

The Real Effects of Universal Banking: Does Access to the Public Debt Market Matter?*

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Abstract

I analyze the impact of the formation of universal banks on corporate investment by looking at the gradual dismantling of the Glass-Steagall Act's separation between commercial and investment banking. Using a sample of US firms and their relationship banks, I show that firms curtail debt issuance and investment after positive shocks to the underwriting capacity of their main bank. This result is driven by unrated firms and is strongest immediately after a shock. These findings suggest that universal banks may pay more attention to large firms providing more underwriting opportunities while exacerbating financial constraints of opaque firms, in line with a shift to a banking model based on transactional lending.

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1 Introduction

The recent financial crisis has reignited the debate on the desirability of the separation between commercial and investment banking once contained in the Glass-Steagall Act of 1933. This separation was gradually removed starting in the 1980s in a deregulatory process that ended with the Financial Services Modernization Act of 1999. The deregulation was widely supported back then, in the hope of efficiency gains from information production and monitoring, and improved access to capital markets by corporations. More recently, however, these claims have been brought into question by observers, voicing concern about excessive bank bargaining power and a decline in the quality of bank-firm relationships (e.g., [Carow, Kane, and Narayanan, 2011](#); [Wilmarth, 2009](#)).¹ In this context, the Volcker Rule contained in the Dodd-Frank Act of 2010 – which restricts proprietary trading and private equity activities by commercial banks – can be seen as a partial rollback of the previous deregulation ([Keppo and Korte, 2016](#)).

This paper focuses on one particular aspect of the deregulation of the 1980s and 1990s, namely the repeal of the Glass-Steagall Act’s provisions that limited the joint supply of private lending and underwriting services by commercial banks.² Though the commercial banks’ entry into the underwriting market has attracted much academic interest, the evidence on the effect on firms’ access to finance is not conclusive, especially so for small and opaque borrowers (e.g., [Gande, Puri, Saunders, and Walter, 1997](#); [Shivdasani and Song, 2011](#)). A number of papers in this area analyze bond issue- and loan-level data for firms that access the bond market, but few studies explore the consequences of the deregulation for real corporate policies. Among them, [Neuhann and Saidi \(2018\)](#) show that, after deregulatory shocks, universal banks’ client firms experience long-lasting

¹See also, for instance, [Financial Times \(2012\)](#).

²The provisions of the Glass-Steagall Act restricting banks’ ability to hold equity stakes in borrowing firms remained in place (e.g., [Banerji, Chen, and Mazumdar, 2002](#)). The study of this facet of universal banking activity is thus outside of the scope of this paper.

increases in volatility, productivity, and investment attributable to economies of scope in lending and underwriting.

I complement this evidence by examining the short-term impact of the formation of universal banks on the investment policy of US non-financial public corporations. My analysis focuses on how a firm's short-term investment reaction relates to its ability to access the public debt market. Firms that do not access the public debt market are generally smaller, more opaque, and rely more on relationship lending. These firms' access to external finance is a primary concern for policy-makers. If market imperfections made the supply of capital not perfectly elastic, then the deregulation may have affected firms' investment through its impact on the availability of external finance.

The deregulation may benefit corporate borrowers by making external finance less costly, thanks to the economies of scope realized by universal banks and to more intense competition for underwriting mandates between commercial and investment banks (Gande, Puri, and Saunders, 1999; Puri, 1996). Neuhann and Saidi (2018) show that these forces prevail in the long-term.

On the other hand, once they become universal, commercial banks may transition from relational to transactional lending, thus weakening existing bank-firm relationships and especially so in the short-term. Such a transition could be particularly detrimental to opaque borrowers (Ferri and Murro, 2015). Universal banks may pay more attention to large and transparent firms that provide more underwriting opportunities. Small and opaque firms, by contrast, could find themselves matched to a bank whose lending technology no longer fits their characteristics and become credit constrained. The formation of universal banks may be particularly harmful for small and opaque firms' access to finance if realized through mergers (Carow, Kane, and Narayanan, 2006; Degryse, Masschelein, and Mitchell, 2011).

I conduct the analysis over a firm-bank panel for the period 1988 to 2007. Assessing

the impact of the gradual dismantling of the separation between commercial and investment banking poses a methodological problem, as the deregulation was an economy-wide shock. To deal with this issue, I identify each firm's main bank and consider the instances when such a bank expands its presence in the underwriting market. The events that increase a bank's presence in the underwriting market include mergers and acquisitions (M&As) with pure investment banks, M&As with banks that are already universal, and the establishment of securities subsidiaries. I estimate the impact of the rise of universal banking on corporate investment and debt issuance choices by exploiting the staggered nature of these events.

I find that firms cut capital expenditures by 4.3% in the three years following positive shocks to their main bank's underwriting capacity. Consistent with an impairment of borrowing firms' access to finance, also net debt issuance falls over the same time window by 1.1% of total assets, whereas no significant effect is observed in the year before a shock. These adverse effects mainly stem from unrated firms, which tend to be more opaque and bank-dependent. This evidence points to universal banks paying more attention to firms providing more underwriting opportunities. The reduction in capital expenditures and issuance activity is temporary over the whole sample, being largely absorbed after three years, in line with studies on the impact of bank M&As on borrowing firms ([Di Patti and Gobbi, 2007](#)).

I then show that the decline in net debt issuance descends from a contraction of bank credit, which takes place at the extensive margin, i.e., through a reduction in the number of loan deals issued to firms. To put it differently, borrowing firms whose main bank expands in the underwriting market are more likely to see their lending relationship terminated. In line with a shift to a transactional approach to lending, commercial banks that enhance their underwriting capacity tend to rely more on hard information in monitoring activities, as indicated by their increased reliance on financial covenants.

All these findings are more marked for non-investment grade firms.

An important concern for the main analysis is the confounding role of the bank branching deregulation (inter- and intra-state) that took place between the 1970s and the 1990s (e.g., [Jayaratne and Strahan, 1996](#); [Kroszner and Strahan, 1999](#)). Whereas I focus on events that expanded banks' scope of operations and that are thus more likely to be triggered by the dismantling of the Glass-Steagall Act, it is possible that some of these events (M&As, in particular) were actually driven by the concomitant branching deregulation. I thus refine the baseline tests by distinguishing among the different ways in which banks can enhance their underwriting capacity. First, I examine the impact on investment and financing policy of a firms' main bank achieving the status of universal bank. Second, I restrict the attention to pure shocks to a commercial bank's underwriting capacity, i.e., mergers with pure investment banks and the establishment of securities subsidiaries. Especially this second type of events is arguably less likely to directly stem from the branching deregulation. For both types of events, the evidence is overall supportive of the baseline results. It is also worth noticing that the bank branching deregulation, with its unambiguous positive effect on credit supply (e.g., [Chu, 2018](#), and references therein), should bias me against finding a negative effect on the investment and financing policies of borrowing firms.

Yet, the approach above builds on one main identifying assumption, namely that in a given period shocks to banks' underwriting capacity do not correlate differently with the investment opportunities of firms whose main bank expands into the underwriting market relative to firms whose main bank does not. In other words, it requires random matching between borrowing firms and banks. Whereas the US banking consolidation of the 1990s was largely a by-product of deregulatory shocks ([Pilloff, 2004](#); [Harford, 2005](#)) and thus arguably exogenous to individual borrowing firms' policies, this is a strong assumption (e.g., [Schwert, 2018](#)). Therefore, in the spirit of [Neuhann and Saidi \(2018\)](#), I use the

1996-1997 loosening of restrictions on commercial banks' securities subsidiaries as a quasi-natural experiment. In particular, the cap on revenues from underwriting and dealing services over total revenues was raised from 10% to 25%, and most of the regulatory firewalls between parent commercial banks and securities subsidiaries were removed. I argue that these restrictions were binding only for the most active commercial banks on the underwriting market. The treated group thus includes firms whose main bank was an active underwriter at the time of the 1996-1997 deregulation. The deregulation provides a plausibly exogenous shock in the banks' scope of operations. Again, I obtain results that are generally consistent with the baseline findings.

All in all, the analysis suggests that the formation of universal banks may have a transitory negative impact on borrowing firms' investment and financing activity. Consistent with universal banks focusing on large and transparent firms that provide more underwriting opportunities, I illustrate that unrated firms are the most adversely affected. Such firms, indeed, are more likely to suffer from a shift to the transactional lending model.

This paper contributes to two strands of literature. First, it relates to the literature on the consequences of universal banking for non-financial corporations. While most of the research on commercial banks' entry into the underwriting market focuses on bond issue- and loan-level data (e.g., [Gande et al., 1999](#); [Sufi, 2004](#)), limited evidence exists on the real consequences of universal banking at the firm-level.³ Using German data for the period 1903-2013, [Fohlin \(1998\)](#) shows that client firms of universal banks exhibit higher investment-cash flow sensitivities. [Vinas \(2016\)](#), starting from a sample of French firms between 2004 and 2009, documents that firms with lending relationships with universal banks experienced a sharper decline in credit and investment than other firms following the subprime crisis. [Xie \(2007\)](#), in a cross-country setting, illustrates that universal banking is associated with lower firm growth. Few studies, however, examine

³Focusing on Japan, [Takahashi \(2014\)](#) investigates how universal banking affects outside investors by looking at earnings forecasts by commercial bank-affiliated analysts.

the firm-level effects of universal banking for the US case. [Carow et al. \(2011\)](#), in a regulatory event study around the passage of the Financial Services Modernization Act of 1999, illustrate that credit-constrained firms experience abnormally negative stock returns. [Neuhann and Saidi \(2018\)](#) find that firms borrowing from universal banks have become more volatile and invest more in the long-run. [Wang, Yin, Zhang, and Zhen \(2019\)](#) observe that universal banks' borrowers innovate less. I add to this strand of the literature by assessing the short-term impact of the formation of universal banks both on investment and financing of rated and unrated firms. My analysis sheds light on the immediate consequences of the deregulation for firms depending on their access to the public debt market.

Second, a number of studies examine the real effects of bank relationships. Among others, [Houston and James \(2001\)](#) find that bank-dependent firms have higher investment-cash flow sensitivities. Using Japanese data, [Kang and Stulz \(2000\)](#) provide evidence that bank-dependent companies curtail investment following adverse shocks to their relationship lender. Several recent papers provide systematic evidence that a bank's health impacts its client firms' policies in the US context (e.g., [Chava and Purnanandam, 2011](#); [Chodorow-Reich, 2013](#); [Aslan, 2016](#); [Chodorow-Reich and Falato, 2019](#)).⁴ Similarly to this paper, [Chen and Vashishtha \(2017\)](#) devise an identification strategy based on mergers of relationship lenders, showing that they positively affect borrowing firms' disclosure.

The remainder of this paper is organized as follows. Section 2 discusses the background of the deregulation process and its possible real consequences for firms. Section 3 presents the empirical approach, data sources, panel construction, and summary statistics. Section 4 reports the results of the empirical analysis. Section 5 concludes.

⁴For an overview of this literature, see [Chodorow-Reich \(2013\)](#) and [Chodorow-Reich and Falato \(2019\)](#).

2 The end of the separation between commercial and investment banking

This section first provides some institutional background on the deregulation process that led to the repeal of the separation between commercial and investment banks. Second, the possible real consequences for firms of the deregulation are discussed.

2.1 Legal background

The Glass-Steagall Act of 1933 restricted commercial banks from being “engaged principally”, either directly or through subsidiaries, in underwriting and dealing in securities. This effectively separated commercial and investment banking. However, these restrictions did not apply to foreign banks until the approval of the International Banking Act of 1978. Several foreign commercial banks owning affiliates involved in such activities as of 1978 were thus allowed to continue their operations (*grandfathered securities affiliates*).⁵

This legislation underwent a gradual dismantling process.⁶ In 1987, amid concerns that US banks were not competing on a level playing field with foreign institutions holding grandfathered securities affiliates, Section 20 of the Glass-Steagall Act, which prohibited commercial banks from being affiliated with companies engaged principally in underwriting and dealing in securities, was reinterpreted more loosely by the Federal Reserve Board (henceforth, the Board). For the first time the expression “engaged principally” was read as a 5% cap on the fraction of revenues the securities affiliates could derive from underwriting and dealing in bank-ineligible securities, i.e., commercial paper, municipal revenue bonds, mortgage-backed securities (*tier-one securities*). In releasing this ruling, the Board authorized the formation of three of these securities affiliates of commercial

⁵See, for instance, “National Treatment Study: Report to Congress on Foreign Government Treatment of U. S. Commercial Banking and Securities Organizations” by the United States Treasury Department, pp. 29-30.

⁶See, e.g., [Kwan \(1997\)](#), [Narayanan, Rangan, and Rangan \(2004\)](#), and Federal Register, Volume 61, Number 251, pp. 68750-68751.

banks (*Section 20 subsidiaries*).⁷ In 1989, the Board raised the revenue cap to 10% and allowed several Section 20 subsidiaries to underwrite and deal also in corporate debt and equity securities (*tier-two securities*).

After a proposal from August 1, 1996 (Neuhamm and Saidi, 2018), the Board released a ruling substantially increasing the revenue cap to 25% on December 30, 1996, which became effective on March 6, 1997.⁸ Following the same initial proposal from August 1, 1996, the Board on August 27, 1997 removed many of the firewalls initially imposed in 1987 and 1989 between commercial banks and their Section 20 subsidiaries to limit the potential conflict of interests arising from the exchange of information across divisions. This measure became effective on October 27, 1997.⁹ The 25% limit de facto allowed commercial banks to merge even with the largest securities firms, spurring a wave of acquisitions. An important episode was the merger of Citicorp and Travelers Group, a financial conglomerate controlling the bulge-bracket investment bank Salomon Smith Barney.¹⁰

Finally, in November 1999, Congress passed the Financial Modernization Act (also known as the Gramm-Leach-Bliley Act), repealing the remaining restrictions for commercial banks to engage in non-banking activities imposed by the Glass-Steagall and Bank Holding Act.¹¹ This reform allowed bank holding companies to acquire the *financial holding company* status, and carry out securities activities through a so-called *Section 4(k)(4)E underwriting and dealing subsidiary* not subject to the limits set for Section 20 subsidiaries.

⁷The bank holding companies that obtained this authorization were Citicorp, J.P. Morgan & Co., and Bankers Trust.

⁸See Federal Register, Volume 61, Number 251, pp. 68750-68756.

⁹See Federal Register, Volume 62, Number 166, pp. 45295-45307.

¹⁰See <https://www.federalreserve.gov/boarddocs/press/bhc/1998/19980923/19980923.pdf>.

¹¹Carow et al. (2011) provide a detailed description of the events leading to the enactment of the Financial Services Modernization Act.

2.2 Real consequences of the deregulation

As long as there were capital market frictions making the supply of capital not perfectly elastic, the deregulation, which plausibly affected firms' access to finance, influenced corporate investment, in line with the standard Modigliani-Miller argument. What is less clear is the direction of such an effect. If the deregulation improved firms' access to the public debt market, then one should expect an increase in investment. Indeed, there is evidence that access to this source of financing, as proxied by the existence of an issuer rating, leads firms to lever up (Faulkender and Petersen, 2006), and, in turn, invest more (Harford and Uysal, 2014). Sufi (2009) provides similar results for the introduction of a syndicated bank loan rating. Opposite effects ought to be observed if the deregulation reduced access to finance.

There are several reasons why the deregulation may have enhanced firms' access to the public debt market. Universal banks can reap economies of scope as they both lend and underwrite, making the financial system more efficient. Thanks to their monitoring activity over loans, they are believed to suffer less from information asymmetry, providing a stronger "certification effect" on their underwritings than pure investment banks (Laux and Walz, 2009). Similarly, universal banks can exploit economies of scope by offering a wide range of financial services to client firms as their needs change throughout the life cycle (Neuhann and Saidi, 2018). Moreover, the entry of commercial banks into the underwriting market might increase competition, thus driving down fees (Gande et al., 1999).

One may also expect that the deregulation negatively affected corporate borrowers, particularly the most opaque ones. When commercial banks enter the underwriting market, and especially so through M&As, a transition to a more transaction-based banking model may take place, thus weakening existing firm-bank relationships. Large and diversified banks, indeed, tend to rely more on hard than soft information, penalizing firms with

information problems that depend on traditional, relational lending (Elyasani and Goldberg, 2004; Berger, Miller, Petersen, Rajan, and Stein, 2005; Berger and Black, 2011). In other words, commercial banks, once they become universal, may pay more attention to large and transparent firms. On a related note, as M&As played a major role in the formation of universal banks in the US, it is possible that this resulted in higher banks' bargaining power from increased concentration both in the loan market and in the underwriting market.¹² Such a conduct would be especially harmful for opaque borrowers, which face higher costs of switching relationship banks (e.g., Schenone, 2010).

The existing evidence on the short-term consequences of the deregulation for firms' access to finance is not conclusive, especially for opaque borrowers. Consistent with the economies of scope argument, Neuhauss and Saidi (2018) illustrate empirically that universal banks' client firms exhibit long-term increases in volatility, productivity, and capital expenditures. Puri (1996) provides evidence in favor of the certification effect in the pre-Glass-Steagall Act period, finding that securities underwritten by universal banks were characterized by higher prices. Gande et al. (1997) illustrate that for the period 1993 through 1995, public debt securities underwritten by Section 20 subsidiaries displayed lower yields than those underwritten by investment banks, and that this benefited opaque firms, consistent with the existence of a certification effect.¹³

In line with universal banks paying more attention to large and transparent borrowers, Ferri and Murro (2015) show that in the Italian market opaque borrowers become more credit constrained when their main bank switches from the relational to the transactional banking model (usually because of a merger or technological innovation). Gropp and

¹²Moreover, as argued by Kanatas and Qi (2003), universal banks, thanks to cost advantages due to information monopolies, might "lock in" borrowers jointly offering lending and underwriting services, thus increasing their bargaining power with client firms (tying practices). However, Calomiris and Pornrojngkool (2009) find limited evidence of such practices.

¹³Similarly, Yasuda (2005) documents that public debt issues underwritten by relationship lenders enjoy lower fees. Schenone (2004) show that IPOs underwritten by relationship lenders are less prone to underpricing.

[Park \(2016\)](#) illustrate that commercial banks' involvement in investment banking may reduce their attention to traditional lending activities, thus leading to an increase in problem loans. [Neuhann and Saidi \(2016\)](#) instead document that enlarged bank scope may not weaken banks' monitoring incentives on syndicated loans, in a context of increased participation by non-bank intermediaries to this market.

With regards to the consequences of bank consolidation – which is conducive to a more transactional approach to lending ([Chen and Vashishtha, 2017](#)) –, there is international evidence that smaller corporate borrowers suffer from bank mergers (e.g., [Degryse et al., 2011](#); [Di Patti and Gobbi, 2007](#)). In the US case, whereas [Erel \(2011\)](#) finds an average negative effect of commercial banks' mergers on loan spreads, [Carow et al. \(2006\)](#), who focus only on mergers between large banks (i.e., the most relevant ones for the creation of universal banks), find that they adversely affect opaque borrowers in an event study framework.

Concerning the competition channel, [Gande et al. \(1999\)](#) present empirical support for commercial banks' entry increasing competition in the underwriting market. By contrast, [Roten and Mullineaux \(2002\)](#) fail to find evidence consistent with favorable competitive effects of deregulation on yields and fees. Adverse competitive effects might be particularly strong for firms that do not access the public debt market. Indeed, whereas most of the studies above focus on rated borrowers, [Parthasarathy \(2007\)](#) illustrates that unrated firms do not benefit from universal banking when it comes to accessing public capital markets.

The aim of this paper is to evaluate the net firm-level real effects of the formation of universal banks with a special emphasis on opaque firms. Such an analysis speaks to the consequences of the deregulation for relationship lending.

3 Empirical approach and data

3.1 Empirical approach

It is problematic to evaluate the real effects of the end of the separation between commercial and investment banking. The reforms described in Section 2.1, unlike the removal of inter- and intra-state branching restrictions (e.g., [Jayaratne and Strahan, 1996](#); [Kroszner and Strahan, 1999](#)), were nationwide shocks, which makes it impossible for researchers to conduct a standard difference-in-differences analysis around their passage.

To identify appropriate counterfactuals, I look at those instances when a commercial bank expands its presence in the underwriting market. The relevant events are M&As with investment banks, M&As with banks that are already universal, and the establishment of Section 20 subsidiaries with tier-two securities authorization. In line with the literature, I assume that the lending relationships of target banks are inherited by the acquiring banks following M&As.

Then, I build a panel of firms and their main relationship banks, following [Carvalho, Ferreira, and Matos \(2015\)](#) and [Wardlaw \(2011\)](#). Based on data on outstanding loans, for each firm-period I identify the main bank (see below for a detailed discussion).¹⁴ Given this panel structure, I exploit the staggered nature of the events that increased the underwriting capacity of a firm's main bank to study their effect on corporate investment. To establish a sounder link with borrowing firms' policies, I focus on the short-term effects of such events (up to three years after the event). For the same reason, besides estimating the effect on investment, I analyze the impact of these shocks on the firm-level financing policy. This amounts to evaluating not only the changes in supply of capital by the main bank but also the response of other banks or financiers following the event ([Di Patti and Gobbi, 2007](#)).

¹⁴Though some firms have multiple bank relationships, I find that on average the main bank acts as the lead bank on 92% of total outstanding loans.

More specifically, I estimate specifications of this form:

$$y_{f,t} = \beta \cdot UW_{b,t} + \boldsymbol{\theta} \mathbf{x}_{f,t} + \gamma_{f,b} + \gamma_t + \epsilon_{f,t}, \quad (1)$$

where f , b , and t denote the borrowing firm, its main bank, and the year, respectively. As baseline dependent variables $y_{f,t}$, I use the firm’s investment rate and net debt issuance activity. $UW_{b,t}$, the variable of interest, indicates events that increase the underwriting capacity of the firm’s main bank b . Throughout the paper, I define such events in different ways (M&As enhancing the bank’s underwriting capacity, acquisition of the universal bank status, establishment of a Section 20 subsidiary). To capture short-term effects, $UW_{b,t}$ takes a value of one in the first three years following the event of interest.

$\mathbf{x}_{f,t}$ is a vector of firm-level covariates including, at a minimum, lagged Tobin’s q (to control for the firm’s investment opportunities) and internal cash flows.¹⁵ In the preferred specification, firm-bank fixed effects ($\gamma_{f,b}$) control for time-invariant unobservable features of each lending relationship and absorb the impact of firms switching lenders, allowing identification of the effect of shocks to the bank’s underwriting capacity throughout the duration of a firm-bank relationship.¹⁶ Year fixed effects (γ_t) absorb variation in macroeconomic conditions. Standard errors are heteroskedasticity-consistent and clustered at the firm-level.¹⁷

The parameter of interest is β . A positive (negative) β estimate would point to a mitigation (deterioration) of the borrowing firm’s financial frictions associated to its main bank’s expansion into the underwriting market.

This econometric approach hinges on two identifying assumptions. The first is that

¹⁵When the dependent variable is investment, the internal cash flow is scaled by lagged fixed assets. For other dependent variables, it is scaled by lagged total assets in line with [Chen and Chen \(2012\)](#).

¹⁶Firm-bank fixed effects are defined based on the eventual parent entity the bank belongs to as of the end of the sample period, to better account for potential anticipation of mergers.

¹⁷Throughout the empirical analysis, I estimate regressions models using the Stata package REGHDFE by [Correia \(2018\)](#).

the shocks to main banks' underwriting capacity do not affect differently the investment opportunities of treated and control firms in a given period, allowing to estimate the effect of these shocks on firm-level investment. This assumption can be justified on the grounds that the US banking consolidation of the 1990s was mainly driven by deregulatory and technological shocks, rather than by borrowers' performance (Pilloff, 2004; Harford, 2005; Chen and Vashishtha, 2017).

The second assumption is that borrowing firms face switching costs, limiting their ability to establish new lending relationships, should the main bank restrict their access to finance. This assumption seems especially accurate for opaque borrowers, such as junk-bond issuers and unrated firms (e.g., Schenone, 2010), which have difficult or no access to the public debt market as an alternative source of finance. To focus on such firms, in complementary tests I refine the analysis by augmenting equation (1) with interaction terms between $UW_{b,t}$ and the rating status of the firm:

$$y_{f,t} = \beta_1 \cdot UW_{b,t} + \beta_2 \cdot UW_{b,t} \times Junk_{f,b} + \beta_3 \cdot UW_{b,t} \times Unrated_{f,b} + \theta \mathbf{x}_{f,t} + \gamma_{f,b} + \gamma_t + \epsilon_{f,t}, \quad (2)$$

where $Junk_{f,b}$ and $Unrated_{f,b}$ are indicator variables equal to one if firm f at the initiation of the relationship with bank b has a junk rating or no rating on its debt, respectively.¹⁸ Thus, specification (2) allows to capture heterogeneous effects of shocks to banks' underwriting capacity on corporate policies across borrowing firms.

The parameter β_1 captures the change of a given corporate policy associated with an increase of the main bank's underwriting capacity for investment-grade issuers. The parameter β_2 (β_3) measures the same change for junk-rated (unrated) firms relative to the reference group of investment-grade issuers. To test whether the overall change in the

¹⁸Note that the coefficients for $Junk_{f,b}$ and $Unrated_{f,b}$ cannot be estimated, because they are absorbed by bank-firm fixed effects.

corporate policy of interest is significantly different from zero for junk-rated (unrated) firms, I conduct F -tests on the sum of β_1 and β_2 (β_3).

Finally, to reduce concerns about the validity of the identifying assumptions above, I exploit the 1996-1997 increase of revenue limits and removal of firewalls for Section 20 subsidiaries as a quasi-natural experiment. These deregulatory shocks were nationwide, therefore, to identify a treatment and a control group, I rely on heterogeneity in treatment. I define as treated the firms whose main bank had a substantial share of the public debt underwriting market at the time of the deregulation, for which the restrictions were especially binding. Given the distinction between treated and control institutions, the 1996-1997 deregulation lends itself to a standard difference-in-differences design.

3.2 Data and sample construction

The firm-bank matched panel is based on loan data from the Loan Pricing Corporation's Dealscan database, non-convertible debt issues data from the Thomson Financial's SDC Platinum Global New Issues database, ratings data from the Standard and Poor's Compustat database, and accounting and stock data from the Center for Research in Security Prices/Compustat merged (CCM) database for the period 1988 to 2007. The sample begins in 1988, because Dealscan's coverage up to 1987 is extremely limited. The sample ends in 2007, so that results are not confounded by the recent financial crisis, and because the deregulation had arguably already exerted its effect on the banking sector by 2007. I focus on US firms excluding financial institutions, utilities, and firm-years with missing information on assets, financial debt, stock price, or sales. Moreover, I remove from the sample firms with less than \$10 million of total assets.

I collect information on mergers of commercial banks with investment banks (or with banks that are already universal) from the Thomson Financial's SDC Platinum Mergers and Acquisitions database, relying on the effective date of completion of each

deal. I then check each transaction using the Standard and Poor’s Capital IQ (CIQ) M&A/Private Placements table and information from existing studies (Bao and Edmans, 2011; Ljungqvist, Marston, and Wilhelm, 2006; Cornett, Ors, and Tehranian, 2002; Gande et al., 1999). From the Federal Reserve Bulletins, I retrieve the dates of authorization by the Board to underwrite and deal in tier-two securities through a Section 20 subsidiary.

Dealscan provides data on syndicated and, to a lesser extent, sole-lender loans (Hale and Santos, 2008), with an extensive (though not complete) coverage of commercial loans to public corporations. Dealscan covers 50% to 75% of the US commercial loan volume in the early 1990s, and between 80% and 90% after 1992 (e.g., Carey and Nini, 2007; Chava and Roberts, 2008). I restrict my sample to loans denominated in US dollars and merge Dealscan with Compustat data using the link file made available by Michael Roberts (Chava and Roberts, 2008), which contains public firms only. Indeed, whereas private firms might be especially sensitive to the deregulation, Dealscan covers most of the lending relationships only for public firms. I merge debt issues data from SDC with CRSP and Compustat using historical CUSIP codes.

Given the sparse availability of data on loan shares of the syndicate members in the early years of the Dealscan sample (Carvalho et al., 2015), I allocate each deal (or package), which may contain more than one credit facility (or loan), to the lead arranger bank.¹⁹ Whereas this is admittedly a relatively strong assumption, it is worth noticing that the lead arranger “is the bank that conducts due diligence, handles all the payments, and monitors the loan” (p. 305, Ivashina, 2009), i.e., it is the main relationship lender. In other words, it is sensible to see the lead arranger as the bank in charge of the entire lending relationship. In case of a co-led syndicate, the value of each credit facility within the deal is assigned to the different lead arrangers on a pro rata basis. To make data collection less burdensome, the sample is restricted to the top 80 lead arrangers by the

¹⁹I identify the lead arranger following Ivashina (2009).

number of deals year-by-year. All the lead arrangers with more than ten deals over the sample period are also included. The final sample covers between 94% and 98% of the total Dealscan's loan volume from 1988 to 2007.

All subsidiaries reported as lead arrangers are matched to their ultimate parent company. In particular, I trace the history of mergers and acquisitions for each financial institution, which is thus linked to its historical ultimate parent company in each period. In line with the literature (e.g., [Bharath, Dahiya, and Srinivasan, 2007](#)), I assume that the lending relationships of target institutions are inherited by acquiring financial institutions following mergers. For each ultimate parent financial institution, I hand-collect information on the date at which it becomes universal, which generally happens through mergers or through the establishment of a Section 20 subsidiary. In a limited number of cases, however, commercial banks become universal only after the Financial Services Modernization Act of 1999 opening for the first time a securities subsidiary under Section 4(k)(4)E, whereas there are several foreign banks that are universal throughout the whole sample period, as they own securities subsidiaries grandfathered under the International Banking Act of 1978. Given that my sample period ends in 2007, there are only two investment banks that become universal by acquiring the bank holding company status (Stifel Financial Corp. and Charles Schwab Corp.). Those that became bank holding company after 2007 (e.g., Goldman Sachs and Morgan Stanley) are classified as pure investment banks throughout the sample period.

To identify a firm's main bank in every period, first, for each facility in the deal, I compute its outstanding balance period-by-period based on the Dealscan's Facility Payment Schedule table. If the latter is missing for a facility, I assume that payments are made at quarterly frequency. Second, without distinguishing between term loans and credit lines, I aggregate outstanding credit facilities at the deal-level and, in turn, at the firm-bank level for each period. Third, I identify a firm's main bank in a given period as

the one with the largest outstanding loan balance.²⁰

In the same way, I compute the total outstanding loan balance for each firm-period. This is admittedly an approximation of bank debt, as Dealscan typically contains only information about loan origination, so that the renegotiation history of each facility cannot be traced. Hence, similarly to Wardlaw (2011), I replace the outstanding bank debt computed this way with the total debt from Compustat as soon as it exceeds it. Eventually, like Wardlaw (2011), I obtain one time-series for each firm, which is the constituent of the panel structure used for the tests below.²¹ The final panel contains 4,843 unique firms and 111 eventual parent financial groups (as of December 31, 2007).

3.3 Summary statistics

Table 1 presents summary statistics. Panel A reports the descriptive statistics for the whole sample. Investment in fixed capital and net debt issuance are the main dependent variables in the tests below. On average, capital expenditures are 30.2% of fixed capital, whereas on average net debt issuance is 2.7% of total book assets. The ratio of outstanding loans to total assets exhibits a mean of 17.2%, and the firm's main bank on average holds 91.9% of such loans, which is evidence in favor of the existence of strong lending relationships.

$UW M\&A$ is the variable of interest in the baseline analysis and is meant to capture the short-term effects of M&As enhancing the underwriting capacity of a bank. It is equal to one in the event year and in the following two years, provided that the firm does not change its main bank in the event year. To this end, I look at the mergers of a firm's main bank with investment banks or with banks that are already universal.

²⁰In case multiple banks have the same outstanding balance in a given period, as a tie-breaking rule, the firm-period is assigned to US commercial banks.

²¹If a firm's total outstanding loan balance goes to zero, I keep it in the sample for three years afterwards (if available in Compustat) to fully capture the effect of underwriting capacity shocks on corporate policies. This adjustment also allows me not to discard firm-years in between two different lending relationships.

These events include all mergers with active underwriters of public debt based on SDC data, the acquisition of Section 20 subsidiaries with tier-two securities powers, and the mergers involving investment banks compiled by [Bao and Edmans \(2011\)](#), if any of the counterparties appears in the data. I focus on public debt underwriters, given that, as pointed out by [Narayanan, Rangan, and Rangan \(2007\)](#), commercial banks have been much more successful in entering the underwriting market for public debt than for equity securities, arguably because the former is more similar to traditional lending services, which makes it easier for them to extend their scope of operations. In 10.7% of firm-years, the main bank enhances its underwriting capacity through mergers, as indicated by $UW M\&A(0)$ (where 0 means that only the event-year is considered).

Panel B reports summary statistics conditioning on the firms' rating status. The rating status of each firm-year is defined based on the Standard & Poor's issuer rating at the initiation of the lending relationship with the main bank. Following [Faulkender and Petersen \(2006\)](#), a firm is defined as unrated if Standard & Poor's does not provide neither a long- nor a short-term issuer rating. A firm is classified as investment grade if its Standard & Poor's long-term issuer rating is above BB+. Other rated firms are classified as junk issuers. The presence of a rating proxies for public debt market access, hence unrated firms are considered bank-dependent ([Chava and Purnanandam, 2011](#)). 71.7% of firm-years are classified as unrated, and 12.8% of firm-years are classified as investment-grade. As one might expect, unrated firms invest more, and are on average much smaller than rated ones and more financially constrained – based on the financial constraints measure (SA index) by [Hadlock and Pierce \(2010\)](#).²²

Panel C details the expansion of commercial banks into the debt underwriting market from 1988 to 2007. The effect of deregulation is apparent. Most of the shocks to un-

²²In Table [OA.1](#) of the Online Appendix, by examining bond issues of US firms, I do not find clear evidence that the rise of universal banking made it easier for small and opaque borrowers to access the public debt market.

derwriting capacity are observed between 1997 and 2002, and the fraction of firm-years characterized by a universal main bank increases from 55% to 83.5% between the period 1994-1996 and the period 2000-2002.

All the ratios are winsorized at the 5th and 95th percentile. Detailed definitions of the variables are given in Appendix Table A.1. All dollar amounts are expressed in 2007 dollars.

4 Results

The baseline analysis concentrates on mergers that enhance the underwriting capacity of banks, as captured by the dichotomous variable $UW\ M\mathcal{E}A$, which is equal to one in the three years following such events and zero otherwise. The reason to choose these events as the main subject of the analysis is that commercial banks are more likely to substantially enlarge their underwriting business by merging with already large, established players rather than by internal growth through a new Section 20 subsidiary or by acquiring “boutique” investment banks. Thus, I leave the analysis of these alternative ways of entering the underwriting market to supplementary tests in Section 4.2.

Table 2 studies how the mergers captured by $UW\ M\mathcal{E}A$ affect the investment and net debt issuance patterns of borrowing firms. Columns 1 and 2 examine the association between investment and $UW\ M\mathcal{E}A$ over the entire sample by estimating specification (1) with firm and bank fixed effects, and with firm-bank fixed effects, respectively. $UW\ M\mathcal{E}A$ exhibits a negative and statistically significant coefficient at the 1% level in both columns, i.e., firms decrease their capital expenditures in the event year and the following two years. The point estimate of -1.3% (relative to fixed capital) in column 2 indicates that, if a bank is involved in a merger increasing its underwriting capacity, its client firms reduce capital expenditures by 4.3% on average in the following three years, or 4.9% of a standard deviation. Hence, the effect is not only statistically significant, but also

economically sizable.

Column 3 estimates equation (2) to tease out the effect conditional on the rating status of the borrowing firm and test if junk issuers and unrated firms react more sharply to these shocks than investment-grade firms. Whereas $UW M\&A$ displays a significantly negative coefficient for junk issuers and unrated firms – which thus drive the result above –, the effect is even positive and statistically significant for investment-grade issuers (the reference group). This result suggests that following mergers enhancing their bank’s underwriting capacity, junk-rated and unrated firms experience a decline in investment relative to investment-grade ones. To assess the overall effect on investment of these firms, I also test whether the sum of coefficients of $UW M\&A$ and $UW M\&A \times Rating\ status$ is significantly different from zero by means of an F -test, which shows that the investment rate drops significantly for both groups. In particular, for unrated firms the overall effect is negative at $1.1\% - 2.8\% = -1.7\%$ (relative to fixed capital), translating into an average 5.1% decrease in capital expenditures. The effect is even larger for junk issuers.

In columns 4 to 6, I turn to net debt issuance as dependent variable, as it seems natural to think that the changes in the banking market’s structure are transmitted to investment policy through their impact on the availability of debt finance. Column 5 shows that net debt issuance falls by 1.1% of assets in the three years following a merger enhancing the main bank’s underwriting capacity, and the effect is statistically significant at the 1% level. Column 6 shows that the effect is again driven by unrated firms, whose net debt issuance activity significantly reduces relative to investment-grade issuers, and exhibit a statistically significant decline by $-0.1\% - 1.3\% = -1.4\%$ (relative to total assets). Also investment-grade and junk-rated firms issue less debt, but these effects are statistically insignificant.

Table 3 presents further tests of the consequences of mergers increasing relationship

banks' underwriting capacity for borrowing firms. Columns 1 and 4 follows an approach similar to [Bertrand and Mullainathan \(2003\)](#) for investment and net debt issuance, respectively. If the decrease in these variables is indeed triggered by mergers, there should be no significant effects in the period before. Hence, rather than $UW M\mathcal{E}A$, I now include an indicator variable equal to one in the period before the event ($UW M\mathcal{E}A (-1)$) and an indicator variable for each of the following three periods ($UW M\mathcal{E}A (0)$, $UW M\mathcal{E}A (1)$, $UW M\mathcal{E}A (2)$). Consistently with a causal interpretation, the coefficient of $UW M\mathcal{E}A (-1)$ is statistically indistinguishable from zero for both investment and net debt issuance. The effect of mergers is stronger in the first two years and then dies out. Therefore, the effects of the formation of universal banks seem to be short-lived, possibly because firms find alternative sources of finance in the long run.

Columns 2 and 5 interact $UW M\mathcal{E}A$ with a different proxy for opacity and bank-dependence, i.e., the SA index, instead of relying on the rating status. This measure of financial constraints is based on a firm's size and age, building on the intuition that larger and older firms tend to be less constrained. In line with the previous findings, the interaction of the *SA index* with $UW M\mathcal{E}A$ exhibits a negative and significant coefficient: capital expenditures and net debt issuance decrease more for constrained firms.

Columns 3 and 6 control for additional firm characteristics, such as the natural logarithm of total assets to proxy for size, Altman's Z-score to proxy for distress risk, and asset tangibility. In addition, I cluster standard errors by firm and bank, and I include Fama-French 30 industry-year fixed effects to account for heterogeneous industry sensitivity to the state of the business cycle. The sign and magnitude of the coefficient of $UW M\mathcal{E}A$ remain in line with the baseline tests.²³

These results suggest that commercial banks' gradual entry into the debt underwrit-

²³Furthermore, Table [OA.2](#) of the Online Appendix studies the consequences of mergers increasing relationship banks' underwriting capacity for other corporate outcomes, showing an increase of cash holdings driven by unrated firms (consistent with a precautionary motive). Table [OA.3](#) of the Online Appendix shows that the baseline results are robust to several sample restrictions.

ing market adversely affected borrowers, which reduced net debt issuance and investment especially in the case of non-investment-grade firms, with the effect being most pronounced immediately after the merger events. Non-investment-grade firms – which tend to be relatively small and opaque – may indeed find it more difficult to switch to alternative source of finance should, for instance, their main bank interrupt the less profitable lending relationship to favor those providing more cross-selling opportunities. The next section thus explores possible channels through which commercial bank’s expansion into the underwriting market affected borrowing firms’ policies.

Finally, it is worth noting that the sample contains only public firms. If anything, focusing on these firms should create a bias against finding an adverse effect of universal banking on firm-level investment and net debt issuance.

4.1 Economic mechanism

It is important to better understand the economic channel through which a relationship bank’s higher underwriting market share may negatively affect a borrowing firm’s ability to raise external finance and invest, especially for the most opaque ones. The theoretical discussion in Section 2.2 pinpoints one specific reason: banks expanding their underwriting business may shift to a more transaction-based banking model, which is detrimental for borrowers suffering from asymmetric information.

Table 4 tests the validity of such an hypothesis. By means of regressions of the form (1) and (2), in Panel A I look at the dynamics of the number of loan deals issued (columns 1 to 3) and of the net bank debt issuance (columns 4 to 6) of the firm around mergers enhancing the underwriting capacity of the main bank. I observe a significant reduction in the number of deals, which is particularly strong for junk-rated and unrated firms. Hence, the decline in net debt issuance is at least partly driven by a decline in bank debt on the extensive margin.

As a validity check, I verify if the reduction in net debt issuance and in the number of deals indeed goes hand in hand with a contraction of net bank debt issuance. This measure is admittedly noisy, being computed from Dealscan data, which do not provide information of renegotiations.²⁴ Nonetheless, it can give some insights on the economic channel. The results for net bank debt issuance are very close to those for net debt issuance, but economically larger.

Panel B then looks into the number of different type of loans within deals to study how the loan mix changes around bank mergers. Following [Berg, Saunders, Schäfer, and Steffen \(2019\)](#), I divide loans in three categories: revolving loans (columns 1 and 2), term loans (columns 3 and 4), and other loans (columns 5 and 6). The unconditional effect of mergers is significantly negative for both revolving loans (i.e., credit lines) and term loans, and positive and insignificant for other types of loans. For each type of loan, I document that the decrease is stronger for non-investment grade borrowers. And the economically largest effect is observed for revolving loans.

The evidence so far highlights that the decrease in net debt emanates mainly from bank debt, and this is relevant as 92% of outstanding bank loans are held by the main bank. The contraction of bank debt descends (at least partially) from a reduction in the number of loans deals, which is particularly large for revolving loans. More intuitively, this points to an increased likelihood of a termination of lending relationships for small and opaque borrowers following an expansion of their bank into the underwriting market. Moreover, loan deals issued after such expansions may be less likely to contain credit lines, namely one of the key instruments to commit banks to screen and monitor borrowers with information problems (e.g., [Berger, Zhang, and Zhao, 2020](#), and references therein).

Panel C continues the analysis of the economic mechanism at a more granular level. First, in columns 1 to 4 I carry out loan-level tests on the amount lent (intensive margin)

²⁴It is worth noting that CIQ starts reporting the breakdown of total debt by type only from 2001, so that the years in which most of the universal banks emerged are not covered.

and the all-in-drawn spread.²⁵ I document that, conditional on getting a loan from a bank that recently expanded its underwriting capacity, borrowing firms obtain significantly larger and cheaper loans, with the latter effect being more pronounced for unrated firms. In other words, the contraction of bank credit takes place exclusively at the extensive margin.

Columns 5 and 6 examine the number of financial covenants at the deal level, as defined by [Anantharaman, Fang, and Gong \(2014\)](#).²⁶ The significant increase in the number of covenants – again driven by non-investment grade firms – is in line with a transition to the transactional banking model. Indeed, such a model tends to be based on hard information, whereas traditional relationship lending relies more on soft information about borrowers ([Gao, Karolyi, and Pacelli, 2018](#)). And financial covenants are devices that shift control rights from shareholders to debtholders based on hard accounting information.²⁷

To sum up, these findings are consistent with a more transactional approach of universal banks to lending relationships, which may be harmful for small and opaque borrowers. These firms, when their banks become more active in the underwriting market, face an increased risk of lending relationship termination and are subject to more intense hard-information-based monitoring, which in turn may be synonymous with less forbearance towards them. Interestingly, those non-investment grade firms that do receive bank credit obtain larger and cheaper loans. A rationale for this is provided by [Neuhann and Saidi \(2018\)](#): universal banks are characterized by informational economies of scope, which

²⁵Loan-level specifications feature year, Fama-French 30 industry, and loan type fixed effects. The control variables include the loan's maturity, syndicate size, the firm's assets, and its asset tangibility, all measured at the time of origination of the loan.

²⁶Deal-level specifications feature year and Fama-French 30 industry fixed effects. The control variables include the deal's amount and maximum maturity, syndicate size, the firm's assets, and its asset tangibility, all measured at the time of origination of the deal.

²⁷[Chen and Vashishtha \(2017\)](#) make a similar point by showing that banks after mergers – potentially disrupting lending relationships – rely more on hard information and thus induce borrowers to disclose more information to the market. At the same time, banks involved in M&As increase monitoring based on hard information through an increase of financial covenants in loan deals.

allow them to provide more funding to the most promising risky firms (e.g., young, technological firms).

4.2 *Other event definitions*

The bank branching deregulation took place at around the same time as the gradual repeal of the Glass-Steagall Act's provisions, culminating with the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994, which was implemented in the following years at staggered times across states. As a result, the wave of consolidation in the banking industry exploited in the main analysis – to a large extent the by-product of legal and technological changes (Pilloff, 2004; Harford, 2005) – can be a reflection of both deregulatory processes. Indeed, several of the events exploited above are mergers involving not only underwriting subsidiaries but also commercial banking divisions.

In this section, I thus directly distinguish between those shocks that are likely to have enhanced banks' underwriting capacity leaving other operations unchanged, and the others. To put it differently, these tests aim at insulating shocks that are most likely to reflect the removal of regulatory barriers between commercial and investment banking as opposed to those stemming from the bank branching deregulation.

In Table 5, I focus on the time at which a firm's main bank becomes universal. Panel A studies the effect on investment of these events through the variable *UB status*, which captures the short-term effects of the main bank acquiring the status of universal bank, regardless of the way it was acquired. It is equal to one in the event year and in the following two years, provided that the firm does not change its main bank in the event year. A commercial bank can become universal through M&As, establishing a Section 20 subsidiary with tier-two securities powers, or establishing a securities subsidiary under Section 4(k)(4)E of the Financial Services Modernization Act of 1999. An investment bank becomes universal as soon as it acquires bank holding company status. Several

foreign banks are universal throughout the whole sample period, as they own a grandfathered securities subsidiary.

In columns 1 to 3, I look at investment. Estimating a specification of the form of (1), I obtain a significantly negative coefficient of *UB status* in column 1 with firm and bank fixed effects, which stays negative but turns insignificant once I include firm-bank fixed effects in column 2. In column 3, I distinguish among rating classes by means of equation (2). I show that the negative investment effect is again more pronounced for unrated firms, although the difference with respect to investment-grade issuers is not statistically significant at conventional levels. However, the overall effect on the investment of unrated firms (as captured by the sum of the coefficients of *UB status* and *UB status* × *Unrated*) is significantly different from zero, with a point estimate of $-0.5\% - 1.8\% = -2.3\%$ of fixed assets. In columns 4 to 6, I use net debt issuance as dependent variable, finding qualitatively similar results, reinforcing the idea that the decline in investment associated with the formation of universal banks indeed stems from borrowing firms' impaired access to external finance.

Panel B evaluates the impact on investment of universal banking by means of specifications in line with (2), distinguishing between banks that become universal through mergers (odd columns) and banks that develop internally a Section 20 subsidiary (even columns). Even if several results become statistically insignificant – possibly because sources of variation in this setting narrow down to relatively few events –, coefficient signs and magnitudes remain overall consistent with Panel A.

In Table 6, I assess the effect on corporate investment of pure positive shocks to the underwriting capacity of a firm's main bank, as captured by *UW shock*. This indicator variable captures the short-term effects of pure positive shocks to the underwriting capacity of a bank. Many of the events used for *UW M&A*, besides enhancing a bank's underwriting capacity, also affect its presence in the lending services market. Hence, to

proxy for such pure shocks to the underwriting capacity, I consider only the acquisition of pure investment banks and the establishment of Section 20 subsidiaries by commercial banks as events, which should leave at the same time the bank’s geographic presence and commercial banking activities unchanged. The target pure investment banks must be either active underwriters of public debt based on SDC data or appear in the list of deals compiled by [Bao and Edmans \(2011\)](#). As *UW M&A*, *UW shock* is equal to one in the event year and in the following two years, provided that the firm does not change its main bank in the event year. Moreover, being computed only for acquiring banks, it rules out confounding effects due to the increased likelihood of relationship termination for client firms of target banks ([Di Patti and Gobbi, 2007](#)).

Columns 1 and 2 provide evidence of a decrease in capital expenditures (insignificant after the inclusion of bank-firm fixed effects). Interestingly, column 3 documents that the effect mainly emanates from junk issuers. The coefficient estimate for $UW\ shock \times Unrated$ is indistinguishable from zero and economically smaller than the one for $UW\ shock \times Junk$. Nonetheless the sum of such coefficients with that for $UW\ shock$ is negative and statistically significant for both groups of firms, in line with the baseline analysis. The findings on net debt issuance in columns 4 to 6 are qualitatively in line with those on capital expenditures, but generally statistically insignificant.

4.3 A quasi-natural experiment: Loosening of restrictions on Section 20 subsidiaries

Though the banking industry consolidation of the 1990s was largely driven by deregulatory and technological shocks ([Pilloff, 2004](#); [Harford, 2005](#)), the assumption that the timing of bank mergers is exogenous to client firms’ investment opportunities is strong. Here, I address this issue by means of a quasi-natural experiment that captures a plausibly exogenous shock in the formation of US universal banks. Following [Neuhann and Saidi \(2018\)](#), I exploit two reforms that were proposed in August 1996 and came into

effect in 1997, loosening the Glass-Steagall Act restrictions on Section 20 subsidiaries (see Section 2.1). First, effective on March 6, 1997, the Board increased the Section 20 subsidiaries' revenue cap from 10% to 25%. Second, effective on October 27, 1997, the Board removed many of the firewalls between commercial banks and their Section 20 subsidiaries, which effectively limited cross-selling behavior. As argued by [Neuham and Saidi \(2018\)](#), these reforms were largely unexpected by the banking industry, which had already asked and failed to obtain the removal of firewalls in 1991.

These deregulations were at national level, posing a challenge in terms of appropriate counterfactuals. Thus, I resort to heterogeneity in treatment to obtain identification. The intuition is that before 1997 these restrictions were binding only for the commercial banks with the most active Section 20 subsidiaries in the underwriting market, so that only these banks received treatment.²⁸

Ideally, one could identify treated commercial banks by looking at the revenue mix of their Section 20 subsidiaries. The regulatory cap applied to the ratio of revenues from underwriting and dealing in bank-ineligible securities over the total revenues generated by the Section 20 subsidiary. Thus, the gold standard for defining the treatment group would be to select those commercial banks owning Section 20 subsidiaries with a ratio exactly at (or close to) 10%, for which the limit was arguably binding. However, Section 20 subsidiary-level revenue data reported by bank holding companies through FR Y-20 forms are confidential.²⁹ At the same time, bank-level data on revenues from investment banking services are not available for the period before the Financial Modernization Act of 1999, if not within very coarse accounting items: for instance, one could look

²⁸[Neuham and Saidi \(2018\)](#), in a difference-in-differences setting, compare firms taking loans from universal banks at any point in time to other firms before and after 1996, the year in which the regulation was proposed by the Board. Thus, in their analysis of firm-level productivity and investment they estimate long-run effects of the deregulation, whereas here I only look at short-term effects defining the treatment group based on loans originated before the final implementation of the regulation in 1997.

²⁹[Geyfman and Yeager \(2009\)](#) use these data to study the relation between banks' expansion into the underwriting market and their exposure to systematic risk.

at non-interest income, but that would comprise any fees not related to underwriting and dealing in securities (and thus not affected by the 1996/1997 reform). A treatment definition based on such a measure would risk capturing to a large extent banks' presence in services other than underwriting.

For these reasons, building on publicly and commercially available data, I classify as treated those commercial banks that had a share of at least of 1% of the dollar volume of public debt issued in 1996.³⁰ This criterion identifies five bank groups as treated, namely Bankers Trust, Chase Manhattan, Citicorp, JP Morgan, and Nationsbank. These are all large bank groups, but, reassuringly, other major lenders in my sample, such as Bank of America, Wachovia, and Wells Fargo turn out to be non-treated, alleviating concerns that I am simply capturing a size effect. Figure 1 shows the public debt underwriting activity of commercial banks for the period 1995 to 2000, distinguishing between treated and non-treated groups. In line with the graphical evidence provided by [Lown, Osler, Sufi, and Strahan \(2000\)](#), the effect of the deregulation is apparent. While exhibiting similar dynamics until 1997 (consistently with the parallel trends assumption), treated banks experience a sharp increase in the number of underwritten issues in 1998. The effect on the underwritten dollar volume becomes noticeable one year later. This evidence suggests that the pre-1997 restrictions were binding for the treated banks, which expanded their presence in the underwriting market following the reforms, possibly also through mergers and acquisitions. Moreover, treated banks largely coincide with the list of top underwriters over 1996/1997 provided by [Bhargava and Fraser \(1998\)](#), which constitutes a further validation of the treatment definition.³¹

A firm is assigned to the treated group if its main bank as of 1996 is one of the treated commercial banks. I restrict the sample to the time window 1996 to 1999. To be included

³⁰I exclude foreign bank groups with a grandfathered securities subsidiary, as they were not subject to Section 20 of the Glass-Steagall Act.

³¹Unreported tests show that the results obtained using a treatment definition based on [Bhargava and Fraser \(1998\)](#) are line with those obtained using the preferred treatment definition.

in the sample, a firm needs to have available data over such a window. In the tests below, I estimate treatment effects conditional on firms' rating status. I determine the rating status of a firm based on its rating in the pre-reform period.

Table 7 contains the results of the quasi-natural experiment. Panel A reports summary statistics on changes in selected firm characteristics of treated and non-treated firms over the pre-reform period. The parallel trends assumption appears to be satisfied, as the differences in such changes between the two groups of firms are almost invariably statistically insignificant.

Panel B of Table 7 presents estimates of difference-in-differences regressions of investment (columns 1 and 2) and net debt issuance (columns 3 and 4). The effect of the reform on treated firms without conditioning on the rating status is negative, but statistically insignificant at conventional levels (column 1). In column 2, when conditioning on the rating status, I find that investment-grade firms experience a significant investment decline of 3.4% of fixed capital. The positive but insignificant coefficient for $Post-1997 \times Treated \times Unrated$ suggests that unrated firms' capital expenditures followed a similar pattern, whereas junk issuers exhibit a significant higher investment trajectory than investment-grade ones after 1997. Looking at the sum of the coefficients $Post-1997 \times Treated$ and $Post-1997 \times Treated \times Rating\ status$, I observe that the overall effect of the reform on investment is $-3.4\% + 9\% = 5.6\%$ and $-3.4\% + 1.4\% = -2\%$ for junk and unrated firms (in both cases insignificant), respectively. Moving to the analysis of net debt issuance, column 3 shows that unconditional effect of the reform on treated firms is insignificant. But, when conditioning on the rating status in column 4, I find a significant reduction for unrated firms only.

All in all, this points to an adverse impact of the reform – and of the linked expansion of commercial banks into the underwriting market – on unrated firms, which were not fully able to buffer the decline in debt finance and may have reduced capital expenditures as a

consequence. As unrated firms are the large majority of firms in the sample, the evidence from the quasi-natural experiment confirms the baseline analysis. Instead, the results on investment-grade in this setting are of harder interpretation, as the decline in their investment is not coupled with lower net debt issuance: this may suggest that investment choices of treated investment-grade firms were influenced by confounding factors after 1997.

5 Conclusion

This paper examines the impact of the gradual dismantling of the separation between commercial and investment banking on the investment and financing policies of US non-financial companies, conditional on a firm's access to the public debt market. I focus on events that increase a single commercial bank's underwriting capacity, such as mergers with investment banks, mergers with banks that are already universal, and the establishment of securities subsidiaries.

Using a firm-bank panel, I exploit the staggered nature of the instances when commercial banks increase their underwriting capacity to obtain identification. I find that borrowing firms curtail capital expenditures following these events. Consistently, firms also cut net debt issuance and net bank debt issuance. These results appear to be driven by unrated firms, which are more opaque and bank-dependent than investment grade ones. The impact of shocks to the relationship bank's underwriting capacity on investment and issuance activity appears to be relatively short-lived, indicating that borrowing firms are able to find alternative sources of finance in the long run.

Overall, the formation of universal banks exerted an adverse effect on borrowing firms. This effect was especially pronounced in the short run and for the unrated ones, which are more likely to have suffered from a shift to the transactional lending model by universal banks.

References

- Anantharaman, D., V. W. Fang, and G. Gong. 2014. Inside debt and the design of corporate debt contracts. *Management Science* 60:1260–1280.
- Aslan, H. 2016. Do lending relationships affect corporate financial policies? *Financial Management* 45:141–173.
- Banerji, S., A. H. Chen, and S. C. Mazumdar. 2002. Universal banking under bilateral information asymmetry. *Journal of Financial Services Research* 22:169–187.
- Bao, J., and A. Edmans. 2011. Do investment banks matter for M&A returns? *Review of Financial Studies* 24:2286–2315.
- Berg, T., A. Saunders, L. Schäfer, and S. Steffen. 2019. “Brexit” and the contraction of syndicated lending. Working paper, Frankfurt School of Finance & Management.
- Berger, A., and L. Black. 2011. Bank size, lending technologies, and small business finance. *Journal of Banking and Finance* 35:724–735.
- Berger, A. N., N. H. Miller, M. A. Petersen, R. G. Rajan, and J. C. Stein. 2005. Does function follow organizational form? Evidence from the lending practices of large and small banks. *Journal of Financial Economics* 76:237–269.
- Berger, A. N., D. Zhang, and Y. E. Zhao. 2020. Bank specialness, credit lines, and loan structure. Working paper, University of South Carolina.
- Bertrand, M., and S. Mullainathan. 2003. Enjoying the quiet life? Corporate governance and managerial preferences. *Journal of Political Economy* 111:1043–1075.
- Bharath, S., S. Dahiya, and A. S. A. Srinivasan. 2007. So what do I get? The bank’s view of lending relationships. *Journal of Financial Economics* 85:368–419.
- Bhargava, R., and D. R. Fraser. 1998. On the wealth and risk effects of commercial bank expansion into securities underwriting: An analysis of Section 20 subsidiaries. *Journal of Banking & Finance* 22:447–465.
- Calomiris, C., and T. Pornrojngkool. 2009. Relationship banking and the pricing of financial services. *Journal of Financial Services Research* 35:189–224.
- Carey, M., and G. Nini. 2007. Is the corporate loan market globally integrated? A pricing puzzle. *Journal of Finance* 62:2969–3007.
- Carow, K., E. Kane, and R. Narayanan. 2006. How have borrowers fared in banking

- megamergers? *Journal of Money, Credit and Banking* 38:1373–1398.
- Carow, K., E. Kane, and R. Narayanan. 2011. Safety-net losses from abandoning Glass-Steagall restrictions. *Journal of Money, Credit and Banking* 43:1373–1398.
- Carvalho, D., M. Ferreira, and P. Matos. 2015. Lending relationships and the effect of bank distress: Evidence from the 2007–2009 financial crisis. *Journal of Financial and Quantitative Analysis* 50:1165–1197.
- Chava, S., and A. Purnanandam. 2011. The effect of banking crisis on bank-dependent borrowers. *Journal of Financial Economics* 99:116–135.
- Chava, S., and M. Roberts. 2008. How does financing impacts investment? The role of debt covenants. *Journal of Finance* 63:2085–2121.
- Chen, H., and S. Chen. 2012. Investment-cash flow sensitivity cannot be a good measure of financial constraints: Evidence from the time series. *Journal of Financial Economics* 103:393–410.
- Chen, Q., and R. Vashishtha. 2017. The effects of bank mergers on corporate information disclosure. *Journal of Accounting and Economics* 64:56–77.
- Chodorow-Reich, G. 2013. The employment effects of credit market disruptions: Firm-level evidence from the 2008-9 financial crisis. *Quarterly Journal of Economics* 129:1–59.
- Chodorow-Reich, G., and A. Falato. 2019. The loan covenant channel: How bank health transmits to the real economy. Working paper, Harvard University.
- Chu, Y. 2018. Banking deregulation and credit supply: Distinguishing the balance sheet and the competition channels. *Journal of Financial Intermediation* 35:102–119.
- Cornett, M. M., E. Ors, and H. Tehranian. 2002. Bank performance around the introduction of a Section 20 subsidiary. *Journal of Finance* 57:501–521.
- Correia, S. 2018. REGHDFE: Stata module to perform linear or instrumental-variable regression absorbing any number of high-dimensional fixed effects. Boston College.
- Degryse, H., N. Masschelein, and J. Mitchell. 2011. Staying, dropping, or switching: The impact of bank mergers on small firms. *Review of Financial Studies* 24:1102–1140.
- Di Patti, E., and G. Gobbi. 2007. Winners or losers? The effect of banking consolidation on corporate borrowers. *Journal of Finance* 62:669–695.
- Elyasani, E., and L. Goldberg. 2004. Relationship lending: A survey of the literature.

- Journal of Business and Economics* 56:315–330.
- Erel, I. 2011. The effect of bank mergers on loan prices: Evidence from the United States. *Review of Financial Studies* 24:1068–1101.
- Faulkender, M., and M. Petersen. 2006. Does the source of capital affect capital structure? *Review of Financial Studies* 19:45–79.
- Ferri, G., and P. Murro. 2015. Do firm-bank ‘odd couples’ exacerbate credit rationing? *Journal of Financial Intermediation* 24:231–251.
- Financial Times. 2012. Why I was won over by Glass-Steagall (by L. Zingales). June 10.
- Fohlin, C. 1998. Relationship banking, liquidity, and investment in the German industrialization. *Journal of Finance* 53:1737–1758.
- Gande, A., M. Puri, and A. Saunders. 1999. Bank entry, competition, and the market for corporate securities underwriting. *Journal of Financial Economics* 54:165–195.
- Gande, A., M. Puri, A. Saunders, and I. Walter. 1997. Bank underwriting of debt securities: Modern evidence. *Review of Financial Studies* 10:1175–1202.
- Gao, J., S. A. Karolyi, and J. Pacelli. 2018. Screening and monitoring by inattentive corporate loan officers. Working paper, Indiana University.
- Geyfman, V., and T. J. Yeager. 2009. On the riskiness of universal banking: Evidence from banks in the investment banking business pre-and post-GLBA. *Journal of Money, Credit and Banking* 41:1649–1669.
- Gropp, R., and K. Park. 2016. To separate or not to separate investment from commercial banking? An empirical analysis of attention distortion under multiple tasks. Working paper, Halle Institute for Economic Research.
- Hadlock, C., and J. Pierce. 2010. New evidence on measuring financial constraints: Moving beyond the KZ index. *Review of Financial Studies* 23:1909–1940.
- Hale, G., and J. Santos. 2008. The decision to first enter the public bond market: The role of firm reputation, funding choices, and bank relationships. *Journal of Banking and Finance* 32:1928–1940.
- Harford, J. 2005. What drives merger waves? *Journal of Financial Economics* 77:529–560.
- Harford, J., and V. Uysal. 2014. Bond market access and investment. *Journal of Financial Economics* 112:147–163.

- Houston, J., and C. James. 2001. Do relationships have limits? Banking relationships, financial constraints, and investment. *Journal of Business* 74:347–374.
- Ivashina, V. 2009. Asymmetric information effects on loan spreads. *Journal of Financial Economics* 92:300–319.
- Jayarathne, J., and P. Strahan. 1996. The finance-growth nexus: Evidence from bank branch deregulation. *Quarterly Journal of Economics* 111:639–670.
- Kanatas, G., and J. Qi. 2003. Integration of lending and underwriting: Implications of scope economies. *Journal of Finance* 58:1167–1191.
- Kang, J., and R. Stulz. 2000. Do banking shock affect borrowing firm performance? An analysis of the Japanese experience. *Journal of Business* 73:1–23.
- Keppo, J., and J. Korte. 2016. Risk targeting and policy illusions – Evidence from the announcement of the Volcker Rule. *Management Science* 64:215–234.
- Kroszner, R., and P. Strahan. 1999. What drives deregulation? Economics and politics of the relaxation of bank branching restrictions. *Quarterly Journal of Economics* 114:1437–1467.
- Kwan, S. 1997. Cracking the Glass-Steagall barriers. *FRBSF Economic Letter* 8.
- Laux, C., and U. Walz. 2009. Cross-selling lending and underwriting: Scope economies and incentives. *Review of Finance* 13:341–367.
- Li, D. 2011. Financial constraints, R&D investment, and stock returns. *Review of Financial Studies* 24:2974–3007.
- Ljungqvist, A., F. Marston, and W. Wilhelm. 2006. Competing for securities underwriting mandates: Banking relationships and analyst recommendations. *Journal of Finance* 61:301–340.
- Lown, C. S., C. L. Osler, A. Sufi, and P. E. Strahan. 2000. The changing landscape of the financial services industry: What lies ahead? *FRB of New York Economic Policy Review* 6:39–55.
- Narayanan, R., K. Rangan, and N. Rangan. 2007. The effect of private-debt-underwriting reputation on bank public-debt underwriting. *Review of Financial Studies* 20:597–618.
- Narayanan, R. P., K. P. Rangan, and N. K. Rangan. 2004. The role of syndicate structure in bank underwriting. *Journal of Financial Economics* 72:555–580.
- Neuhann, D., and F. Saidi. 2016. Bank deregulation and the rise of institutional lending.

- Working paper, University of Texas at Austin.
- Neuhann, D., and F. Saidi. 2018. Do universal banks finance riskier but more productive firms? *Journal of Financial Economics* 128:66–85.
- Parthasarathy, H. 2007. Universal banking deregulation and firms' choices of lender and equity underwriter. Working paper, Harvard University.
- Pilloff, S. 2004. Bank merger activity in the United States, 1994-2003. Tech. rep., Board of Governors of the Federal Reserve System.
- Puri, M. 1996. Commercial banks in investment banking: Conflict of interest or certification role? *Journal of Financial Economics* 40:373–401.
- Roten, I., and D. Mullineaux. 2002. Debt underwriting by commercial bank-affiliated firms and investment banks: More evidence. *Journal of Banking and Finance* 26:689–718.
- Schenone, C. 2004. The effect of banking relationships on the firm's IPO underpricing. *Journal of Finance* 59:2903–2958.
- Schenone, C. 2010. Lending relationships and information rents: Do banks exploit their information advantages? *Review of Financial Studies* 23:1149–1199.
- Schwert, M. 2018. Bank capital and lending relationships. *Journal of Finance* 73:787–830.
- Shivdasani, A., and W. Song. 2011. Breaking down the barriers: Competition, syndicate structure, and underwriting incentives. *Journal of Financial Economics* 99:581–600.
- Sufi, A. 2004. Does joint production of lending and underwriting help or hurt firms? A fixed effects approach. Working paper, University of Chicago.
- Sufi, A. 2009. The real effects of debt certification: Evidence from the introduction of bank loan ratings. *Review of Financial Studies* 22:1659–1691.
- Takahashi, H. 2014. The effect of bank-firm relationships on sell-side research. *Journal of Financial Services Research* 46:195–213.
- Vinas, F. 2016. The real effects of universal banking on firms' investment: Micro-evidence from 2004-2009. Working paper, Banque de France.
- Wang, H., D. Yin, X. T. Zhang, and X. Zhen. 2019. Whom you borrow from matters: universal banks and firm innovation. *Managerial Finance* 45:1001–1019.
- Wardlaw, M. 2011. The impact of bank health on the investment of its corporate borrowers. Working paper, University of Texas at Austin.

- Wilmarth, A. 2009. The dark side of universal banking: Financial conglomerates and the origins of the subprime financial crisis. *Connecticut Law Review* 41:963–1050.
- Xie, L. 2007. Universal banking, conflicts of interest and firm growth. *Journal of Financial Services Research* 32:177–202.
- Yasuda, A. 2005. Do bank relationships affect the firm's underwriter choice in the corporate-bond underwriting market? *Journal of Finance* 60:1259–1292.

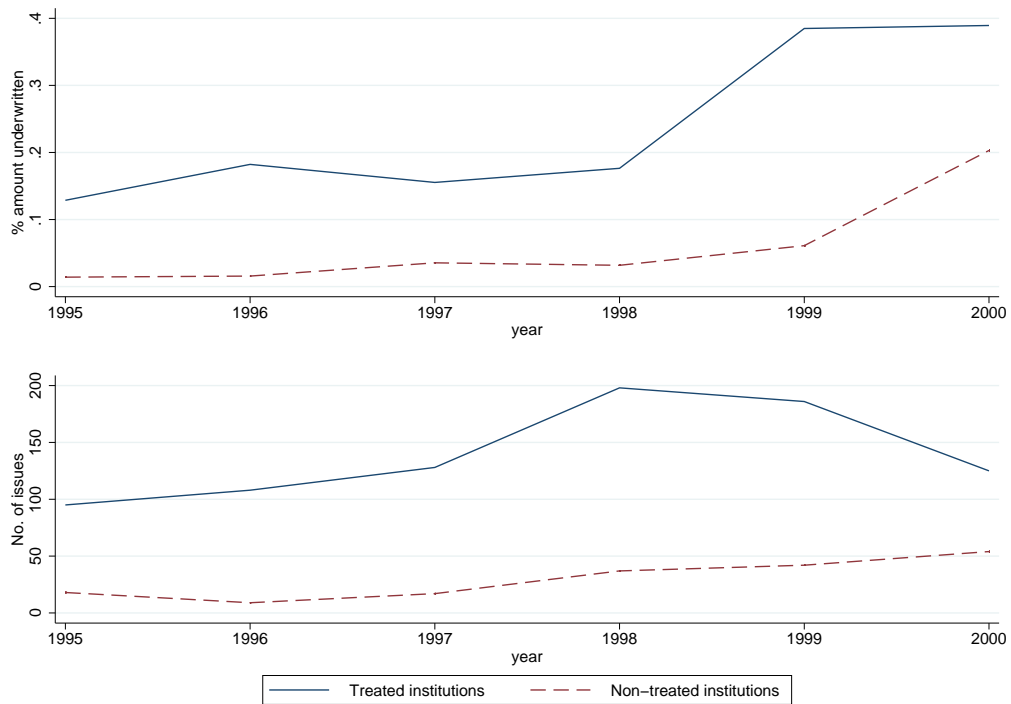


Figure 1: Public debt underwriting by commercial banks (1995-2000)

This figure reports the market share in terms of dollar volume (above) and number of issues (below) of the public debt underwriting market by treated and non-treated commercial banks in the quasi-natural experiment based on the 1996/1997 deregulation.

Table 1: Summary statistics

This table reports summary statistics of variables used in the paper. The sample includes 4,843 US firms over the period 1988 to 2007, excluding financial institutions and utilities. Each firm-year is matched to its main bank based on the outstanding loan balance. Panel A presents the descriptive statistics of the variables over the entire sample. Panel B presents the descriptive statistics conditioning on the firm's rating status. Panel C presents descriptive statistics on the scope of bank operations throughout the sample period. All dollar amounts are in millions of 2007 dollars. Refer to Appendix Table A.1 for variable definitions.

Panel A: Whole sample						
	Mean	St. dev.	Q1	Med.	Q3	Obs.
<i>Investment and financing</i>						
Investment	0.302	0.266	0.124	0.214	0.380	31,625
Cash acquisitions	0.029	0.060	0.000	0.000	0.021	30,579
R&D expenses	0.057	0.079	0.000	0.023	0.081	17,835
Net debt issuance	0.027	0.119	-0.038	-0.001	0.063	32,033
Net bank debt issuance	0.011	0.130	-0.050	-0.005	0.027	29,704
Δ Cash reserves	0.007	0.084	-0.019	0.000	0.026	32,022
Book leverage	0.271	0.196	0.105	0.256	0.405	34,133
Outstanding loans/Assets	0.172	0.168	0.038	0.121	0.257	29,434
Main lender out. loans/Out. loans	0.919	0.160	0.935	1.000	1.000	28,508
No. deals	0.525	0.700	0.000	0.000	1.000	34,133
No. revolving loans	0.487	0.702	0.000	0.000	1.000	34,133
No. term loans	0.166	0.527	0.000	0.000	0.000	34,133
No. other loans	0.070	0.319	0.000	0.000	0.000	34,133
<i>Changes in scope of bank operations</i>						
UW M&A (0)	0.107	0.309	0.000	0.000	0.000	34,133
UB status (0)	0.025	0.157	0.000	0.000	0.000	34,133
UW shock (0)	0.056	0.229	0.000	0.000	0.000	34,133
Universal main lender	0.678	0.467	0.000	1.000	1.000	29,434
<i>Rating status</i>						
Investment grade	0.128	0.334	0.000	0.000	0.000	34,133
Junk	0.155	0.362	0.000	0.000	0.000	34,133
Unrated	0.717	0.450	0.000	1.000	1.000	34,133
<i>Other variables</i>						
Tobin's q	1.746	1.029	1.069	1.393	2.007	30,337
Cash flow	0.310	1.101	0.108	0.290	0.636	31,931
SA index	-3.294	0.654	-3.776	-3.232	-2.828	34,133
Total assets	2,788.995	13,852.939	115.182	381.199	1,400.650	34,133
Z-score	-3.752	3.536	-4.705	-2.972	-1.747	32,841
Tangibility	0.303	0.217	0.124	0.247	0.443	34,089

(Continued)

Table 1: – *Continued*

Panel B: Rating status subsamples									
	Investment grade			Junk			Unrated		
	Mean	Med.	Obs.	Mean	Med.	Obs.	Mean	Med.	Obs.
<i>Investment and financing</i>									
Investment	0.201	0.176	4,196	0.261	0.186	4,909	0.330	0.237	22,520
Cash acquisitions	0.026	0.002	3,815	0.032	0.000	4,738	0.029	0.000	22,026
R&D expenses	0.031	0.019	2,501	0.035	0.011	2,375	0.066	0.028	12,959
Net debt issuance	0.016	-0.003	4,259	0.029	-0.006	5,002	0.028	0.000	22,772
Net bank debt issuance	0.009	-0.008	4,035	0.024	-0.014	4,748	0.009	-0.003	20,921
Δ Cash reserves	0.005	0.001	4,259	0.007	0.000	4,994	0.007	0.000	22,769
Book leverage	0.282	0.272	4,360	0.406	0.410	5,292	0.240	0.217	24,481
Outstanding loans/Assets	0.126	0.098	4,186	0.260	0.219	4,980	0.160	0.108	20,268
Main lender out. loans/Out. loans	0.882	1.000	4,138	0.860	1.000	4,922	0.942	1.000	19,448
No. deals	0.748	1.000	4,360	0.670	1.000	5,292	0.454	0.000	24,481
No. revolving loans	0.756	1.000	4,360	0.559	0.000	5,292	0.423	0.000	24,481
No. term loans	0.085	0.000	4,360	0.289	0.000	5,292	0.154	0.000	24,481
No. other loans	0.093	0.000	4,360	0.130	0.000	5,292	0.053	0.000	24,481
<i>Changes in scope of bank operations</i>									
UW M&A (0)	0.144	0.000	4,360	0.117	0.000	5,292	0.098	0.000	24,481
UB status (0)	0.024	0.000	4,360	0.021	0.000	5,292	0.026	0.000	24,481
UW shock (0)	0.077	0.000	4,360	0.062	0.000	5,292	0.051	0.000	24,481
Universal main lender	0.863	1.000	4,186	0.726	1.000	4,980	0.628	1.000	20,268
<i>Other variables</i>									
Tobin's q	1.714	1.455	3,828	1.537	1.266	4,526	1.795	1.415	21,983
Cash flow	0.400	0.298	4,253	0.320	0.215	4,964	0.290	0.309	22,714
SA index	-4.132	-4.357	4,360	-3.615	-3.508	5,292	-3.076	-3.042	24,481
Total assets	14,556.074	5,372.960	4,360	2,904.582	1,164.008	5,292	668.324	203.389	24,481
Z-score	-3.354	-3.012	4,045	-2.330	-1.974	4,997	-4.119	-3.228	23,799
Tangibility	0.367	0.324	4,355	0.338	0.295	5,265	0.284	0.224	24,469

Panel C: Changes in scope of bank operations over time

	1988-1990	1991-1993	1994-1996	1997-1999	2000-2002	2003-2005	2006-2007
UW M&A (0)	0.002	0.016	0.052	0.221	0.145	0.166	0.123
UB status (0)	0.039	0.041	0.040	0.055	0.014	0.002	0.000
UW shock (0)	0.040	0.033	0.031	0.131	0.077	0.022	0.069
Universal main lender	0.209	0.334	0.550	0.724	0.835	0.877	0.901

Table 2: M&As enhancing underwriting capacity, investment, and financing

This table examines the relation between borrowing firms' investment and financing policies and mergers that enhanced their lenders' underwriting capacity by means of panel regressions. The dependent variable is indicated at the top of each column. The main variable of interest is *UW M&A*, which is equal to one in the year a firm's main bank expands its underwriting capacity through an M&A and in the following two years, and zero otherwise. Columns 1-2 and 4-5 estimate the unconditional effect of mergers enhancing underwriting capacity. Columns 3 and 6 interact *UW M&A* with indicator variables for the rating status of the firm (*Junk* and *Unrated*), using firms with an investment grade rating as the reference group. Fixed effects included in each specification are indicated below. The *t*-statistics (in parentheses) are calculated with robust standard errors clustered by firm. Significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively. The last two rows report the *p*-value for the *F*-test of the null hypothesis that the sum of the coefficients involving *UW M&A* for *Junk* and *Unrated* firms is equal to zero, respectively. Refer to Appendix Table A.1 for variable definitions.

	Investment			Net debt issuance		
	(1)	(2)	(3)	(4)	(5)	(6)
UW M&A	-0.012*** (-2.95)	-0.013*** (-3.32)	0.011** (1.97)	-0.014*** (-6.14)	-0.011*** (-4.43)	-0.001 (-0.27)
UW M&A × Junk			-0.037*** (-3.54)			-0.007 (-1.00)
UW M&A × Unrated			-0.028*** (-3.80)			-0.013*** (-2.60)
Tobin's <i>q</i>	0.104*** (29.28)	0.102*** (26.74)	0.101*** (26.71)	0.032*** (19.67)	0.036*** (19.98)	0.036*** (19.89)
Cash flow	0.041*** (11.08)	0.040*** (10.12)	0.040*** (10.10)			
Cash flow (scaled by assets)				0.016 (1.15)	0.015 (1.02)	0.015 (0.98)
Firm FE	Yes	No	No	Yes	No	No
Bank FE	Yes	No	No	Yes	No	No
Firm × Bank FE	No	Yes	Yes	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	24,731	23,770	23,770	25,053	24,081	24,081
<i>R</i> ²	0.578	0.629	0.629	0.251	0.309	0.309
H ₀ : Sum of coeff. (junk)=0 (<i>p</i> -value)			0.005			0.154
H ₀ : Sum of coeff. (unrated)=0 (<i>p</i> -value)			0.001			0.000

Table 3: M&As enhancing underwriting capacity, investment, and financing - Additional specifications

This table reports additional panel regressions to study the relation between borrowing firms' investment and financing policies and mergers that enhanced their lenders' underwriting capacity. The dependent variable is indicated at the top of each column. The main variable of interest is $UW\ M\&A(t)$, which is equal to one in the year t from the year in which a firm's main bank expands its underwriting capacity through an M&A, and zero otherwise. $UW\ M\&A$ refers to the same events, but is equal to one in the year of the M&A and in the following two years, and zero otherwise. Columns 1 and 4 use a specification in line with [Bertrand and Mullainathan \(2003\)](#) to investigate the timing of the effect. Columns 2 and 5 interact $UW\ M\&A$ with the SA index by [Hadlock and Pierce \(2010\)](#). All specifications include the same control variables as in [Table 2](#), except columns 3 and 6, which control also for the natural logarithm of total assets, the Z-score, and the tangibility of assets. Fixed effects included in each specification are indicated below. The t -statistics (in parentheses) are calculated with robust standard errors clustered along the dimensions indicated below. Significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively. Refer to [Appendix Table A.1](#) for variable definitions.

	Investment			Net debt issuance		
	(1)	(2)	(3)	(4)	(5)	(6)
UW M&A (-1)	0.002 (0.44)			-0.001 (-0.38)		
UW M&A (0)	-0.007 (-1.61)			-0.008*** (-3.07)		
UW M&A (+1)	-0.012** (-2.46)			-0.006** (-2.10)		
UW M&A (+2)	-0.005 (-1.07)			-0.003 (-1.12)		
SA index \times UW M&A		-0.035*** (-5.50)			-0.027*** (-7.56)	
SA index		-0.105*** (-5.67)			-0.137*** (-14.16)	
UW M&A		-0.137*** (-5.67)	-0.014** (-2.41)		-0.108*** (-8.02)	-0.011*** (-3.42)
ln(Total assets)			0.052*** (7.03)			0.063*** (13.52)
Tangibility			0.130*** (4.40)			-0.073*** (-7.17)
Z-score			-0.004*** (-3.54)			0.018*** (8.17)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm \times Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	No	Yes	Yes	No
FF30 industry \times Year FE	No	No	Yes	No	No	Yes
SE clustering	Firm	Firm	Firm & bank	Firm	Firm	Firm & bank
Observations	23,770	23,770	22,881	24,081	24,081	23,129
R^2	0.629	0.631	0.644	0.308	0.323	0.402

Table 4: M&As enhancing underwriting capacity and bank financing

This table examines the relation between borrowing firms' bank financing and mergers that enhanced their lenders' underwriting capacity by means of panel regressions. The dependent variable is indicated at the top of each column. In Panel A and Panel B, the unit of observation is the firm-year. In such panels, the main variable of interest is $UW\ M\&A$, which is equal to one in the year a firm's main bank expands its underwriting capacity through an M&A and in the following two years, and zero otherwise. All specifications in Panel A and Panel B include the same control variables as in Table 2. In Panel C, the unit of observation is the single loan ("facility") within a Dealscan package ("deal") in columns 1-4, and the deal itself in columns 5 and 6. The main variable of interest ($UW\ M\&A$) is in this case computed at the facility- or deal-level. In columns 1-4, control variables include the natural logarithm of the facility's maturity, syndicate size, the natural logarithm of the firm's assets, and its asset tangibility. In columns 5 and 6, control variables include the natural logarithm of the maximum maturity within the deal, the natural logarithm of the deal amount, syndicate size, the natural logarithm of the firm's assets, and its asset tangibility. All panels feature specifications estimating the unconditional effect of mergers enhancing underwriting capacity, as well as specifications interacting $UW\ M\&A$ with indicator variables for the rating status of the firm (*Junk* and *Unrated*), using firms with an investment grade rating as the reference group. Fixed effects included in each specification are indicated below. The t -statistics (in parentheses) are calculated with robust standard errors clustered by firm in Panel A and Panel B, and by Fama-French 30 industry groups in Panel C. Significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively. The last two rows report the p -value for the F -test of the null hypothesis that the sum of the coefficients involving $UW\ M\&A$ for *Junk* and *Unrated* firms is equal to zero, respectively. Refer to Appendix Table A.1 for variable definitions.

Panel A: Changes in number and net issuance of bank loans						
	No. deals			Net bank debt issuance		
	(1)	(2)	(3)	(4)	(5)	(6)
UW M&A	-0.023*** (-8.57)	-0.016*** (-5.57)	0.001 (0.24)	-0.121*** (-9.53)	-0.090*** (-6.39)	0.070** (2.04)
UW M&A × Junk			-0.029*** (-3.42)			-0.201*** (-4.13)
UW M&A × Unrated			-0.019*** (-3.36)			-0.194*** (-5.14)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	No	No	Yes	No	No
Bank FE	Yes	No	No	Yes	No	No
Firm × Bank FE	No	Yes	Yes	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	22,805	21,876	21,876	25,053	24,081	24,081
R^2	0.184	0.238	0.239	0.235	0.299	0.300
H_0 : Sum of coeff. (junk)=0 (p -value)			0.000			0.000
H_0 : Sum of coeff. (unrated)=0 (p -value)			0.000			0.000

Panel B: Types of loans						
	No. revolving loans		No. term loans		No. other loans	
	(1)	(2)	(3)	(4)	(5)	(6)
UW M&A	-0.103*** (-7.24)	0.021 (0.55)	-0.041*** (-3.78)	0.046** (2.51)	0.004 (0.61)	0.027 (1.51)
UW M&A × Junk		-0.142*** (-2.99)		-0.130*** (-3.73)		-0.047* (-1.72)
UW M&A × Unrated		-0.154*** (-3.76)		-0.100*** (-4.78)		-0.022 (-1.19)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm × Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	24,081	24,081	24,081	24,081	24,081	24,081
R^2	0.302	0.303	0.322	0.323	0.271	0.272
H_0 : Sum of coeff. (junk)=0 (p -value)		0.000		0.007		0.336
H_0 : Sum of coeff. (unrated)=0 (p -value)		0.000		0.000		0.534

(Continued)

Table 4: – *Continued*

Panel C: Loan-level analysis						
	ln(Facility amount)		ln(All-in-drawn spread)		No. covenants	
	(1)	(2)	(3)	(4)	(5)	(6)
UW M&A	0.125*** (6.94)	0.112*** (3.30)	-0.091*** (-5.43)	0.028 (1.06)	-0.013 (-0.37)	-0.383*** (-7.20)
Junk		-0.096** (-2.45)		0.968*** (23.42)		0.389*** (4.93)
UW M&A × Junk		-0.041 (-0.92)		-0.022 (-0.55)		0.488*** (5.15)
Unrated		-0.100* (-2.01)		0.638*** (14.78)		0.467*** (6.43)
UW M&A × Unrated		0.044 (1.09)		-0.173*** (-6.86)		0.526*** (9.08)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
FF30 industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Loan type FE	Yes	Yes	Yes	Yes	No	No
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Unit of observation	Facility	Facility	Facility	Facility	Deal	Deal
Observations	23,205	23,205	20,461	20,461	16,653	16,653
R^2	0.759	0.759	0.499	0.600	0.317	0.337
H_0 : Sum of coeff. (junk)=0 (p -value)		0.007		0.807		0.223
H_0 : Sum of coeff. (unrated)=0 (p -value)		0.000		0.000		0.000

Table 5: Universal bank status, investment, and financing

This table examines the relation between borrowing firms' investment and financing policies and their lenders' transformation into universal banks by means of panel regressions. The dependent variable is indicated at the top of each column. In Panel A, the main variable of interest is *UB status*, which is equal to one in the year a firm's main bank becomes universal and in the following two years, and zero otherwise. Panel B distinguishes between banks that become universal through M&As (*UB status (M&A)*) and those that become universal by establishing a Section 20 subsidiary (*UB status (Section 20)*). Columns 1-2 and 4-5 of Panel A estimate the unconditional effect of the main bank becoming universal. Columns 3 and 6 of Panel A and all columns of Panel B interact the variable capturing the universal bank status of the firm's main bank with indicator variables for the rating status of the firm (*Junk* and *Unrated*), using firms with an investment grade rating as the reference group. All specifications include the same control variables as in Table 2. Fixed effects included in each specification are indicated below. The *t*-statistics (in parentheses) are calculated with robust standard errors clustered by firm. Significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively. The last two rows of each panel report the *p*-value for the *F*-test of the null hypothesis that the sum of the coefficients involving *UB status* (or corresponding variables in Panel B) for *Junk* and *Unrated* firms is equal to zero, respectively. Refer to Appendix Table A.1 for variable definitions.

Panel A: Transformation into a universal bank						
	Investment			Net debt issuance		
	(1)	(2)	(3)	(4)	(5)	(6)
UB status	-0.018*** (-2.96)	-0.009 (-1.22)	-0.005 (-0.46)	-0.007** (-2.27)	-0.006* (-1.65)	0.000 (0.02)
UB status × Junk			0.000 (0.00)			-0.007 (-0.67)
UB status × Unrated			-0.018 (-1.40)			-0.007 (-0.85)
Control variables	Yes	Yes	Yes	Yes		
Firm FE	Yes	No	No	Yes	No	No
Bank FE	Yes	No	No	Yes	No	No
Firm × Bank FE	No	Yes	Yes	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	24,731	23,770	23,770	25,053	24,081	24,081
R^2	0.578	0.629	0.629	0.250	0.308	0.308
H ₀ : Sum of coeff. (junk)=0 (<i>p</i> -value)			0.743			0.380
H ₀ : Sum of coeff. (unrated)=0 (<i>p</i> -value)			0.005			0.117

(Continued)

Table 5: – *Continued*

Panel B: M&As vs. Section 20 subsidiaries				
	Investment		Net debt issuance	
	(1)	(2)	(3)	(4)
UB status (M&A)	0.026 (1.12)		0.039** (1.96)	
UB status (M&A) × Junk	-0.045 (-1.57)		-0.046* (-1.94)	
UB status (M&A) × Unrated	-0.041 (-1.57)		-0.051** (-2.49)	
UB status (S20)		-0.012 (-1.07)		-0.009 (-1.17)
UB status (Section 20) × Junk		0.017 (0.79)		0.002 (0.17)
UB status (Section 20) × Unrated		-0.019 (-1.21)		0.005 (0.57)
Control variables	Yes	Yes	Yes	Yes
Firm × Bank FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	23,770	24,081	23,770	24,081
Observations	23,770	23,770	24,081	24,081
R^2	0.629	0.629	0.308	0.308
H_0 : Sum of coeff. (junk)=0 (p -value)	0.268	0.785	0.579	0.512
H_0 : Sum of coeff. (unrated)=0 (p -value)	0.224	0.006	0.060	0.575

Table 6: Pure underwriting capacity shocks, investment, and financing

This table examines the relation between borrowing firms' investment and financing policies and shocks to their lenders' underwriting capacity by means of panel regressions. The dependent variable is indicated at the top of each column. The main variable of interest is *UW shock*, which is equal to one in the year a firm's main bank expands its underwriting capacity either by acquiring an investment bank or by establishing a Section 20 subsidiary and in the following two years, and zero otherwise. Columns 1-2 and 4-5 estimate the unconditional effect of pure underwriting shocks. Columns 3 and 6 interact *UW shock* with indicator variables for the rating status of the firm (*Junk* and *Unrated*), using firms with an investment grade rating as the reference group. All specifications include the same control variables as in Table 2. Fixed effects included in each specification are indicated below. The *t*-statistics (in parentheses) are calculated with robust standard errors clustered by firm. Significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively. The last two rows report the *p*-value for the *F*-test of the null hypothesis that the sum of the coefficients involving *UW shock* for *Junk* and *Unrated* firms is equal to zero, respectively. Refer to Appendix Table A.1 for variable definitions.

	Investment			Net debt issuance		
	(1)	(2)	(3)	(4)	(5)	(6)
UW shock	-0.011*** (-2.73)	-0.007 (-1.60)	-0.001 (-0.11)	-0.005** (-2.32)	-0.003 (-1.24)	-0.002 (-0.45)
UW shock × Junk			-0.019* (-1.74)			-0.007 (-0.99)
UW shock × Unrated			-0.010 (-1.25)			-0.000 (-0.03)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	No	No	Yes	No	No
Bank FE	Yes	No	No	Yes	No	No
Firm × Bank FE	No	Yes	Yes	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	24,731	23,770	23,770	25,053	24,081	24,081
R^2	0.578	0.629	0.629	0.250	0.308	0.308
H ₀ : Sum of coeff. (junk)=0 (<i>p</i> -value)			0.042			0.137
H ₀ : Sum of coeff. (unrated)=0 (<i>p</i> -value)			0.080			0.552

Table 7: Quasi-natural experiment

This table reports results on a quasi-natural experiment based on the 1996/1997 loosening of restrictions on Section 20 subsidiaries over the period 1996 to 1999. A firm is classified as treated ($Treated = 1$) if its main bank as of 1996 is a commercial bank with a share of at least 1% of the 1996 total dollar volume of public debt issuance. The post-event period comprises the years after 1997 ($Post-1997 = 1$). Panel A presents means of changes in selected firms characteristics of treated vs. non-treated firms as of 1997. Differences in means are assessed using standard t -tests and Wilcoxon rank-sum tests. Panel B reports coefficient estimates of difference-in-differences regressions of investment and financing policy. Columns 1 and 3 estimate the unconditional effect of the loosening of restrictions on Section 20 subsidiaries. Columns 2 and 4 interact $Treated$ with indicator variables for the rating status of the firm ($Junk$ and $Unrated$), using firms with an investment grade rating as the reference group. All specifications include the same control variables as in Table 2. Fixed effects included in each specification are indicated below. The t -statistics (in parentheses) are calculated with robust standard errors clustered by firm. Significance at the 10%, 5%, and 1% level is indicated by *, **, ***, respectively. The last two rows report the p -value for the F -test of the null hypothesis that the sum of the interaction terms involving $Treated$ for $Junk$ and $Unrated$ firms is equal to zero, respectively. Refer to Appendix Table A.1 for variable definitions.

Panel A: Summary statistics				
	Treated	Non-treated	p -value	Wilcoxon p -value
Δ Investment	-0.019	-0.031	0.489	0.224
Δ Net debt issuance	0.001	0.002	0.965	0.878
Δ Tobin's q	0.005	-0.019	0.554	0.312
Δ Cash flow	-0.019	-0.055	0.526	0.962
$\Delta \ln(\text{Total assets})$	0.099	0.121	0.226	0.033**
Δ Z-score	0.066	0.062	0.975	0.581
Δ Tangibility	-0.006	-0.005	0.972	0.947

Panel B: Difference-in-differences				
	Investment		Net debt issuance	
	(1)	(2)	(3)	(4)
Post-1997	-0.035***	-0.003	-0.001	-0.015
	(-3.99)	(-0.28)	(-0.26)	(-1.30)
Post-1997 \times Treated	-0.007	-0.034**	-0.008	0.020
	(-0.54)	(-2.38)	(-0.89)	(1.26)
Post-1997 \times Junk		-0.055*		-0.002
		(-1.95)		(-0.09)
Post-1997 \times Unrated		-0.034**		0.018
		(-2.17)		(1.37)
Post-1997 \times Treated \times Junk		0.090**		0.023
		(2.41)		(0.76)
Post-1997 \times Treated \times Unrated		0.014		-0.054***
		(0.58)		(-2.87)
Control variables	Yes	Yes	Yes	Yes
Firm \times Bank FE	Yes	Yes	Yes	Yes
Observations	4,134	4,134	4,197	4,202
R^2	0.681	0.682	0.392	0.393
H_0 : Sum of coeff. (junk)=0 (p -value)		0.105		0.101
H_0 : Sum of coeff. (unrated)=0 (p -value)		0.306		0.001

Appendix for

“The Real Effects of Universal Banking: Does Access to the Public Debt Market Matter?”

A Definition of variables

Table A.1: Definition of variables

Variable	Sources	Definition
<i>Investment and financing</i>		
Investment	CCM	Investment in fixed capital computed as $\text{capx/ppent}(t-1)$.
Cash acquisitions	CCM	Cash acquisitions computed as $\text{aqc/at}(t-1)$.
R&D expenses	CCM	R&D expenses defined as $\text{xrd/at}(t-1)$.
Net debt issuance	CCM	Net debt issuance computed as $(\text{dlc}+\text{dltt}-(\text{dlc}(t-1)+\text{dltt}(t-1)))/\text{at}(t-1)$.
Net bank debt issuance	CCM, Dealscan	Net bank debt issuance computed as the change in total outstanding loans, scaled by $\text{at}(t-1)$.
Δ Cash reserves	CCM	Change in cash reserves computed as $(\text{che}-\text{che}(t-1))/\text{at}(t-1)$.
No. deals	Dealscan	Number of loan deals (packages) issued to the firm in a given year.
No. revolving loans	Dealscan	Number of loans (facilities) classified as revolving loans issued to the firm in a given year. Following Berg et al. (2019) , a facility is classified as a “revolving loan” if its <code>loantype</code> field contains any of the following text strings: “364-Day Facility”, “Revolver/Line < 1 Yr.”, “Revolver/Line >= 1 Yr.”, “Revolver/Term Loan”, “Limited Line”.
No. term loans	Dealscan	Number of loans (facilities) classified as term loans issued to the firm in a given year. Following Berg et al. (2019) , a facility is classified as “term loan” if its <code>loantype</code> field contains any of the following text strings: “Term Loan”, “Term Loan A~I”, “Delay Draw Term Loan”.
No. other loans	Dealcan	Number of loans (facilities) classified as other loans issued to the firm in a given year. Following Berg et al. (2019) , a facility is classified as “other loan” if it is neither a “revolving loan” nor a “term loan”.
<i>Changes in scope of bank operations</i>		
UW M&A	SDC, CIQ, Federal Reserve Bulletins, existing studies mentioned above	Mergers enhancing the underwriting capacity of the main bank, as captured by an indicator variable equal to one in the event year and in the following two years, provided that the firm does not change its main bank in the event year. <i>UW M&A (-1)</i> is equal to one in the period prior to an event, <i>UW M&A (0)</i> is equal to one in the event period, <i>UW M&A (1)</i> is equal to one in the period following the event, and <i>UW M&A (2)</i> is equal to one two periods after the event.
UB status	SDC, CIQ, Federal Reserve Bulletins, existing studies mentioned above	First time the main bank acquires the status of universal bank, as captured by an indicator variable equal to one in the event year and in the following two years, provided that the firm does not change its main bank in the event year.

(Continued)

Table A.1: – Continued

UB status (M&A)	SDC, CIQ, Federal Reserve Bulletins, existing studies mentioned above	Main bank acquiring the status of universal bank through a merger, as captured by an indicator variable equal to one in the event year and in the following two years, provided that the firm does not change its main bank in the event year.
UB status (Section 20)	SDC, CIQ, Federal Reserve Bulletins, existing studies mentioned above	Main bank acquiring the status of universal bank establishing a Section 20 subsidiary with tier-two securities powers, as captured by an indicator variable equal to one in the event year and in the following two years, provided that the firm does not change its main bank in the event year.
UW shock	SDC, CIQ, Federal Reserve Bulletins, existing studies mentioned above	Pure shocks to the underwriting capacity of the main bank (mergers merely enhancing underwriting capacity and establishment of Section 20 subsidiaries), as captured by an indicator variable equal to one in the event year and in the following two years, provided that the firm does not change its main bank in the event year.
<i>Rating status</i> Junk, Unrated	Compustat	Indicator variables (<i>Junk</i> , <i>Unrated</i>) based on the rating status of each firm-year defined looking at the Standard & Poor's issuer rating at the initiation of the relationship with the main bank. Following Faulkender and Petersen (2006) , a firm is defined as "unrated" if Standard and Poor's does not provide neither a long- nor a short-term issuer rating, i.e., <i>splticrm</i> and <i>spsticrm</i> , respectively. A firm is classified as "investment grade" if its Standard and Poor's long-term issuer rating is above BB+. Other rated firms are classified as "junk".
<i>Loan (deal) characteristics</i>		
ln(Facility amount)	Dealscan	Natural logarithm of the amount lent through the facility in 2007 dollars.
ln(All-in-drawn spread)	Dealscan	Natural logarithm of the all-in-drawn spread on the facility in basis points relative to a reference rate (e.g., LIBOR).
No. covenants	Dealscan	Number of financial covenants contained in the loan deal computed following Anantharaman et al. (2014) .
<i>Other variables</i>		
Tobin's q	CCM	Tobin's q computed as $(at - ceq + prcc_f \times csho - txdb) / at$.
Cash flow	CCM	Internal cash flow computed as $(ib + dp) / ppent$. In several cases, it is scaled by total assets, at .
SA index	CCM	Measure of financial constraints computed following the procedure described by Hadlock and Pierce (2010) and Li (2011) .
ln(Total assets)	CCM	Natural logarithm of at , where at is in 2007 dollars.
Tangibility	CCM	Tangibility of assets computed as $ppent / at$.
Z-score	CCM	Altman's Z-score computed as $-3.3 \times (pi / at) - 1.2 \times ((act - lct) / at) - sale / at - 0.6 \times ((prcc_f \times csho) / lt) - 1.4 \times (re / at)$.