Banking sector consolidation and corporate financing choices[1]

Valerio Potì‡

M. Smurfit School of Business, University College Dublin, Dublin, Ireland

William Senyu Wang†

Essex Business School, University of Essex, Wivenhoe Park, Colchester CO4 3SQ, UK

Abstract

We exploit variation in the timing of bank mergers and acquisitions (M&As) and adopt a difference-in-differences approach to examine how bank consolidation affects financing decisions of corporate borrowers. We find that firms increase leverage ratios after their lending banks are involved in M&As, by increasing bond finance to more than compensate for the reduction in bank loans. The result is stronger for firms that have more exclusive banking relationships prior to mergers and those facing more powerful merged banks with significantly enhanced market power. The increase in leverage ratios leads to the build-up of cash balances, consistent with the hedging motive for cash holding à la Acharya et al. (2007). After their bank becomes part of a merged entity, corporates move away from bank debt and into bond financing, issuing proportionally more public debt to compensate the loss of financial flexibility due to a weakened or less reliable post-merger banking relationship. Overall, our findings have implications for how mergers in the banking sector affect financing choices of the corporate sector, and connect the literature on the banking sector structure to the literature on cash holdings.

Keywords: Capital structure; Financing decisions; Debt structure; Bank M&A; Syndicated loans
JEL Classification: G21, G32, G34

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1. Introduction

How do bank mergers and acquisitions (M&As) impact capital structure decisions of corporate borrowers? The extant literature generally highlights the role of the credit channel via lending relationships in transmitting shocks from banks to their borrowers. An important segment of this literature studies extensively the effects of bank consolidation on corporate borrowers and finds that bank mergers can have a significant impact on firm outcomes such as credit availability, cost of capital, stock returns, and investment (see, e.g., Sapienza, 2002; Erel, 2011; Degryse, Masschelein, and Mitchell, 2011; Karceski, Ongena, and Smith, 2005; Bonaccorsi di Patti and Gobbi, 2007). While many economic consequences of bank consolidation are well understood, it is less clear how the mergers influence the overall financing decisions of borrowers.

From a theoretical perspective, the effect of bank consolidation on corporate leverage is unclear. There are at least two possible channels that have been considered by the literature through which banking sector consolidation may have an effect on corporate financial leverage. The first type of channel is through the price of bank debt (interest rate charged), and the second one is through the availability of a reliable banking relationship. We refer to the former as the "price" (or "interest rate") channel and to the latter as the "relationship" channel.

As for the first channel (the price or interest rate one), bank mergers can increase loan interest rates for borrowers and thus influence their capital structure decisions by affecting corporate demand for loans. Efforts by a consolidated bank to improve efficiency could lead to higher rates charged to borrowers, such as firms that previously obtained mispriced loans at below-cost rates (Karceski, Ongena, and Smith, 2005). Loan rates could also increase following consolidation if merged banks gain significant market power (Erel, 2011). In response to the higher costs of bank financing, corporate borrowers may reduce their reliance on bank credit and turn to public debt markets following mergers.

As for the alternative channel, the one operating through the effect on the (perceived) existence of a reliable banking relationship, bank mergers can result in outright termination of firm-bank relationships, thereby reducing these firms' bank credit supply, or weaken the relationship in a more subtle way. Bonaccorsi di Patti and Gobbi (2007) consider both types of possible effects. As an instance of the first effect, they suggest that banks may reassess their portfolios after mergers and modify some of the terms and conditions on existing loans, inducing relationship termination.[2] As an instance of the second effect, they observe that corporate investments become more sensitive to cash flows, implying that the firm can rely to a lesser extent on the financial flexibility provided by the banking relationship after the merger.

The implication for the effect on corporate bank debt along either channel is negative, in the sense that firms rely less on bank debt after their banks are involved in M&As. The overall impact on corporate leverage - and corporate financial choices more broadly - is however not fully determined along either channel, in that it depends on whether affected borrowers substitute bank debt with other sources of finance, bonds in particular. Investigating this possibility and its ramifications is the focus of this study. We especially investigate whether

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[2] Carow, Kane, and Narayanan (2006) report that an anecdotal article in 2004 documents that almost two thirds of the chief financial officers and treasurers at large companies said in a survey that they had ever been denied credit or faced loan price hike due to the "growing clout and competition in the banking industry that have come with consolidation…".

borrowers of merged banks substitute bond finance for bank debt and, if so, whether concurrently they accumulate more cash. The fact that substituting bank debt with public debt should lead to greater cash balances is a key implication of the hedging motive for cash holdings, as originally put forth by Acharya et al. (2007), if we posit that firms' banking relationships become less reliable following mergers of their lending banks, or at least if this is firms' perception.

The two channels are thus not mutually exclusive. Hence, the need arises to econometrically identify them. To this end, we consider the implications of the existence and strength of banking relationships for *both* financial leverage and cash holdings policies. If the relationship channel is important, then we should observe a rise of both cash balances and leverage ratios alongside the rise of bond ratios and the drop of loan ratios. Instead, if bank consolidation does not impair banking relationships in place, so that only the interest rate channel is at work, then leverage and cash balances do not need to rise as firms substitute loans with bonds in their capital structure. Thus, an increase in cash balances alongside a replacement of bank debt with bond issuance can be an important clue that the firms come to 'miss' a close banking relationship when their lending bank is involved in a merger. This in turn can reveal whether their banking relationships weaken after M&As of their banks even if the banking relationships, as is empirically the case in our sample, are not terminated. This insight can only be gained by considering the nexus between banking sector consolidation and overall financing choices of firms, rather than limiting the analysis to the impact on bank debt availability and price, which is the focus of the extant literature.

To empirically characterize the link between bank M&As and borrowing firms' debt financing and overall financial leverage, we construct a dataset of syndicated loans merged with borrower and lender characteristics where borrowers are publicly listed companies in the US and lenders are the lead arrangers (i.e., lead banks) in the syndicated loans to those public

firms. We then exploit the variation in the timing of lead banks' M&As and adopt a difference-in-differences (DiD) approach where the treatment and control groups consist of firms whose lending banks have and have not completed the M&A deal, respectively. The DiD estimator compares changes in the financial leverage of borrowing firms whose lead arrangers experience M&As during the syndicated loan contracts with contemporaneous changes in the financial leverage of borrowing firms whose lead arrangers do not experience M&As. We find that the book leverage ratio of corporate borrowers significantly increases after the M&As of lending banks. The result continues to hold when using market leverage as an alternative measure of leverage.

An important assumption about the application of the DiD approach is that, in the absence of the treatment, the average change in leverage ratios would have been the same for both treatment and control firms. Hence, to identify whether there is any pre-treatment trend, we examine the evolution of corporate leverage from four quarters prior to the bank consolidation to four quarters after. We find that there is no trend of changes in firm leverage prior to bank M&As and that changes in borrower leverage appear only after mergers. The evidence suggests that there are no pre-treatment trends.

We perform additional checks to reaffirm that the main finding that bank consolidation leads to higher corporate leverage is robust to a host of concerns on economic, methodological, and measurement grounds. Overall, our analysis of borrowers' debt structure reveals that borrowing firms raise their bond financing, but reduce loan financing in response to bank mergers and the net effect is the observed increase in total debt ratios due to issuance of bonds that more than compensates the reduced loans.

We also investigate the cross-sectional heterogeneity of the effect of bank M&As to shed some light on the economic mechanisms underlying our results. First, we show that corporate borrowers with fewer or no alternative banking relationships, with high switching costs, or

being not dependent on bank credit increase bond and leverage ratios more, while reduce more loans following bank mergers. Such borrowers have less bargaining power when facing the newly merged entities and hence have stronger incentives to turn to public debt markets. Second, we show a larger increase in bond and leverage ratios and a larger decline in loan ratios by borrowing firms following bank M&As with mega merger partners (over $10 billion in assets) or greater prior geographic overlap. These mergers create more adverse effects on borrowers' banking services due to the increased market power considerably outweighing the efficiency gains. On this account, borrowing firms rely more on bond financing following such mergers.

The cross-sectional variations in the extent of changes in capital and debt structures beg the following question: through what channel does bank consolidation impact corporate borrowers? As mentioned at the beginning, there may be two channels – the "price" (or "interest rate") channel and the "relationship" channel – through which the underlying mechanisms act. To identify the primary channel, we begin by estimating the association between bank consolidation and loan prices charged to existing borrowers (i.e., price channel), and the association between bank consolidation and whether lending relationships are terminated (i.e., relationship channel). We find that loan rates are significantly higher following bank mergers. However, we find no significant association between bank mergers and relationship termination. The evidence suggests that the primary channel through which bank M&As may affect capital structure decisions of borrowing firms is via the price channel as opposed to the relationship.

Finally, we investigate the impact of bank mergers on the investment decisions and performance of borrowing firms. First, we show that corporate borrowers save more cash after bank mergers. Second, we find no significant relation between bank M&As and either capital investments or stock annual returns of borrowing firms. These results show that borrowers

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respond to disruptions to their banking relationships resulting from the consolidation of their lending banks through accumulating cash, in a manner consistent with the hedging motive of Acharya et al. (2007). The cash is accumulated to avoid the risk of not being able to finance future investment opportunities due to the lack of a reliable banking relationship.

Taken collectively, our evidence suggests that firms affected by bank mergers subsequently move away from bank debt, issue more bonds as a substitute, and accumulate the difference as cash balance to hedge future investment needs. This hedging need implies that firms perceive that their banking relationship becomes weaker after their bank is involved in a merger, since there is no evidence that relationships in place are actually terminated. These important findings imply that corporate borrowers may perceive bank loans as being not only less reliable after bank mergers, but also less available in the future if needed to finance favorable investment opportunities.

This paper contributes to several strands of literature. First, it adds to the extensive literature that studies the economic consequences of bank consolidation. Prior literature shows that consolidation among financial institutions leads to changes in their efficiency and market power (see, e.g., Berger, Demsetz, and Strahan, 1999; DeLong, 2001; DeYoung, Evanoff, and Moyneaux, 2009) and in the welfare of borrowers and depositors in terms of credit availability (Bonaccorsi di Patti and Gobbi, 2007; Degryse, Masschelein, and Mitchell, 2011), loan prices (Sapienza, 2002; Garmaise and Moskowitz, 2006; Erel, 2011), and deposit rates (Park and Pennacchi, 2009). We extend this literature by drawing a connection between bank consolidation and corporate leverage. To the best of our knowledge, this is the first article to use loan-level data to systematically investigate the effect of bank mergers on the overall financing decisions of corporate borrowers. Therefore, it adds a new perspective on how financial sector shocks spill over into the real economy. By assessing the relation between banking sector consolidation and corporate bank debt, financial leverage and cash holdings,

we connect the literature on bank mergers and the literature on cash holdings (Opler *et al*., 1999; Deshmukh and Vogt, 2005; Acharya et al., 2007; Denis and Sibilkov, 2010; Gamba and Triantis, 2014), which gives us insight not only into the effect of banking sector consolidation, but also into whether the effect is due to the weakened firm-bank relationships following bank mergers.

Second, this study contributes to the literature on the role of bank-firm relationships and the operation of the lending channel. Prior research highlights the influence of banking relationships on the lending channel (Gan, 2007; Chava and Purnanandam, 2011; Chernenko and Sunderam, 2014) and firm outcomes (Bharath et al., 2007; Bolton et al., 2016). Additionally, Kang and Stulz (2000) use a sample of Japanese firms to examine the effects of bank distress announcements on client firm performance and find that bank health deterioration adversely impacts firms' investment and stock value. Bonaccorsi di Patti and Gobbi (2007) argue that bank M&As may cause adverse shocks to the credit supply due to the loss of soft information or the changed business focus in newly merged entities and hence may have effects that are similar to those of bank distress. Bae, Kang, and Lim (2002) and Ongena, Smith, and Michalsen (2003) examine how exogenous shocks to banks affect the equity value of borrowing firms but find opposite results. We add to this strand of literature by showing that one way in which bank consolidation disrupts bank-firm relationships is by altering the cost of bank lending for corporate borrowers, leading to their substitution towards public debt markets, which ultimately affects leverage ratios for these firms.

Finally, our study is broadly related to the literature that explores firms' capital structure and debt structure. Prior research largely uses firm-level data and investigates how firms make their leverage policies and how they consider one type of debt over another. In particular, the literature on capital structure shows that both firm-specific determinants and factors outside a

firm could shape corporate leverage decisions.[3] The studies related to debt structure recognize the variation in debt types across firms and seek to understand the economic mechanisms behind this phenomenon (see, e.g., Rauh and Sufi, 2010; Colla, Ippolito, and Li, 2013). Unlike these papers mainly focusing on the corporate sector per se based on firm-level data, our work links the banking sector with its clientele in the corporate sector using loan-level data, which helps improve our understanding of how firms' differential access to certain segments of the debt markets may influence their financing policy. Moreover, by providing cross-sectional evidence on debt heterogeneity, we offer some fresh insights into the relationship between debt market segmentation and capital structure.

The rest of the paper proceeds as follows. Section 2 describes the data and sample. Section 3 presents the methodology and reports the initial empirical results. Section 4 presents additional results on the effect on cash holdings, other investments and stock performance of borrowing firms. Section 5 concludes.

2. Data, sample construction and summary statistics

This section describes the data sources, the sample construction, and summarizes the sample characteristics.

2.1. Data and sample construction

We draw data from Loan Pricing Corporation's (LPC) DealScan, Thomson ONE, Compustat, and CRSP. We start with firms from Compustat of which loan information is available in the LPC DealScan. The DealScan majorly provides data on syndicated loans which are provided by a group of banks and administered by one or more lead banks (i.e., lead arranger). We focus on lead arrangers instead of other syndicated lenders in a bank-firm lending

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[3] For the work on firm-specific determinants, see, for example, Titman and wessels (1988), Rajan and Zingales (1995), and Lemmon, Roberts, and Zender (2008). For the work related to external factors, see, for example, Grahare and Harvey (2001), Booth et al. (2001), Korajczyk and Levy (2003), welch (2004), Frank and Goyal (2009), and Leary and Roberts (2014).

relationship as a lead bank plays an active role in originating and structuring the loan and monitoring the borrower.

We collect information on M&A deals of lead arrangers from Thomson ONE which provides a wide range of data on financial deals including M&As, equity issuance deals, etc. We then merge the M&A information with lead banks from DealScan to identify whether a lead bank engages in M&A activities at a specific time.

We collect data on corporate borrowers' accounting variables from Compustat, debt structure variables from Capital IQ and stock market variables from CRSP, all at quarterly frequency. We finally match the lead arrangers with the information of the lending contracts and M&As to their borrower characteristics.

Our sample covers the whole post-crisis period between 2010 and 2018. Due to the fact that accounting standards vary from country-to-country and the accuracy of our analysis relies on consistent financial statement reports, we restrict all the banks and borrowing firms in our sample in the US.[4] Following the previous literature, we exclude utility (SIC codes between 4900 and 4999), financial (SIC codes between 6000 and 6999), and government (SIC codes above 9000) firms to avoid the externality of regulatory intervention (Leary and Roberts, 2014). We also eliminate observations for which firms file for bankruptcy or are involved in M&As in that particular quarter as these major corporate events may lead to substantial changes in firm fundamentals. The final sample consists of 10532 distinct loan contracts and 99516 firm-bank-quarter observations that correspond to 96 lead arrangers and 3263 publicly listed borrowing firms and have no missing data for the main variables.

The observation level in our sample is the firm-loan-bank-quarter quadruplet. Each firm may receive several syndicated loans and each loan contract may be managed by several lead

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[4] Berk and DeMarzo (2017) report that Generally Accepted Accounting Principles (GAAP) differ among countries, which leads to tremendous accounting complexity faced by companies operating internationally.

banks. This means a borrowing firm in our sample may appear multiple times for a given quarter, which leads to a potential problem with our panel regression that error terms may be arbitrarily correlated across time for a given firm. We therefore follow Petersen (2009) to cluster standard errors at the firm level to address this issue.[5]

2.2. Summary statistics

Panel A of Table 1 reports summary statistics for the main variables of the full sample. All continuous variables are winsorized at the 1st and 99th percentiles to mitigate the influence of outliers. Due to the aforementioned fact that a firm may repeat several times for a particular quarter, borrowing firm variables are counted at the firm-quarter level. All the other variables are counted at the full sample level. As reported, the average consolidation (M&A) rate during our sample period is 39.7% with 22.8% acquisition rate and 16.8% target rate, suggesting that nearly 40% of the observations in our sample are affected by consolidations of lead arrangers. As for the borrowing firm variables, the typical borrowers in the sample have book leverage of 29.8% and market leverage of 23.1%. The size distribution of borrowing firms, in terms of their book assets, is highly skewed with total assets varying from $462 million at the lower quartile to 5.6 billion at the upper quartile. Panel A also shows that on average, 17.7% of borrowers' total assets are funded by drawn credit lines (i.e., revolving credit facilities) or term loans, while the sample average ratio of loan facility amount to borrower book assets is 0.153, which suggests that bank loans are an important source of external financing for the sample firms.

Panel B of Table 1 presents a year by year distribution of the mean values of bank M&A variables. As shown in the table, the M&A activity among our sample banks was subdued during 2012 and 2013, but resurged afterwards. Overall, these statistics suggest that M&As are

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[5] Our finding is robust to clustering standard errors at the state level as discussed later in Table 4.

common for the lead arrangers in the sample. However, whether these deals affect borrowers' external financing decisions remains unclear. We address this question in the following section.

[Insert Table 1 here]

3. Empirical analysis

3.1. The effect of bank M&As on borrowing firms' leverage

We start our analysis by adopting a difference-in-differences (DiD) approach to investigate the impact of lead banks' M&As on borrowing firms' financial leverage. Specifically, our baseline regression specification is as follows:

$$
\begin{aligned}
Firm\ Leverage_{i,j,t} = a &+ b \cdot Consolidation_{i,j,t} + g \cdot Firm\ Controls_{i,t} + d \cdot Loan\ Controls_{i,j,t} \\
&+ Loan\ Fixed\ Effects + Quarter\ Fixed\ Effects + e_{i,j,t}
\end{aligned}
\tag{1}
$$

where i denotes the borrowing firm, j denotes the lead bank, t denotes the quarter, and the explanatory variable of interest is $Consolidation_{i,j,t}$ that is a DiD indicator for whether the lead arranger j who has an ongoing syndicated loan contract with firm i has completed the M&A deal by quarter t. The dependent variable $Firm\ Leverage_{i,j,t}$ uses two different measures: *Book leverage* (the ratio of total debt to the book value of total assets) and *Market leverage* (the ratio of total debt to the market value of total assets) which are traditional corporate leverage measures commonly used by prior literature (see, e.g., Grahare and Harvey, 2002; Leary and Roberts, 2014).

Firm Controls$_{i,t}$ are a group of borrowing firm characteristics that have been shown to determine capital structure decisions. These variables include *Ln(total book assets)*, *Market-to-book ratio*, *Profitability*, *Tangibility*, and *Dividend payer indicator* which are used as proxies for a firm's size, growth opportunities, internal funding available, collateral available for external financing, and signalling earnings prospects, respectively (Rajan and Zingales 1995; Lemmon, Roberts, and Zender, 2008; Frank and Goyal, 2009). We additionally control for a group of loan contract characteristics that include *Loan amount/Borrower assets* and *Term*

to Maturity to mitigate the effect of potential omitted variables that are related to the borrower's leverage. All variables are defined in Appendix A.

Equation (1) also includes loan fixed effects and quarter fixed effects. Controlling for loan fixed effects eliminates the unobserved time-invariant contract-specific effects, while quarter fixed effects account for time-specific factors common to every firm. As explained in Section 2.1, we cluster standard errors at the firm level to correct for within-firm error term correlations across time.

Equation (1) represents a staggered DiD approach since the timing of M&As for different lead banks is staggered. The coefficient of interest β compares changes in the financial leverage of borrowing firms whose lead arrangers experience consolidations during the contracts with contemporaneous changes in the financial leverage of borrowing firms whose lead arrangers do not experience consolidation. The DiD specification is valid under the assumption that the timing of M&As for lead arrangers is exogenous regarding their borrowers' capital structure decisions. Evidence from prior literature largely suggests that US bank M&As could be efficiency-driven (Hannan and Pilloff, 2009), strategy-motivated to penetrate new markets or realize the economies of scale (Benston, Hunter, and Wall, 1995; Hannan and Pilloff, 2009), or the result of the deregulation of US banking markets over the past decades (Andrade, Mitchell, and Stafford, 2001). That is, the value of *Consolidation*$_{i,j,t}$ is determined by the above external contributing factors outside the model (1). Therefore, our DiD research design meets the exogenous assumption and enables me to identify the causal impact of bank M&As on borrowers' leverage.

Table 2 reports the results on the relation between bank M&As and borrowing firms' leverage. We start with a specification in column (1) that uses *Book Leverage* as the dependent variable and only includes firm control variables. The positive and significant coefficient for *Consolidation* implies that a bank M&A is associated with 1.8% higher book leverage for the

borrowing firm. Relative to the sample average *Book Leverage* of 29.8%, the finding represents a 6.0% (=0.018/0.298) increase in leverage. In column (2), we keep the same dependent variable, but include both firm and loan-level control variables. The estimated coefficient for *Consolidation* remains positive and significant with a slightly higher magnitude compared to that in column (1), implying a stronger economic significance of the impact of bank consolidation on borrowers' leverage. Firm book leverage increases by 2.3% or 7.7% (=0.023/0.298) relative to its sample mean after a bank consolidation. In columns (3) and (4), we use *Market Leverage* as the dependent variable. The estimated coefficients for *Consolidation* in both columns show a similarly positive and significant relation between bank M&As and borrowing firms' market leverage. When including both firm and loan-level control variables, column (4) reports that firm market leverage increases by 2.4% or 10.4% (=0.024/0.231) relative to its sample average following a bank consolidation. Overall, Table 2 documents a strong economic and statistical significance of the effect of bank consolidation on corporate financial leverage.

Table 2 also shows that firm leverage depends positively on size and collateral, and negatively on the market-to-book ratio, profits and dividend payment, which is largely consistent with the prior literature finding (Rajan and Zingales, 1995; Frank and Goyal, 2009; Leary and Roberts, 2014). Additionally, the negative and significant coefficients on *Loan amount/Borrower assets* and *Term to Maturity* in columns (2) and (4) indicate that firms that finance less of their assets using bank loans or have bank loans approaching the maturity date, are associated with higher leverage, which could suggest that firms are more likely to seek other types of debt financing as they rely less on bank loans or their borrowed bank loans will expire soon. Columns (2) and (4) represent the full specifications which we will use throughout the rest of the paper.

[Insert Table 2 here]

3.2. The validity of the DiD approach

The validity of the DiD approach requires that in the absence of lead banks' M&As, the difference between the leverage of borrowing firms whose banks are involved in M&As and the leverage of borrowers whose banks are not involved in M&As would have been constant over time. In other words, there should be no pre-treatment trends. If the leverage trend differed between firms of merged banks and those of non-merged banks, our estimation strategy could yield erroneous inferences. Therefore, to assess the validity of our regression framework, we follow Chemmanur, He, and Nandy (2010) and examine the evolution of firm leverage from four quarters prior to the bank consolidation to four quarters after. We first set quarter 0 equal to the quarter when the bank of a borrowing firm completes the M&A deal. We then replace the variable *Consolidation* in Eq. (1) with a series of variables *Consolidation$^\omega$* which indicate up to 4 quarters before and after quarter 0.[6] More specifically, the following regression model is employed:

$$
\begin{aligned}
\textit{Firm Leverage}_{i,j,t} = a &+ \sum_{w=-4,w\neq0}^{4} b_w \cdot \textit{Consolidation}_{i,j,t}^{w} \\
&+ g \cdot \textit{Firm Controls}_{i,t} + d \cdot \textit{Loan Controls}_{i,j,t} \\
&+ \textit{Loan Fixed Effects} + \textit{Quarter Fixed Effects} + e_{i,j,t}
\end{aligned}
\tag{2}
$$

Note that the control group in the analysis is the borrowers whose banks did not engage in M&As throughout the contract period. Thus, the variables *Consolidation$^\omega$* always remain 0 for these borrowing firms. The coefficients of interest are β_ω that capture the deviations of firm leverage with respect to the base quarter 0.

Table 3 presents the regression estimates. In columns (1) and (3), we only include firm control variables, while in columns (2) and (4) we repeat the regression after including loan-level controls. The coefficients on *Consolidation^{-4}*, *Consolidation^{-3}*, *Consolidation^{-2}*, and

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[6] Strict definitions of *Consolidation$^\omega$* are given in Appendix A.

Consolidation^{-1} are statistically insignificant across all columns, indicating that there is no trend of decrease or increase in firm leverage prior to the completion of bank consolidation. Noticeably, the subsequent impact of bank consolidation on firm leverage is not transitory, but persists until at least two quarters following the M&A. In sum, the finding validates our DiD specification.

[Insert Table 3 here]

3.3. Robustness checks

We perform a battery of robustness checks on the main findings. To streamline the presentation, we restrict attention to the key variable of interest, namely, the M&A indicator of the lead arranger - *Consolidation*. Table 4 reports the results. All specifications include firm and loan-level control variables. The presence of fixed effects and all control variables is indicated in the bottom part of each panel.

First, prior study shows that firm capital structure can be affected by time-varying macroeconomic conditions (Bhamra, Kuehn, and Strebulaev, 2010) or political factors (Desai, Foley, and Hines, 2008). In particular, if the economic and political conditions in the local state lead to the observed change in leverage, the inference for the effect of *Consolidation* would be biased due to omitted state-level macroeconomic and political variables. Hence, we use two approaches to mitigate this concern. In the first approach, we follow Bertrand, Duflo, and Mullainathan (2004) and cluster standard errors at the state level instead of firm level. This clustering method accounts for time series correlations in unobserved state-level factors that affect different firms within a given state. In the second approach, we include state × quarter fixed effects to confine the control group in the same state and quarter, thereby removing the effect of omitted state-level macroeconomic and political variables since both treatment and control firms are now exposed to the same local conditions. The results reported in columns (1) and (2) for dependent variable *Book Leverage*, and (6) and (7) for *Market Leverage* in Panel A

of Table 4 show that the local state-level macroeconomic and political conditions have little impact on our inference. The estimated coefficients on *Consolidation* remain positive and statistically significant and have very close economic magnitude compared to the estimates in columns (2) and (4) in Table 2.

Second, prior theoretical work relates industry dynamics to capital structure decisions (Miao, 2005). Therefore, we include industry × quarter fixed effects to account for time-varying industry shocks that could lead to the leverage increase. Similar to the above state × quarter fixed effects, the interaction of industry × quarter fixed effects confines the effective control firms to the same industry and quarter, and hence removes the heterogeneous effect of time-varying industry factors. The results reported in columns (3) and (8) in Panel A of Table 4 suggest that industry factors are not a major concern for our baseline specification. The coefficients on *Consolidation* in both columns remain positive and statistically significant.

Third, we are concerned that if a lead arranger conducts several mergers during a syndicated loan contract, some correlated factors between those mergers for which we cannot control could affect borrower leverage. For this reason, we consider the subsample for firms whose lead banks experience mergers at most once during a contract, and re-estimate Eq. (1). Columns (4) and (9) in Panel A of Table 4 report the results. The coefficient estimates imply that the number of mergers during a contract is not behind the main finding that bank M&As increase borrowing firm leverage.

Fourth, firms generally raise a substantial amount of external funds in the initial years following IPOs. Thus, newly listed firms are more dependent on external finance than older firms (Rajan and Zingales, 1998). To alleviate the concern that young listed companies in our sample could drive the baseline results, we exclude observations for which borrowing firms were listed for less than two years and re-estimate Eq. (1). As shown in columns (5) and (10) in Panel A of Table 4, the estimated coefficients on *Consolidation* continue to remain positive

and economically and statistically significant, indicating that the main finding that bank M&As increase borrowing firm leverage is robust to the subsample for relatively mature firms.

Fifth, one possible concern about using the *Book/Market Leverage* as the dependent variables is that the observed increase in leverage ratios could be driven by a reduction in total assets rather than an increase in the amount of firm debt outstanding. To address this concern, we replace *Book/Market Leverage* with an alternative measure for firm capital structure - the natural logarithm of the total debt. Column (1) in Panel B of Table 4 reports the result which is qualitatively similar to those in Table 2 and hence indicates that the observed rise in leverage ratio is indeed due to more debt outstanding.

3.4. Effect on borrower debt structure

The results thus far have not determined whether more debt comes from bond issuance or more bank borrowing or even both. To determine this, columns (2) and (3) of Table 4 analyse the estimated effects of bank M&As on bond and loan ratios of borrowing firms, namely, debt structure. Data for different types of debt are obtained from Capital IQ from S&P Global that provides the details of corporate debt structure including commercial paper, senior and subordinated bonds and notes, drawn credit lines (i.e., revolving credit facilities), term loans, and other private debt. The variable of bond ratio *Total bonds/Total book assets* is defined as the book value of commercial paper plus senior and subordinated bonds and notes divided by the book value of total assets, while the variable for loan ratio *Total loans/Total book assets* is defined as the book value of drawn credit lines plus term loans divided by the book value of total assets. As shown in Panel A of Table 1, the sum of total bond and loan ratios has a sample average of 28.3% which accounts for roughly 95% of book leverage of a typical sample firm. The regression results presented in columns (2) and (3) in Panel B of Table 4 show that firms raise their bond, but curtail loan financing in response to bank M&As. Specifically, the positive and significant coefficient on *Consolidation* in column (2) indicates a 1.5% (14.2% relative to

its sample mean) increase in bond ratio for firms of merging banks relative to the contemporaneous changes in firms of non-merging banks, while column (3) shows a 0.7% (4.0% relative to its sample mean) decline in loan ratio for firms of merging banks relative to the contemporaneous changes in firms of non-merging banks.

The results have an important implication: firms of merging banks tend to turn to public debt markets to offset the reductions in bank credit, and the net outcome is the observed increase in firm leverage due to more bonds being raised than reduced loans. This finding can be aligned with the intuition that debt covenants may limit a firm's capital structure decisions (Qi and Wald, 2008). Since banks attach covenants to loans to protect the loans from being too risky, the covenants in relation to indebtedness may require that borrowing firms not take on a much greater debt burden relative to their equity, and hence limit borrowers' abilities to issue additional debt. However, by substituting towards bonds following the mergers of their lending banks, firms are subject to fewer restrictions imposed by bank covenants on further debt issuance and thus are able to reach a higher leverage ratio. We must, however, caution that this interpretation is not suggestive of any mechanism driving the loan reductions which we explicitly discuss in Section 3.6. Further examination on firm equity-issuing activity in column (4) in Panel B of Table 4 shows that there is no significant relation between bank M&As and borrower equity issuance.

In sum, the results in Table 4 provide further assurance that the main finding that bank M&As result in higher corporate leverage is robust to a host of methodology, economics, and measurement concerns.

[Insert Table 4 here]

3.5. Cross-sectional variation of the effect of bank M&As

In this section, we investigate whether the effect of bank M&As on corporate capital and debt structure exhibits heterogeneity in the cross-section to identify possible mechanisms

through which bank M&As operate. We exploit variation along two important dimensions: (1) the heterogeneity of borrowers' access to alternative finance, and (2) the heterogeneity of bank M&As.

3.5.1. How the effect varies with borrowers' access to alternative finance

We start by examining whether bank M&As have a stronger impact on corporate borrowers that have alternative banking relationships. Prior study suggests that bank consolidation could lead to a decrease in lending or an increase in interest rates, and the extent of such impact on borrowers may depend on the extensiveness of borrowers' alternative sources of lenders. Borrowers with access to fewer lenders have less bargaining power and suffer more from merger activity (Sapienza, 2002). Hence, we expect the increase of leverage and bond ratios to be higher for firms with fewer or no alternative banking relationships as these firms have more incentives to turn to public debt markets.

We use two proxies to gauge the extent of a firm's access to alternative relationships. The first is *Single bank relationship* which is an indicator variable for whether the firm has an existing lending relationship with only one lead arranger in that quarter.[7] Most firms in our sample maintain relatively few banking relationships and in 62% of observations the firms have only one banking relationship. The second proxy is *Fewer local banks* which is an indicator variable for whether the number of alternative banks located in the metropolitan statistical area (MSA) or the rural county where the firm is headquartered is below the sample median. To construct the measure, we collect branch geographic information from the FDIC Summary of Deposits (SOD) database. We then count the number of banking institutions in each MSA or rural county and merge the data with the main sample.[8] Note that if a borrower's

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[7] Our definition of "lending relationship" is relatively stricter relative to several other studies that also take past lending or other services into account (see, e.g., Ongena and Smith, 2000).

[8] The FDIC SOD data are updated annually in June. Therefore, we use its annual data for the quarter when it updates as well as the succeeding three quarters. For example, SOD data updated in June 2017 are used for 2017Q2, 2017Q3, 2017Q4, and 2018Q1.

relationship bank has presence in the same area as where the borrower is headquartered, that bank will be excluded when calculating the number of local alternative banks. We last create an indicator variable *Fewer local banks* that is set to one if the number of local alternative banks is below the sample median, and zero otherwise.

Columns (1) and (2) in Panel A of Table 5 report the estimation results by including the additional interaction terms *Consolidation × Single bank relationship* and *Consolidation × Fewer local banks* in the Eq. (1), respectively. The two proxies *Single bank relationship* and *Fewer local banks* are also included in the regression in columns (1) and (2), respectively. However, they are not tabulated for brevity.[9] we find a positive and significant coefficient on both *Consolidation × Single bank relationship* and *Consolidation × Fewer local banks*. The finding confirms that the positive association between bank consolidation and firm leverage is more pronounced for firms with no alternative banking relationships or fewer local alternative banks. Columns (1) and (2) of Panel B repeat the analysis in columns (1) and (2) of Panel A, but replace the dependent variable with *Total bonds/Total book assets* to examine whether more leverage increase is due to more bond increase for firms with limited access to alternative banks. The results presented uphold the conjecture and reinforce the finding in Section 3.3 that firms of merging banks substitute into public debt markets to partially offset the adverse impact by merger activities of their lending banks.

We next consider the role the intensity of banking relationship plays in the effect of consolidation. We define *Relationship Intensity* as the proportion of the borrower's total loans contributed by the loan facility, which can reflect the extent of information exchange between the borrower and the lender (Degryse, Masschelein, and Mitchell, 2011). A higher relationship intensity often translates into more information accumulated by incumbent banks about the borrower. However, such information, especially the "soft" part such as trust and reputation, is

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[9] In the remaining columns in Table 5, the relevant partition variables are also not tabulated for brevity.

often difficult to pass on to lenders outside the relationship, which is related to switching costs for borrowers should they wish to switch to another bank (Karceski, Ongena, and Smith, 2005). As such, a high relationship intensity implies high switching costs that may restrict borrowers' access to alternative lenders and hence a greater merger impact. With this in mind, we create an indicator variable *High relationship intensity* that is set to one if the value of the continuous measure *Relationship Intensity* is above the sample median, and zero otherwise. We then re-estimate the Eq. (1) by including the interaction term *Consolidation × High relationship intensity* and the partition measure *High relationship intensity* as two additional variables. Results are presented in column (3) in Panel A and in column (3) in Panel B of Table 5 when the dependent variable is replaced by *Total bonds/Total book assets*. While we find that the effect of bank consolidation remains significant for both groups of firms, the impact for firms with high relationship intensity is stronger since the coefficient estimates on the interaction term *Consolidation × High relationship intensity* in both panels have either higher economic magnitude or stronger statistical significance. This is supportive of the expectation that firms that are locked into their existing relationships due to high switching costs are more likely to turn to public debt markets to offset disruptions from their bank consolidation, resulting in a larger increase in bond and leverage ratios.

We further explore cross-sectional heterogeneity of firms' dependence on bank financing. Firms that are less reliant on bank debt generally have less information asymmetry and access to a wider menu of financing alternatives such as bonds (Chava and Purnanandam, 2011). As a result, these firms are more likely to have rating status. Contrarily, it is more difficult for nonrated firms to raise external finance through public debt markets. That being the case, we expect the effect of bank consolidation on firm capital structure decisions to be stronger for rated firms. We follow Chava and Purnanandare (2011) and define a borrower as bank-nondependent if it receives an S&P long-term domestic issuer credit rating based on the data

obtained from Compustat (approximately 59% of observations). Column (4) in Panels A and B show that the positive effect of bank consolidation on firm leverage and bond ratios is concentrated within bank-nondependent firms that receive S&P ratings, a result that is consistent with the prediction.

Columns (1) to (4) of Panel C repeat the above analyses, but replace the dependent variable with *Total loans*/*Total book assets* to test for heterogeneous effects of bank consolidation on firm loan ratio. The results, viewed collectively, indicate that the adverse impact of bank consolidation on firm loans is accentuated for borrowers with fewer or no alternative banking relationships, with high switching costs, or not dependent on bank credit.[10]

3.5.2. How the effect varies with bank M&A idiosyncrasy

The second dimension of cross-sectional variation we explore in the effect of bank M&As on leverage is the heterogeneity of bank M&As. Mergers result in larger and more complex banks that have greater market power and better efficiency. However, if the merger partners are both too large (i.e., mega mergers) or have substantial geographic overlap in their operational markets, the increased market power can outpace the efficiency gains that are passed on to borrowing firms, which would disrupt credit availability (Degryse, Masschelein, and Mitchell, 2011), raise loan prices (Karceski, Ongena, and Smith, 2005; Erel, 2011), or diminish service quality (Karceski, Ongena, and Smith, 2005), thereby harming borrowers. In that case, firms are likely to substitute more bonds for lending. Consequently, we expect a larger increase in bond and leverage ratios by firms following bank M&As with mega merger partners or greater prior geographic overlap.

To evaluate this conjecture, we define two partition variables. The first is an indicator variable *Mega Mergers* that is set to one if both the acquirer and the target have total assets of

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[10] we interpret the last finding for bank nondependent firms as supportive of the idea that these firms rely more on public debt sector, and have fewer alternative sources of bank lenders and hence less bargaining power to negotiate better rates or covenants with their existing banks. Thus, their loan ratios are more affected by the M&A activities of the lending banks.

more than \$10 billion, and zero otherwise. We choose \$10 billion as a cut-off point to distinguish large banks from small ones since US banks whose assets are above this threshold are subject to stress testing and large-bank deposit pricing rules (Bennett, Güntay, and Unal, 2015). According to this definition, 17% of the sample observations involve mega mergers, accounting for 42.8% (=0.17/0.397) of all mergers. The second variable is similar to the approach by Erel (2011) and gauges the degree of geographic overlap associated with the consolidation. Using the branch-level data collected from the FDIC SOD mentioned above, we identify the total deposits of each bank in a given geographic market that is either an MSA or a non-MSA rural county. We then define the geographic overlap of markets between the acquirer and the target in the following Equation (3):

$$Market\ Overlap = \frac{\sum_{i=1}^{n} \min(Deposit_{Acq,i}, Deposit_{Tar,i})}{\sum_{i=1}^{n} \left(Deposit_{Acq,i} + Deposit_{Tar,i}\right)}$$

(3)

where n is the total number of markets where either bank operates, while $Deposits_{Acq,i}$ and $Deposits_{Tar,i}$ denote the total deposits garnered by the acquirer and the target, respectively, in market i prior to the consolidation. *Market Overlap* can take a maximum value of 0.5 when there is full overlap between the two merging banks' operations and a minimum value of zero where there is no overlap. For this measure of overlap, we create an indicator variable *High Market Overlap* that equals one if the value of *Market Overlap* is above the sample median, and zero otherwise.

Columns (5) and (6) in Panel A of Table 5 present the results by including the additional interaction terms *Consolidation × Mega mergers* and *Consolidation × High market overlap* in the Eq. (1), respectively. The two partition variables *Mega Mergers* and *High Market Overlap* are also included in the regression in column (5) and (6), respectively, but not tabulated for brevity. The positive and significant coefficients on both *Consolidation × Mega mergers* and

Consolidation × High market overlap imply that bank consolidations have greater positive influence on the leverage of borrowers whose merging banks are large or have above-median geographic overlap. Columns (5) and (6) of Panel B repeat the analysis in columns (5) and (6) of Panel A, but replace the dependent variable with *Total bonds/Total book assets* to examine whether mega mergers or mergers with higher overlap are also associated with more bond increase. The results validate the conjecture.

Again, columns (5) and (6) of Panel C repeat the above analyses, but replace the dependent variable with *Total loans/Total book assets* to test for heterogeneous effects of bank consolidation on firm loan ratio. The results show that the adverse effect of bank consolidation on firm loans is stronger for M&As with large merging banks or high geographic overlap. The finding lends support to the earlier argument that when the merger partners are sufficiently large or their overlap is adequately high the resulting market power dominates the cost savings and borrowing firms are harmed.

[Insert Table 5 here]

3.6. Channels of the effect of bank M&As

The results thus far are consistent with bank M&As leading to increase in borrower leverage. The cross-sectional variations in the extent of changes in capital and debt structures beg the question of through what channel bank mergers influence borrowing firms. We next assess the importance of two possible channels, namely, **the "price" channel and the "relationship" channel**.

While we document that bank M&As result in lower bank credit and substitution of large public debt issuance for bank loans for borrowers, it is, however, not clear whether lower bank credit is due to firms reducing the loan volume because of higher rates (price channel), or relationship termination (relationship channel) following the consolidation. Previous studies show that merged banks may charge higher prices or force existing borrowers out due to the

reduction of competition or changes of lending policies (Sapienza, 2002; Karceski, Ongena, and Smith, 2005). Therefore, to identify the possible channel, we estimate the Eq. (1) by replacing the dependent variable with *Loan Spread* or *Relationship Termination*. *Loan Spread*, as our measure of loan pricing, is the all-in-drawn spread retrieved from DealScan, which is the loan's credit spread over LIBOR plus annual fees paid to the lenders. *Relationship Termination* is an indicator variable for whether the lending relationship between the firm and the lead bank is discontinued. We consider a borrower to experience relationship termination in quarter *t* if its lead arranger at the end of quarter *t* is different from the one in the previous quarter or if the borrower disappears from the DealScan database at the end of quarter *t*. The coefficient of interest β reflects whether there are observable changes in loan prices or relationship following bank M&As.

Column (1) of Table 6 shows a positive and significant coefficient on *Consolidation*, indicating that loan price is significantly higher following bank mergers. Column (2) of Table 6 splits *Consolidation* into *Acquirer* and *Target*, and shows that borrowers of both acquiring and target banks experience higher loan prices following mergers. The insignificant coefficient on *Consolidation* in column (3) implies that bank consolidation does not increase the chance of relationship termination. Further examination for borrowers of acquirers and targets in column (4) shows that neither is likely to lose the relationship following mergers. In unreported results, we replicate all the tests in Table 6 after including either state × quarter fixed effects or industry × quarter fixed effects and find qualitatively similar results. Overall, the findings are in favor of the price channel but not the relationship channel, suggesting that bank M&As tend to induce higher interest rates and, through this channel, affect the overall financing decisions of firms. There is however the possibility that the relationship channel is in operation because banking relations might be weakened post-mergers even though they are not entirely discontinued. We examine this possibility in the next section.

[Insert Table 6 here]

4. Impact on cash holdings, other investments and stock performance of borrowing firms

In this section, we take our analysis further to examine the association between lead banks' M&As and cash holdings, investment decisions and stock market performance of borrowing firms. The purpose of this analysis is twofold. *First*, we want to assess whether the relationship channel is in operation, in the sense that consolidation affects the decision to increase bond issuance not only to substitute more costly bank debt but also to increase cash holdings, so as to compensate for a less reliable banking relationship, consistent with the hedging motive for cash holdings advocated by Acharya et al. (2007). *Second*, we want to assess whether the more costly bank debt and/or the less reliable banking relationship affect the ability of the firms to finance investments. These two questions are related because accumulation of cash can make up the loss of financial flexibility due to the weakening of the banking relationship with merged banks. That is, by accumulating cash firms can replace the availability of a reliable banking relationship as a hedge for the risk that future investment opportunities will arise at a time of low free cash flows.

To carry out this analysis, we examine the impact of bank consolidation on various real outcomes of borrowers such as capital expenditures, cash holdings, and stock return. We use annual instead of quarterly data used in the above tests because that is when we expect changes in the investment decisions and performance to be more observable. Specifically, we estimate the following DiD regression model similar to Eq. (1):

$$
\begin{aligned}
\textit{Firms' Real Outcomes}_{i,j,t} = &\ a + b \acute{}\ \textit{Consolidation}_{i,j,t} \\
&+ g \acute{}\ \textit{Firm Controls}_{i,t} + d \acute{}\ \textit{Loan Controls}_{i,j,t} \\
&+ \textit{Loan Fixed Effects} + \textit{Year Fixed Effects} + e_{i,j,t}
\end{aligned}
\tag{4}
$$

where *i* denotes the borrowing firm, *j* denotes the lead bank, *t* denotes the year, *Consolidation*$_{i,j,t}$ is a DiD indicator for whether the lead arranger *j* who has an ongoing syndicated loan contract

with firm *i* has completed the M&A deal by year *t*, firm and loan controls stay the same as used in the Eq. (1), and *Firms' Real Outcomes* denote *Capital expenditures/Total book assets*, *Cash/Total book assets*, or *Stock Annual Return*. The coefficient of interest is β which compares changes in the investment policy and performance of borrowing firms affected by consolidations with contemporaneous changes in those of borrowing firms unaffected by consolidations.

Table 7 reports the results. The insignificant coefficient on *Consolidation* in column (1) suggests that borrowers of merged banks make similar investment relative to their counterparts of non-merged banks. The former, however, hoard more cash as a response to bank M&As as shown by the positive and significant coefficient on *Consolidation* in column (2). The insignificant coefficient on *Consolidation* in column (3) reveals that there is also no significant association between bank M&As and the annual stock performance of borrowing firms. In unreported results, we again replicate all the tests in Table 7 after including either state × quarter fixed effects or industry × quarter fixed effects and obtain qualitatively similar results. Overall, these results imply that firms respond to the disruptions in the banking services from merged banks by increasing cash holdings, avoiding a decline in their ability to finance future investment opportunities. The stock market appears to detect this by not applying a discount to the firms after mergers of their lending banks.

[Insert Table 7 here]

5. Conclusion

In this paper, we investigate how bank M&As affect financial policies of corporate borrowers. To the best of our knowledge, this is the first article to use loan-level data to systematically investigate the effect of bank mergers on the overall financing decisions of corporate borrowers. By exploiting the variation in the timing of bank mergers and adopting a difference-in-differences approach, we show that borrowing firms significantly increase

leverage ratios after their lending banks engage in M&As. The effect is stronger for firms with fewer or no alternative banking relationships, with high switching costs, or being not dependent on bank credit and for firms facing the merged banks with mega merger partners or greater prior geographic overlap. The results suggest that, when firms have trouble finding alternative bank lenders or have less bargaining power, they suffer more from the disruptions from bank mergers and switching to bond finance becomes an attractive alternative. Importantly, they do so in a way consistent with implications of the hedging motive for cash holdings, à la Acharya et al. (2007), if we admit that firms may perceive the banking relationships as becoming less reliable after bank mergers. In particular, while we find that terminations of banking relationships are not significantly affected by bank mergers, firms accumulate more cash as it would be rational to do so if they expect the relationships to become less reliable at the time of need (i.e., when the need to finance investment will arise at a time of low free cash flow generation). This way we connect two main streams of the finance literature, namely the literature on bank mergers and the literature on cash holdings.

All in all, our key finding is that borrowing firms raise their bond financing but reduce loan financing in response to bank mergers, and the net effect is the observed increase in total debt ratios due to issuance of bonds that more than compensates the reduced loans. This finding is consistent with the increased cash balances in response to post-merger banking relationships that are perceived as less reliable, an indirect implication of the hedging motive for cash holdings put forth by Acharya et al. (2007). Another possible explanation for the increase in leverage is the traditional notion that debt covenants may limit a firm's capital structure decisions (Qi and Wald, 2008) and, more generally, the idea that bank monitoring may restrain corporate financial leverage more than the weaker monitoring exerted by the bond market.[11]

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[11] Since banks attach covenants to loans to protect the loans from being too risky, they may require that borrowing firms not take on a much greater debt burden relative to their equity, and hence limit borrowers' abilities to issue additional debt.

By substituting towards bonds following the mergers of their lending banks, firms may be subject to fewer restrictions imposed by bank covenants and stringent monitoring on further debt issuance and may thus be able to reach a higher leverage ratio. These two possible explanations are not mutually exclusive, and we leave for future research the assessment of their relative importance.

Appendix A. Variable definitions

Variable	Description
Bank M&A variables	
Consolidation	An indicator variable equal to one if the lead arranger of a firm has completed the M&A deal by quarter t and zero otherwise.
Consolidation^{-4}	An indicator variable equal to one if the lead arranger of a firm will be involved in the M&A deal in four or more quarters and zero otherwise.
Consolidation^{-3}	An indicator variable equal to one if the lead arranger of a firm will be involved in the M&A deal in three quarters and zero otherwise.
Consolidation^{-2}	An indicator variable equal to one if the lead arranger of a firm will be involved in the M&A deal in two quarters and zero otherwise.
Consolidation^{-1}	An indicator variable equal to one if the lead arranger of a firm will be involved in the M&A deal in one quarter and zero otherwise.
Consolidation^{+1}	An indicator variable equal to one if the lead arranger of a firm was involved in the M&A deal one quarter ago and zero otherwise.
Consolidation^{+2}	An indicator variable equal to one if the lead arranger of a firm was involved in the M&A deal two quarters ago and zero otherwise.
Consolidation^{+3}	An indicator variable equal to one if the lead arranger of a firm was involved in the M&A deal three quarters ago and zero otherwise.
Consolidation^{+4}	An indicator variable equal to one if the lead arranger of a firm was involved in the M&A deal four or more quarters ago and zero otherwise.
Acquirer	An indicator variable equal to one if the lead arranger of a firm has completed the acquisition deal by quarter t and zero otherwise.
Target	An indicator variable equal to one if the lead arranger of a firm has completed the deal of being acquired by quarter t and zero otherwise.
Mega mergers	An indicator variable equal to one if both the acquirer and the target have total assets of more than $10 billion.
High market overlap	An indicator variable equal to one if the geographic overlap of markets between the acquirer and the target - *Market Overlap* is above the sample median, while *Market Overlap* is defined in Eq. (3).
Firm borrower variables	
Book leverage	The ratio of the book value of total debt to the book value of total assets.
Market leverage	The ratio of the book value of total debt to the market value of total assets.
Total book assets ($ millions)	The book value of total assets in millions.
Ln(total book assets)	The natural logarithm of the book value of total assets.
Market-to-book ratio	The ratio of the market value of total assets to the book value of total assets.
Profitability ratio	The ratio of operating income before depreciation to the book value of total assets.
Tangibility ratio	The ratio of property, plant, and equipment to the book value of total assets.

Dividend payer indicator	An indicator variable equal to one if the firm makes dividend payments in that quarter.
Total bonds/Total book assets	The book value of commercial paper plus senior and subordinated bonds and notes divided by the book value of total assets.
Total loans/Total book assets	The book value of drawn credit lines plus term loans divided by the book value of total assets.
Equity issuance	The difference between sale of common and preferred stock and purchase of common and preferred stock, scaled by the book value of total assets.
Single bank relationship	An indicator variable equal to one if the firm has a lending relationship with only one lead arranger.
Fewer local banks	An indicator variable equal to one if the number of alternative banks located in the MSA or rural county where the firm is headquartered is below the sample median.
Bank nondependent firms	An indicator variable equal to one if the firm receives an S&P long-term domestic issuer credit rating.
Capital expenditures/Total book assets	The ratio of capital expenditures to the book value of total assets.
Cash/Total book assets	The ratio of cash and cash equivalents to the book value of total assets.
Stock Annual Return	The return on the borrowing firm's stock over the calendar year.

Loan contract variables

Loan amount/Borrower assets	The ratio of loan amount to the borrower's book assets.
Term to Maturity (years)	The number of years remaining until the final repayment date.
Loan spread (basis points)	The sum of the spread of the loan facility over London Interbank Offered Rate (LIBOR) and any annual fees paid to the lender group (all-in-drawn spread).
High relationship intensity	An indicator variable equal to one if the proportion of the borrower's total loans contributed by the loan facility is above the sample median.
Relationship termination	An indicator variable for whether the lending relationship between the firm and the lead bank is discontinued.

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Table 1
Summary statistics

This table reports descriptive statistics for the main variables in our sample. Panel A presents summary statistics for the full sample which consists of 99516 firm-loan-bank-quarter observations over the 2010 to 2018 period without missing data. Panel B presents a year by year distribution of the mean values of bank M&A variables. *Consolidation* is an indicator variable equal to one if the lead arranger of a firm has completed the M&A deal by quarter *t* and zero otherwise. *Acquirer* is an indicator variable equal to one if the lead arranger of a firm has completed the acquisition deal by quarter *t* and zero otherwise. *Target* is an indicator variable equal to one if the lead arranger of a firm has completed the deal of being acquired by quarter *t* and zero otherwise. *Book Leverage* is the ratio of the book value of total debt to the book value of total assets. *Market Leverage* is the book value of total debt to the market value of total assets. *Ln(total book assets)* is the natural logarithm of the book value of total assets. *Market-to-book* is the ratio of the market value of total assets to the book value of total assets. *Profitability* is the ratio of operating income before depreciation to the book value of total assets. *Tangibility* is the ratio of property, plant, and equipment to the book value of total assets. *Dividend payer* is an indicator variable equal to one if the firm makes dividend payments in that quarter. *Total bonds/Total book assets* is the book value of commercial paper plus senior and subordinated bonds and notes divided by the book value of total assets. *Total loans/Total book assets* is the book value of drawn credit lines plus term loans divided by the book value of total assets. *Equity issuance* is the difference between sale of common and preferred stock and purchase of common and preferred stock, scaled by the book value of total assets. *Loan amount/Borrower assets* is the ratio of loan amount to the borrower's book assets. *Term to Maturity* is the number of years remaining until the final repayment date. *Loan spread* is the sum of the spread of the loan facility over London Interbank Offered Rate (LIBOR) and any annual fees paid to the lender group (all-in-drawn spread). All continuous variables are winsorized at the 1st and 99th percentiles. Appendix A provides variable definitions.

Panel A: Summary statistics for the full sample					
	Mean	Std. Dev.	p25	Median	p75
Bank M&A variables					
Consolidation	0.397	0.517	0	0	1
Acquirer	0.228	0.383	0	0	0
Target	0.168	0.220	0	0	0
Firm borrower variables					
Book leverage	0.298	0.236	0.095	0.256	0.456
Market leverage	0.231	0.197	0.060	0.205	0.351
Total book assets ($ millions)	8316	49240	462	1361	5563
Ln(total book assets)	7.851	1.603	6.136	7.216	8.624
Market-to-book ratio	1.752	1.561	0.953	1.303	1.911
Profitability ratio	0.037	0.135	0.023	0.057	0.096
Tangibility ratio	0.328	0.227	0.132	0.276	0.484
Dividend payer indicator	0.363	0.448	0	0	1
Total bonds/Total book assets	0.106	0.185	0.013	0.062	0.258
Total loans/Total book assets	0.177	0.169	0.055	0.140	0.265
Equity issuance	0.002	0.008	0.000	0.000	0.001
Loan variables					
Loan amount/Borrower assets	0.153	0.179	0.040	0.118	0.215
Term to Maturity (years)	3.674	1.987	2.071	3.808	4.849
Loan spread (basis points)	271	186	93	265	379

Panel B: Year by year distribution of bank M&A variables			
Year	Consolidation	Acquirer	Target
2010	0.355	0.231	0.125
2011	0.371	0.225	0.146
2012	0.283	0.170	0.113
2013	0.275	0.173	0.102
2014	0.429	0.252	0.176
2015	0.502	0.201	0.301
2016	0.568	0.324	0.243
2017	0.426	0.237	0.189
2018	0.387	0.179	0.208

Table 2
The effect of bank consolidation on borrowing firms' leverage

This table reports results from Eq. (1) on the relation between borrowing firms' leverage and lead arrangers' M&As. The dependent variables in columns (1) and (2), and (3) and (4) are *Book Leverage* and *Market Leverage*, respectively. *Consolidation* is an indicator variable equal to one if the lead arranger of a firm has completed the M&A deal by quarter t and zero otherwise. Columns (1) and (3) only include firm control variables. Columns (2) and (4) include both firm and loan-level control variables. Appendix A provides variable definitions. Continuous variables are winsorized at the 1st and 99th percentiles. Standard errors are clustered at the firm level. t-statistics are reported in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

	Book leverage		Market leverage	
	(1)	(2)	(3)	(4)
Consolidation	0.018***	0.023***	0.026***	0.024***
	(4.14)	(4.48)	(4.12)	(4.25)
Ln(total book assets)	0.032***	0.024***	0.033***	0.021***
	(5.09)	(4.91)	(5.31)	(4.83)
Market-to-book ratio	-0.048***	-0.070***	-0.045***	-0.076***
	(-3.55)	(-4.23)	(-3.22)	(-4.01)
Profitability ratio	-0.182**	-0.235***	-0.162*	-0.200**
	(-2.00)	(-3.84)	(-1.90)	(-2.53)
Tangibility ratio	0.134***	0.123***	0.129***	0.126***
	(4.46)	(5.53)	(4.45)	(6.34)
Dividend payer indicator	-0.090***	-0.083***	-0.085***	-0.064***
	(-15.03)	(-12.46)	(-15.98)	(-11.02)
Loan amount/Borrower assets		-0.014***		-0.018***
		(-4.24)		(-4.84)
Term to Maturity		-0.009*		-0.016**
		(-1.68)		(-2.52)
Loan fixed effects	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes
Observations	99516	99516	99516	99516
Adj. *R*-sq	0.528	0.658	0.531	0.695

Table 3
The examination of the validity of the DiD approach

This table assesses the validity of the DiD specification (1). The dependent variables in columns (1) and (2), and (3) and (4) are *Book Leverage* and *Market Leverage*, respectively. *Consolidation^{-4}* is an indicator variable equal to one if the lead arranger of a firm will be involved in the M&A deal in four or more quarters and zero otherwise. *Consolidation^{-3}* is an indicator variable equal to one if the lead arranger of a firm will be involved in the M&A deal in three quarters and zero otherwise. *Consolidation^{-2}* is an indicator variable equal to one if the lead arranger of a firm will be involved in the M&A deal in two quarters and zero otherwise. *Consolidation^{-1}* is an indicator variable equal to one if the lead arranger of a firm will be involved in the M&A deal in one quarter and zero otherwise. *Consolidation^{+1}* is an indicator variable equal to one if the lead arranger of a firm was involved in the M&A deal one quarter ago and zero otherwise. *Consolidation^{+2}* is an indicator variable equal to one if the lead arranger of a firm was involved in the M&A deal two quarters ago and zero otherwise. *Consolidation^{+3}* is an indicator variable equal to one if the lead arranger of a firm was involved in the M&A deal three quarters ago and zero otherwise. *Consolidation^{+4}* is an indicator variable equal to one if the lead arranger of a firm was involved in the M&A deal four or more quarters ago and zero otherwise. Columns (1) and (3) only include firm control variables. Columns (2) and (4) include both firm and loan-level control variables. Appendix A provides variable definitions. Continuous variables are winsorized at the 1st and 99th percentiles. Standard errors are clustered at the firm level. *t*-statistics are reported in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

	Book leverage		Market leverage	
	(1)	(2)	(3)	(4)
Consolidation^{-4}	0.006	0.007	0.012	0.013
	(1.43)	(1.29)	(1.08)	(1.55)
Consolidation^{-3}	-0.003	-0.006	-0.001	-0.005
	(-0.34)	(-0.81)	(-0.17)	(-0.79)
Consolidation^{-2}	0.005	0.002	0.007	0.003
	(0.47)	(0.19)	(0.65)	(0.27)
Consolidation^{-1}	0.009	0.008	-0.034	0.010
	(1.23)	(0.69)	(-1.20)	(0.68)
Consolidation^{+1}	0.010*	0.011**	0.017**	0.020**
	(1.84)	(2.18)	(2.55)	(2.15)
Consolidation^{+2}	0.019***	0.025***	0.030***	0.029***
	(3.47)	(4.20)	(4.41)	(4.46)
Consolidation^{+3}	-0.008	0.012*	-0.007	-0.009
	(-1.64)	(1.75)	(-1.41)	(-1.12)
Consolidation^{+4}	0.021**	-0.009	-0.006	-0.019**
	(2.04)	(-0.66)	(-1.35)	(-1.98)
Firm control variables	Yes	Yes	Yes	Yes
Loan control variables	No	Yes	No	Yes
Loan fixed effects	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes
Observations	99516	99516	99516	99516
Adj. *R*-sq	0.613	0.743	0.595	0.728

Table 4
The effect of bank consolidation on borrowing firms' leverage: Robustness checks

This table performs several robustness checks for the link between bank consolidation and borrowing firms' leverage. Panel A presents results by using different clustering method, fixed effects, or subsamples. The dependent variables in columns (1) to (5), and (6) to (10) of Panel A are *Book Leverage* and *Market Leverage*, respectively. *Consolidation* is an indicator variable equal to one if the lead arranger of a firm has completed the M&A deal by quarter *t* and zero otherwise. Columns (1) and (6) cluster standard errors at the state level instead of the firm level. Columns (2) and (7) include the interaction of state and quarter fixed effects. Columns (3) and (8) include the interaction of industry and quarter fixed effects. Industries are defined by two-digit SIC code. Columns (4) and (9) exclude firms whose lead arrangers experience M&As at least twice during a contract. Columns (5) and (10) exclude observations for which borrowing firms were listed for less than two years. Panel B presents estimates where we replace *Book Leverage* and *Market Leverage* with alternative measures for firm capital structure and financing decisions. The dependent variable is indicated at the top of each column. *Ln(total debt)* is the natural logarithm of the book value of total debt. *Total bonds/Total book assets* is the book value of commercial paper plus senior and subordinated bonds and notes divided by the book value of total assets. *Total loans/Total book assets* is the book value of drawn credit lines plus term loans divided by the book value of total assets. *Equity issuance* is the difference between sale of common and preferred stock and purchase of common and preferred stock, scaled by the book value of total assets. Firm and loan-level control variables are included in all regressions in both panels. Appendix A provides variable definitions. Continuous variables are winsorized at the 1st and 99th percentiles. Standard errors are clustered at the firm level except for columns (1) and (5) in Panel A. *t*-statistics are reported in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

Panel A: Is the finding robust to different regression methods or subsamples?

	Book leverage					Market leverage				
	Cluster standard errors at the state level	Include the interaction of state and quarter fixed effects	Include the interaction of industry and quarter fixed effects	Exclude firms whose lead arrangers experience M&As at least twice during a contract	Exclude observations for which firms were listed for less than two years	Cluster standard errors at the state level	Include the interaction of state and quarter fixed effects	Include the interaction of industry and quarter fixed effects	Exclude firms whose lead arrangers experience M&As at least twice during a contract	Exclude observations for which firms were listed for less than two years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Consolidation	0.022***	0.023***	0.020***	0.017***	0.019***	0.024***	0.021***	0.022***	0.015***	0.018***
	(4.31)	(4.47)	(3.94)	(3.43)	(3.75)	(4.28)	(3.73)	(3.90)	(2.68)	(3.21)
Firm and loan controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Loan FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FEs	Yes	No	No	Yes	Yes	Yes	No	No	Yes	Yes
State × quarter FEs	No	Yes	No	No	No	No	Yes	No	No	No
Industry × quarter FEs	No	No	Yes	No	No	No	No	Yes	No	No
Observations	99516	99516	99516	63657	85572	99516	99516	99516	63657	85572
Adj. *R*-sq	0.658	0.660	0.663	0.646	0.665	0.695	0.701	0.698	0.679	0.686

Panel B: Alternative measures for firm capital structure and financing decisions

	Ln(total debt)	Total bonds/Total book assets	Total loans/Total book assets	Equity issuance
	(1)	(2)	(3)	(4)
Consolidation	0.205***	0.015***	-0.007**	-0.001
	(3.72)	(4.85)	(-2.21)	(-0.06)
Firm and loan controls	Yes	Yes	Yes	Yes
Loan and quarter FEs	Yes	Yes	Yes	Yes
Observations	99516	99516	99516	99516
Adj. *R*-sq	0.712	0.507	0.343	0.526

Table 5
Cross-sectional variation of the effect of bank consolidation

This table shows how the effect of bank M&As varies with characteristics of firms and banks. The dependent variables in Panels A, B, and C are *Book Leverage*, *Total bonds/Total book assets*, and *Total loans/Total book assets*, respectively. Columns (1)-(4) in each panel examine how the effect of bank M&As varies with borrowers' access to alternative finance. Columns (5) and (6) in each panel examine how the effect of bank M&As varies with bank M&A idiosyncrasy. *Consolidation* is an indicator variable equal to one if the lead arranger of a firm has completed the M&A deal by quarter t and zero otherwise. *Single bank relationship* is an indicator variable equal to one if the firm has a lending relationship with only one lead arranger. *Fewer local banks* is an indicator variable equal to one if the number of alternative banks located in the MSA or rural county where the firm is headquartered is below the sample median. *High relationship intensity* is an indicator variable equal to one if the proportion of the borrower's total loans contributed by the loan facility is above the sample median. *Bank nondependent firms* is an indicator variable equal to one if the firm receives an S&P long-term domestic issuer credit rating. *Mega Mergers* is an indicator variable equal to one if both the acquirer and the target have total assets of more than \$10 billion. *High Market Overlap* is an indicator variable equal to one if the geographic overlap of markets between the acquirer and the target - *Market Overlap* is above the sample median, while *Market Overlap* is defined in Eq. (3). Partition variables are not tabulated for brevity. Firm and loan-level control variables are included in all regressions in all panels. Appendix A provides variable definitions. Continuous variables are winsorized at the 1st and 99th percentiles. Standard errors are clustered at the firm level. t-statistics are reported in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

Panel A: Cross-sectional effect on *Book Leverage*

	Does the effect vary with borrowers' access to alternative finance?				Does the effect vary with bank M&A idiosyncrasy?	
	Single vs. multiple banking relationship firms	More vs. fewer local alternative banks	High vs. low relationship intensity	Bank-dependent vs. nondependent firms	Mega vs. Non-mega mergers	High vs. low market overlap
	(1)	(2)	(3)	(4)	(5)	(6)
Consolidation	0.007	0.012	0.017***	-0.006	0.011*	0.019***
	(0.93)	(1.27)	(2.61)	(-1.13)	(1.68)	(2.77)
Consolidation × Single bank relationship	0.029***					
	(5.06)					
Consolidation × Fewer local banks		0.025***				
		(4.59)				
Consolidation × High relationship intensity			0.022***			
			(3.25)			
Consolidation × Bank nondependent firms				0.038***		
				(4.62)		
Consolidation × Mega mergers					0.030***	
					(4.91)	
Consolidation × High market overlap						0.027***
						(3.89)
Firm and loan controls	Yes	Yes	Yes	Yes	Yes	Yes
Loan and quarter FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	99516	81758	99516	91013	99516	80325
Adj. *R*-sq	0.657	0.642	0.684	0.691	0.662	0.633

Panel B: Cross-sectional effect on *Total bonds/Total book assets*

	Does the effect vary with borrowers' access to alternative finance?				Does the effect vary with bank M&A idiosyncrasy?	
	Single vs. multiple banking relationship firms	More vs. fewer local alternative banks	High vs. low relationship intensity	Bank-dependent vs. nondependent firms	Mega vs. Non-mega mergers	High vs. low market overlap
	(1)	(2)	(3)	(4)	(5)	(6)
Consolidation	-0.003	0.005	0.009*	-0.002	0.012**	0.014***
	(-0.28)	(1.14)	(1.68)	(-0.79)	(2.42)	(3.91)
Consolidation × Single bank relationship	0.020***					
	(6.01)					
Consolidation × Fewer local banks		0.017***				
		(4.22)				
Consolidation × High relationship intensity			0.012**			
			(2.26)			
Consolidation × Bank nondependent firms				0.025***		
				(6.65)		
Consolidation × Mega mergers					0.039***	
					(5.68)	
Consolidation × High market overlap						0.022***

	Single vs. multiple banking relationship firms	More vs. fewer local alternative banks	High vs. low relationship intensity	Bank-dependent vs. nondependent firms	Mega vs. Non-mega mergers	High vs. low market overlap
						(5.73)
Firm and loan controls	Yes	Yes	Yes	Yes	Yes	Yes
Loan and quarter FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	99516	81758	99516	91013	99516	80325
Adj. R-sq	0.512	0.509	0.523	0.498	0.517	0.506

Panel C: Cross-sectional effect on *Total loans/Total book assets*

	Does the effect vary with borrowers' access to alternative finance?				Does the effect vary with bank M&A idiosyncrasy?	
	Single vs. multiple banking relationship firms	More vs. fewer local alternative banks	High vs. low relationship intensity	Bank-dependent vs. nondependent firms	Mega vs. Non-mega mergers	High vs. low market overlap
	(1)	(2)	(3)	(4)	(5)	(6)
Consolidation	-0.003	-0.005*	-0.004	-0.003	-0.006*	-0.002
	(-0.72)	(-1.70)	(-1.38)	(-0.97)	(-1.91)	(-0.35)
Consolidation × Single bank relationship	-0.011***					
	(-2.69)					
Consolidation × Fewer local banks		-0.006**				
		(-2.42)				
Consolidation × High relationship intensity			-0.013***			
			(-2.81)			
Consolidation × Bank nondependent firms				-0.009**		
				(-2.56)		
Consolidation × Mega mergers					-0.015***	
					(-3.87)	
Consolidation × High market overlap						-0.012***
						(-2.63)
Firm and loan controls	Yes	Yes	Yes	Yes	Yes	Yes
Loan and quarter FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	99516	81758	99516	91013	99516	80325
Adj. R-sq	0.348	0.345	0.352	0.344	0.330	0.351

Table 6
The effect of bank consolidation on loan prices and firm-bank relationship

This table presents evidence on the effect of bank M&As on loan prices and firm-bank relationship. The dependent variables in columns (1) and (2), and (3) and (4) are *Loan Spread* and *Relationship Termination*, respectively. *Loan Spread* is the all-in-drawn spread retrieved from DealScan, defined as the sum of the spread of the loan facility over London Interbank Offered Rate (LIBOR) and any annual fees paid to the lender group. *Relationship Termination* is an indicator variable for whether the lending relationship between the firm and the lead bank is discontinued. *Consolidation* is an indicator variable equal to one if the lead arranger of a firm has completed the M&A deal by quarter t and zero otherwise. *Acquirer* is an indicator variable equal to one if the lead arranger of a firm has completed the acquisition deal by quarter t and zero otherwise. *Target* is an indicator variable equal to one if the lead arranger of a firm has completed the deal of being acquired by quarter t and zero otherwise. Appendix A provides variable definitions. Continuous variables are winsorized at the 1st and 99th percentiles. Standard errors are clustered at the firm level. t-statistics are reported in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

	Loan spread (basis points)		Relationship termination	
	(1)	(2)	(3)	(4)
Consolidation	5.628**		0.008	
	(2.11)		(0.72)	
Acquirer		5.309**		0.002
		(2.06)		(0.15)
Target		6.255***		0.011
		(2.73)		(1.43)
Ln(total book assets)	-1.513	-1.512	-0.020*	-0.022*
	(-1.26)	(-1.23)	(-1.69)	(-1.72)
Market-to-book ratio	0.905	0.905	0.002	0.001
	(0.62)	(0.50)	(0.64)	(0.40)
Profitability ratio	11.362***	11.358***	-0.058*	-0.058**
	(5.03)	(5.04)	(1.95)	(1.97)
Tangibility ratio	9.705***	9.683***	-0.025	-0.027
	(6.17)	(6.20)	(-1.01)	(-1.13)
Dividend payer indicator	1.213	1.211	0.024	0.018
	(0.52)	(0.54)	(0.62)	(0.69)
Loan amount/Borrower assets	-8.250***	-8.280***	-0.038*	-0.038*
	(-7.73)	(-7.92)	(-1.75)	(-1.76)
Term to Maturity	-1.591	-1.592	-0.047	-0.047
	(-1.56)	(-1.61)	(-1.32)	(-1.36)
Loan fixed effects	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes
Observations	99516	99516	99516	99516
Adj. R-sq	0.539	0.521	0.353	0.355

Table 7
The relation between bank consolidation and borrowing firms' real outcomes

This table reports results from Eq. (4) on the relation between borrowing firms' real outcomes and lead arrangers' M&As. The dependent variables in columns (1) to (3) are as follows: *Capital expenditures/Total book assets* is the ratio of capital expenditures to the book value of total assets; *Cash/Total book assets* is the ratio of cash and cash equivalents to the book value of total assets; and *Stock Annual Return* is the return on the borrowing firm's stock over the calendar year. *Consolidation* is an indicator variable equal to one if the lead arranger of a firm has completed the M&A deal by year t and zero otherwise. Appendix A provides variable definitions. Continuous variables are winsorized at the 1st and 99th percentiles. Standard errors are clustered at the firm level. t-statistics are reported in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

	Capital expenditures/Total book assets	Cash/Total book assets	Stock annual return
	(1)	(2)	(3)
Consolidation	0.008	0.013**	-0.027
	(0.25)	(2.28)	(-0.36)
Ln(total book assets)	-0.142***	-0.008***	-0.005
	(-2.87)	(-4.62)	(-1.35)
Market-to-book ratio	0.089***	0.017***	0.002
	(5.10)	(4.59)	(0.54)
Profitability ratio	0.061***	-0.011	0.050***
	(3.86)	(-0.47)	(12.61)
Tangibility ratio	-0.573***	0.162***	-0.015
	(-7.78)	(6.01)	(-0.67)
Dividend payer indicator	-0.049***	0.005*	0.153***
	(-6.22)	(1.72)	(9.47)
Loan amount/Borrower assets	0.010***	-0.021	-0.038*
	(4.33)	(-1.06)	(-1.82)
Term to Maturity	0.005	-0.002	-0.000
	(0.36)	(-0.22)	(-0.12)
Loan fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Observations	30873	30873	30873
Adj. *R*-sq	0.575	0.426	0.231