Firm-level media news, bank loans, and the role of institutional environments☆

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ABSTRACT

Employing an international sample of bank loans from 37 countries, we find that both borrowers' intensive media coverage and positive media sentiment reduce the interest rate spreads on bank loans. In syndicated lending, positive media sentiment increases the likelihood of a non-relationship bank leading or participating in a loan syndicate and decreases the loan share of the lead arranger. Furthermore, we demonstrate that the negative impact of media news on loan spreads is more pronounced in countries with better financial information and governance environments, a higher representation of privately owned media, and lower government control of banks. These findings underscore the significance of media coverage and sentiment in shaping the costs of bank loans worldwide.

1. Introduction

The impact of mass media on financial markets has received increasing attention from academics and practitioners. The existing literature suggests that the media reduces information asymmetry in the stock market (Bushee et al., 2010) and improves corporate governance quality (Dyck et al., 2008). Compared with the stock market, the debt market is more opaque due to its substantially lower requirements on public disclosure about borrowers. How the debt market is influenced by the media has been studied in the U.S. market. For example, Bushman et al. (2017) examine the informational role of the media in private lending, and Gao et al. (2020a) investigate the role of the media in corporate bond pricing. Drawing on these previous studies, we examine the impact of borrowers'

media news on bank loan interest rate spreads using an international sample. By doing so, we extend Bushman et al.'s (2017) work from the U.S. to an international setting, and Gao et al.'s (2020a) study from a public to a private lending setting.

The effect of the media is an important topic given its importance in finance and economics. Prior studies have established that the media affects municipal borrowing costs (Gao et al., 2020b), legal violations (Heese et al., 2022), government responsiveness to citizen needs (Besley and Burgess, 2002), electoral accountability (Larreguy et al., 2020), and public concerns regarding immigration (Benesch et al., 2019), among many others. The media also has significant implications for financial markets through shaping price discovery in earnings announcements (Xu, 2023) and the process of mergers (Buehlmaier and Zechner, 2021), individual investors' stock trading (Mavruk, 2021), and international equity returns (Fraiberger et al., 2021). Therefore, studying the effect of the media internationally and for private lending is a meaningful out-of-sample test. The international bank-loan setting is interesting because (1) information asymmetry problems are bigger, (2) the role of the bank loan market is more important than only in the U.S., and (3) whether private lenders require information from public media is still an open question. Our setting also provides unique opportunities for further exploring the effect of the media on syndicated loan participation, as well as how the media effect is related to cross-country differences in institutional environments, such as information and governance quality and the ownership structure of the media or banking industry. These are important issues because U.S.-based evidence may not be generalizable to the rest of the world, and our international setting allows for an examination of how country-level institutional environments shape this relation.

As a key information intermediary, the media specializes in collecting, screening, and consolidating information from diverse sources and disseminating that information to a broad range of investors (Peress, 2014). Media outlets are, therefore, able to provide information of substantial economic significance. Current literature has found concrete evidence of a strong association between media news and stock prices (Fang and Peress, 2009; Drake et al., 2014; Hillert et al., 2014). It has also shown that journalists' editorial content helps investors interpret earnings news (Guest, 2021). Moreover, media reporting exposes managerial opportunism and irregularities to public scrutiny and oversight, as evidenced by the previous findings that media coverage increases the likelihood of managers abandoning a value-destroying acquisition (Liu and McConnell, 2013) and decreases CEOs' option grants (Kuhnen and Niessen, 2012). However, most prior research focuses on the U.S. market, and international studies are scant. Griffin et al. (2011) note that "[d]espite the perceived importance of the financial media, there has been little attempt to either quantify its importance internationally or to understand why its impact may vary across countries" (pp. 3941–3942). Our paper advances this line of work.

In loan issuance, high-quality firm-level information is crucial to bank loan success (Qian et al., 2015), and information risk is one of the fundamental concerns of lenders (Graham et al., 2008). In real-world scenarios, there is a high degree of information asymmetry between informed and uninformed lenders regarding borrowers' private information (Hale and Santos, 2009). The media can lessen the information asymmetry by creating and validating information about a borrower and distributing it to a large pool of lenders. Moreover, the media acts as an external monitor. Media coverage disciplines borrowers and lowers banks' monitoring costs. Therefore, we expect high media coverage to reduce bank loan spreads. This is especially true in the case of positive media news about a borrower, which reflects the media's favorable perceptions and assessment of the borrower's fundamentals or strategies and indicates a low default risk on a potential loan. The theoretical model by Rajan (1992) predicts that positive public information signals about a borrower increase competition among lenders by attracting less informed lenders to compete for the loan. According to this logic, positive media sentiment should reduce loan spreads. In addition to the information-based considerations, evidence from the equity market suggests that the market response to media sentiment is also linked to behavioral reasons, such as mis-reactions (Tetlock, 2007, 2011; Ben-Rephael et al., 2019; Fraiberger et al., 2021). When setting loan prices, bankers could be irrationally influenced by positive media sentiment, resulting in overreactions. These overreactions could in turn trigger a temporary reduction in loan spreads.[1]

Anecdotal evidence from the international market supports the significant implications of media news on loan pricing. In 2008, Hainan Airlines Co. Ltd. was one of the most publicized airline companies in China. Most of its news coverage was positive and inspiring, such as "Hainan Airlines has the lowest customer complaint rate among Chinese airline companies, according to the Civil Aviation Administration of China" (CARNOC) and "Hainan Airlines launched the Beijing-Seattle flight – the fastest flight between China and the U.S." (Sina news). Concurrently, Hainan Airlines' long-term weighted-average loan interest rate declined from 6.61% in 2007 to 6.12% in 2008.[2] By comparison, from late 2017 to 2018, Hainan Airlines suffered massive negative media coverage, representing the worst situation the company had faced in its history.[3] The poor media coverage raised the loan interest rate. In 2017, the company's long-term loan interest rate interval was 3.07% to 6.91%, rising to 4.04% to 8.26% in 2018.[4] A similar relation was observed for Apple Inc. At the end of 2017, many news outlets, including the BBC and CNN, reported on their front pages that Apple had slowed down older iPhones.[5] At the same time, the all-in-drawn spread on Apple's loans increased to 350 basis points, up from 275

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[1] Due to the scarcity of consecutive loan facilities borrowed by the same firm, we cannot formally test whether there is any subsequent reversal in loan spreads at longer horizons. Nonetheless, we recognize the possibility that the sentiment effect on loan spreads could be temporary. We thank the anonymous referee to point this out.

[2] Data from the company's 2008 annual report.

[3] "HNA Group [which is Hainan Airlines' parent company] has been offloading assets since late 2017 to pay down a staggering amount of debt from investments made during an acquisition spree, and it's a process that looks set to drag on for some time", according to forbes.com (https://www.forbes.com/sites/ywang/2019/04/08/chinas-hna-group-still-needs-to-raise-tens-of-billions-more-and-it-wont-be-easy/#2c0e0e532ff6).

[4] Data from the company's 2018 annual report.

[5] See BBC news (https://www.bbc.com/news/technology-42438745) and CNN news (https://money.cnn.com/2017/12/21/technology/apple-slows-down-old-iphones/index.html).

basis points before the extensive negative news.[6]

Using an international sample of 12,422 loans from 37 countries over the period 2000–2016, we find strong evidence that a borrower's intensive media coverage and positive media sentiment prior to loan issuance reduce the interest rate spread on a bank loan. This result is robust to controlling for a variety of borrower-level, facility-level, and country-level determinants of loan spreads. To assuage concerns about endogeneity, we use borrowers' geographical proximity to Dow Jones branches as an instrument for media coverage, considering that journalists are inclined to track and report on a proximate firm, and media source sentiment (reflecting each media news provider's unique reporting style) as an instrument for media sentiment. As expected, the instrumented values of media coverage and media sentiment decrease loan spreads. As a further attempt to sharpen our identification, we exploit national media strikes as an exogenous shock to media coverage. We report that bank loans with at least one national media strike occurring before the loan issuance (representing an exogenous *reduction* in media coverage) are associated with higher loan spreads.

Syndicated loans are jointly offered by a group of lenders, including a lead arranger and participants. The nature of syndicated lending results in information asymmetry not only between the borrower and the lenders, but also between the lead arranger and the participants. Lead arrangers originate and underwrite loans and negotiate contract terms with borrowers. Lead arrangers have more access to borrowers' private information than participant lenders. The heightened information asymmetry in syndicated lending forces *uninformed* syndicate lenders to use the media to obtain borrowers' information. Consistent with these expectations, we show that intensive positive media news (1) increases the likelihood of having an outside bank with no previous lending relationship with the borrower as the lead arranger of a syndicate, (2) increases the likelihood of having a lender with no previous lending relationship with the borrower or the lead arranger as a syndicate participant, and (3) decreases the share of the loan retained by the lead arranger. These findings suggest that positive media news increases lender competition and reduces information asymmetry within a loan syndicate.

In an international setting, institutional factors display diverse patterns across countries. Prior literature documents that banks charge lower loan rates to firms in countries with higher financial reporting transparency (Kim et al., 2011) and stronger legal institutions (Cumming et al., 2020). However, from a cross-country perspective, it is unclear whether these country-level institutional environments complement or substitute for the role of the media. As discussed by Dang et al. (2015), strong disclosure and legal regulations facilitate the discovery and collection of firm-specific information and lower the media's information production cost. The media should therefore perform more effective information intermediation in these contexts. By contrast, Chen et al. (2020) argue that a country's high-quality financial reporting system and strong investor protection directly alleviate firm-level information asymmetry and consequently act as substitutes for the media's informational function. Our results support the first view by showing that the negative relation between media news and loan spreads is stronger in countries with higher financial information transparency and better governed institutions. That being said, improved information disclosure and governance at the country level enhance the effectiveness of media news in loan pricing.

Worldwide, governments own significant stakes in both the media and banking sectors. Governments frequently control the media and banks to achieve their political goals, resulting in biased media coverage and credit misallocation. Government-owned media outlets have limited incentives to investigate and uncover problems and negative issues. Their news reporting is less critical, less accurate, and less timely than that of private media (You et al., 2018). Moreover, government-owned banks are urged to divert credit to supporters of affiliated political parties (Sapienza, 2004). Their lending behavior is driven more by political forces than by market information. Therefore, government-owned banks are less responsive to public signals from the media. Confirming these conjectures, our evidence demonstrates that the negative impact of media news on loan spreads is weaker in countries where the media or banking sector is largely owned by the government.

Our contribution is threefold. First, we contribute to focal research on media influence in capital markets. Debt financing is the main source of external capital for firms, both listed and unlisted, around the world. In the U.S., Gao et al. (2020a) study the effect of the media on corporate bonds and show that media coverage reduces bond yield spreads for U.S. firms. However, only a few countries have well-developed bond markets. In most countries, debt takes the form of bank loans. The role played by the media in bank lending is less obvious because banks employ in-house research analysts and access borrowers' private information through privileged networks. Consequently, they may not need public information from the media. Shedding light on this debate, our study shows that media news has an impact on loan pricing internationally. A closely related study is that of Bushman et al. (2017), focusing on media sentiment and the U.S. bank loan market, whereas our paper examines both media coverage and media sentiment because media coverage is a first-order important concept. Since information asymmetry problems in an international context are more severe than those in the domestic U.S. market, our cross-country evidence enriches our understanding of the determinants of loan pricing worldwide.

Second, our paper adds to the growing body of international studies on the relation between media sentiment and returns/costs of capital. The focus of these previous studies is on how media sentiment affects stock market returns. Calomiris and Mamaysky (2019) show that the topic and sentiment of news articles written about a country have predictive power for future stock market returns and volatility. Ben-Rephael et al. (2019) discover that the extent to which investors shift existing investments from their home market to a foreign destination market predicts return reversals in the destination market. This effect is caused by investors' overreaction to destination-market bad news. Fraiberger et al. (2021) demonstrate that global market news sentiment has a larger and more permanent impact on stock market returns than local market news sentiment. However, these studies primarily examine country-level market news (such as economic policy, monetary policy, commodity market, equity market, and foreign exchange), rather than the

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[6] Data extracted from the Thomson-Reuters LPC DealScan database.

firm-specific news presented in our study.

Finally, our paper responds directly to Griffin et al.'s (2011) call for more research into how media effects vary across countries. Existing research, such as Griffin et al. (2011), discovers that stock price reactions to media news are stronger in developed markets than in emerging markets, owing to stringent insider trading laws and advanced information transmission technologies in developed markets. Dang et al. (2015) find that the effectiveness of a country's investor protection and disclosure regulations drives media reporting to become more firm-specific. Liu et al. (2022) suggest that foreign investors place more trust in news published by their home-country media, particularly when the host country's information environment is opaque. Our paper broadens this strand of literature by showing that higher country-level information transparency and governance quality enhance the media's beneficial role in ameliorating information frictions in loan pricing, while government control of the media and banking industries undermines this role.

The remainder of the paper is structured as follows. Section 2 develops the hypotheses. Section 3 presents the empirical models and variables. Section 4 describes the data and sample. Section 5 discusses the empirical results. Section 6 concludes the paper.

2. Hypotheses

Media coverage influences loan interest rate spreads in global markets through both its information and governance roles. The media collects and integrates information about a borrower from various sources and communicates that information to a wide audience (Bushee et al., 2010). Media news in the public domain assists lenders in confirming or falsifying noisy information about borrowers obtained from private sources. The media also undertakes original research and analysis, generating new information that is useful for lenders in making loan issuance decisions. Evidence shows that the media can detect and disclose a firm's accounting fraud (Miller, 2006), which is new information that can be used by lenders to assess a firm's creditworthiness. In addition, the media serves as an external monitor for borrowing firms. Media coverage prompts the rectification of corporate governance violations (Dyck et al., 2008), enhances board effectiveness (Joe et al., 2009), and disciplines insider trading (Dai et al., 2015). Well-governed borrowers receive favorable loan contract terms from lenders (Chava et al., 2009). Because media coverage reduces lenders' information and agency risks, banks should charge borrowers with more media coverage lower interest rate spreads.

Media sentiment has emerged as a popular topic in recent studies (e.g., Calomiris and Mamaysky, 2019; Fraiberger et al., 2021; Mavruk, 2021). Media sentiment summarizes the context and linguistic features of a news article and whether it delivers positive, neutral, or negative sentiment to the market. Equities research shows that positive news from the business press reduces a firm's realized stock returns and return volatility (Kothari et al., 2009). Positive media sentiment about a borrower reflects the media's positive perceptions of the borrower's performance and operations, lowering lenders' risk of a bad loan. Positive media sentiment also attracts a large pool of prospective lenders and increases their willingness to compete for the loan (Rajan, 1992). However, unlike media coverage, the return response to media sentiment could also be explained by non-information channels such as mis-reactions. In the stock market, Tetlock (2007) finds evidence of investor overreactions to media sentiment, followed by a subsequent reversal to stock fundamentals. Tetlock (2011) further shows that the extent of the return reversals increases as the news becomes stale. Moreover, Ben-Rephael et al. (2019) document that foreign investment is predictive of return reversals in foreign destination markets, driven by an overreaction to negative news about the foreign markets. Fraiberger et al. (2021) discover that global news sentiment has a strong impact on stock returns that does not reverse over subsequent weeks, in contrast to the small and transient effect observed with local news sentiment. In bank lending, loan officers are not fully rational decision-makers (Agoraki et al., 2022). They could overreact to positive media sentiment, resulting in a temporary lower loan spread. According to both information- and behavioral-based reasoning, positive media sentiment is expected to reduce loan spreads.

However, media news could be irrelevant to loan pricing, given the institutional differences between the private debt (i.e., bank loan) and public debt (i.e., corporate bond) markets (Gorton and Winton, 2003). Debt markets are generally opaque (relative to the stock market) because of the limited public disclosure made to debt investors and the significant information asymmetry between large and small investors. In the corporate bond market, Gao et al. (2020a) show that bond investors rely heavily on media news to acquire public information about a bond issuer when determining the bond yield they will demand. In the private lending market, banks can establish personal relationships and private communication channels with borrowers. Banks have privileged access to borrowers' private information (e.g., financial projections, capital investment, and managerial abilities). Banks also conduct private investigations and monitoring of informationally opaque borrowers on a regular basis and are allowed to renegotiate loan terms after initial loan issuance. Given the availability of private information to banks and loan officers, one could argue that news articles in public media are redundant. The preceding discussions form our first set of hypotheses:

Hypothesis 1a. *Higher media coverage of borrowers reduces loan spreads.*

Hypothesis 1b. *More positive media sentiment about borrowers reduces loan spreads.*

Hypothesis 1c. *Media coverage and media sentiment are irrelevant to loan spreads.*

In response to Griffin et al.'s (2011) call for an understanding of why media impact differs across countries, we examine how country-level institutional environments alter the relation between media news and loan spreads. Given the media's crucial roles as an information intermediary and monitor, the extent to which these roles can be fulfilled depends on a country's information transparency and governance quality. Furthermore, the degree to which the media and banks are controlled by the government (as opposed to private owners) affects media censorship and the efficiency of bank loan pricing. These institutional differences could change the effect of media news on loan spreads.

(1) *Country-level financial information environment.* In general, the extent to which the media alleviates information asymmetry through information dissemination and creation is determined by the transparency of a country's financial information environment. A transparent information environment increases the availability and reliability of original information that can be used by the media to produce news. Dang et al. (2015) argue that a transparent information environment facilitates the media's discovery and collection of firm-specific information and reduces its information production and replication costs. This promotes its information intermediation and strengthens its power to reduce loan spreads. However, in countries with high information transparency, firms are required to disclose high-quality information to external investors and creditors, who therefore demand less information from other sources, such as the media. Chen et al. (2020) argue that a country's high-quality financial reporting system improves the transparency of financial reports and reduces the information asymmetry associated with IPOs. The role of media coverage as an information intermediary in IPOs thus becomes less important. Following this line of thought, if banks in high transparency countries obtain timely and accurate information from firm disclosure and other verified information sources, they will have less need to search for media news to acquire necessary information. Based on the foregoing two possibilities, we propose two competing hypotheses:

Hypothesis 2a. *The negative relation between media coverage/sentiment and loan spreads is stronger in countries with a more transparent financial information environment.*

Hypothesis 2b. *The negative relation between media coverage/sentiment and loan spreads is weaker in countries with a more transparent financial information environment.*

(2) *Country-level governance quality.* A country's legal and political institutions affect banks' capacity and incentives to screen borrowers and offer loans. Strong creditor and property rights protect lenders' interests in the event of a default and ensure the availability of bank loans to meet the financing needs of growing businesses. Sound judicial enforcement of contracts raises recovery rates on defaulted loans and shortens the time spent reprocessing collateral following a loan default. A country's political risks and control of corruption are also important because, all else being equal, banks are more willing to lend to firms operating in politically stable, uncorrupt countries where political and legal institutions provide better security and legitimacy to loan contracting. Research shows that banks respond to a country's better creditor rights protection (Qian and Strahan, 2007), strong contract enforceability (Bae and Goyal, 2009), and efficient debt collection (Cumming et al., 2020) by reducing loan interest rates, which in turn facilitates firms' access to debt capital. Nevertheless, whether country-level governance quality and firm-level governance mechanisms complement or act as substitutes for each other in loan pricing is ambiguous. Ge et al. (2012) find that firms with better corporate governance structures receive more favorable loan contract terms. This effect is strengthened in countries where legal institutions protect creditors and enforce contracts more effectively. On the other hand, Chen et al. (2020) argue that a country's legal infrastructure and enforcement determine what rights securities holders have and how well these rights are protected. They show that strong shareholder rights encourage informationally disadvantaged investors to enter the IPO market and dampen investors' demand for information from the media about the IPO firm's intrinsic value. Therefore, we expect that well-governed institutions at the country level could influence the relation between media news and loan spreads in two opposing directions:

Hypothesis 3a. *The negative relation between media coverage/sentiment and loan spreads is stronger in countries with higher governance quality.*

Hypothesis 3b. *The negative relation between media coverage/sentiment and loan spreads is weaker in countries with higher governance quality.*

(3) *Media sector controlled by government or private owners.* The extent of media influence is dependent on the success of the media as an information intermediary and watchdog. A distorted media fails to assess and verify the integrity and credibility of original information sources, delays news reporting, and disseminates erroneous or even fabricated information. Media ownership is an important determinant of media efficacy. Djankov et al. (2003) analyze the ownership of media companies around the world and discover that almost all major media companies are owned by governments or private families. However, news reporting is biased by government-owned media seeking to serve the political interests of incumbent politicians. You et al. (2018) report that government-owned media provides less critical, less accurate, less comprehensive, and less timely news than privately owned media. Houston et al. (2011) document that government-owned media has little incentive to investigate and report on problems and bad situations, such as corruption in bank lending. Government ownership suppresses the media's discovery and monitoring function and diminishes media news' lowering of firms' bank loan costs.

Hypothesis 4. *The negative relation between media coverage/sentiment and loan spreads is attenuated in countries with a government-controlled media sector.*

(4) *Government control of banks.* Loan prices are set by banks. The characteristics of the banking sector should matter in loan pricing. The literature suggests that the lending behavior of government-owned banks is driven by the political goals of the government (Dinc, 2005). Government-owned banks are used by the government to divert financial resources so as to achieve political aims, resulting in inefficient credit allocation (Sapienza, 2004). In countries where the government owns the majority of banks, bank lending decisions are influenced more by political policies than by market forces. Due to government interference and political objectives, banks could be less responsive to information provided by media news. We expect a weaker impact of media news on loan spreads in this context.

Hypothesis 5. *The negative relation between media coverage/sentiment and loan spreads is weakened in countries with increased government-controlled media sector.*

3. Empirical models

Empirical loan pricing studies determine the loan interest rate spread as a function of various borrower- and facility-level factors (e. g., Bushman et al., 2017). Our international setting requires additional controls for country-level characteristics. To test for hypothesis **H1** on the relation between media coverage/sentiment and loan pricing, we estimate the ordinary least squares (OLS) regression model below:

$$Spread = \alpha_0 + \beta_1 Media\ News\ Variables + \beta_2 Borrower\text{-}Level\ Controls + \beta_3 Facility\text{-}Level\ Controls + \beta_4 Country\text{-}Level\ Controls$$
$$+ Fixed\ Effects + \varepsilon \tag{1}$$

where the dependent variable is the interest rate spread (*Spread*) of the loan facility, calculated as the natural logarithm of the sum of the interest rate spread of the facility in basis points over LIBOR and any annual fees paid for each dollar drawn down to the bank group (i.e., all-in-drawn spread).

Our key independent variables (*Media News Variables*) are the borrower's media coverage (*Coverage*), media sentiment (*Sentiment*), and aggregate sentiment (*Sent-Aggregate*) over the 180 days prior to the loan issuance date. Media news data are gathered from RavenPack News Analytics – a leading global news analytics database widely used in accounting and finance studies (Drake et al., 2014; Dai et al., 2015; Dang et al., 2015; Bushman et al., 2017). RavenPack collects and tracks news articles from over 40,000 companies in more than 200 countries, representing over 98% of the investable global equity market. RavenPack sources real-time, firm-specific news from over 22,000 publishers and web aggregators, including Dow Jones Newswires, The Wall Street Journal, Barron's, MarketWatch, MT Newswires, industry and business publications, regional and local newspapers, government and regulatory updates, and other press release distribution networks.[7] As in Bushman et al. (2017), we restrict our sample to full-size news articles, excluding news flashes, tabular material, and firm-initiated press releases. We keep only news articles with a RavenPack relevance score of 100, which contain news most relevant to the specific borrower.

Media coverage (*Coverage*) is measured as the natural logarithm of 1 plus the number of news articles published about a borrower over the 180 days prior to the loan issuance date. RavenPack creates a news-level composite sentiment score (CSS) by combining various sentiment analysis techniques that are designed to detect the positive or negative impact of news stories on stock prices. The CSS ranges from 0 to 100, where 50 is the cutoff between positive news (CSS > 50) and negative news (CSS < 50). We rescale the CSS to a value between −1 and 1, so that a positive (negative) rescaled score corresponds to positive (negative) news, and 0 corresponds to neutral news. Media sentiment (*Sentiment*) is the average of the rescaled CSS of all news articles published about a borrower over the 180 days preceding the loan issuance. The aggregate sentiment (*Sent-Aggregate*) is the sum of the rescaled CSS of all news articles published about a borrower over the 180 days preceding the loan issuance. This variable reflects the joint effect of media coverage and sentiment, and captures the cumulated news signal to the market.

The regression model controls for a set of borrower-, facility-, and country-level characteristics: (a) *Borrower's firm-level characteristics.* Return on assets (*ROA*) is operating income after depreciation scaled by total assets. Interest coverage (*IC*) is operating income after depreciation divided by interest expense, reflecting the borrower's ability to meet interest payments. Leverage ratio (*Lev*) is total liabilities divided by total assets, as a proxy for the borrower's financial risks. Firm size (*Size*) is the natural logarithm of total assets. Altman's (1968) *Z-score* is used to assess the default risk. A higher *Z-score* indicates a lower probability of bankruptcy. The market-to-book ratio (*MB*) is the ratio of the market value to the book value of equity. *Loss* is a dummy variable indicating a financial loss (i.e., negative *ROA*). *PUB* is a dummy variable equal to 1 if the borrower remains publicly listed after the most recent loan issuance, and 0 otherwise. *Analyst* equals 1 if at least one analyst follows the borrower in the month before the loan issuance, and 0 otherwise. *Return* is the borrower's cumulative market-adjusted return over the 180 days prior to the loan issuance. *NegRet* equals 1 if *Return* is negative, and 0 otherwise. *Distance* is the natural logarithm of 1 plus the geographical distance (in kilometers) between the capital city of the country of the borrower's headquarters and the capital city of the country of the lead bank's headquarters. *Rated* equals 1 if the borrower has a senior debt rating from major rating agencies, and 0 otherwise.

(b) *Loan-level characteristics.* Loan size (*Amount*) is the natural logarithm of the loan amount in U.S. dollars. *Maturity* is the number of months to maturity. Other loan-level control variables are whether the loan has a performance pricing provision (*PP*), how many financial covenants are used (*Covenant*), whether it is a revolving line of credit (*Revolver*), and whether the loan type is Term Loan B, C, D, E, or F (*TLB*).

(c) *Country-level characteristics in the country of the borrower's headquarters.* The Fraser Institute's economic freedom index (*EcoF*) is a composite index that measures a country's rule of law (in terms of property rights, government integrity, and judicial effectiveness), government size (which considers government spending, tax burden, and fiscal health), regulatory efficiency (which reflects business freedom, labor freedom, and monetary freedom), and open markets. GDP per capita (*GDP*) and GDP growth rate (*GDPG*) are included to account for a country's economic affluence.

Eq. (1) incorporates year, industry, country, loan purpose, and distribution method fixed effects. All variable definitions are summarized in Internet Appendix Table IA1. If the coefficients (β_1) on media coverage and media sentiment are negative and

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[7] While RavenPack only collects English-language news, some RavenPack-tracked news providers, such as Dow Jones Newswires, publish local-language news and concurrently translate it into English for distribution on their English-version newswires. Dow Jones Newswires is the dominant source of news stories outside of the U.S. utilized by RavenPack, accounting for nearly half of the non-U.S. news in the database. Thus, we have sufficient confidence that our results are unlikely to be biased by RavenPack's reporting of only English-language news.

Table 1
Sample distribution.

Panel A. Distribution by Market

Developed Market	Freq.	Developing Market	Freq.
Australia	680	Argentina	34
Belgium	126	Brazil	142
Canada	917	Chile	78
Denmark	43	China	338
Finland	87	Greece	95
France	846	Hungary	42
Germany	674	India	331
Hong Kong	552	Israel	32
Ireland	126	Korea (South)	420
Italy	325	Luxembourg	117
Japan	421	Mexico	119
Netherlands	453	Philippines	92
Norway	141	Poland	57
Singapore	243	Portugal	63
Spain	479	Russia	125
Sweden	152	South Africa	89
Switzerland	242	Taiwan	1891
United Kingdom	1739	Turkey	82
		United Arab Emirates	29
		Total	**12,422**

Panel B. Distribution by Year

Year	Freq.	Percent	Cum.
2000	538	4.33	4.33
2001	648	5.22	9.55
2002	663	5.34	14.88
2003	705	5.68	20.56
2004	852	6.86	27.42
2005	1014	8.16	35.58
2006	999	8.04	43.62
2007	923	7.43	51.05
2008	817	6.58	57.63
2009	527	4.24	61.87
2010	702	5.65	67.53
2011	804	6.47	74.00
2012	714	5.75	79.75
2013	672	5.41	85.16
2014	747	6.01	91.17
2015	634	5.10	96.27
2016	463	3.73	100
Total	**12,422**	**100**	

This table presents the sample distribution by market (Panel A) and year (Panel B).

significant, hypothesis **H1** is supported. That is, intensive media coverage and positive media sentiment reduce loan spreads.

To examine hypotheses **H2**–**H5** on the interaction effect of media news and country-level institutional environments on loan pricing, we augment eq. (1) with an interaction term and estimate the following model:

$$Spread = \alpha_0 + \beta_1 Media\ News\ Variables + \beta_2 Institutional\ Environment\ (IE) + \beta_3 Media\ News\ Variables \times IE$$
$$+ \beta_4 Borrower\text{-}Level\ Controls + \beta_5 Facility\text{-}Level\ Controls + \beta_6 Country\text{-}Level\ Controls + Fixed\ Effects + \varepsilon \qquad (2)$$

where *Institutional Environment* (*IE*, hereafter) denotes a country-level institutional environment factor. We focus on the four dimensions of country-level factors listed below:

(a) *Financial information environment.* We use three time-invariant indexes from Bushman et al. (2004). Financial disclosure intensity (*DISCL*) is the prevalence of disclosures regarding several accounting items that are highly proprietary in nature but useful to outside investors for valuation purposes (e.g., R&D, capital expenditures, segments, and subsidiaries). Financial transparency (*FINTRA*) is the availability of financial information to outside investors as a result of its disclosure, interpretation, and dissemination by firms, financial analysts, and news reporters. Private information acquisition by financial analysts (*NAN*) is assessed using the average number of analysts following the largest thirty companies in a country. A higher value for each of the indexes reflects a higher degree of financial information transparency in a country.

(b) *Country governance quality.* We use the World Governance Indicators (WGI) from Kaufmann et al. (2010) to capture a country's political and institutional quality over time in terms of Voice and Accountability (*VA*), Political Stability and Absence of Violence/ Terrorism (*PV*), Government Effectiveness (*GE*), Regulatory Quality (*RQ*), Rule of Law (*RL*), and Control of Corruption (*CC*). A higher

Table 2
Summary statistics.

	N	Mean	St. Dev	P25	Median	P75
Main variables:						
Spread	12,422	4.794	0.858	4.212	4.828	5.416
Coverage	12,422	2.487	1.808	1.099	2.485	3.850
Sentiment	8475	0.005	0.043	−0.003	0.000	0.028
Sent-Aggregate	8475	0.017	0.145	−0.009	0.000	0.097
Control variables:						
ROA	12,422	0.067	0.062	0.033	0.062	0.098
IC	12,422	9.684	26.989	1.779	3.815	8.073
Lev	12,422	0.600	0.175	0.489	0.601	0.711
Size	12,422	9.352	2.412	7.689	9.254	10.63
Z-score	12,422	2.340	1.891	1.217	1.932	2.874
MB	12,422	2.155	2.794	0.913	1.493	2.479
Loss	12,422	0.084	0.278	0.000	0.000	0.000
PUB	12,422	0.513	0.500	0.000	1.000	1.000
Analyst	12,422	0.166	0.372	0.000	0.000	0.000
Return	12,422	0.054	0.317	−0.104	0.055	0.213
NegRet	12,422	0.401	0.490	0.000	0.000	1.000
Distance	12,422	0.897	2.629	0.000	0.000	0.000
Rated	12,422	0.220	0.414	0.000	0.000	0.000
Amount	12,422	18.852	1.830	17.728	18.882	20.082
Maturity	12,422	57.009	38.555	36.000	60.000	60.000
PP	12,422	0.114	0.318	0.000	0.000	0.000
Covenant	12,422	0.391	0.912	0.000	0.000	0.000
Revolver	12,422	0.351	0.477	0.000	0.000	1.000
TLB	12,422	0.062	0.240	0.000	0.000	0.000
EcoF	536	7.430	0.720	7.015	7.500	7.850
GDP	536	9.948	1.070	9.401	10.258	10.690
GDPG	536	0.029	0.033	0.012	0.027	0.044
Institutional environment variables:						
DISCL	32	85.326	17.024	73.550	92.750	100.000
FINTRA	32	0.329	0.656	−0.179	0.386	0.801
NAN	32	14.493	7.782	7.685	13.870	20.350
VA	556	0.833	0.765	0.460	1.041	1.413
PV	556	0.460	0.826	−0.063	0.744	1.063
GE	556	1.126	0.766	0.441	1.268	1.777
RQ	556	1.044	0.739	0.549	1.200	1.658
RL	556	0.991	0.861	0.349	1.262	1.754
CC	556	1.030	0.991	0.136	1.281	1.934
PRCS	34	−0.047	0.185	0.000	0.000	0.000
PRSS	34	−0.047	0.186	0.000	0.000	0.000
PRCP	34	0.900	0.222	1.000	1.000	1.000
PRSP	34	0.905	0.218	1.000	1.000	1.000
GB	36	0.322	0.275	0.108	0.274	0.428
GBCOM	36	0.307	0.280	0.104	0.240	0.411
GC20	36	0.395	0.326	0.128	0.325	0.587
GC50	36	0.344	0.312	0.096	0.235	0.575
GC90	36	0.213	0.254	0.018	0.126	0.303

This table presents the summary statistics of the main variables, control variables, and country-level institutional environment variables. The statistics of country-level time-varying variables are reported based on country-year observations, and the statistics of country-level time-invariant variables are reported based on the cross-section of countries. Variable definitions are provided in Internet Appendix Table IA1.

value of each indicator suggests better governance quality in a country.

(c) *Media owned by government or private owners.* Djankov et al. (2003) classify media ownership as state, private (i.e., family-owned, widely held, and employee-owned), and other (i.e., trade unions, political parties, churches, not-for-profit foundations, and business associations). They find that state and private ownership are the dominant forms. From their study, we collect data on state ownership of the media by count (*PRCS*), which is the percentage of state-owned newspapers among the five largest newspapers by circulation in a country. State ownership of the media by share (*PRSS*) is the market share of state-owned newspapers as a percentage of the total market share of the five largest newspapers in a country. Private ownership of the media by count (*PRCP*) is the percentage of privately owned newspapers among the five largest newspapers in a country. Private ownership of the media by share (*PRSP*) is the market share of privately owned newspapers out of the total market share of the five largest newspapers in a country.

(d) *Government control of banks.* We collect government ownership of banks (*GB*) and commercial banks (*GBCOM*) from La Porta et al. (2002). *GB* is the proportion of the assets of the top ten banks (including both commercial banks and development banks) in a country that are owned by the government of that country. *GBCOM* is the share of government ownership in the top ten commercial banks in a country. Government ownership of banks at 20% (*GC20*) is the share of the assets of the top ten banks in a country that are controlled by the government, where the government holds at least 20% ownership of the given bank. Likewise, *GC50* and *GC90* are

government ownership of banks where the government holds at least 50% and 90% ownership, respectively.

We de-mean the covariates in the interaction term to ease the interpretation of the separate *Media News Variables* and *IE* variables.[8] The regression model includes year, industry, loan purpose, and distribution method fixed effects. If the country-level *IE* variable is time-varying, the model also includes country fixed effects. The coefficient β_3 in eq. (2) measures how the impact of media news on loan pricing varies depending on the country-level institutional environment factor.

4. Data and sample

We search the Thomson-Reuters LPC DealScan database for loan-facility-level information and merge it with borrower characteristics in Compustat Global and North America using the DealScan-Compustat linking file (Chava and Roberts, 2008). We collect media news from RavenPack News Analytics, analyst coverage from I/B/E/S, the economic freedom index from the Fraser Institute, and countries' GDP per capita and growth rates from the World Development Indicators (WDI). The data sources are listed in Internet Appendix Table IA1. The sample selection process results in an overrepresentation of U.S. borrowers and an underrepresentation of non-U.S. borrowers. To avoid our results being driven by U.S. observations and maintain our research focus on the international bank-loan setting, we restrict our main tests to loan facilities borrowed by non-U.S. firms. We drop borrowers in the financial and utility industries due to their distinct financial statement structure and heavy regulation. We require at least 20 loan facilities to be present in each country. After removing missing observations from the baseline regression, we obtain a sample of 12,422 facilities from 2535 firms in 37 non-U.S. countries from 2000 to 2016.

Table 1 presents the sample distribution by market (Panel A) and year (Panel B). The number of facilities varies by country in Panel A. The UK (14.00% of the sample) and Taiwan (15.22%) have more facilities than the other markets. As seen in Panel B, the sample is distributed fairly evenly across years. The highest percentage of loan facilities is reported in 2005 (8.16% of the sample).

Table 2 presents the summary statistics of the loan interest rate spread, media news variables, control variables, and institutional environment proxies. The statistics of *Spread* are similar to those reported by Bushman et al. (2017) for U.S. loan facilities. The average interest rate spread in our sample is 169 basis points. An average of 56 news articles are published about borrowers within the 180 days preceding loan issuance. After log-transformation, *Coverage* has a mean value of 2.487. The mean of *Sentiment* is 0.005, indicating that borrowers' media news conveys positive information on average. Most institutional environment variables (except the country-level governance quality proxies) are time-invariant within a country.

5. Empirical results

5.1. The effect of media news on loan pricing

This section presents the baseline results for the effects of media coverage and media sentiment on loan spreads (**H1**). In column 1 of Table 3, the coefficient of *Coverage* is statistically significant with a negative sign. In terms of economic magnitude, a one standard deviation increase in *Coverage* leads to a 0.108 (=1.808 × 0.060) decrease in *Spread*, which is approximately 12.4 basis points.[9] The effect of media sentiment on loan pricing is examined in column 2. A one standard deviation increase in *Sentiment* leads to a 0.039 (=0.900 × 0.043) decrease in *Spread* (approximately 4.6 basis points). Including both media measures in column 3, the result indicates that one standard deviation increases in *Coverage* and *Sentiment* reduce the loan spread by 14.2 and 4.4 basis points, respectively. In column 4, we use *Sent-Aggregate* as a proxy for aggregate news signals to the market. The negative and significant coefficient of *Sent-Aggregate* suggests that borrowers with positive aggregate media sentiment obtain lower loan interest rate spreads. The coefficient can be interpreted as a one standard deviation increase in *Sent-Aggregate* reducing the interest rate spread by 5.8 basis points. Taken together, our findings corroborate the prediction that intensive media coverage and positive media sentiment lower the cost of bank loans.

Turning to the control variables, the results are generally consistent with previous research (Bushman et al., 2017; Gao et al., 2020a). Regarding borrowers' firm-level characteristics, we observe lower interest rate spreads for borrowers with better operating performance (as proxied by *ROA*, *Loss*, and *NegRet*), lower leverage (*Lev*), larger firm size (*Size*), lower bankruptcy risk (*Z-score*), a public stock listing (*Pub*), the presence of analyst following (*Analyst*), and a shorter geographical distance to the lead bank (*Distance*). For the loan-level characteristics, we find that larger loans (*Amount*) and revolver loans (*Revolver*) have lower interest rate spreads, while loans with longer maturities (*Maturity*), performance pricing provisions (*PP*), and a loan type of Term Loan B or below (*TLB*) show higher spreads. Borrowers in countries with greater economic freedom (*EcoF*) and higher GDP growth (*GDPG*) have lower interest rate spreads. The spreads increase in countries with higher GDP per capita (*GDP*).

5.2. Endogeneity

5.2.1. Instrumental variable approach

Following Dai et al. (2015) and Chen et al. (2020), we use the geographical distance between a firm's headquarters and the nearest

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[8] After de-meaning in Eq. (2), β_1 represents the marginal effect of *Media News Variable* when *IE* is set to its sample mean, and β_2 represents the marginal effect of *IE* when *Media News Variable* is set to its sample mean. The coefficient of the interaction term (β_3) has the same interpretation as the coefficient of the interaction without de-meaning.

[9] $12.4 = e^{4.794} - e^{4.794-0.108}$, where 4.794 is the sample mean of *Spread*.

Table 3
Baseline regression results – media and loan pricing.

	(1)	(2)	(3)	(4)
	Spread	Spread	Spread	Spread
Coverage	−0.060***		−0.061***	
	(−13.319)		(−11.049)	
Sentiment		−0.900***	−0.860***	
		(−5.145)	(−4.970)	
Sent-Aggregate				−0.333***
				(−6.643)
ROA	−0.596***	−0.486***	−0.513***	−0.472***
	(−4.564)	(−2.930)	(−3.112)	(−2.919)
IC	0.000	0.000*	0.000*	0.000
	(0.416)	(1.741)	(1.761)	(1.636)
Lev	0.385***	0.414***	0.441***	0.409***
	(8.906)	(7.610)	(8.221)	(7.597)
Size	−0.068***	−0.093***	−0.073***	−0.093***
	(−17.823)	(−18.229)	(−13.995)	(−20.291)
Z-score	−0.030***	−0.037***	−0.033***	−0.037***
	(−6.327)	(−6.632)	(−5.942)	(−6.379)
MB	0.002	0.002	0.003	0.002
	(0.811)	(0.723)	(1.266)	(0.796)
Loss	0.194***	0.221***	0.219***	0.221***
	(8.125)	(7.106)	(7.068)	(7.239)
PUB	−0.087***	−0.098***	−0.101***	−0.099***
	(−7.276)	(−6.416)	(−6.691)	(−6.540)
Analyst	−0.038**	−0.101***	−0.054***	−0.101***
	(−2.089)	(−5.202)	(−2.666)	(−5.152)
Return	0.034	0.072**	0.073**	0.075**
	(1.396)	(2.200)	(2.225)	(2.475)
NegRet	0.049***	0.043**	0.047**	0.040**
	(3.130)	(2.193)	(2.418)	(2.078)
Distance	0.024***	0.022***	0.023***	0.022***
	(10.688)	(8.343)	(8.839)	(8.264)
Rated	0.012	−0.008	0.038*	−0.007
	(0.670)	(−0.403)	(1.806)	(−0.381)
Amount	−0.063***	−0.066***	−0.064***	−0.066***
	(−15.861)	(−11.694)	(−11.429)	(−13.911)
Maturity	0.001***	0.001***	0.001***	0.001***
	(6.931)	(3.672)	(3.864)	(4.834)
PP	0.061***	0.053**	0.063***	0.053**
	(3.331)	(2.518)	(2.976)	(2.413)
Covenant	−0.000	0.022***	0.018**	0.021**
	(−0.009)	(2.700)	(2.210)	(2.456)
Revolver	−0.161***	−0.190***	−0.188***	−0.190***
	(−12.675)	(−12.295)	(−12.239)	(−12.009)
TLB	0.329***	0.357***	0.348***	0.356***
	(13.052)	(13.065)	(12.596)	(11.810)
EcoF	−0.418***	−0.394***	−0.458***	−0.394***
	(−10.943)	(−7.755)	(−9.051)	(−7.864)
GDP	0.304***	0.347***	0.338***	0.347***
	(7.715)	(6.801)	(6.742)	(6.864)
GDPG	−1.180***	−1.253***	−0.926**	−1.209***
	(−3.802)	(−3.234)	(−2.442)	(−3.077)
Fixed Effects	Yes	Yes	Yes	Yes
Adj. R^2	0.541	0.548	0.555	0.549
Obs.	12,422	8475	8475	8475

This table presents the OLS regression results for the effects of media coverage, media sentiment, and aggregate sentiment on loan spreads. *Coverage* is the natural logarithm of 1 plus the number of news articles published about a borrower over the 180 days prior to the loan issuance. *Sentiment* is the average sentiment of all news articles published about a borrower over the 180 days prior to the loan issuance. *Sent-Aggregate* is the aggregate sentiment of all news articles published about a borrower over the 180 days prior to the loan issuance. The dependent variable, *Spread*, is the natural logarithm of the total (interest and fees) spread in basis points over LIBOR. Intercepts are included but suppressed for brevity. The fixed effects include year, industry, country, loan purpose, and distribution method fixed effects. Variable definitions are provided in Internet Appendix Table IA1. The *t*-statistics computed using robust standard errors corrected for heteroskedasticity are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Dow Jones branch as an instrumental variable for media coverage. Dow Jones, as a global business news conglomerate, provides extensive coverage of companies worldwide through prestigious brands such as The Wall Street Journal, Factiva, Barron's, Market-Watch, Mansion Global, Financial News, and Dow Jones Newswires. Gurun and Butler (2012) note that media coverage is dependent on the distance between a firm and media outlets. A firm that is close to media outlets tends to receive more media coverage because it

Table 4
Instrumental variable approach.

Panel A. The IV-2SLS approach for media coverage

	Full sample		Matched sample	
	First-stage	Second-stage	First-stage	Second-stage
	(1)	(2)	(3)	(4)
Dependent variable=	Coverage	Spread	Coverage	Spread
DJD_rank	0.046***		0.034***	
	(7.761)		(4.543)	
Fitted Coverage		−0.169***		−0.274**
		(−1.732)		(−2.315)
Controls	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes
Partial *F*-statistic	60.259***		20.378***	
Adj. R^2	0.616		0.614	
Obs.	10,553	10,553	5844	5844

Panel B. The IV-2SLS approach for media sentiment

	Full sample		Matched sample	
	First-stage	Second-stage	First-stage	Second-stage
	(1)	(2)	(3)	(4)
Dependent variable=	Sentiment	Spread	Sentiment	Spread
Source_Sentiment	1.107***		1.801***	
	(7.473)		(8.332)	
Fitted Sentiment		−4.878**		−4.615***
		(−2.557)		(−3.063)
Controls	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes
Partial *F*-statistic	54.218***		65.928***	
Adj. R^2	0.195		0.095	
Obs.	6247	6247	4066	4066

This table presents the 2SLS regression results for the effects of media coverage (Panel A) and media sentiment (Panel B) on loan spreads. In Panel A, we use *DJD_rank* as an instrument for media coverage. *DJD_rank* is the descending decile rank of the geographical distance between a borrower and the nearest Dow Jones branch. A higher score of *DJD_rank* signals a closer distance to the Dow Jones branch. Columns 1–2 use the full sample, and columns 3–4 use the matched sample that matches borrowers who have high distances to the nearest Dow Jones branch with those who have low distances through one-to-one nearest neighbor propensity score matching. In Panel B, we use *Source_Sentiment* as an instrument for media sentiment. *Source_Sentiment* captures the average reporting style (optimistic or pessimistic) of all media sources that have published news about a borrower within the 180 days prior to the loan issuance. Columns 1–2 use the full sample, and columns 3–4 use the matched sample that matches borrowers with positive and negative *Source_Sentiment* through one-to-one nearest neighbor propensity score matching. Intercepts are included but suppressed for brevity. The fixed effects include year, industry, country, loan purpose, and distribution method fixed effects. Variable definitions are provided in Internet Appendix Table IA1. The *t*-statistics computed using robust standard errors corrected for heteroskedasticity are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

is easier for journalists and media outlets to track and report on a nearby firm. We collect global Dow Jones branch locations from the Dow Jones website and create the instrument *DJD_rank* by taking the descending decile rank of the distance between a firm's headquarters and the nearest Dow Jones branch. The closer the firm is to the Dow Jones branch, the higher the *DJD_rank*.

The two-stage least squares (2SLS) regression results are reported in Panel A of Table 4. In the first-stage regression in column 1, media coverage is positively and significantly related to *DJD_rank*, suggesting that firms located close to Dow Jones branches receive more media coverage. The partial *F*-statistic is 60.259 and significant at the 1% level, rejecting a weak instrument problem. The second-stage regression in column 2 shows that the fitted values of media coverage (*Fitted Coverage*) significantly reduce loan spreads, lending credence to our previous results.

Dow Jones may want to set up offices in places where there is a higher chance of producing news. That is, the newsworthiness of firms may influence Dow Jones' choice of branch location. To dispel this concern, we adopt propensity score matching and use a set of firm characteristics that reflect a firm's newsworthiness (Fang and Peress, 2009; Gao et al., 2020a) as explanatory variables to predict a firm's distance to the nearest Dow Jones branch. Previous research suggests that stock return volatility, as a proxy for firm riskiness, increases a firm's newsworthiness (Fang and Peress, 2009). We calculate *Volatility* as the standard deviation of a borrower's stock returns in the 180 days before the loan issuance date. A probit model is then fitted, with the dependent variable set to 1 for firms whose distance to the nearest Dow Jones branch is above the sample median (i.e., high-distance group), and 0 otherwise (i.e., low-distance group). The independent variables include *Volatility* and the control variables as in eq. (1). The probit regression result is provided in Internet Appendix Table IA2. We find that firm size (*Size*), market-to-book ratio (*MB*), latest public listing status (*PUB*), and analyst following (*Analyst*) reduce the likelihood that a firm is located farther from the Dow Jones branch than the sample median. These

results lend some support to the argument that Dow Jones prefers to establish offices near firms that are more newsworthy, such as larger firms, firms with high growth potential, listed firms, and firms followed by financial analysts.

Based on the estimated propensity scores, we apply one-to-one nearest neighbor matching without replacement. After matching, there are no significant differences in the mean values of the matching variables between the high- and low-distance groups (see Internet Appendix Table IA3). By this means, we ensure that, after matching, the instrument *DJD_rank* retains a degree of variation across the high- and low-distance groups, but the two groups of firms exhibit similar levels of characteristics in terms of their newsworthiness. Therefore, in the matched sample, the distance between firms and Dow Jones branches is not directly related to firms' differences in newsworthiness or media outlets' opportunities to produce news. We rerun the 2SLS regressions using the matched sample. As seen in columns 3–4 of Panel A of Table 4, the fitted values of media coverage decrease loan spreads.

In Panel B of Table 4, we instrument media sentiment based on each media source's past reporting style. For a given loan facility, the instrumental variable *Source_Sentiment* is a proxy for the average reporting style of all media sources that have published news about a borrower during the 180 days leading up to the loan issuance. The rationale is that each news provider has its own reporting style (e.g., optimistic or pessimistic), which is likely to be reflected in the sentiment of news it publishes about a firm. To estimate a media source's reporting style, we calculate the average media sentiment score of all its previously published news across different firms, excluding the 180 days used to measure a given borrower's media sentiment prior to a loan's issuance. See Internet Appendix Table IA1 for the construction of the instrument.

Column 1 of Panel B shows that *Source_Sentiment* is positively associated with borrowers' actual media sentiment.[10] The partial *F*-statistic is 54.218 at the 1% significance level, providing us with confidence that the weak instrument problem is not a threat. In column 2, the fitted values of media sentiment significantly reduce loan spreads. Nevertheless, one may argue that news providers prefer to follow firms that suit their reporting tastes. As such, media sources' reporting styles may be correlated with borrowers' firm-level characteristics. We address this concern using propensity score matching. First, we divide borrowers into two groups based on whether *Source_Sentiment* is positive or negative (i.e., an average positive or negative reporting style from media sources). We assign a value of 1 to borrowers with positive *Source_Sentiment* and a value of 0 to borrowers with negative *Source_Sentiment*. We regress this dummy indicator on the control variables in eq. (1) using a probit model. As shown in Internet Appendix Table IA4, firms characterized by high *ROA* and high *Return* are more likely to be featured in positively reporting media sources. After matching, there are no significant differences in the matching variables between the two groups (see Internet Appendix Table IA5). The matched sample is then used to estimate the 2SLS regressions in columns 3–4 of Panel B of Table 4. Fitted sentiment reduces loan spreads.

5.2.2. Exogenous shock – national media strike

Firms can actively manage their media coverage by choosing which information to disclose to the media and changing the frequency of earnings announcements. To strengthen our identification for filtering out endogeneity, we use national media strikes as exogenous shocks to media coverage. We obtain national media strike data from Peress (2014), who compiled a list of media strikes that occurred in France, Greece, Italy, and Norway between 1989 and 2010. Of those strikes, 31 fall within our sample period.[11] These strikes involved the media sector only and impacted the media on a national scale. They were initiated by journalists, print personnel, or distribution workers seeking improvements in employment conditions, salaries, pensions, tax breaks, and state subsidies, or defending media freedom. These strikes had little relevance to the development of other sectors or events in bank loan markets.

Following the strategy used by Chen et al. (2020), we identify 504 loan facilities that were issued to borrowers in countries where there were national media strikes. We divide the loan facilities into two groups: strike and non-strike. The strike group includes 147 loan facilities with at least one national media strike occurring within the 180 days preceding the loan issuance. The remaining 357 loan facilities are in the non-strike group. The dummy variable *Strike* is used to indicate whether a loan facility belongs to the strike group (*Strike* = 1) or non-strike (*Strike* = 0) group.

To validate the appropriateness of using national media strikes as shocks to media coverage, we compare the means of media coverage between the strike and non-strike groups in Panel A of Table 5. *Coverage* has a mean value of 3.474 in the non-strike group and 3.227 in the strike group.[12] The difference in means is statistically significant, according to the *t*-test. The strike group has less media coverage than the non-strike group as a result of interruptions caused by national media strikes. Following that, we examine how the occurrence of national media strikes affects loan spreads. The regression incorporates the same set of control variables as in our baseline regression and firm, year, loan purpose, and distribution method fixed effects. As shown in Panel B of Table 5, the coefficient on *Strike* is positive and statistically significant, suggesting that the occurrence of national media strikes (i.e., an exogenous decline in media coverage) significantly increases loan spreads. The finding supports the causal inference that less media coverage results in higher costs of bank loans.

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[10] The sample size is smaller than that of the baseline OLS regression presented in Table 3, because the instrument *Source_Sentiment* is undefined when there is no prior news to estimate a media source's past reporting style.

[11] We must limit our analysis to loan facilities issued between 2000 and 2011. Peress (2014) searched for media strikes up to 2010. The last loan issuance subsequent to these media strikes was therefore in 2011.

[12] Before log-transformation, the count of news articles about a borrower has an average number of 56 articles in the non-strike group and 51 articles in the strike group.

Table 5
Exogenous shock – national media strike.

Panel A.Media coverage with and without a national media strike				
	Strike = 0	Strike = 1	Mean diff.	*t*-statistic
Coverage	3.474	3.227	0.263	2.05**
Obs.	357	147		

Panel B. How the occurrence of a national media strike affects loan spreads	
	(1)
Dependent variable=	Spread
Strike	0.151*
	(1.744)
Controls	Yes
Fixed Effects	Yes
Adj. R^2	0.797
Obs.	504

This table presents the results of using national media strikes as exogenous shocks to media coverage. The sample comprises 504 loan facilities that were issued to borrowers in countries where there was at least one national media strike during 2000–2010 (i.e., France, Greece, Italy, and Norway). In Panel A, the loan facilities are classified into the strike (*Strike* = 1) and non-strike (*Strike* = 0) groups, based on whether a national media strike occurred within the 180 days prior to the loan issuance. *Coverage* is the natural logarithm of 1 plus the number of news articles published about a borrower within the 180 days prior to the loan issuance. In Panel B, *Spread* is regressed on the dummy indicator of *Strike* and control variables. An intercept is included but suppressed for brevity. The fixed effects include firm, year, loan purpose, and distribution method fixed effects. Variable definitions are provided in Internet Appendix Table IA1. The *t*-statistics computed using robust standard errors corrected for heteroskedasticity are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

5.3. Robustness tests

In this section, we provide further assurance of the main results through a series of robustness tests.

(a) *Selection bias related to observed characteristics*. Borrowers who receive media coverage may exhibit fundamentally different characteristics from borrowers who have no media coverage. These differences in observed characteristics may explain their difference in bank loan costs. A borrower is considered media-covered if it is mentioned in at least one news article during the 180 days prior to the loan issuance. A dummy variable, *Cov_Dum*, is created to differentiate media-covered borrowers (assigned a value of 1) from non-media-covered borrowers (assigned a value of 0). These two types of borrowers are then matched using one-to-one nearest neighbor propensity score matching without replacement, with the first-step probit model estimated as a function of the control variables outlined in eq. (1). We verify that the two groups post-matching do not differ significantly in observed characteristics. Using the matched sample, we regress *Spread* on *Cov_Dum* and other control variables. The result presented in Internet Appendix Table IA6, Panel A, column 1 shows that media-covered borrowers face lower loan spreads than non-media-covered borrowers, consistent with our baseline finding. Similarly, whether borrowers receive positive or negative media sentiment should not be correlated with any observed differences in their characteristics. For this test, we create a dummy variable *Sent_Dum*, which equals 1 for borrowers with positive *Sentiment* during the 180 days preceding loan issuance and 0 for borrowers with negative *Sentiment* during the same period. We repeat the above matching method and ensure that the two groups post-matching are comparable in the matching variables. In column 2 of Panel A of Table IA6, we show the result of regressing *Spread* on *Sent_Dum* and controls, using the matched sample. The negative coefficient of *Sent_Dum* suggests that borrowers with positive media sentiment have lower loan spreads than borrowers with negative media sentiment.

(b) *Alternative media news estimation window*. Our media news variables in the baseline analysis are based on news articles published within a 180-day window prior to the loan issuance date. We extend this window and calculate media coverage (*Cov_360*), media sentiment (*Sent_360*), and aggregate sentiment (*Sent-Agg_360*) over the 360 days preceding loan issuance. As shown in Panel B of Table IA6, higher media coverage and more positive sentiment over a longer estimation window continue to reduce loan spreads.

(c) *Additional control variables*. We introduce new control variables to the loan pricing model. *PRS* is the average sentiment score of borrower-initiated press releases within the 180 days leading up to a loan's issuance. The coefficient on *PRS* in Panel C of Table IA6 is negative and significant, supporting Bushman et al.'s (2017) finding that firms that issue positive press announcements receive lower loan spreads. Most importantly, our baseline results are robust to the addition of *PRS*, dispelling the concern that media news simply replicates firm press releases. We also control for institutional ownership (*IO*), which is the fraction of a firm's shares owned by institutional investors. Given the prior finding of a nonlinear relation between institutional ownership and loan spreads (Roberts and Yuan, 2010), we include the squared term (*IO^2*) as an additional control. The effects of media coverage and sentiment remain negative and significant.

(d) *Clustering methods*. We choose alternative clustering methods that correct for cross-sectional and/or time-series correlation in residuals. We use industry-level clustering, country-level clustering, year-level clustering, two-way clustering by firm and year, and two-way clustering by industry and year. Our main results are robust to all these clustering methods. To save space, we only report the results of two-way clustering by firm and year in Panel D of Table IA6.

(e) *Alternative media sentiment scores*. The media sentiment variables in our main tests are based on RavenPack's CSS score. This

score numerically describes how the market reacts to news. This is critical to our purpose of detecting price-sensitive information in news, which is most relevant to loan pricing. RavenPack also assigns an event sentiment score (ESS) to each news item by systematically matching events detected in the news with a training sample of other stories in which financial experts have classified entity-specific events as conveying positive, neutral, or negative sentiment, and to what degree. We use ESS to re-calculate media sentiment (*Sent-ESS*) and aggregate sentiment (*Sent-ESS-Agg*). The higher the values of both variables, the more positive the media sentiment. As reported in Panel E of Table IA6, positive media sentiment is associated with low spreads.

(f) *Excluding the UK, Taiwan, and major firms from the sample.* Borrowers from the UK and Taiwan account for a sizable portion of the sample (see Panel A of Table 1). To avoid our results being driven by these two markets, we exclude them from the sample. Furthermore, it is worth noting that major companies in the international market garner a great deal of media attention. They may benefit from increased public visibility and enjoy favorable loan terms. We examine a sample that excludes the top 10% of firms by market value in the international market. In Panel F of Table IA6, the regression results from these alternative samples are similar to our previous results.

(g) *Developed countries versus developing countries.* There are many institutional distinctions between developed and developing countries in the banking and media sectors. We examine whether our main findings hold across both groups. We separate the countries of the borrowers' headquarters into developed and developing countries based on the CIA World Factbook classification. The negative effect of media coverage on loan spreads is evident in both developed and developing countries in Panel G of Table IA6. However, media sentiment appears to be more effective in reducing loan spreads in developed countries than developing countries.

5.4. Syndicated loan structure

The issue of information asymmetry is exacerbated in the context of syndicated loans, which involve a minimum of two lenders, including a lead arranger and other participants. In a syndicated lending process, a borrower selects a lead arranger from a pool of competing lenders. The lead arranger gathers and processes relevant information about the borrower, initiates the loan, negotiates contract terms with the borrower, sells portions of the loan to other lenders, and monitors the loan on behalf of all syndicate participants. The lead arranger acts as an intermediary between the syndicate members and the borrower. The lead arranger thus possesses more private information about the borrower than other participants. As a result of this information asymmetry, syndicate lenders who lack access to private information must rely on public information from the media. To investigate this proposition, we focus our analysis on syndicated loans in the international market and examine the impact of media news on syndicated loan participation and structure.

5.4.1. The effect of media news on the likelihood of a non-relationship bank acting as a lead arranger

Lenders receive private benefits by serving as the lead arranger in a syndicate. A lead arranger functions as a syndicate agent, collecting and analyzing information about the borrower. The lead arranger obtains an exclusive underwriting fee at loan origination and establishes a relationship with the borrower that can be useful for future business. For these reasons, prospective lenders have incentives to compete for the position of lead arranger. In this competition, relationship banks that have previously issued loans to the borrower have inside knowledge of the borrower's quality and privileged channels by which to liaise with the borrower. Outside banks that have no prior relationship with the borrower are at a disadvantage, increasing their demand for public information (Rajan, 1992), such as media news. Favorable news signals, compared with negative news signals, enhance outside banks' willingness to participate as a lead arranger (Bushman et al., 2017). These discussions suggest that both the quantity and sentiment of media news may impact loan syndication. We therefore test how aggregate media sentiment (which combines both news amount and sentiment) influences the likelihood of an outside, non-relationship bank leading a loan syndicate. We estimate a logit model at the syndicated loan level:

$$\begin{aligned} \textit{Borrower-Lead Bank Nonrelationship} = \alpha_0 &+ \beta_1 \textit{Sent-Aggregate} + \beta_2 \textit{Borrower-Level Controls} + \beta_3 \textit{Facility-Level Controls} \\ &+ \beta_4 \textit{Country-Level Controls} + \varepsilon \end{aligned} \tag{3}$$

where the dependent variable is a dummy for there being no relationship between the borrower and the lead bank (*BLNoRel*). Specifically, it equals 1 if the loan's lead arranger has not syndicated 50% or more of the dollar volume of the borrower's loans over the five years preceding the current loan's issuance, and 0 otherwise.[13] The control variables include a number of factors that have been used to predict the presence of a non-relationship lead arranger (Gopalan et al., 2011; Bushman et al., 2017), including a dummy indicator of whether the borrower has outstanding loans at the time of the current loan's issuance (*Outstanding*) and the number of days between the previous and current loans' issuance dates (*Gap*).

The sample includes 3596 syndicated loans from 37 markets, after eliminating loans with insufficient information for identifying relationship versus non-relationship lead arrangers. In column 1 of Table 6, the coefficient of *Sent-Aggregate* is positive and statistically significant. A one standard deviation increase in aggregate sentiment (*Sent-Aggregate*) increases the likelihood of a non-relationship bank serving as a lead arranger (*BLNoRel*) by 8.5%. The effect of *Outstanding* is negative, suggesting that a borrower having outstanding loans reduces the probability of a non-relationship bank syndicating a new loan to the borrower as lead arranger. As the

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[13] We require the borrower to have at least one loan issuance within the five-year window preceding the current loan to determine whether the lead bank and the borrower have a prior lending relationship.

Table 6

Media and syndicated loan structure.

	(1)	(2)	(3)	(4)
	BLNoRel	PBNoRel	PLNoRel	LeadShare
Sent-Aggregate	0.563**	0.585***	0.680***	−3.916**
	(2.123)	(4.238)	(2.844)	(−2.215)
Outstanding	−0.681***			
	(−4.040)			
Gap	0.001***			
	(15.379)			
FirstTime		0.598***	0.369***	−0.738
		(12.493)	(3.927)	(−0.765)
BLNoRel		1.550***	0.611***	−2.188**
		(27.133)	(7.818)	(−2.257)
ROA	1.370	0.753	4.021***	10.797*
	(1.494)	(1.506)	(5.802)	(1.784)
IC	−0.004**	0.001	−0.008***	0.022**
	(−2.001)	(0.425)	(−2.853)	(2.400)
Lev	0.515*	1.100***	1.193***	−2.388
	(1.848)	(6.563)	(5.657)	(−1.245)
Size	−0.210***	−0.091***	−0.045*	−1.360***
	(−8.454)	(−6.251)	(−1.865)	(−5.343)
Z-score	0.012	0.036*	0.083***	−0.080
	(0.361)	(1.866)	(3.888)	(−0.444)
MB	−0.003	0.030**	0.011	−0.005
	(−0.186)	(2.571)	(0.938)	(−0.062)
Loss	0.319	−0.251**	1.013***	2.884***
	(1.631)	(−2.435)	(8.014)	(2.887)
PUB	−0.303***	−0.069	−0.002	−1.462**
	(−3.553)	(−1.441)	(−0.026)	(−2.424)
Analyst	−0.214**	0.245***	−0.103	−0.256
	(−2.191)	(4.955)	(−1.367)	(−0.406)
Return	−0.545***	−0.176*	−0.187	−3.113**
	(−3.047)	(−1.861)	(−1.580)	(−2.360)
NegRet	−0.266**	0.067	0.148	−0.374
	(−2.265)	(1.092)	(1.615)	(−0.565)
Distance	0.016	−0.005	−0.036***	−0.168*
	(1.200)	(−0.667)	(−3.272)	(−1.656)
Rated	0.326***	−0.092*	−0.199***	1.654***
	(3.373)	(−1.848)	(−2.616)	(2.604)
Amount	−0.089***	−0.007	−0.074***	−2.511***
	(−3.897)	(−0.494)	(−4.196)	(−12.144)
Maturity	0.003**	0.005***	−0.003**	−0.001
	(2.387)	(5.485)	(−2.120)	(−0.099)
Spread		0.126***	0.042	0.425
		(4.078)	(0.833)	(1.050)
Collateral		−0.048	0.071	0.008
		(−0.924)	(0.805)	(0.012)
PP		0.235***	0.186**	2.202***
		(4.166)	(2.266)	(3.386)
Covenant		−0.074***	0.201***	0.804***
		(−3.037)	(6.941)	(2.966)
Revolver	−0.345***	−0.277***	−0.180**	−1.211**
	(−3.714)	(−5.719)	(−2.429)	(−2.355)
TLB	−0.020	0.109	0.434***	8.321***
	(−0.130)	(1.200)	(4.182)	(4.836)
PRS	−1.627*	−1.110**	−1.618**	4.966
	(−1.865)	(−2.170)	(−2.251)	(0.747)
EcoF	0.172*	−0.208***	0.946***	7.854***
	(1.697)	(−3.620)	(11.645)	(3.580)
GDP	−0.565***	0.002	−0.793***	2.072
	(−7.318)	(0.034)	(−12.449)	(1.095)
GDPG	2.799**	1.221	−0.819	44.044**
	(2.037)	(1.592)	(−0.725)	(2.306)
Model	Logit	Logit	Logit	OLS
Fixed Effects	No	No	No	Yes
R^2	0.165	0.174	0.134	0.459
Obs.	3596	13,612	13,612	2668

This table presents the regression results for the effect of aggregate media sentiment on syndicated loan participation and structure. The sample includes syndicated loans only. *BLNoRel* is a dummy variable equal to 1 if there is no relationship between the borrower and the lead bank, and 0 otherwise. *PBNoRel* is a dummy variable equal to 1 if there is no relationship between the participant bank and the borrower, and 0 otherwise.

PLNoRel is a dummy variable equal to 1 if there is no relationship between the participant bank and the lead bank, and 0 otherwise. *LeadShare* is the share of the loan retained by the lead bank. *Sent-Aggregate* is the aggregate sentiment of all news articles published about a borrower over the 180 days prior to the loan issuance. *Outstanding* is a dummy variable equal to 1 if a borrower has outstanding loans at the time of the current loan's issuance, and 0 otherwise. *Gap* is the number of days between the previous and current loans' issuance dates. *FirstTime* is a dummy variable equal to 1 if this is the first loan syndicated by the lead bank, and 0 otherwise. Intercepts are included but suppressed for brevity. The fixed effects include year, industry, country, loan purpose, and distribution method fixed effects. Variable definitions are provided in Internet Appendix Table IA1. The *t*-statistics computed using robust standard errors corrected for heteroskedasticity are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

period between the borrower's previous and current loans (*Gap*) increases, the willingness of a non-relationship bank to act as a lead arranger in a new syndicate increases.

5.4.2. The effect of media news on syndicate participation and lead arranger share

Once a lead arranger is chosen, they will send a confidential memorandum to other financial institutions outlining their assessment of the borrower's quality and inviting those institutions to join them and form a syndicate. The lead arranger is the primary syndicate member, communicating with the borrower and arranging the loan. Participant lenders, on the other hand, do not interact directly with the borrower, but rather manage and monitor the loan through the lead arranger. If a potential lender wants to join the syndicate, they will submit a quote to the lead arranger. After receiving all quotes from prospective lenders, the lead arranger will determine an interest rate spread on the loan. Only lenders who have quoted that spread or less will be eligible for a share of the loan. During this process, information asymmetry emerges among potential syndicate participants. Lenders who have no prior relationship with the borrower or the lead arranger face an information disadvantage when bidding for syndicate participation (Bushman et al., 2017). However, favorable media coverage of the borrower can enhance non-relationship lenders' willingness to participate in the syndicate because it alleviates their fear of making a bad loan. We test this contention by fitting a logit model at the participant level:

$$Participation = \alpha_0 + \beta_1 Sent\text{-}Aggregate + \beta_2 Borrower\text{-}Level\ Controls + \beta_3 Facility\text{-}Level\ Controls + \beta_4 Country\text{-}Level\ Controls + \varepsilon$$

$$(4)$$

where *Participation* represents one of two proxies: (1) the participant-borrower non-relationship dummy (*PBNoRel*) equals 1 if the participant has not been involved in the borrower's loans over the five years prior to the current loan's issuance, and 0 otherwise, and (2) the non-relationship between participant and lead bank dummy (*PLNoRel*) equals 1 if the participant has not issued any loans together with the lead arranger over the five years prior to the current loan's issuance, and 0 otherwise. The choice of control variables is similar to that in previous studies (Sufi, 2007; Bushman et al., 2017). The *FirstTime* dummy indicates that this is the first deal syndicated by the lead arranger. An additional control is the dummy for no relationship between the borrower and the lead bank (*BLNoRel*). In a syndicate arranged by a lead bank with no prior relationship with the borrower, participants are at less of an information disadvantage relative to the lead arranger. These syndicates attract non-relationship lenders.

In Table 6, the coefficients on aggregate sentiment (*Sent-Aggregate*) in columns 2 and 3 are positive and significant, suggesting that a more positive aggregate news signal increases the willingness of a lender who has no prior relationship with the borrower (column 2) or the lead arranger (column 3) to participate as a syndicate member. Specifically, a one standard deviation increase in *Sent-Aggregate* increases the likelihood of a bank with no prior relationship with the borrower (lead bank) joining a syndicate by 8.9% (10.4%). In addition, we find that the presence of a first-time lead arranger (*FirstTime*) or a non-relationship lead arranger (*BLNoRel*) increases non-relationship lenders' syndicate participation rate.

Participant banks are confronted with adverse selection and moral hazard problems due to information asymmetry with the lead bank. Adverse selection arises when the lead bank syndicates low-quality loans to capture private benefits (e.g., securing underwriting fees). Following syndication, the lead bank is the principal monitor of the loan. However, it only keeps a fraction of the loan, which limits its incentive to monitor the borrower, creating a moral hazard problem. Sufi (2007) highlights that when the borrower is informationally opaque and requires greater monitoring, the lead bank retains a larger share of the loan, and forms a more concentrated syndicate. We argue that the media is a powerful external monitoring force. Positive media news about the borrower signals the high quality of potential loans for lenders. This alleviates the adverse selection and moral hazard problems that syndicate participants encounter and leads to a lower share needing to be retained by the lead bank. To test this prediction, we estimate the effect of aggregate sentiment (*Sent-Aggregate*) on the lead bank's share (*LeadShare*) in an OLS regression at the syndicated loan level:

$$Lead\ Bank\ Share = \alpha_0 + \beta_1 Sent\text{-}Aggregate + \beta_2 Borrower\text{-}Level\ Controls + \beta_3 Facility\text{-}Level\ Controls + \beta_4 Country\text{-}Level\ Controls$$
$$+ Fixed\ Effects + \varepsilon$$

$$(5)$$

In column 4 of Table 6, a higher value of *Sent-Aggregate* significantly reduces the lead bank's ownership of the syndicated loan (*LeadShare*). Specifically, a one standard deviation increase in *Sent-Aggregate* leads to a 5.1% decrease in the lead bank's share of the loan. In addition, the result shows that when a non-relationship lead arranger (*BLNoRel*) is involved in a loan syndication, they tend to hold a smaller proportion of the loan. This aligns with the notion that syndication by a non-relationship lead bank mitigates information asymmetry within the syndicate, thereby reducing the share required to be kept by the lead.

Table 7
The effect of financial information environment.

	(1)	(2)	(3)	(4)
	Spread	Spread	Spread	Spread
Panel A. IE = DISCL				
Coverage (C)	−0.049***		−0.050***	
	(−5.703)		(−5.223)	
Sentiment (S)		−0.836***	−0.881***	
		(−4.366)	(−4.610)	
Sent-Aggregate (A)				−0.298***
				(−5.190)
C × IE	−0.002***		−0.002***	
	(−4.454)		(−4.181)	
S × IE		−0.032***	−0.034***	
		(−2.837)	(−3.008)	
A × IE				−0.016***
				(−4.332)
IE	0.000	−0.002***	0.000	−0.002***
	(0.166)	(−2.927)	(0.360)	(−2.876)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.545	0.544	0.547	0.546
Obs.	6142	5996	5996	5996
Panel B. IE = FINTRA				
Coverage (C)	−0.050***		−0.051***	
	(−5.636)		(−5.335)	
Sentiment (S)		−0.733***	−0.770***	
		(−3.772)	(−3.972)	
Sent-Aggregate (A)				−0.293***
				(−5.066)
C × IE	−0.026**		−0.026**	
	(−2.627)		(−2.429)	
S × IE		−0.522*	−0.586**	
		(−1.835)	(−2.060)	
A × IE				−0.199**
				(−2.343)
IE	−0.101***	−0.136***	−0.095***	−0.133***
	(−4.524)	(−7.036)	(−4.048)	(−6.888)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.575	0.573	0.575	0.574
Obs.	6142	5719	5719	5719
Panel C. IE = NAN				
Coverage (C)	−0.048***		−0.047***	
	(−5.591)		(−5.073)	
Sentiment (S)		−0.817***	−0.843***	
		(−4.287)	(−4.432)	
Sent-Aggregate (A)				−0.301***
				(−5.263)
C × IE	−0.002**		−0.002**	
	(−2.582)		(−2.375)	
S × IE		−0.058**	−0.063***	
		(−2.445)	(−2.688)	
A × IE				−0.026***
				(−3.710)
IE	−0.006***	−0.008***	−0.005***	−0.008***
	(−3.399)	(−5.905)	(−3.017)	(−5.745)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.548	0.546	0.548	0.547
Obs.	6142	5996	5996	5996

This table presents the interaction effect of media news and country-level financial information environment on loan spreads. *IE* denotes one of financial information environment proxies, including financial disclosure intensity (*DISCL*), financial transparency (*FINTRA*), and analysts' private information acquisition (*NAN*). These indexes are time-invariant for each country. The fixed effects include industry, year, loan purpose, and distribution method fixed effects. Intercepts are included but suppressed for brevity. Variable definitions are provided in Internet Appendix Table IA1. The *t*-statistics computed using robust standard errors corrected for heteroskedasticity are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 8
The effect of country-level governance quality.

	(1)	(2)	(3)	(4)
	Spread	Spread	Spread	Spread
Panel A. IE = VA				
Coverage (C)	−0.050***		−0.046***	
	(−5.993)		(−5.084)	
Sentiment (S)		−0.578***	−0.595***	
		(−3.162)	(−3.257)	
Sent-Aggregate (A)				−0.207***
				(−3.785)
C × IE	−0.007		−0.000	
	(−0.717)		(−0.031)	
S × IE		−0.665**	−0.711***	
		(−2.555)	(−2.733)	
A × IE				−0.246***
				(−3.311)
IE	−0.345***	−0.348***	−0.328**	−0.344***
	(−2.699)	(−2.665)	(−2.495)	(−2.638)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.586	0.585	0.587	0.586
Obs.	6191	6046	6046	6046
Panel B. IE = PV				
Coverage (C)	−0.051***		−0.047***	
	(−6.088)		(−5.091)	
Sentiment (S)		−0.620***	−0.640***	
		(−3.399)	(−3.515)	
Sent-Aggregate (A)				−0.227***
				(−4.170)
C × IE	−0.011		−0.006	
	(−1.104)		(−0.528)	
S × IE		−0.513*	−0.550*	
		(−1.814)	(−1.948)	
A × IE				−0.169**
				(−2.084)
IE	−0.002	−0.027	−0.006	−0.028
	(−0.026)	(−0.467)	(−0.105)	(−0.490)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.586	0.585	0.586	0.585
Obs.	6191	6046	6046	6046
Panel C. IE = GE				
Coverage (C)	−0.052***		−0.047***	
	(−6.135)		(−5.175)	
Sentiment (S)		−0.577***	−0.591***	
		(−3.146)	(−3.229)	
Sent-Aggregate (A)				−0.210***
				(−3.836)
C × IE	0.001		0.008	
	(0.142)		(0.781)	
S × IE		−0.684**	−0.720**	
		(−2.435)	(−2.567)	
A × IE				−0.252***
				(−3.054)
IE	−0.090	−0.087	−0.098	−0.087
	(−1.230)	(−1.182)	(−1.317)	(−1.181)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.586	0.585	0.587	0.586
Obs.	6191	6046	6046	6046
Panel D. IE = RQ				
Coverage (C)	−0.050***		−0.046***	
	(−5.944)		(−5.023)	
Sentiment (S)		−0.594***	−0.611***	
		(−3.244)	(−3.341)	

Table 8 (*continued*)

	(1)	(2)	(3)	(4)
	Spread	Spread	Spread	Spread
Sent-Aggregate (A)				−0.215***
				(−3.928)
C × IE	0.008		0.011	
	(0.816)		(0.983)	
S × IE		−0.471*	−0.483*	
		(−1.66)	(−1.708)	
A × IE				−0.141*
				(−1.752)
IE	−0.249***	−0.213***	−0.216***	−0.212***
	(−3.158)	(−2.708)	(−2.668)	(−2.698)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.587	0.585	0.587	0.586
Obs.	6191	6046	6046	6046
Panel E. IE = RL				
Coverage (C)	−0.051***		−0.047***	
	(−6.011)		(−5.127)	
Sentiment (S)		−0.549***	−0.563***	
		(−2.984)	(−3.068)	
Sent-Aggregate (A)				−0.197***
				(−3.583)
C × IE	0.003		0.007	
	(0.365)		(0.772)	
S × IE		−0.682***	−0.713***	
		(−2.698)	(−2.824)	
A × IE				−0.228***
				(−3.134)
IE	−0.238**	−0.191*	−0.189*	−0.182*
	(−2.246)	(−1.790)	(−1.746)	(−1.710)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.586	0.585	0.587	0.586
Obs.	6191	6046	6046	6046
Panel F. IE = CC				
Coverage (C)	−0.051***		−0.047***	
	(−6.036)		(−5.100)	
Sentiment (S)		−0.560***	−0.575***	
		(−3.044)	(−3.130)	
Sent-Aggregate (A)				−0.197***
				(−3.581)
C × IE	−0.002		0.001	
	(−0.311)		(0.093)	
S × IE		−0.504**	−0.534**	
		(−2.412)	(−2.560)	
A × IE				−0.189***
				(−3.090)
IE	−0.187**	−0.169**	−0.165**	−0.170**
	(−2.522)	(−2.282)	(−2.166)	(−2.294)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.586	0.585	0.587	0.586
Obs.	6191	6046	6046	6046

This table presents the interaction effect of media news and country-level governance quality on loan spreads. *IE* denotes one of country-level governance proxies, including Voice and Accountability (*VA*), Political Stability and Absence of Violence/Terrorism (*PV*), Government Effectiveness (*GE*), Regulatory Quality (*RQ*), Rule of Law (*RL*), and Control of Corruption (*CC*). These indexes are time-varying for each country. The fixed effects include year, industry, country, loan purpose, and distribution method fixed effects. Intercepts are included but suppressed for brevity. Variable definitions are provided in Internet Appendix Table IA1. The *t*-statistics computed using robust standard errors corrected for heteroskedasticity are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

5.5. The role of country-level institutional environment

This section examines how a country's institutional environment (*IE*) shapes the relation between media news and loan pricing. It is important to note that this part of the study is looking entirely at association, and not causation.

Table 9
The effect of ownership structure of the media sector.

	(1) Spread	(2) Spread	(3) Spread	(4) Spread
Panel A. IE = PRCS				
Coverage (C)	−0.057***		−0.058***	
	(−6.749)		(−6.282)	
Sentiment (S)		−0.934***	−0.960***	
		(−4.907)	(−5.056)	
Sent-Aggregate (A)				−0.321***
				(−5.638)
C × IE	0.057		0.016	
	(1.338)		(0.327)	
S × IE		2.351**	2.429**	
		(2.034)	(2.108)	
A × IE				0.994***
				(3.167)
IE	−0.165*	−0.107	−0.116	−0.109
	(−1.874)	(−1.387)	(−1.162)	(−1.411)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.542	0.540	0.543	0.541
Obs.	6171	6023	6023	6023
Panel B. IE = PRSS				
Coverage (C)	−0.057***		−0.058***	
	(−6.738)		(−6.270)	
Sentiment (S)		−0.934***	−0.960***	
		(−4.908)	(−5.056)	
Sent-Aggregate (A)				−0.321***
				(−5.639)
C × IE	0.054		0.012	
	(1.263)		(0.247)	
S × IE		2.308**	2.367**	
		(1.994)	(2.052)	
A × IE				0.978***
				(3.114)
IE	0.181**	0.127	0.130	0.129*
	(2.052)	(1.645)	(1.307)	(1.672)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.542	0.540	0.543	0.541
Obs.	6171	6023	6023	6023
Panel C. IE = PRCP				
Coverage (C)	−0.058***		−0.058***	
	(−6.836)		(−6.323)	
Sentiment (S)		−0.964***	−0.993***	
		(−5.057)	(−5.225)	
Sent-Aggregate (A)				−0.332***
				(−5.815)
C × IE	−0.094**		−0.054	
	(−2.458)		(−1.199)	
S × IE		−1.887*	−1.955*	
		(−1.798)	(−1.869)	
A × IE				−0.933***
				(−3.212)
IE	0.155**	0.052	0.107	0.049
	(1.999)	(0.764)	(1.233)	(0.723)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.543	0.540	0.543	0.541
Obs.	6171	6023	6023	6023
Panel D. IE = PRSP				
Coverage (C)	−0.058***		−0.058***	
	(−6.829)		(−6.316)	
Sentiment (S)		−0.964***	−0.991***	
		(−5.056)	(−5.218)	

Table 9 (*continued*)

	(1)	(2)	(3)	(4)
	Spread	Spread	Spread	Spread
Sent-Aggregate (A)				−0.331***
				(−5.811)
C × IE	−0.090**		−0.048	
	(−2.286)		(−1.058)	
S × IE		−1.892*	−1.955*	
		(−1.762)	(−1.827)	
A × IE				−0.928***
				(−3.135)
IE	0.165**	0.068	0.117	0.067
	(2.086)	(0.994)	(1.328)	(0.970)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.543	0.540	0.543	0.541
Obs.	6171	6023	6023	6023

This table presents the interaction effect of media news and media sector ownership structure on loan spreads. *IE* denotes one of ownership structure proxies, including state ownership of the media sector by count (*PRCS*), state ownership of the media sector by market share (*PRSS*), private ownership of the media sector by count (*PRCP*), and private ownership of the media sector by market share (*PRSP*). These indexes are time-invariant for each country. The fixed effects include industry, year, loan purpose, and distribution method fixed effects. Intercepts are included but suppressed for brevity. Variable definitions are provided in Internet Appendix Table IA1. The *t*-statistics computed using robust standard errors corrected for heteroskedasticity are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

5.5.1. Financial information environment

The degree to which the media achieves information intermediation and reduces information asymmetry at the firm level depends on the transparency of a country's financial information environment (*IE*). In Table 7, we rely on the indexes of country-level financial disclosure intensity (*DISCL*), financial transparency (*FINTRA*), and private information acquisition by analysts (*NAN*) as *IE* proxies. We find that higher *IE* reduces loan spreads, reflecting lower borrowing costs for firms in high-transparency countries. Media coverage, sentiment, and aggregate sentiment significantly reduce loan spreads. The interaction terms, media coverage × *IE*, media sentiment × *IE*, and aggregate sentiment × *IE*, all have negative and significant coefficients, suggesting that a country's financial information transparency accentuates the negative effect of media news on loan spreads. In other words, borrowers with intensive media coverage or positive media sentiment experience a larger reduction in loan spreads in a more transparent financial environment. This finding supports Dang et al.'s (2015) argument that country-level financial information transparency facilitates the media's revelation and dissemination of firm-specific information and stimulates the media's information intermediary role.

5.5.2. Country-level governance quality

Laws and political institutions are the foundation of loan contracting. Effective legal and political institutions are conducive to loan screening and enforcement, leading to efficient credit allocation. In Table 8, we evaluate a country's legal and political institutional quality (*IE*) in terms of Voice and Accountability (*VA*), Political Stability and Absence of Violence/Terrorism (*PV*), Government Effectiveness (*GE*), Regulatory Quality (*RQ*), Rule of Law (*RL*), and Control of Corruption (*CC*). We find that higher country-level governance quality (proxied by *VA, RQ, RL,* and *CC*) significantly reduces loan spreads. While the coefficients on media coverage × *IE* in columns 1 and 3 are not statistically significant, the coefficients on media sentiment × *IE* (column 2) and aggregate sentiment × *IE* (column 4) are significantly negative. The inference is that borrowers who receive more positive media exposure benefit from a larger reduction in bank loan costs in better-governed countries.

5.5.3. Media owned by government or private owners

In almost every country, governments and private owners are the dominant categories of owners in the media sector (Djankov et al., 2003). However, government-owned media is often subject to political interference. Privately owned media is freer and more dedicated to the investigation and provision of information useful to readers. In Table 9, we index each country's media ownership (*IE*) by counting the proportion of state-owned newspapers among the five largest newspapers (*PRCS*) and the market share of state-owned newspapers among the five largest newspapers (*PRSS*), as well as the fraction (*PRCP*) and market share (*PRSP*) of privately owned newspapers among the five largest newspapers. In columns 1 and 3, media coverage interacted with the ownership structure of the media sector (*C × IE*) shows little effect. However, media sentiment and aggregate sentiment have strong effects when interacted with the media sector ownership proxies. Specifically, in Panels A and B, the coefficients on *S × IE* and *A × IE* are significantly positive, revealing that government ownership of the media sector weakens the negative relation between media sentiment and loan spreads. In Panels C and D, private ownership of the media sector strengthens this relation. The findings indicate that an increase in private ownership and a decrease in state ownership of the media sector enhance the media's ability to reduce loan spreads, affirming the notion that private media serves as a more efficient information intermediary.

5.5.4. Government control of banks

Government ownership of banks is extensive and pervasive across the globe. In many countries, government-owned banks serve as

Table 10
The effect of government control of the banking sector.

	(1)	(2)	(3)	(4)
	Spread	Spread	Spread	Spread
Panel A. IE = GB				
Coverage (C)	−0.064***		−0.063***	
	(−7.787)		(−7.017)	
Sentiment (S)		−0.899***	−0.919***	
		(−4.863)	(−4.987)	
Sent-Aggregate (A)				−0.305***
				(−5.488)
C × IE	0.055**		0.052**	
	(2.519)		(2.143)	
S × IE		1.649**	1.617**	
		(2.564)	(2.524)	
A × IE				0.719***
				(3.749)
IE	−0.561***	−0.496***	−0.564***	−0.494***
	(−9.977)	(−9.264)	(−9.456)	(−9.251)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.550	0.547	0.551	0.548
Obs.	6326	6174	6174	6174
Panel B. IE = GBCOM				
Coverage (C)	−0.063***		−0.061***	
	(−7.633)		(−6.805)	
Sentiment (S)		−0.887***	−0.905***	
		(−4.804)	(−4.922)	
Sent-Aggregate (A)				−0.301***
				(−5.420)
C × IE	0.054**		0.053**	
	(2.501)		(2.168)	
S × IE		1.721***	1.676***	
		(2.673)	(2.612)	
A × IE				0.735***
				(3.831)
IE	−0.573***	−0.517***	−0.576***	−0.515***
	(−10.636)	(−10.149)	(−10.08)	(−10.124)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.551	0.548	0.552	0.549
Obs.	6326	6174	6174	6174
Panel C. IE = GC20				
Coverage (C)	−0.065***		−0.065***	
	(−7.862)		(−7.221)	
Sentiment (S)		−0.906***	−0.928***	
		(−4.888)	(−5.024)	
Sent-Aggregate (A)				−0.308***
				(−5.522)
C × IE	0.038**		0.040**	
	(2.133)		(1.971)	
S × IE		1.184**	1.178**	
		(2.193)	(2.192)	
A × IE				0.553***
				(3.361)
IE	−0.378***	−0.332***	−0.390***	−0.330***
	(−8.366)	(−7.562)	(−8.149)	(−7.545)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.548	0.545	0.549	0.546
Obs.	6326	6174	6174	6174
Panel D. IE = GC50				
Coverage (C)	−0.063***		−0.062***	
	(−7.701)		(−6.907)	
Sentiment (S)		−0.873***	−0.890***	
		(−4.725)	(−4.835)	

(continued on next page)

Table 10 (*continued*)

	(1)	(2)	(3)	(4)
	Spread	Spread	Spread	Spread
Sent-Aggregate (A)				−0.294***
				(−5.297)
C × IE	0.040**		0.040*	
	(2.157)		(1.944)	
S × IE		1.811***	1.753***	
		(3.253)	(3.162)	
A × IE				0.767***
				(4.503)
IE	−0.460***	−0.421***	−0.467***	−0.420***
	(−10.079)	(−9.575)	(−9.664)	(−9.550)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.555	0.548	0.551	0.549
Obs.	6326	6174	6174	6174
Panel E. IE = GC90				
Coverage (C)	−0.062***		−0.060***	
	(−7.489)		(−6.714)	
Sentiment (S)		−0.927***	−0.946***	
		(−5.012)	(−5.130)	
Sent-Aggregate (A)				−0.319***
				(−5.733)
C × IE	0.051*		0.040	
	(1.883)		(1.307)	
S × IE		1.638**	1.616**	
		(2.076)	(2.054)	
A × IE				0.720***
				(3.136)
IE	−0.661***	−0.599***	−0.648***	−0.596***
	(−9.826)	(−9.547)	(−9.015)	(−9.509)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.555	0.547	0.551	0.548
Obs.	6326	6174	6174	6174

This table presents the interaction effect of media news and government control of the banking sector on loan spreads. *IE* denotes one of government control proxies, including government ownership of the top ten banks (*GB*), government ownership of the top ten commercial banks (*GBCOM*), and government ownership of the top ten banks where the government holds at least 20% (*GC20*), 50% (*GC50*), or 90% (*GC90*) ownership of the bank. These indexes are time-invariant for each country. The fixed effects include industry, year, loan purpose, and distribution method fixed effects. Intercepts are included but suppressed for brevity. Variable definitions are provided in Internet Appendix Table IA1. The *t*-statistics computed using robust standard errors corrected for heteroskedasticity are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

a conduit for politicians to transfer financial resources to supporters or pursue political and personal goals, which hinders effective credit allocation. Sapienza (2004) finds that government-owned banks tend to provide loans at lower interest rates than private banks, but their cheaper loans primarily benefit larger firms and firms located in areas where there is more political patronage. We examine how government ownership of the banking sector changes the association between media news and loan spreads in Table 10. Government ownership is measured by the share of assets of the top ten banks (*GB*) or commercial banks (*GBCOM*) owned by the government. We further require a government owner to hold at least 20% (*GC20*), 50% (*GC50*), or 90% (*GC90*) ownership of a given bank. In Table 10, we document a significantly negative effect of government ownership of banks (*IE*) on loan spreads, consistent with the evidence in Sapienza (2004). The interaction terms, media coverage × *IE*, media sentiment × *IE*, and aggregate sentiment × *IE*, all report positive and significant coefficients, indicating that the negative effects of media coverage and sentiment on loan spreads are attenuated in countries with more government control of banks. One explanation is that government-owned banks are less responsive to public information provided by the media.

5.6. U.S. evidence

In our main tests, the sample excludes loans issued to U.S. firms because the heavy weight of U.S. observations will dominate our international sample. However, to make our paper a truly international study, we study U.S. firms separately. As shown in Table 11, the U.S. sample contains 12,552 loan facilities, confirming the dominance of U.S. borrowers in the global market. Media coverage (*Coverage*) has a significantly negative effect on loan spreads in column 1; however, it loses its significance in column 3, when media sentiment is added as an explanatory factor for loan spreads. From column 2 to column 4, positive media sentiment (*Sentiment*) and aggregate sentiment (*Sent-Aggregate*) significantly reduce loan spreads, consistent with the evidence in Bushman et al. (2017). In terms of economic significance, a one standard deviation increase in *Sentiment* reduces loan spreads by 5.0 basis points in column 3. A one

Table 11
The U.S. sample analysis.

	(1) Spread	(2) Spread	(3) Spread	(4) Spread
Coverage	−0.025***		−0.011	
	(−4.240)		(−1.437)	
Sentiment		−0.533***	−0.531***	
		(−6.575)	(−6.561)	
Sent-Aggregate				−0.298***
				(−8.543)
ROA	−0.482***	−0.613***	−0.602***	−0.566***
	(−2.585)	(−2.909)	(−2.859)	(−2.688)
IC	−0.001***	−0.001***	−0.001***	−0.001***
	(−5.037)	(−4.081)	(−4.042)	(−4.020)
Lev	0.424***	0.437***	0.432***	0.433***
	(16.307)	(15.669)	(15.383)	(15.554)
Size	−0.094***	−0.102***	−0.098***	−0.101***
	(−16.668)	(−18.848)	(−15.996)	(−18.705)
Z-score	−0.071***	−0.078***	−0.079***	−0.079***
	(−11.918)	(−11.778)	(−11.854)	(−11.950)
MB	−0.010***	−0.010***	−0.009***	−0.009***
	(−8.952)	(−8.383)	(−8.147)	(−8.078)
Loss	0.233***	0.204***	0.204***	0.196***
	(16.063)	(12.983)	(12.994)	(12.460)
PUB	−0.181***	−0.243***	−0.243***	−0.244***
	(−8.278)	(−9.969)	(−9.974)	(−10.033)
Analyst	−0.115***	−0.105***	−0.105***	−0.106***
	(−10.373)	(−8.842)	(−8.860)	(−8.922)
Return	−0.102	−0.117	−0.122*	−0.116
	(−1.466)	(−1.594)	(−1.652)	(−1.581)
NegRet	−0.021	−0.039**	−0.039**	−0.038**
	(−1.234)	(−2.155)	(−2.166)	(−2.128)
Rated	0.054***	0.057***	0.056***	0.055***
	(4.123)	(4.116)	(4.103)	(4.021)
Amount	−0.106***	−0.111***	−0.110***	−0.111***
	(−20.583)	(−20.474)	(−20.369)	(−20.527)
Maturity	0.002***	0.002***	0.002***	0.002***
	(6.956)	(7.357)	(7.333)	(7.342)
PP	−0.087***	−0.090***	−0.090***	−0.090***
	(−8.041)	(−7.918)	(−7.914)	(−7.907)
Covenant	0.065***	0.066***	0.066***	0.066***
	(15.971)	(15.082)	(15.083)	(15.095)
Revolver	−0.044***	−0.052***	−0.052***	−0.052***
	(−4.005)	(−4.467)	(−4.474)	(−4.464)
TLB	0.388***	0.386***	0.385***	0.385***
	(21.083)	(19.833)	(19.803)	(19.823)
Fixed Effects	Yes	Yes	Yes	Yes
Adj. R²	0.619	0.618	0.618	0.619
Obs.	12,552	11,354	11,354	11,354

This table presents the OLS regression results for the effects of media coverage, media sentiment, and aggregate sentiment on loan spreads for U.S. borrowers. *Coverage* is the natural logarithm of 1 plus the number of news articles published about a borrower over the 180 days prior to the loan issuance. *Sentiment* is the average sentiment of all news articles published about a borrower over the 180 days prior to the loan issuance. *Sent-Aggregate* is the aggregate sentiment of all news articles published about a borrower over the 180 days prior to the loan issuance. The dependent variable, *Spread*, is the natural logarithm of the total (interest and fees) spread in basis points over LIBOR. Intercepts are included but suppressed for brevity. The fixed effects include industry, year, loan purpose, and distribution method fixed effects. Variable definitions are provided in Internet Appendix Table IA1. The *t*-statistics computed using robust standard errors corrected for heteroskedasticity are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

standard deviation increase in *Sent-Aggregate* reduces loan spreads by 6.3 basis points in column 4. Taken together, our results uncover that media sentiment dominates media coverage in determining loan pricing in the U.S. market.

6. Conclusion

Using an international sample of bank loans from 37 countries, we examine the effects of media coverage and media sentiment on loan pricing around the world. Several findings emerge. First, there are significantly negative relations between media coverage/sentiment and loan spreads globally. Abundant media coverage mitigates information frictions and reduces information risk, lowering firms' costs of bank loans. Positive media sentiment increases the competition among lenders, who compete for customers by offering lower loan interest rates (Rajan, 1992). Second, how the media affects syndicated loan participation and structure is studied in an

international context. Positive aggregate sentiment increases the rate of a non-relationship lender leading or joining a syndicate, and decreases the lead bank's share, consistent with the media bridging the information gap between informed and uninformed lenders in a syndicate. Finally, we study how differences in country-level institutional environments are associated with the cross-country variation in the relation between media and loan pricing. The negative relation between media and loan pricing is stronger in countries with better information and governance environments and weaker in countries with greater government control of the media or banking sector.

The influence of media news on loan spreads is a prevalent phenomenon that is not limited to the U.S. market. Our findings provide valuable insights into the significance of media news in shaping the behavior of financial institutions in the global market. Bank officers are advised to consider the information conveyed by media coverage and media sentiment when making lending decisions. Policymakers are encouraged to strengthen the existing country-level institutional frameworks to improve the disclosure of financial information and the protection of creditor rights. Moreover, policymakers are urged to promote private-sector involvement and ownership in media and banking, which could enhance the media's beneficial impact on the international bank-loan market.

Data availability

The authors do not have permission to share data.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jcorpfin.2023.102491.

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