The role of credit lines in corporate takeovers.[*]

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Working draft: October 2022

Abstract

I provide new evidence on the role of credit lines in M&A using a hand-collected sample of the sources of funds in US takeover bids 1994–2020. I show that credit lines are the most frequently used source in cash bids, financing more than 56% of transactions financed at least partially and 23% entirely. Deals financed with new or amended credit lines tend to have higher announcement returns and lower premiums than deals financed with existing credit lines and other sources. I find evidence that lender certification in new and amended credit-line-funded deals positively influences firms to make more value-enhancing acquisitions.

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1. INTRODUCTION

Bank credit lines are an essential source of liquidity for US public corporations. Between 2009 and 2019, the ratio of undrawn credit lines to GDP increased from 1% to 6%, accounting for almost the entire growth in debt financing of US publicly listed firms (Berg, Saunders, and Steffen, 2021). Moreover, during 2002-2017, more than 85% of firm-years had a line of credit, with the total value of these credit commitments amounting to 16% of firms' book assets[1]. Despite their importance, relatively little is known empirically[2] about the role of credit lines in corporate investment.

In this paper, I aim to fill this gap by examining the use of credit lines to fund mergers and acquisitions (M&A). Acquisitions provide a sound empirical setting to study the use of credit lines for firms' investment decisions because M&A are prominent and visible investment decisions in which details of transactions are recorded and publicly available. I address a number of questions: how does credit line usage vary with the bidder, deal, and other financial market characteristics? Would the type of financing differ for cash-constrained acquirers and those with less access to external funds, such as small acquirers? How are funding sources linked to bidding, synergy gains, and takeover premiums? And, how do firms refinance credit lines used in M&A?

The conventional view proposes that banks provide firms with credit lines (or, equivalently, short-term loans) to meet short-term liquidity needs rather than to finance long-term investments (Berger and Udell, 1998; Strahan, 1999). On the other hand, Lins, Servaes, and Tufano (2010), using *survey* responses from corporate chief financial officers (CFOs), document that managers tend to use cash reserves to hedge against future cash flow shocks and credit lines to fund investment projects available in good times. In their survey paper, Berg, Saunders, and Steffen (2021) break down the dollar amount of new and amended credit line facilities by reported purpose at origination using data from Loan Pricing Corporation's (LPC) DealScan. They show that transactional purposes (including M&A) have grown into the second-largest category in issuance volume ($200 billion). Furthermore, Chang, Chen, and Masulis (2022) find that credit line drawdowns rise with high long-term investment needs, including M&A.

Given the mixed evidence in credit line utilization, I explore how credit lines are used in long-term M&A investments and how this choice relates to value creation. I construct a comprehensive hand-

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[1]This is based on the Capital IQ database sample, which consists of 38,986 firm-year observations involving 5,526 US publicly-listed nonfinancial and nonutility firms.

[2]Mostly survey-based evidence.

collected dataset from the bidder's Securities Exchange Commission (SEC) filings recording the intensity of different financing sources in M&A between 1994 and 2020. Interestingly, of 1,393 all-cash and hybrid bids, credit lines are the most frequently used source: 56.5% of deals are financed partially and 23% entirely with credit lines. Conditional on usage, the median credit line utilization in transaction value is significant: 84%. Cross-sectional analyses suggest that small acquirers and firms with low cash balances are more likely to finance their bids and a larger portion of the deal with credit lines. These findings support the theoretical notion that access to credit lines alleviates liquidity constraints (Boot, Thakor, and Udell, 1987) for firms with scarce internal funds and less access to external financing. Credit line financing is also more common in smaller deals and when the target is private.

How should one expect the usage of credit lines to affect which types of acquisitions firms make? On the one hand, access to "pre-committed" credit lines may incentivize firms to make value-decreasing M&A investments. For instance, Jensen (1986) argues that empire-building managers would make acquisitions to the detriment of shareholder wealth rather than increase payouts. Consistent with this view, Harford (1999) finds that cash-rich firms are more likely to attempt value-destroying acquisitions, and shareholder wealth decreases with the amount of free cash flow held by the bidder. On the other hand, unlike cash holdings, credit lines serve as an optimal financing contract in resolving investment distortions such as underinvestment, overinvestment, and suboptimal liquidation problems (Berkovitch and Greenbaum, 1991; and Shockley and Thakor, 1997). Under this framework, if firms use credit lines in M&A as a credible signal of project quality, we expect deals financed with credit lines to create more value than those financed with other sources of funds.

I find that capital markets react more favorably to acquisition announcements of deals financed with new or amended credit lines, involving ex-ante (re)negotiations in which borrowers are often required to obtain lender consent for M&A investments[3]. The effect is economically significant: deals financed with new or amended credit lines tend to produce, on average, greater bidder cumulative abnormal returns (CARs) than non-credit-line and existing credit-line-funded deals by 1.4 percentage points (pp) and 2.0 pp, respectively. This translates into a $23-33 million improvement in shareholder value for a mean-sized bidder. Moreover, these deals also yield significantly higher combined acquirer-target CARs than non- and existing-credit line deals (by 1.7 to 4.2 pp) – indicating that the high acquirer CARs are not only a result of better bargaining on the part of the bidder, but in fact reflect higher overall synergies. Notably,

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[3]Examples are provided in Appendix 1.

the market does not usually know the exact sources of cash in corporate takeovers at the announcement date, in contrast to the method of acquisition financing (cash versus stock). Hence, these results primarily reflect the market's assessment of the quality of the deal (net of expectations) – rather than the signaling effects of the financing per se.

I also consider endogeneity concerns that could arise if the firm's choice of M&A financing with credit lines is correlated with certain observed or unobserved bidder- and/or deal-specific characteristics. The self-selection of financing choice by the bidder could create an omitted variable bias, leading to a potentially biased ordinary least squares (OLS) estimation. I attempt to address this concern by using the Heckman's (1979) two-stage procedure to correct selection bias. The solution is to model the firm's decision to use credit lines in M&A at the first stage using a probit model, calculate the predicted inverse Mills ratio (*Lambda*) for each observation, and in the second stage, estimate the bidder CAR using *Lambda* as a predictor in the model. All of the prior results continue to hold, while the insignificant coefficient for *Lambda* indicates that such a selection bias is not likely to distort my empirical setting. Furthermore, the baseline results are also robust to the use of an alternative measure of bidder gains, the inclusion of firm fixed effects, and the exclusion of all-stock deals[4].

I explore potential channels to gain further insight into the origins of these valuation effects. For example, suppose banks engage in the certification of firm acquisitions. In that case, the positive effects of new/amended credit line usage should be more significant in subsamples where certification is expected to be more valuable. In line with this prediction, the bidder CARs for new or amended credit-line-financed deals are more pronounced for (i) deals financed with loans provided by top-tier banks, which are more experienced and are better able to identify valuable deals (Golubov, Petmezas, and Travlos, 2012), and (ii) smaller acquirers facing larger information asymmetry problems, for which outside advice is more beneficial. Further, I investigate another explanation for higher bidder CAR: acquirers using new or amended credit lines are more likely to bid less aggressively, possibly due to lender engagement. The results show that offer premiums paid to targets in deals financed with new or amended credit lines are, on average, 17.5 pp lower, or roughly a third of the sample average of 50% (among completed deals). In contrast, those financed with existing credit lines have 15.2 pp *higher* premiums than deals not using

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[4]Prior studies offer several explanations for why the stock price of firms announcing a takeover can be negative. Jensen (1986) argues that empire-building acquiring-firm managers would instead make acquisitions than increase payouts to shareholders (the free cash flow hypothesis). Travlos (1987) emphasizes that firms with poor returns generally finance their takeovers through an exchange of common stock, and Myers and Majluf (1984) show that firms that issue equity convey negative information that their assets are overvalued (the equity signaling hypothesis).

credit line funding. These findings suggest that lender certification plays a critical role in borrowers' M&A deal-making through the renegotiation of credit line contracts.

In contrast to this argument, stronger creditor bargaining power can induce conservative investment policies that diverge from shareholder interests, such as diversifying acquisitions or inefficient allocation in capital expenditures (Nini et al., 2012). If banks exploit their informational advantage to interfere with the company's optimal investment policies, lender certification would be less beneficial or even detrimental to shareholders in the subsample where there is greater agency cost between lenders and borrowers (i.e., among firms with greater investment opportunities) (Houston and James, 1996). Regression results show no difference in the positive bidder CARs of high and low market-to-book acquirers using new or amended credit lines. Thus, this evidence does not support the theory that credit line provider engagement negatively impacts firms' investment policies when the bank's informational advantage is considerable.

Overall, this paper is the first to provide a systematic analysis of the role of credit lines in financing long-term M&A investments, which sheds light on the mixed evidence found in prior work on the subject. Second, the study offers direct evidence of bridge financing from a subsample of acquisitions financed with credit lines. In this sample, firms refinance credit lines in M&A transactions primarily with proceeds from long-term bond issuance. On median, the time until at least half of the credit lines used in the transaction is paid down is 4.5 months. The repayment speed suggests that firms use credit lines to reduce transaction costs when presented with the stochastic arrival of investment opportunities. Once funding is secured, firms can move quickly and confidentially to ensure the timely closing of the transaction (Martin and Santomero, 1997), especially when other alternatives, such as bonds and equity issuance, would take longer to arrange and entail high issuance costs. Furthermore, if the takeover fails to close, firms would encounter higher transaction costs in returning unused funds if these are issued via bonds and equity instead of via credit lines.

Moreover, this study contributes to the M&A literature by building on several studies that link bidder gains with acquisition financing (Travlos, 1987; Harford, 1999; and Martynova and Renneboog, 2009). Schlingemann (2004) shows that the level of debt financing before a merger announcement is not related to acquirers' announcement returns. In contrast, Bharadwaj and Shivdasani (2003) and Massoud, Song, and Tran (2019) document a positive market reaction to announcements of U.S. bank-funded deals. Martynova and Renneboog (2009), using data on European takeover bids from 1993–2001, report that

deals financed with internal funds considerably underperform those financed with debt. I add to these findings by examining value creation in deals funded with credit lines, and more broadly, how bidder gains differ across different sources of funds in acquisitions.

This paper is also related to research on the interdependence of bank financing and investment decisions. In Diamond (1984) and Billett et al. (1995), private lenders either obtain private information about the firm's value or have the incentive and ability to monitor firm behavior more effectively than other outside monitors can. This control can be efficient by allowing positive net present value activities to be undertaken while also impeding bad investment proposals (Diamond, 1991). Contributing to these studies, I find empirical evidence suggesting that upon renegotiation, lenders engage in an ex-ante screening and self-selection through the approval of high-quality M&A deals funded with new or amended credit lines.

The remainder of the paper proceeds as follows. Section 2 describes data and examines the characteristics of the sample firms and M&A deals. Section 3, 4, and 5 provide empirical tests and results. Section 6 provides concluding remarks.

2. DATA

2.1. Sample Construction

As summarized in Table 1 Panel A, I first sample control bids from Refinitiv's SDC Mergers & Acquisitions database using transaction form "merger" or "acquisition of majority interest" from 1994 to 2020. I chose 1994 as the initial year for my sample to coincide with the passage of the SEC's mandated submission of company filings through its electronic data gathering, analysis, and retrieval system, EDGAR. The initial sample consists of 22,643 takeovers made by U.S. acquirers of U.S. public, private, and subsidiary targets. I impose several restrictions:

1. The buyer must own less than 50% of the target shares before the acquisition and seek to own at least 50% of the target equity after the bid.

2. Bidders are covered by both CRSP and Compustat.

3. Financial firms (SIC code 6000–6999) and regulated utilities (SIC code 4900–4999) are excluded to avoid capital structures governed by regulation.

4. Deals are completed for the exact sources of funds in acquisitions to be identifiable. For withdrawn

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deals, firms do not report the intended sources of funds.

5. The deal value is greater than $1 million in 2000 USD and at least 1% of the bidder's book value of assets.

[INSERT Table 1 HERE.]

The resulting sample consists of 5,712 successful takeovers, of which 43% are all-cash offers, 25% are mixed offers, and the remaining 32% are all-stock offers. Table 1 Panel B describes the manual data selection process to gather information on how cash bids are financed. Due to the time-consuming nature of this data collection, I limit the analysis to a sample of firms financed at least one deal with corporate funds, debt, or stock issuance, according to SDC. The hand-collected sample is therefore restricted to 1,910 cash-paid acquisitions (all-cash and hybrid offers), a feature that I require to identify sources of cash in M&A transactions[5].

For each deal in the sample, I manually read all available SEC filings (10-Ks, 10-Qs, and 8-Ks) through the announcement to closing (effective) dates and beyond to verify the actual sources of cash, which are classified into seven different sources: internally generated cash[6], credit line, term loan, note issuance, commercial paper, other debt[7], and stock issuance. I also use the Nexis Uni research tool to obtain press releases and business news related to the deal when no information is available on SEC filings. I obtain data on the intensity or usage of the sources of funds in cash-paid acquisitions: (i) the frequency of sources of financing that represent as the *only* and *partial* source of financing, (ii) the dollar amount of sources of financing used in transactions, (iii) whether firms enter into new/amended/existing credit lines to fund M&A and the loan contract information (i.e., loan amount, maturity, secure, stated of purposes), and (iv) the undrawn ratio of the firm's U.S. bank lines of credit (unused portion scaled by the total lines of credit), measured prior to the merger announcement. An example of a financing disclosure is as follows:

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[5]SDC provides dummies on sources of financing, such as financing via corporate funds, debt issuance, and stock offering. Nevertheless, these data often contain errors, so they can only be used to indicate whether information on the sources of funds is available. To illustrate, in the sample of 1,912 acquisition bids, SDC records 588 deals financed at least partially with corporate funds, 968 deals financed at least partially with debt issuance, 84 deals stock offering, and 730 deals missing sources of funds. On the other hand, in my hand-collected sample, 692 deals are financed at least partially with corporate funds, 1,130 deals debt issuance (i.e., credit lines, term loans, bonds, commercial papers, and other debt), 65 deals stock offering, and 484 deals missing sources of funds. Even though SDC does not correctly record financing sources, its indicators are an excellent filter to use.

[6]Refer to "cash on hand", "corporate funds", "existing cash and marketable securities", and "working capital" in SEC filings.

[7]Refer to bridge financing, mortgage financing, seller carryback financing, accounts receivable securitization facility, account receivable sale program, lease facility.

Goldleaf Financial Solutions

(Announcement - Effective merger dates: 17.Jan.2008 – 17.Jan.2008)

Form 8-K filed on 18-Jan-2008, and form 10-Q filed on 18-Mar-2008

"On January 17, 2008, Goldleaf Financial Solutions, Inc. entered into an Agreement and Plan of Merger by and among the Company, GLF Sub, Inc. and Alogent Corporation. Under the Merger Agreement, the Company agreed to acquire all of the capital stock of Alogent by merger of Alogent into an existing subsidiary of the Company for an aggregate purchase price of $42,619,063.

Also on the Closing Date, the Company amended the Second Amended and Restated Credit Agreement dated November 30, 2006 by and among the Company, Bank of America, N.A., The Peoples Bank and Wachovia Bank, N.A. The parties to the amendment, agreed to certain changes to the Credit Agreement, including the following: the Revolving Loan Commitment was increased by $5 Million to $45 Million; the limit on annual Capital Expenditures was increased from $5 million to $7 million; *consent was given for the Alogent acquisition.*"

The takeover was financed 100% credit lines (new loan).

By removing firms without company filings, deals without financing sources, and stock-to-stock transactions misidentified by SDC, the cash-bid sample consists of 1,393 deals which account for 73% of the starting sample of 1,910 cash offers. For these offers in which sources of funds were disclosed, I define discrete dummy variables on whether the deal is financed with *partial* or *only* source of financing and continuous variables for a fraction of each source of financing in the deal payment.

2.2. Description of Sources of Funds in Acquisitions

Figure 1 presents descriptive statistics on sources of funds in the sample of 1,393 cash bids. Broadly speaking, firms often use a combination of different sources, and cash bids are at least partially funded with internal cash in about 50% of the cases, with debt in more than 81% cases, and with public stock issuance in 5% cases. Among cash-paid acquisitions, credit lines are used to finance at least part of the acquisition in 787 (56.5%) control bids, making such loans among the most frequently used source of debt financing in M&A. Of those credit line deals in the sample, about 23% are entirely financed with credit lines, and the average credit line utilization in transaction value is large: 0.7 (with a median of 0.84).

Internally-generated corporate cash is the second most prevalent source of financing (49.7%), followed by term loans (29%) and bond/notes issuance (12.6%). The different sources of funds are not mutually exclusive as firms often combine different financing sources to finance acquisitions and thus do not sum up to one.

Figure 2 describes the loan characteristics used to fund 787 credit-line-financed deals. Of these credit line deals, 304 (38.6%) loans are existing loans, 138 (17.5%) amended loans, and 347 (44.1%) new loans (Panel A). Here, renegotiation in amended loans takes place prior to takeovers to facilitate M&A financing. Amendment purposes include increasing the dollar amount available for credit lines, extending loan maturity, allowing for additional term loans under the same loan facility, improving pricing, and modifying the related financial and nonfinancial covenant requirements. Firms must often obtain lender approval for M&A investments in new or amended credit lines. I define *REVISECL* as an indicator variable which takes the value of one if an acquisition is financed by an amended or new credit lines, and zero otherwise. *OLDCL* is an indicator variable that equals one if an acquisition is financed with existing credit lines, and zero otherwise.

Figure 2 Panel C and D show that more than 90% of revolving credit agreements are long-term contracts with an average maturity of 4.5 years, and 67% of the credit line contracts used to finance mergers are secured arrangements. Figure 3 shows that the average size of credit lines used to finance the takeover entirely is approximately $133 million, but the median loan amount is significantly smaller at $54 million. These figures for a term loan ($296 million) and note issuance ($275 million) are, on average, more than two times higher than the credit line amount, suggesting that larger deals tend to involve other debt than credit lines.

2.3. Sample Statistics: Characteristics of the Takeover Sample

In addition to all-stock merger deals, the study centers around a data set that records funding sources in 1,393 cash bids (all cash and mixed offers). Table 2 presents summary statistics of the full sample of 3,199 merger bids and samples sorted by sources of financing (credit-line versus non-credit-line deals). It reports means, medians, and the number of observations for key variables used in empirical analyses. Panel A of Table 2 illustrates bidders' characteristics, in which those variables are measured at the end of the fiscal year before the takeover announcement. To mitigate the impact of outliers or coding, all continuous variables are winsorized at the upper and lower one percentiles. All variables are defined in

Table A.1, Appendix. Cash holdings, excess cash, profitability, Tobin's Q, tangibility, and book leverage are all scaled by total assets.

The data show that credit-line acquirers are, on average, smaller than non-credit-line acquirers and have relatively low cash holdings, earnings volatility, and higher profitability, asset tangibility, and book leverage. Alternative measures for acquirers' cash richness (the ratio of cash to the transaction value and excess cash) provide similar results. Excess cash is defined as cash that is not required for operation or investment purposes. Precisely, I determine excess cash as the cash held above a predicted "normal" (or "optimal") level (as in Eckbo et al., 2018). Panel A shows that excess cash is -0.05 for credit-line bidders and 0.04 for non-credit-line bidders. The difference between these two samples is statistically significant at 1% level (based on both the t-test and Wilcoxon test for mean and median values, respectively).

[INSERT Table 2 HERE.]

Table 2 Panel B reports various deal characteristics. In the full sample, 8.5% of deals are tender offers, and about 40% of targets are publicly listed. This is consistent with the sample characteristics of 6,200 merger bids for US targets by US nonfinancial public bidders during 1980–2014, as reported by Eckbo et al. (2018). On average and median, credit-line deals are relatively smaller than non-credit-line deals in relative size (measured as the natural logarithm of the ratio of the transaction value to total assets of the acquirer at the end of the fiscal year prior to the merger announcement). Credit-line financing is also more common among private-target deals and tender offers. Moreover, the average time to completion of a merger (measured from the public announcement date of the initial control bid to the effective merger date) in the full sample is 67 trading days[8]. The median speed of merger execution is one month shorter for credit-line-financed deals than those without credit-line financing.

The table also reports the five-day bidder cumulative abnormal returns (CARs) using the market model estimated over the trading days $(-252; -42)$ prior to the deal announcement, and takeover premium calculated as the natural logarithm of the initial offer price divided by the stock price 42 days prior to the takeover announcement. The resulting average (median) bidder CARs in the full-, credit-line- and non-credit-line sample is about 1.2% (0.3%), 2.4% (1.5%) and 0.8% (-0.3%), respectively[9]. The differences in bidder gains between credit-line- and non-credit-line samples are statistically significant at 1% level.

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[8]For a sample of 25,166 successful takeover contests for US targets between 1980 and 2005, Betton et al. (2008) find that the mean time to completion is about 65 trading days.

[9]CARs for all-cash bids documented in Betton et al. (2008) sample between 1980 and 2002 is about 1%. In my sample of merger bids between 1994 and 2020, this figure is about 2%, conditional on successful or completed merger bids.

3. Factors influencing the use of credit lines in M&A

To formally examine types of firms and deals in credit-line-financed acquisitions, I employ a series of regression specifications with either an indicator for the presence of credit line usage or the fraction of credit line funding to deal value as the dependent variable. The baseline choice model consists of two groups of determinants: (1) bidder characteristics, (2) deal characteristics. Specifically, I estimate:

$$y_{i,d,t} = \alpha + \beta X_{i,t-1} + \phi D_{d,t} + \mu_t + \nu_j + \epsilon_{i,d,t}$$

where i, d, j, t index firm, deal, industry, and year, respectively. The K-dimensional vector $X_{i,t-1}$ contains bidder characteristics at the end of the fiscal year prior to merger announcements, and $D_{d,t}$ refers to deal characteristics. Bidder characteristics includes cash holdings, profitability, EBITDA volatility, Tobin's Q, asset tangibility, size, and book leverage. Deal characteristics contain large relative size, public status of target, and whether the deal is a tender offer.

A variety of fixed effects are included to control for other potentially unobservable factors. For instance, volatility of credit markets or macro-economic factors could adversely affect the firm. Changes in U.S. and global financial markets, including market disruptions, limited liquidity, and interest rate volatility, may increase the cost of financing as well as the risks of refinancing maturing debt. Thus, year FEs (μ_t) are used to control for inter-temporal variation in choice of financing, and industry FEs (ν_j, based on 2-digit SIC industry classification) are used to control for unobservable, time-invariant differences across industries. Statistical inferences are based on heteroskedasticity-robust standard errors clustered at the industry level to account for correlations among error terms within industry. The firm-specific variables used in my choice-of-financing regressions are as follows.

1. Undrawn CL: It is measured as ratio of the undrawn portion of credit lines to the total lines of credit using a hand-collected dataset from SEC filings[10]. Firms with greater undrawn credit lines are more likely to finance their bids, and a greater portion of the deal with credit lines. Hence, I predict this variable will have a positive effect.

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[10]I collect the data on undrawn credit availability prior to takeovers for the sample of 1,393 all-cash and mixed bids and a random sample of 680 deals out of 1,806 all-stock bids. Following Sufi (2009), I search for seven terms in 10K and 10Q filings on EDGAR: "credit lines", "credit facility", "revolving credit", "bank credit line", "lines of credit", and "line of credit". If a line of credit backs up a standby letter of credit or commercial paper program, any outstanding amount of both letter of credit and commercial paper is subtracted from the availability of revolving credit lines, while it is not part of the drawn portion of the line of credit. Any balance of the backup line that does not support letter of credit or commercial paper is recorded as an unused portion. This process results in 1,983 merger bids with nonmissing data on undrawn credit lines.

2. Cash holdings: I study whether the decision to obtain credit line financing is associated with the availability of internal funds. Many studies focus on firms' choice between internal liquidity through cash and external liquidity through credit lines (Sufi, 2009; Lins, Servaes, and Tufano, 2010; and Acharya, Almeida, and Campello, 2013). Despite bank credit lines being the best all-around substitute for cash holdings, credit lines are the partial substitution for cash holdings among firms that maintain a high level of cash flows.

3. Profitability and CF volatility: Prior research argues that credit line providers use covenant violations as early warning signals that give them the right to revise and renegotiate the debt contract (Sufi, 2009; Roberts, 2015). Thus, it is expected that firms facing a lower cost of covenant violations (i.e., more credit-worthy firms and those with greater cash flow risk) will rely more heavily on credit lines in funding large investments. I measure the variability of cash flows as the standard deviation of annual changes in EBITDA level over a lagged five-year period, scaled by total assets.

4. Size: Although less credit hurts all firms, smaller firms tend to rely more on bank credit than larger and better-established firms. In particular, small and medium-sized firms obtain credit lines to fund short-term liquidity needs, while large firms use commercial papers for short-term funding and bonds to finance long-term investments (Strahan, 1999). I use size measure as the logarithm of total assets, where assets are adjusted to 2000 dollars.

5. Asset Tangibility: Access to credit lines tends to be subject to collateral constraints, such that firms' debt capacity is bounded by the fraction of assets they can collateralize (see Nikolov, Schmid, and Steri, 2019). Collateral lessens credit risk since the lender has a lawful right against the firm's assets in case of default or bankruptcy. I use asset tangibility (the ratio of property, plant, and equipment to total assets) as a proxy for collateral.

6. Tobin's Q: The investment theory conjectures that the link between growth opportunities and mode of acquisition exists when firms with greater growth options avoid underinvestment problems caused by debt overhang; hence, they prefer to raise capital with equity (Martin, 1996). Further, Jung, Kim, and Stulz (1996) show that firms with valuable investment opportunities are more likely to issue equity because it offers them more managerial discretion over the funds raised than debt financing. To proxy for growth opportunities, I use the bidder's Tobin's Q.

7. Leverage: I measure Leverage using the debt-to-assets ratio, which combines short- and long-term debt. Firms with a higher debt ratio (*Book Leverage*) may have higher costs of raising additional debt due

to the potential agency costs of underinvestment (Myers, 1974). Thus, the predicted effect of *Leverage* is negative.

[INSERT Table 3 HERE.]

Table 3 presents the results of both multivariate OLS analysis with the fixed-effect framework in columns (1)-(2) and (4)-(5) and Tobit analysis in columns (3) and (6). In columns (1) and (4), the dependent variable (CL) takes the value of one if the deal is financed at least partially with credit lines. In columns (2) and (5), $CLONLY$ equals one if the deal is fully financed with credit lines. In columns (3) and (6), the dependent variable ($CLPCT$) is the fraction of credit lines used to fund the cash portion of the takeover to the transaction value, $CLPCT \in [0, 1]$. I run regressions across subsamples of 1,393 all-cash and mixed offers for columns (1)-(3) and 1,078 all-cash bids for columns (4)-(6), and perform additional tests where I report results in the full sample where all-stock bids are included (Table A.2, Appendix). The number of observations in all regressions declines due to missing values in the hand-collected data on the undrawn credit ratio.

Regression results report that the undrawn credit line ratio is a strong statistical predictor of credit line usage in M&A. A one-standard-deviation increase in the ratio of undrawn-to-total-credit (34.372) is associated with a ($34.372 \times 0.005 =$) 17.2% increase in the probability of using credit lines to pursue an all-cash acquisition, which is more than three-fourths of one standard deviation. Moreover, firms' cash ratio has consistently negative coefficients across specifications. It is also striking that the coefficient estimates of cash are relatively stable through the different specifications. Column (4) indicates that among all-cash bids, a one-standard-deviation decrease in the cash-to-asset ratio is associated with an economically significant ($0.160 \times 0.668 =$) 11% increase in the likelihood of credit line financing, after controlling for other firm- and deal-specific characteristics.

The results in columns (1) and (4) also suggest that smaller firms and firms that experienced relatively low cash flow risk are more likely to use credit line financing. Given their size, however, small businesses tend to be more financially constrained than larger firms due to their relative lack of hard information, such as audited financial statements (Petersen and Rajan, 1994). These results suggest that credit line lenders specialize in lending to more financially constrained and less risky firms. Columns (2) and (5) report results from the models that estimate the likelihood that a cash bid is entirely financed with credit lines. Similar results are obtained regarding the predicted firm-level characteristics. The propensity

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to finance a cash bid with 100% bank credit is negatively correlated with the acquirer's internal cash, firm size, and risk (measured by EBITDA volatility), and is positively correlated with past performance (profitability). Columns (3) and (6) provide robustness checks by reporting results from a Tobit model that uses ($CLPCT$), the fraction of transaction volume financed by credit lines, as the dependent variable. In line with prior results, the ratio of credit line amount to transaction value falls with the availability of internal financial slack, firm size, and risk. It increases with the capacity of undrawn credit lines and profitability.

Deal-specific characteristics also appear to correlate with credit lines' use for acquisition purposes. Credit line financing is more common in relatively small-sized deals (those in the bottom quartile of the ratio of deal value to total bidder assets) and public-to-private mergers. This partially confirms the statistics in Figure 3, showing that larger deals tend to involve other debt, such as term loans, notes issuance, and commercial papers. A robustness check where all-stock bids are included in the sample (Table A.2, Appendix) largely holds across all models.

In short, these models exhibit that variables used to proxy for the availability of internal funds, undrawn credit lines, size, and cost of covenant violations (i.e., past performance and earnings volatility) tend to be important in explaining the usage of bank lines of credit in takeovers. There is less evidence that credit line providers avoid lending to more collateral-constrained acquirers (e.g., less tangible assets or PPENT/AT).

4. Valuation effects of credit line financing

4.1. Hypotheses and testable implications

The precautionary saving theory introduced by Keynes (1936) states that firms preserve cash holdings to safeguard themselves against adverse cash flow shocks that might cause them to bypass valuable investment opportunities due to costly external financing. Notwithstanding, the agency costs of free cash flow hypothesis led by Jensen (1986) posits that conflicts of interest between managers and shareholders emerge when the firm generates more cash than is needed to finance all positive NPV projects. In this case, there is an incentive for managers to misuse the excess cash on unprofitable investments such as acquisitions.

Unlike cash holdings, credit lines are theoretically regarded as optimal solutions to resolve moral

hazard and the traditional underinvestment problem (Boot, Thakor and Udell, 1987; Thakor and Udell, 1987; Shockley, 1995; Berkovitch and Greenbaum, 1991; Shockley and Thakor, 1997). Specifically, a credit line contract that includes a material adverse change (MAC) clause[11] mitigates investment distortions; the commitment interest rate (a fee that is charged to compensate the lender for keeping a credit line open) can be set low enough to prevent debt overhang. At the same time, the MAC clause enables the bank to forbid excessive reinvestment (Shockley, 1995). Empirically, creditors in loan agreements tend to use their bargaining power to influence firm policies through various covenant restrictions (Nini et al., 2009; Denis and Wang, 2014; Chava and Roberts, 2008; Nini et al., 2012; Ferreira et al., 2018). They can also tighten contractual restrictions upon renegotiation to prevent value-destroying acquisitions (Becher et al., 2021).

Under this framework, we expect deals financed with credit lines to create more value than those financed with other sources of funds. In other words, it predicts a positive relationship between credit line financing and bidder gains. This is related to prior studies that link bidder gains with financing sources (see Lang et al., 1991; Harford, 1999; Schlingemann, 2004; Bharadwaj and Shivdasani, 2003; and Martynova and Renneboog, 2009). Lang et al. (1991) and Harford (1999), in support of Jensen (1986) 's free cash flow theory, find that acquirers endowed with free cash flows are more likely to engage in value-destroying acquisitions as external capital markets do not constrain them. Schlingemann (2004) documents no relationship between the level of debt before a takeover announcement and bidder gains. In contrast, Bharadwaj and Shivdasani (2003) and Martynova and Renneboog (2009) find that acquirers using more debt to finance their cash offers experience higher bidder gains.

The positive association between credit line financing and announcement returns can be interpreted in two ways. First, does the bank's decision to secure financing for an acquisition serve as a signaling mechanism regarding the acquisition's profitability, thereby enabling the firm to pursue more value-enhancing investment projects? Or do credit line providers, using their informational advantage, selectively grant funding to those more value-enhancing acquisitions? I disentangle these two effects by examining the acquirer's wealth gains for deals financed with existing and those financed with new/amended credit lines. Due to the dynamic, rollover nature of credit lines, an acquirer can either (i) draw down on its existing credit lines or (ii) negotiate a new or amended credit facility, obtain *lender consent* on the acquisition, and draw down on that facility concurrently with the consummation of that acquisition. Consequently,

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[11]This grants the bank the right to revoke the entire loan commitment if the firm's financial condition worsens.

if lenders "cherry-pick" better-quality acquisitions based on their belief, we expect more profound bidder gains for deals financed with new/amended credit lines than those financed with existing credit lines.

4.2. Methodology and empirical results

I measure bidder stock price reactions around the M&A announcement date. Following the event-study methodology that is analogous to that used by Schwert (1996), I define abnormal returns as the residuals from a one-factor market model. Market model parameters are estimated using daily stock returns over the interval –252 trading days to –42 trading days relative to the announcement date (day 0). In these regressions, the benchmark returns are the value-weighted index returns, including dividends for all combined New York Stock Exchange (NYSE), American Stock Exchange (AMEX), and NASDAQ. Cumulative bidder abnormal stock returns ($CARs(-2, 2)$) is estimated over a five-day window centered around the deal's announcement date. I then test the following baseline model specifications:

(1) H_0: There is no difference in market reactions between credit-line- and non-credit-line-funded deals.

$$CARs_{d,t} = \alpha + \beta_1 CL_{d,t} + \lambda X_{i,t-1} + \theta D''_{d,t} + \mu_t + \nu_j + \epsilon_{d,t}$$

(2) H_0: There is no difference in market reactions between deals financed with new or restated credit lines and existing credit-line-funded deals.

$$CARs_{d,t} = \alpha + \beta_1 CL_{d,t} + \beta_2 REVISECL_{d,t} + \lambda X_{i,t-1} + \theta D''_{d,t} + \mu_t + \nu_j + \epsilon_{d,t}$$

where *i, d, j, t* index firm, deal, industry, and year, respectively. Year FEs (μ_t) and industry FEs (ν_j) are included. Standard errors (SEs) are robust to heteroskedasticity and clustered at the industry level (SIC2). The dependent variable ($Y_{d,t}$) is the acquirer's cumulative abnormal returns measured from 2 days before to 2 days after the announcement day, i.e., $CARs(-2, +2)$. Deal characteristics ($D''_{d,t}$) consist of dummies on large relative size, public target, all cash, all stock, tender offer, within-industry merger, hostile.

[INSERT Table 4 HERE.]

The univariate analysis shows that a positive association between credit line financing and bidder CARs does not account for several key factors that affect acquirer returns (Table A.3, Appendix). Following extant literature, I control for various bidder- and deal-specific characteristics in the multivariate

regressions. Bidder characteristics are measured at the end of the fiscal year before the acquisition announcement unless specified otherwise. Table 4 reports the coefficient estimates of regressions of acquirers' five-day CARs on credit line financing and control variables. We add year and industry-fixed effects to account for M&A waves, macroeconomic trends, and industrial heterogeneity in acquisition returns. Standard errors are clustered at the industry level. The definitions of all variables are detailed in Appendix A.1. The goodness-of-fit measure for regression models (R2) is above 5% for all models, which are comparable to CARs regressions in prior studies (e.g., Moeller, Schlingemann, and Stulz, 2004).

In columns (1) and (2), the main variable of interest is the extent of credit line financing. They both report a higher bidder CARs for deals financed with credit lines, specifically the coefficient on CL is 0.008 (t = 1.75) in column (1) and 0.010 (t = 1.97) in column (2) when both year and industry FE are included. In models (3) and (4), I separate the valuation effects of credit line financing between credit line deals funded with new or amended loans ($REVISECL$) from those funded with existing loans ($OLDCL$). Acquisitions funded by new/amended credit line loans have bidder gains that are 1.4 percentage points (t = 2.85) higher than non-credit-line-financed acquisitions. In contrast, those funded by existing credit line loans have CARs that are indifferent from other offers (column (4)). The valuation effect of new or amended credit-line-financed deals is substantial, given acquirers' announcement returns of the full sample average of 1.38% (among completed deals).

Compared to existing-credit-line-financed offers, those financed by new/amended credit lines attain around two percentage points greater average bidder gains (columns 5-6). In other words, the positive association between acquirers' announcement returns and credit line financing attributes only to new/amended loan commitments, where borrower-lender negotiations often occur before takeover announcements. Hence, this is consistent with the view that lenders positively influence a firm's investment policy by securing financing under new/amended credit lines for better quality M&A deals perceived by the market – rather than simply signaling effects regarding firm value.

The last two columns present how bidder gains differ across different sources of funds in acquisition. Specifically, I compare bidder gains from deals financed with credit lines, term loans ($TLOAN$), bond issuance ($BOND$), commercial paper, and other short-term debt such as bridge financing (CPO), and stock issuance (SI) with deals financed entirely with internally generated cash ($CORPONLY$, the baseline dummy). I show that among debt, only deals financed with new credit lines or term loans (mostly new loans) are associated with higher acquirers' announcement returns than internal-fund-only deals,

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which managerial empire-building motives may drive. This adds to the evidence in Martynova and Renneboog (2009), finding that deals financed with internally generated funds are underperformed debt-financed deals. Moreover, these results remain intact when using three-day bidder CARs as an alternative measurement of bidder gains (see Table A.4, Appendix) and for subsamples of all-cash bids (see Table A.5, Appendix). These suggest that my analyses are unlikely to be driven by measurement error or the payment method choice between cash and stock.

4.3. Synergy gains

I measure synergic acquisition gains following the methodology developed by Bradley, Desai, and Kim (1988). For each deal, I construct a value-weighted portfolio of the bidder and the target, with the weights based on their respective market capitalizations at the 20 trading days prior to the initial announcement of the acquisition. The synergy gain is defined as the portfolio's cumulative abnormal return during a five-day event window, which is measured by market-model adjusted returns around the initial merger announcement. In an efficient stock market, the value creation of the merging firms in response to deal announcements can be illustrated as the expected synergy gain generated from the combination.

[INSERT Table 5 HERE.]

Table 5 presents the coefficient estimates of regressions of combined CARs on credit line financing and bidder- and deal-specific explanatory variables (similar to what is included in Table 6). Models (1) and (2) show no association between credit line financing and synergistic gains. Models (3) and (4) show that the combined firm cumulative abnormal returns around merger announcements of deals financed with new/amended credit lines increase by $1.4 - 1.7$ percentage points relative to the sample average combined firm CARs of 2%. Overall, my findings suggest that deals financed with new or amended credit lines are associated with greater anticipated shareholder value creation for the combined entity. This also implies that the high acquirer CARs shown in Section 3.4.2 is not only a result of better bargaining on the part of the bidder but also reflects higher overall synergies.

4.4. Sensitivity Analysis

Let's reconsider the following baseline model:

$$CAR_{d,t} = \alpha + \beta_1 CL_{d,t} + \lambda X_{i,t-1} + \theta D''_{d,t} + \mu_t + \nu_j + \epsilon_{d,t} \tag{1}$$

where $X_{i,t-1}$ and $D''_{d,t}$ are a set of observable characteristics of the firm and deal, respectively. $CL_{d,t}$ is a dummy variable that takes the value of 1 if the firm use credit lines to finance an acquisition and 0 otherwise, $\nu = \{\alpha, \beta_1, \lambda, \theta\}$ is a vector of parameters to be estimated, and $\epsilon_{d,t}$ is an error term.

We observe that the firm's decision to finance the acquisition with specific sources of funds is potentially subjected to sample selection bias. If determinants of an acquirer's choice of financing in M&A are correlated with determinants of the acquirer's announcement returns, $CL_{d,t}$ will be correlated with the error term in equation (1). The self-selection of financing choice by the acquirer could create a type of omitted variable problem manifesting as endogeneity, leading to a biased OLS estimate of β_1. Assuming a normally distributed selection process, I apply Heckman's (1979) two-stage procedure to address omitted variable bias stemming from the sample selection problem. I estimate a first-stage probit model predicting the likelihood of the firm engaging in credit-line-funded deals in the following form ("selection model"):

$$CL^*_{d,t} = \eta Z_{i.t-1} + \varepsilon_{d,t} \tag{2}$$

$$CL_{d,t} = 1 \text{ if } CL^*_{d,t} > 0$$

$$CL_{d,t} = 0 \text{ if } CL^*_{d,t} < 0$$

where $CL^*_{d,t}$ is an unobserved latent variable, $Z_{i,t-1}$ refers to a set of firm characteristics that affect the firm's decision to finance the deal with credit lines, and $\varepsilon_{d,t}$ is an error term. A firm-specific instrument, specifically undrawn credit availability prior to a merger announcement, that predicts the decision of credit line financing is used in the selection equation. This makes a valid instrument to the degree that they do not affect the acquirer's CARs directly but through the channel of credit line financing, conditional on other potential channels being controlled. I also include industry- and time-specific factors in the model. Precisely, I control for the presence of industry merger waves, proxies for macroeconomic conditions and business cycles such as credit spread (the difference between the yield of AAA seasoned corporate bonds and a three-month Treasury bill), real growth rates of gross domestic product (GDP) and the number of months in the period between a peak of economic activity and its subsequent trough (recession). The

first-stage probit model is reported in Table A.5, Appendix.

The expected bidder gains, conditional on whether the deal is financed with credit lines and without credit lines, respectively, are estimated as:

$$E(CAR_{d,t}|CL_{d,t} = 1) = \alpha + \beta_1 + \lambda X_{i,t-1} + \theta D''_{d,t} + E(\epsilon_{d,t}|CL_{d,t} = 1)$$

$$E(CAR_{d,t}|CL_{d,t} = 0) = \alpha + \lambda X_{it-1} + \theta D''_{dt} + E(\epsilon_{d,t}|CL_{d,t} = 0)$$

Suppose that $\epsilon_{d,t}$ and $\varepsilon_{d,t}$ follow a bivariate normal distribution with mean zero, standard deviation σ and 1, and correlation ρ. I have,

$$E(\epsilon_{d,t}|CL_{dt} = 1) = \rho\sigma\tau_1(\eta Z_{i,t-1}) \text{ where } \tau_1(\eta Z_{i,t-1}) = \frac{\phi(\eta Z_{i,t-1})}{\Phi(\eta Z_{i,t-1})}$$

$$E(\epsilon_{d,t}|CL_{d,t} = 0) = \rho\sigma\tau_2(\eta Z_{i,t-1}) \text{ where } \tau_2(\eta Z_{i,t-1}) = -\frac{\phi(\eta Z_{i,t-1})}{1 - \Phi(\eta Z_{i,t-1})}$$

where $\phi(.)$ and $\Phi(.)$ are the standard normal density and cumulative distribution functions of the standard normal, respectively. The difference in the acquirer's CARs conditional on credit line financing and non-credit line financing is given by

$$E(CAR_{d,t}|CL_{d,t} = 1) - E(CARs_{d,t}|CL_{d,t} = 0) = \beta_1 + \rho\sigma\frac{\phi(\eta Z_{i,t-1})}{\Phi(\eta Z_{i,t-1})(1 - \Phi(\eta Z_{i,t-1}))} \quad (3)$$

The OLS specification estimates the RHS of equation (3). The correlation between error terms in equations (1) and (2) determines the direction of the biased estimate. The acquirers' CARs will be biased upward for a positive ρ, and vice versa.

In the first step of the Heckman procedure, I estimate the probit model in equation (2) to obtain consistent estimates of η. Then, the residuals of the selection equation are used to construct a selection bias control factor, which denotes as *Lambda* and is equivalent to the Inverse Mill's ratio. Finally, in the second step, I estimate equation (1) and use the selection bias control factor *Lambda* as an additional independent variable. Since *Lambda* reflects the effect of all the unmeasured characteristics related to the credit line financing decision, the coefficient of this factor captures the part of the effect of these characteristics related to the acquirer's CARs. In other words, if *Lambda* enters significantly into regressions, some selection bias is present, and estimates obtained through regressions without a correction for this bias (i.e., OLS) can be inconsistent.

[INSERT Table 6 HERE.]

Table 6 presents the second-stage estimation in the Heckman two-step model of bidder gains on credit line financing, other controls, and the Inverse Mill's ratio. The sign of *Lambda* is determined by the sign of ρ, the correlation between the error terms in equations (1) and (2). In the second-stage Heckman regressions, the inverse Mills ratio does not enter significantly across all specifications, indicating that selection bias does not distort my results. The estimated coefficients for credit line financing (CL) are robust and consistent with previous findings in Table 6. Column (2) indicates that the average bidder gains of deals financed with credit lines are indifferent to other deals. The stronger average bidder CARs effect is attributed to deals financed with new or amended credit lines (column (4)), given that the magnitude is slightly greater than what is reported in Table 6 (1.6% versus 1.4%, both are statistically significant at 1% level).

In sum, the estimation of bidder gains in the Heckman selection model (assuming the normal distribution of the residuals) indicates that omitted variable bias stemming from sample selection is less of a concern in my setting. While this analysis does not directly facilitate causal inference, I also conduct numerous robustness checks suggesting that the results are not spuriously driven by potentially omitted factors (in particular industry × time fixed effects and acquiring firm fixed effects) (refer to Table A.6, Appendix).

4.5. Potential explanations for the higher bidder CARs

To gain insights into the positive relation between new/amended credit line financing and bidder gains, I explore several possible explanations: (i) lender certification effect, (ii) financial flexibility, and (iii) offer premiums.

4.5.1. *Lender certification effect*

First, lender certification presents as a channel. Presumably, the difference in bidder gains between deals financed by new/amended and existing credit lines is related to banks' superior information, which allows them to certify the quality of investment projects and finance those more likely to be better quality. In this framework, we expect the positive coefficient of new/amended credit line financing to be more robust in subsamples where the certification is more valuable. Therefore, I propose two hypotheses: (i) lender

certification is more substantial among credit-line-funded deals by top-tier banks with more experience in deal-making (Golubov, Petmezas, and Travlos, 2012), and (ii) the role of lender certification is more sophisticated and valuable for small acquirers facing greater information asymmetry.

[INSERT Table 7 HERE.]

Table 7 presents empirical results. Models (1) and (2) test the first hypothesis. Based on the financial advisor league table from Thomson Financial SDC (as in Golubov, Petmezas, and Travlos, 2012), I define $TOPBANK$ as the top-15 investment banks (among credit-line-financed deals) by the value of deals on which they advised for domestic acquisitions. As theorized by Chemmanur and Fulghieri (1994), investment banks are incentivized to deliver good deal advice in order to build up their reputation. By extension, banks that end up with a good reputation have also provided the best investment advice. Furthermore, these banks will likely have more experience and a broader area of expertise due to their sizeable M&A transaction volume (Golubov, Petmezas, and Travlos, 2012). The specification is as follows:

$$CAR_{d,t} = \alpha + \beta_1 REVISECL_{d,t} + \beta_2 TOPBANK_{d,t} + \beta_3 REVISECL_{d,t} \times TOPBANK_{d,t} + \lambda X_{i,t-1} + \theta D''_{d,t} + \mu_t + \nu_j + \epsilon_{d,t}$$

In this model, the main variable of interest is the interaction term $REVISECL \times TOPBANK$. If β_3 is significant, we can reject that $TOPBANK$ has no effect on bidder CAR for deals financed with new/amended credit lines ($REVISECL$). In column (2), the coefficient on the interaction term is 0.017 (statistically significant at the 10% confidence level). The economic magnitude is large: bidder CARs of deals financed with new or amended credit lines led by top-tier lenders are, on average, 1.7 pp higher than other deals. This effect is significant even after controlling for the effect of $TOPBANK$, implying an essential role of lender certification through (re)negotiation in the deals financed with new or amended credit lines is not driven by the effect of top-tier investment banks in M&A deals. Moreover, low-quality borrowers do not drive the effect of top-tier lenders after controlling for borrowers' financial health.

In models (3) and (4), I use the size of acquirers' total value of book assets to proxy for information asymmetry. I define $SMALL$ as equal one if the acquirer's size is below the sample first quartile (the 25th percentile) and zero otherwise. Models (3) and (4) add an interaction term between $SMALL$ and $REVISECL$. The coefficient estimates of the interaction term in Model (4), with both year and industry FE included, is 0.017, statistically significant at 10% level. This is consistent with the prediction that

the certification effect is more critical when the information asymmetry between managers and outside investors evolves more severe, for which outside advice becomes more beneficial.

Do hold-up problems exist among deals financed with new/amended credit lines? In theory, renegotiations can lead to hold-up problems in which lenders exploit market power to extract rents following information monopoly and interfere with the company's optimal investment policies (Rajan, 1992). Models (5) and (6) provide evidence in that regard. According to Houston and James (1996), the potential hold-up problems of bank financing are more severe among firms with greater investment opportunities. However, I find no difference in announcement returns of high market-to-book acquirers using new or amended credit lines and those of low market-to-book acquirers ($REVISECL * LOWQ$). As a result, this does not support the other theory that bank engagement deteriorates firms' investment policies when the bank's informational advantage is immense.

4.5.2. *Financial flexibility*

Consider a case at the beginning of unprecedented merger waves. Firms in industries with imperfect competition experience a diverse range of investment opportunities, and there must be sufficient capital liquidity to accommodate the asset reallocation (Harford, 2005). Suppose the market interprets this as having access to new/amended credit lines offering additional financial flexibility so that the firm can move quickly before its competitors to capture profits from M&A waves. In that case, the positive abnormal returns are expected to be more significant for new or amended credit-line-funded deals. Table 7, however, provides results that are inconsistent with this prediction. Models (7) and (8) include an interaction between *REVISECL* and *WAVE*. This indicator equals one if an acquisition is financed by a new or amended loan during merger waves and zero otherwise. All specifications include a control variable for *WAVE*, a binary variable to indicate the presence of industry merger waves at a particular time. I show that the estimated coefficient of *WAVE* is not statistically distinguishable from zero, implying no difference in bidder CARs during and outside merger waves. Moreover, the interaction of *REVISECL*Wave* is non-positive, ruling out the hypothesis that the positive market reaction around merger announcements is stronger for bank-financed deals during periods of industry merger waves.

4.5.3. *Offer premiums*

Finally, an alternative explanation for higher bidder CAR relates to takeover premiums paid to the target firms. Specifically, I study whether new and amended credit line acquirers tend to bid less aggressively due to bank lender engagement. The offer premium is often defined as the bidder's excess offer price over the target's stock price, where the offer price reflects the bidder's valuation of the target's potential for producing acquisition welfare. For deals involving public targets, I compute the premiums paid for targets, which equals the natural logarithm of the initial offer price divided by the stock price 42 days prior to the takeover announcement (Betton et al., 2014). The sample size reduces because only publicly listed targets with sufficient stock price data to generate premiums are included.

[INSERT Table 8 HERE.]

Table 8 presents regression estimates of the takeover premiums. Like the regressions of acquirer CARs in Table 6, I control for various bidder- and deal characteristics, except whether the target is a public firm. Year and industry FEs are included, while standard errors are clustered at the industry (SIC2 industry definitions) level. Model (2) shows lower offer premiums for deals financed with credit lines. In models (3) and (4), I break down the credit line financing into deals financed with new or amended (*REVISECL*) and existing credit lines (*OLDCL*) and find the opposite effects related to the takeover premiums. To illustrate, model (4) shows that acquirers of new or amended credit-line-financed deals tend to pay 19.5 pp less premiums to their target, or roughly a third of the sample average of 50% (among completed deals).

In contrast, those of existing credit-line-financed deals are more likely to offer higher premiums than non-credit-line acquirers. An F-test for the equality of coefficients on the two variables has a *p-value* of less than 1%. In the last two models (5) and (6), I compare the premiums paid for the target firms when the acquirers use (*REVISECL*) and (*OLDCL*). I find that acquirers of new or amended credit-line-financed deals are more likely to pay a significant 31.4 pp less premiums to their target. Collectively, these findings support the view that credit line provider engagement could limit acquirers from bidding aggressively for the acquisitions they pursue.

5. Credit lines, deal completion, and refinancing

5.1. Speed of merger execution

It is costly for a bidder to fail to complete the deal and to undertake a lengthy pre-merger deal-making process. The theory by Martin and Santomero (1997) implies that having access to credit lines is beneficial for firms that need the ability to move quickly to capture newly arriving opportunities due to its flexible nature. More specifically, they argue that the firm needs speed and confidentiality to secure projects before competitors, thus choosing a line of credit that balances its up-front commitment cost against the anticipated excess cost of financing in the spot market. In this section, I explore whether sources of funds relate to M&A deal completion. In particular, I investigate whether deals financed with credit lines are associated with higher deal completion rates.

To formally investigate this theory, I run regressions of time to deal completion, defined as the distance between the public announcement date of a merger and the effective date[12]. Consummation of a transaction may coincide, or if there is a period between announcement and closing, both parties must satisfy all closing conditions such as financing, regulatory- and shareholder approvals. I perform the following baseline models:

(1) H_0: The use of credit lines to fund M&A transactions has no effect on the time to completion.

$$y_{d,t} = \alpha + \beta CL_{d,t} + \lambda X_{i,t-1} + \gamma D'_{d,t} + \mu_t + \nu_j + \epsilon_{d,t}$$

(2) H_0: The fraction of credit line usage in transaction value has no effect on the time to completion.

$$y_{d,t} = \alpha + \beta' CLPCT_{d,t} + \lambda X_{i,t-1} + \gamma D'_{d,t} + \mu_t + \nu_j + \epsilon_{d,t}$$

where i, d, j, t index firm, deal, industry, and year, respectively. Year FEs (μ_t) and industry FEs (ν_j) are included. Standard errors (SEs) are robust to heteroskedasticity and clustered at the industry level. Bidder characteristics ($X_{i,t-1}$) includes cash holdings, profitability, EBITDA volatility, Tobin Q, R&D, asset tangibility, size, and book leverage. Deal characteristics ($D'_{d,t}$) contain large relative size, public status of target, whether the deal is a tender offer, a hostile, under antitrust scrutiny, and whether the deal requires acquirers' shareholder voting.

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[12]A merger transaction usually begins with the private negotiation phrase when a target firm contacts one or more potential bidders or is at bidder's initiative without any prior solicitation of interest (Boone and Mulherin, 2007). During this period, parties and their respective legal counsel make critical decisions, reveal sensitive non-publicly available information, and implement due diligence. When the definitive merger agreement is signed, and forms of certain important ancillary agreements are agreed upon, the merger will be publicly announced (recorded as "announcement date" on SDC).

In theory, the tender offer can have the advantage of speed since, under SEC Rule 14d-1, a tender offer may close as soon as 20 calendar days following the initial filing. However, the Williams Act 1968 for tender offers, as a response to the wave of hostile takeover attempts from corporate raiders in 1960s, create a material delay between the merger announcement and its consummation[13]. Thus, the predicted coefficient of *Tender Offer* is unclear.

Regarding antitrust scrutiny, parties in large M&A have to file a premerger notification and wait for government review under the Hart-Scott-Rodino (HSR) Antitrust Improvements Act of 1976. The deal may be withheld until the waiting period characterized in the HSR Act has passed, or the government agency has granted early termination of the waiting period. It may take a long time to complete, referring to the waiting period under the HSR Act[14]. In my sample of 3,199 completed control bids, only 1% of the cases encountered hurdles from regulatory authorities due to concerns involving a post-merger increase in market concentration (based on hand-collected data from de Bodt, Cousin, Officer, and Roll, 2020).

Furthermore, the predicted sign for shareholder voting is negative. This is because securities used in the transaction must be registered with the U.S. Securities and Exchange Commission (SEC) under the Securities Act of 1933. In addition, NYSE and NASDAQ rules and most state corporation laws require that the bidding company obtain approval from its shareholders when a company intends to issue more than 20% new shares to finance the deal. Therefore, I construct a variable of *Shareholder Voting*, which takes the value of one if a deal financed partially with stock payment and the percent of shares to be issued more than 20% of shares outstanding, and zero otherwise[15].

Table 9 reports coefficient estimates from the time-to-completion regressions across the full sample in columns (1)-(3) and the sample of all-cash bids in columns (4)-(7). Regarding the relation between credit line financing and the speed of execution, as shown in columns (1) and (4) of Table 5, the coefficient estimates *CL* are negative and statistically significant. The point estimate in column (1) indicates that the average time to completion is nearly nine days shorter when the deal is financed with credit lines,

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[13]Directing to protect affected parties from ongoing takeovers, the legislation requires the bidder to provide a full disclosure in details of the offer, for instance, the purpose for making the bid, the source of funds and the outlook of the acquired company.

[14]Each year, the Antitrust Division of the Federal Trade Commission (FTC) in conjunction with the Department of Justice (DOJ) review over a large number of proposed mergers. When the antitrust agency decides that a merger is anticompetitive, they must subsequently choose between two alternatives: block the merger in court or negotiate a solution with the involved parties that will potentially get approval to proceed with the merger if they agree to take steps attempted to rebuild competition. The length of time taken by regulatory to examine a M&A deal may alter depending on the complication of the deal and some may be scrutinized by more than one regulatory authority upon the markets impacted by the integration.

[15]This fraction is bounded between 0 and 1 to mitigate outlines. Almost 6.5% of my sample bids issued more than 100% of new shares to finance their takeovers.

ceteris paribus. Columns (2) and (5) estimate the effects when credit line financing is divided into credit-line-funded deals under existing loans and new/amended credit lines. I find that only deals financed with existing credit lines are associated with about 16 days shorter time to consummation. In contrast, there is no association between time to deal completion and deals financed with revised credit lines (column 2). An F-test for the equality of coefficients on the two variables $OLDCL$ and $REVISECL$ is statistically significant at 1% level. The estimated coefficient of revised credit line financing remains statistically indistinguishable from zero when the sample is restricted to all-cash bids (column 5). This implies that the faster speed of merger execution is only significant in deals financed with existing credit lines, which reduces the need for the bidding company to look for new financing sources. On the other hand, as lender approval must be obtained, it takes longer for deals financed with new/amended credit lines to close.

[INSERT Table 9 HERE.]

Column (3) provides robustness checks. It reveals that the higher percentage of credit line financing in the transaction value is associated with faster deal completion. Moreover, untabulated results, including $Year \times Industry$ fixed effects in all specifications, reveal similar findings. The interaction of time- and industry-fixed effects eliminate omitted variables at the industry level that are time-varied, thereby ruling out differences in time-varying industry-level effects as a potential explanation.

In terms of deal characteristics, the results show consistency with my conjectures. For instance, it takes a shorter amount of time between the deal announcement date and its consummation for tender offers, whereas larger deals, public-to-public mergers, hostile deals under FTC/DOJ antitrust scrutiny, and those require acquirers' shareholder voting are expected to be more time-consuming to execute. To illustrate, deals that face hurdles from antitrust authorities tend to take more than four months longer on average to close compared to those that do not need regulatory approvals by FTC/DOJ agency. Stock deals in which more than 20% of new shares are issued to finance the deal and, therefore, must obtain shareholder approvals from acquirers are expected to take more than 39 days longer to close.

6. Conclusion

Firms often exploit time-varying and stochastic investment opportunities in the presence of external financing costs. In contrast to other loans, credit lines provide firms with financial flexibility and the option to obtain funding contingent on realizing investment opportunities. Exploring a new hand-collected

data set on sources of funds between 1994 and 2020, I document the role of credit lines in corporate takeovers. Acquirers with low cash balances and less access to external financing are more likely to rely on credit lines in M&A, consistent with credit lines offering firms financial slack when making new investments.

Moreover, this study shows how the usage of credit lines in M&A links to the quality of those acquisitions. I find that deals financed with new or amended credit lines are viewed more favorably by the market than non-credit-line deals and existing credit-line-funded deals. The announcement return for acquiring-firm shareholders is roughly 1.4% percentage points higher for deals financed with new or amended credit lines, irrespective of the form of financing and whether the acquired firm is public or private. To gain insight into this valuation effect, I provide supporting evidence that lender certification plays a critical role in firm investment policies to make more value-enhancing acquisitions in new and amended credit-line-funded deals. Further, I do not find supporting evidence that industry merger waves could drive the results or that lender engagement is detrimental to acquirers' shareholder wealth. This result is not reversed over time.

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Figure 1. Sources of funds in takeovers

The figure presents sources of financing of 1,393 completed all cash and mixed bids over the period 1994 to 2020. Sources of funds (SOF) are classified into internally corporate funds, credit lines, term loan, notes issuance, commercial papers, other debt, and stock issuance. The SOF data is manually collected from SEC filings (10-Ks, 10-Qs, and 8-Ks), press releases and business news.
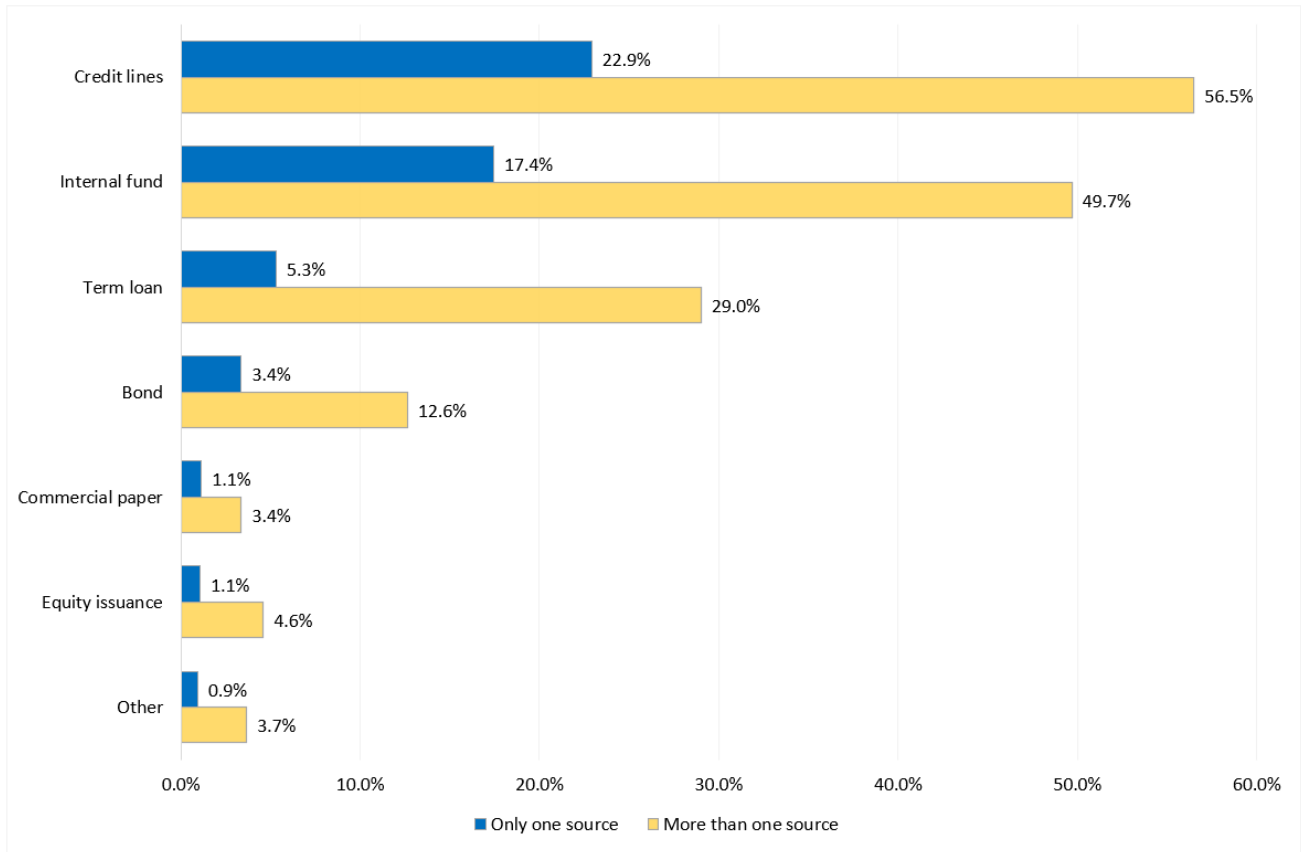
Figure 2. Credit line financing

The figure presents loan status in 789 credit-line-financed bids between 1994 and 2020. Panel A shows whether the bank loan is a new arrangement, an existing loan, or a current loan being renegotiated to facilitate the proposed acquisition. Panel B, C and D exhibit stated purposes, maturity of the loan contract, and whether the loan requires collateral for its debt obligation, respectively.
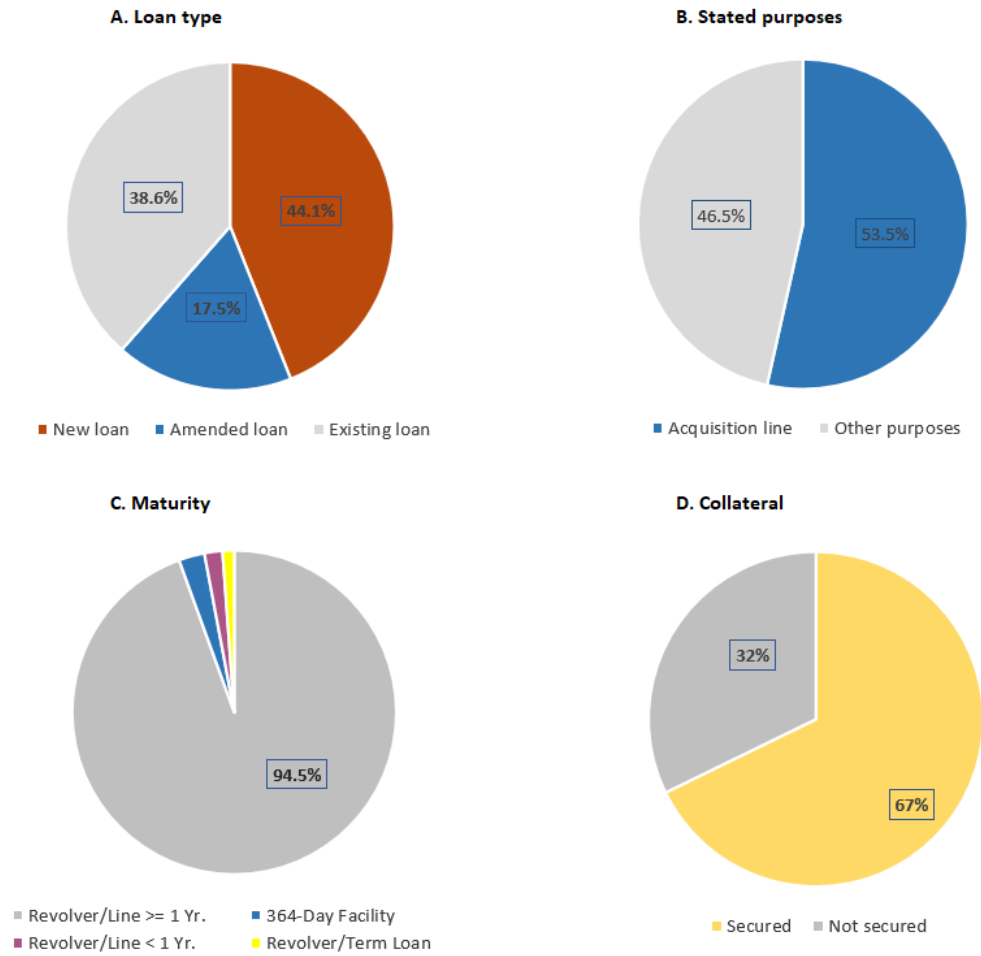
Figure 3. Amount of funds used in takeovers

The figure illustrates the average and median amount of sources of funds used in takeovers, based on the sample of 1,393 completed cash bids (all cash and mixed offers) from SDC over the period 1994 to 2020.
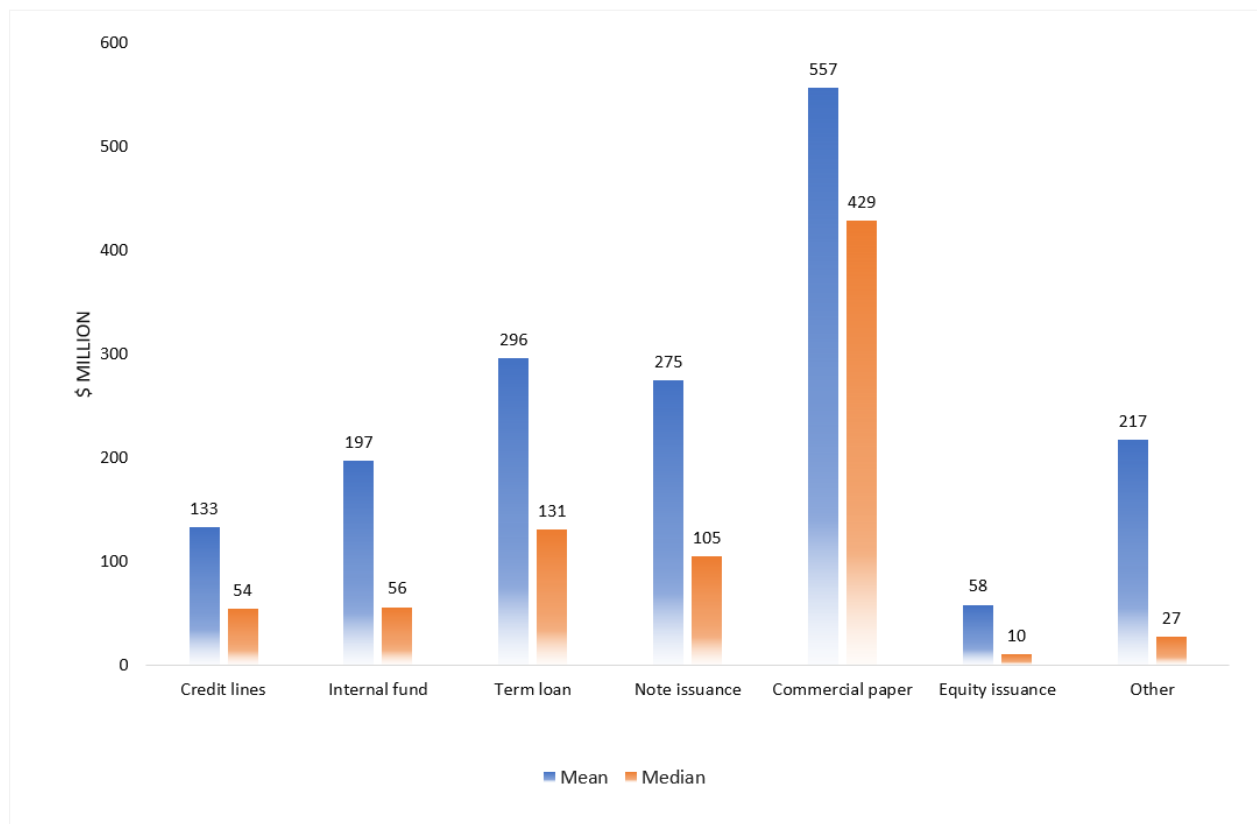
Table 1: Sample Selection

Panel A: SDC Sample

The table illustrates a description of the sample selection process. The sample starts with all initial control bids in SDC for U.S. public bidders and U.S. targets between 1994 and 2020.

Selection Criteria	Source	Exclusions	Sample Size
All bids in SDC (FORMC=M, AM) from January 1994 to December 2020.	SDC		59,479
U.S. target and U.S. public acquirers	SDC	36,836	22,643
Only control bids	SDC	61	22,582
Bidders must be available on both CRSP and Compustat	SDC, WRDS	7,154	15,428
Keep utilities (SIC code 4900-4999) and financial firms (SIC code 6000-6999)	SDC, Compustat	4,524	10,904
Drop missing transaction values	SDC	2,748	8,156
Keep completed deals, deal value > \$1 million and account for 1% of bidder total book assets, and no duplicated announcements	SDC	1,404	6,752
Keep nonmissing bidders' CIK and key Compustat variables	WRDS	1,040	5,712
Pre-Sample			**5,712**

Panel B: Manual data selection for sources of funds in M&A

The manual data selection process starts with the sample of 5,712 firm acquisitions between 1994 and 2020.

Selection Criteria	Sources	Exclusions	Sample size
Keep all cash and mixed offers	SDC		3,906
Firms with at least one deal financed by internal cash, debt, or equity offering[a]	SDC	1,996	1,910
Sample of collected company filings			1,910
Remove firms without SEC filings		115	
Drop deals without financing sources from SEC filings		370	
Exclude stock-to-stock transactions (misidentified by SDC)		32	
Cash-bid Sample			1,393
All-stock Sample			1,806
Final Sample			**3,199**

[a] Identified by sources of funds dummies on SDC.

Table 2: Sample summary statistics

The table reports the mean and median values of key characteristics. The sample consists of 3,199 takeover bids for U.S. targets by U.S. nonfinancial public acquirers, 1994-2020. All variables are defined in the Appendix. Firm-level variables are winsorized at the 1(99) percent level and measured at the end of the fiscal year prior to the merger announcement. The symbols ***, **, and * denote a statistically significant difference in mean and median between credit-line-financed deals (CL) and non-credit-line-financed deals (NCL) using a two-tailed test at the 1%, 5%, and 10% level, respectively.

Variable	Full sample			CL-financed			NCL			Test of difference	
	N	Mean	Median	N	Mean	Median	N	Mean	Median	t-test	Wilcoxon
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)
Panel A: Acquirer characteristics											
Total assets (in $million)	3199	1639	341	787	1282	544	2412	1755	264	-473***	280***
Cash Holding	3199	0.22	0.14	787	0.09	0.05	2412	0.26	0.19	-0.17***	-0.15***
Excess Cash	3039	0.02	-0.03	751	-0.05	-0.07	2288	0.04	-0.01	-0.09***	-0.06***
Cash/Transaction Value	3199	0.01	0.00	787	0.00	0.00	2412	0.01	0.00	-0.01***	-0.00***
Profitability	3199	0.10	0.13	787	0.15	0.15	2412	0.08	0.12	0.08***	0.02***
Tobin Q	3199	3.06	1.76	787	1.67	1.43	2412	3.52	2.03	-1.85***	-0.60***
Tangibility	3199	0.21	0.14	787	0.25	0.18	2412	0.20	0.13	0.05***	0.05***
EBITDA volatility	3199	0.11	0.05	787	0.05	0.03	2412	0.13	0.06	-0.08***	-0.03***
Book Leverage	3199	0.18	0.14	787	0.24	0.22	2412	0.17	0.11	0.07***	0.11***
Panel B: Deal characteristics											
Transaction Value	3199	438	82	787	324	130	2412	476	67	-151	63***
Large Relative Size	3199	0.247	0.000	787	0.180	0.000	2412	0.269	0.000	-0.088***	0.000***
Public Target	3199	0.395	0.000	787	0.330	0.000	2412	0.417	0.000	-0.086***	0.000***
Bidder CARs(-2,+2) (%)	3053	0.012	0.003	756	0.024	0.015	2297	0.008	-0.003	0.016***	0.018***
Offer Premium	809	0.502	0.391	162	0.439	0.432	647	0.517	0.378	-0.078	0.054
Hostile	3199	0.005	0.000	787	0.010	0.000	2412	0.003	0.000	0.007***	0.000***
Tender Offer	3199	0.085	0.000	787	0.166	0.000	2412	0.058	0.000	0.108***	0.000***
Industry Relatedness	3199	0.350	0.000	787	0.363	0.000	2412	0.346	0.000	0.017	0.000
Under FTC/DOJ	3199	0.009	0.000	787	0.009	0.000	2412	0.010	0.000	-0.001	0.000
Shareholder Voting	3000	0.183	0.000	778	0.053	0.000	2222	0.229	0.000	-0.176***	0.000***
Days to completion	3199	67	59	787	53	40	2412	71	70	-18	-30***
Negotiation time	355	173	126	61	169	135	294	174	125	-5	11

Table 3: Choice-of-financing regressions

The table presents OLS estimates of the choice to finance a control bid with credit lines and tobit estimates of the proportion of credit line financing in transaction value. The sample consists of 1,393 cash and mixed offers for column (1)-(3) and 1,806 all-cash bids for columns (4)-(6) from 1994 to 2020. *CL* equals one if the acquisition is at least partially financed with credit lines and equals zero otherwise. *CLONLY* equals one when the acquisition is entirely financed by credit lines and equals zero otherwise. *CLPCT* is the amount of credit line financing scaled by transaction value. *Undrawn CL* is the fraction of unused credit lines to the total lines of credit. The explanatory variables control for firm- and deal-specific characteristics, which are defined in the Appendix (Table A.1). Firm-level variables are lagged by one year. A constant term is included but not reported. Absolute values of t-statistics are reported in the parentheses, with standard errors are adjusted for heteroskedasticity and clustered at the industry level (based on the SIC2 industry definitions). Coefficients marked with *** , ** , and * are significant at the 1%, 5%, and 10% level, respectively.

	Cash and mixed bids			All cash bids		
Dependent variable	CL	CLONLY	CLPCT	CL	CLONLY	CLPCT
	(1)	(2)	(3)	(4)	(5)	(6)
Undrawn CL	0.005***	0.001**	0.002***	0.005***	0.000	0.002***
	(12.47)	(2.22)	(6.63)	(11.54)	(0.29)	(5.65)
Cash holdings	-0.626***	-0.511***	-0.624***	-0.668***	-0.575***	-0.685***
	(5.05)	(4.88)	(6.24)	(4.41)	(4.71)	(5.55)
Profitability	0.239*	0.234**	0.270***	0.155	0.319**	0.295**
	(1.78)	(2.58)	(2.87)	(0.84)	(2.36)	(1.97)
Log(Size)	-0.047***	-0.035***	-0.042***	-0.063***	-0.041***	-0.054***
	(3.93)	(3.30)	(4.04)	(4.78)	(3.20)	(4.51)
Asset Tangibility	0.043	0.026	0.038	0.107	0.089	0.108
	(0.33)	(0.27)	(0.34)	(0.78)	(0.90)	(0.97)
EBITDA Volatility	-0.249**	-0.191**	-0.261***	-0.439***	-0.370***	-0.443***
	(2.07)	(2.15)	(3.20)	(2.92)	(2.75)	(4.43)
Tobin Q	-0.010	0.000	0.003	-0.005	-0.004	0.006
	(0.70)	(0.08)	(0.36)	(0.34)	(0.53)	(0.81)
Book Leverage	-0.013	-0.001	-0.067	0.074	0.037	0.017
	(0.18)	(0.02)	(1.16)	(0.90)	(0.52)	(0.26)
Large Relative Size	-0.074**	-0.178***	-0.173***	-0.074*	-0.164***	-0.187***
	(2.47)	(5.57)	(8.54)	(1.67)	(3.72)	(6.39)
Public Target	-0.095**	-0.080**	-0.098***	-0.072	-0.088**	-0.101***
	(2.64)	(2.51)	(3.06)	(1.67)	(2.53)	(2.87)
Tender offer	0.072	0.050	0.069**	0.071	0.061*	0.082**
	(1.64)	(1.63)	(2.04)	(1.28)	(1.76)	(2.07)
Year FE	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y
Observations	1,357	1,357	1,287	1,044	1,044	992
Adjusted R-squared	0.284	0.185		0.287	0.217	
Pseudo R-squared			0.351			0.384

Table 4: Regressions of five-day acquirer cumulative abnormal returns

The table presents coefficient estimates of acquirer returns between 1994 and 2020. Acquirer returns are calculated over a five-day event window (two days before and two days after the announcement date). The benchmark returns are the value-weighted index of returns including dividends for all combined NYSE, AMEX and NASDAQ. The sample consists of 3,199 merger control bids of U.S. nonfinancial, publicly listed acquirers to U.S. targets between 1994 and 2020. Variable definitions are in Appendix A.1. Absolute values of t-statistics are are given in parentheses and are adjusted for heteroskedasticity and for clustering by industry (SIC2). Year and/or industry fixed effects are included. Coefficients marked with *** , ** , and * are significant at the 1%, 5%, and 10% level, respectively.

Models	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CL	0.006*	0.007*			-0.006	-0.006		
	(1.75)	(1.75)			(1.34)	(1.28)		
OLDCL			-0.005	-0.005			-0.001	-0.002
			(1.15)	(1.14)			(0.17)	(0.35)
REVISECL			0.014***	0.014***	0.019***	0.020***	0.014**	0.014**
			(2.89)	(2.85)	(3.39)	(3.74)	(2.65)	(2.53)
TLOAN							0.011**	0.011*
							(2.03)	(1.98)
BOND							0.015*	0.011
							(1.92)	(1.44)
CPO							-0.012	-0.015
							(1.29)	(1.49)
SI							0.004	0.005
							(0.28)	(0.32)
Large Relative Size	0.008	0.009	0.007	0.008	0.007	0.008	0.005	0.007
	(1.05)	(1.09)	(0.92)	(0.97)	(0.91)	(0.97)	(0.76)	(0.87)
Public Target	-0.042***	-0.042***	-0.042***	-0.042***	-0.042***	-0.042***	-0.043***	-0.043***
	(10.14)	(10.14)	(10.20)	(10.24)	(10.21)	(10.24)	(10.12)	(10.18)
Tender Offer	0.033***	0.034***	0.032***	0.033***	0.032***	0.033***	0.034***	0.035***
	(5.64)	(5.56)	(5.52)	(5.44)	(5.52)	(5.44)	(5.49)	(5.39)
Industry Relatedness	0.005*	0.007**	0.005*	0.006**	0.005*	0.006**	0.005*	0.006**
	(1.88)	(2.35)	(1.72)	(2.20)	(1.72)	(2.20)	(1.81)	(2.24)
Hostile	-0.015*	-0.017*	-0.014*	-0.016*	-0.015*	-0.017*	-0.015*	-0.018*
	(1.93)	(1.89)	(1.80)	(1.69)	(1.84)	(1.73)	(1.84)	(1.74)
All Cash	-0.010	-0.008	-0.009	-0.007	-0.009	-0.007	-0.008	-0.006
	(1.20)	(1.02)	(1.11)	(0.91)	(1.10)	(0.91)	(0.94)	(0.75)
All Stock	-0.013	-0.010	-0.012	-0.009	-0.012	-0.009	-0.005	-0.003
	(1.17)	(0.90)	(1.07)	(0.79)	(1.09)	(0.80)	(0.40)	(0.24)
Firm Controls	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE		Y		Y		Y		Y
Observations	3,053	3,049	3,053	3,049	3,053	3,049	3,053	3,049
Adjusted R-squared	0.051	0.054	0.053	0.055	0.053	0.055	0.054	0.056

Table 5: Regressions of five-day combined cumulative abnormal returns

This table presents the results from the regression of acquirer-target combined announcement cumulative abnormal returns. Variable definitions are in Appendix A.1. Absolute values of t-statistics are are given in parentheses and are adjusted for heteroskedasticity and for clustering by industry (SIC2). Year and/or industry fixed effects are included. Coefficients marked with *** , ** , and * are significant at the 1%, 5%, and 10% level, respectively.

Models	(1)	(2)	(3)	(4)	(5)	(6)
CL	0.003	0.006			-0.024	-0.025
	(0.33)	(0.64)			(1.25)	(1.15)
OLDCL			-0.024	-0.026		
			(1.30)	(1.20)		
REVISECL			0.014*	0.017**	0.038*	0.042*
			(1.69)	(2.11)	(1.91)	(1.85)
Firm Controls	Y	Y	Y	Y	Y	Y
Deal Controls	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Industry FE		Y		Y		Y
Observations	1,051	1,046	1,051	1,046	1,051	1,046
Adjusted R-squared	0.061	0.047	0.065	0.052	0.065	0.052

Table 6: Estimation of bidder gains in self-selection model

The table report the results of a two-stage estimation of the Heckman's self-selection model in regressions of acquirer five-day CARs. The sample consists of 3,199 merger control bids of U.S. nonfinancial, publicly listed acquirers to U.S. targets between 1994 and 2020. The selection bias control factor *Lambda* refers to the residuals of the first-stage selection equation in the Heckman model. Variable definitions are in Appendix A.1. The first-stage Heckman regression is reported in the Appendix A.6. Absolute values of t-statistics are are given in parentheses and are adjusted for heteroskedasticity and for clustering by industry (SIC2). Coefficients marked with *** , ** , and * are significant at the 1%, 5%, and 10% level, respectively.

Models	(1)	(2)	(3)	(4)	(5)	(6)
CL	0.008*	0.010*			-0.004	-0.002
	(1.75)	(1.97)			(0.90)	(0.45)
OLDCL			-0.004	-0.002		
			(0.81)	(0.41)		
REVISECL			0.016***	0.016***	0.020***	0.018***
			(2.87)	(2.85)	(3.74)	(3.54)
Large Relative Size	0.012	0.012	0.010	0.010	0.010	0.010
	(1.05)	(0.93)	(0.89)	(0.80)	(0.88)	(0.80)
Public Target	-0.041***	-0.039***	-0.041***	-0.040***	-0.041***	-0.040***
	(6.80)	(6.71)	(6.92)	(6.84)	(6.93)	(6.85)
Tender Offer	0.031***	0.031***	0.031***	0.031***	0.031***	0.031***
	(4.82)	(4.65)	(4.74)	(4.58)	(4.73)	(4.58)
Industry Relatedness	0.008	0.009	0.007	0.008	0.007	0.008
	(1.39)	(1.44)	(1.27)	(1.34)	(1.27)	(1.34)
Hostile	-0.016*	-0.016	-0.015	-0.015	-0.016	-0.015
	(1.68)	(1.57)	(1.52)	(1.41)	(1.53)	(1.41)
All cash	-0.015	-0.016	-0.014	-0.015	-0.014	-0.015
	(1.42)	(1.43)	(1.37)	(1.38)	(1.37)	(1.38)
All stock	-0.014	-0.012	-0.012	-0.011	-0.013	-0.011
	(0.83)	(0.69)	(0.77)	(0.65)	(0.78)	(0.65)
Lambda	-0.005	-0.006	-0.004	-0.005	-0.004	-0.005
	(0.83)	(1.03)	(0.77)	(0.95)	(0.77)	(0.95)
Firm Controls	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Industry FE		Y		Y		Y
Observations	1,876	1,876	1,876	1,876	1,876	1,876
Adjusted R-squared	0.054	0.053	0.056	0.055	0.056	0.055

Table 7: Regressions of bidder gains in subsamples

The table report the results of the Heckman's self-selection model in regressions of acquirer five-day CARs in different subsamples. The sample consists of 3,199 merger bids of U.S. nonfinancial, publicly listed acquirers to U.S. targets between 1994 and 2020. Deal characteristics include dummies on large relative size, public target, tender offer, within-industry merger, hostile, all cash, and all stock. Variable definitions are in Appendix A.1. Absolute values of t-statistics are are given in parentheses and are adjusted for heteroskedasticity and for clustering by industry (SIC2). Coefficients marked with *** , ** , and * are significant at the 1%, 5%, and 10% level, respectively.

Models	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
REVISECL	0.008	0.008	0.012**	0.012**	0.012**	0.013***	0.020***	0.021***
	(1.08)	(1.10)	(2.49)	(2.44)	(2.62)	(2.83)	(3.75)	(3.84)
REVISECL*TOPBANK	0.017*	0.017*						
	(1.67)	(1.68)						
TOPBANK	-0.004	-0.003						
	(0.70)	(0.43)						
REVISECL*SMALL			0.014	0.017*				
			(1.34)	(1.78)				
REVISECL*LOWQ					0.013	0.011		
					(1.12)	(1.01)		
REVISECL*Wave							-0.023*	-0.023*
							(1.95)	(1.93)
Wave							0.000	0.004
							(0.01)	(0.81)
Cash holdings	-0.033***	-0.027**	-0.032***	-0.027**	-0.032***	-0.027**	-0.032***	-0.027**
	(2.93)	(2.34)	(2.83)	(2.23)	(2.83)	(2.26)	(2.81)	(2.25)
Profitability	-0.044***	-0.046***	-0.045***	-0.047***	-0.044***	-0.045***	-0.045***	-0.047***
	(2.82)	(2.95)	(2.88)	(3.05)	(2.81)	(2.95)	(2.89)	(3.00)
Log(Size)	-0.004**	-0.005***	-0.004**	-0.004**	-0.004**	-0.004***	-0.004**	-0.005***
	(2.64)	(3.08)	(2.26)	(2.64)	(2.60)	(3.03)	(2.66)	(3.12)
Asset Tangibility	0.015	0.004	0.015	0.003	0.015	0.003	0.015	0.004
	(1.62)	(0.29)	(1.65)	(0.24)	(1.67)	(0.26)	(1.65)	(0.33)
EBITDA Volatility	0.005	0.002	0.005	0.002	0.005	0.002	0.005	0.002
	(0.36)	(0.14)	(0.35)	(0.12)	(0.38)	(0.16)	(0.37)	(0.14)
Tobin Q	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000
	(0.94)	(0.76)	(0.93)	(0.75)	(0.91)	(0.73)	(0.89)	(0.79)
Book Leverage	0.003	0.001	0.003	0.002	0.003	0.001	0.004	0.002
	(0.23)	(0.07)	(0.29)	(0.17)	(0.24)	(0.08)	(0.31)	(0.12)
Deal Controls	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE		Y		Y		Y		Y
Observations	3,053	3,049	3,053	3,049	3,053	3,049	3,053	3,049
Adjusted R-squared	0.053	0.056	0.053	0.056	0.053	0.056	0.053	0.056

Table 8: Regressions of takeover premiums

The table reports regression estimates of the premiums paid to target firms. The premium is $(OP/P_{-42})-1$, where OP is the price per share offered by the initial control bidder and P_i is the target stock price on trading day i relative to the merger announcement date $(i = 0)$, adjusted for splits and dividends. Absolute values of t-statistics are are given in parentheses and are adjusted for heteroskedasticity and for clustering by industry (SIC2). Coefficients marked with *** , ** , and * are significant at the 1%, 5%, and 10% level, respectively.

Models	(1)	(2)	(3)	(4)	(5)	(6)
CL	-0.034	-0.086*			0.170	0.137
	(0.69)	(1.82)			(1.66)	(1.56)
OLDCL			0.177*	0.152*		
			(1.76)	(1.75)		
REVISECL			-0.122**	-0.175***	-0.291***	-0.314***
			(2.36)	(3.40)	(2.71)	(3.57)
Large Relative Size	0.093	0.104	0.099	0.112*	0.098	0.111*
	(1.45)	(1.61)	(1.58)	(1.77)	(1.57)	(1.75)
Tender Offer	-0.081	-0.075	-0.082	-0.081	-0.082	-0.080
	(1.01)	(0.94)	(1.03)	(1.02)	(1.03)	(1.02)
Industry Relatedness	0.142*	0.160*	0.154*	0.171*	0.154*	0.170*
	(1.68)	(1.85)	(1.77)	(1.90)	(1.76)	(1.89)
Hostile	-0.128	-0.129	-0.146	-0.152	-0.133	-0.138
	(0.62)	(0.55)	(0.66)	(0.60)	(0.60)	(0.55)
All Cash	0.205***	0.130*	0.181**	0.101	0.181**	0.102
	(2.94)	(1.96)	(2.41)	(1.40)	(2.42)	(1.43)
All Stock	0.042	-0.021	0.025	-0.045	0.024	-0.047
	(0.55)	(0.32)	(0.31)	(0.69)	(0.30)	(0.71)
Firm Controls	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Industry FE		Y		Y		Y
Observations	809	801	809	801	809	801
Adjusted R-squared	0.016	0.005	0.020	0.009	0.020	0.009

Table 9: Time-to-completion regressions

The table reports the coefficient estimates from OLS regressions of deal completion time. The dependent variable is *Days to completion*, which equals the difference between the announcement date and effective date. *CL* equals one if the acquisition is at least partially financed with credit lines and equals zero otherwise. *CLONLY* equals one when the acquisition is entirely financed by credit lines and equals zero otherwise. *OLDCL (REVISECL)* takes the value of one if the deal is financed with an existing (new or revised) credit line loans. Variables are defined in the Appendix. A constant term is included but not reported. Absolute values of t-statistics are reported in the parentheses, with standard errors are adjusted for heteroskedasticity and clustered at the industry level (SIC2). Coefficients marked with ***, **, and * are significant at the 1%, 5%, and 10% level, respectively.

Sample	Full Sample			All-cash bids			
Models	(1)	(2)	(3)	(4)	(5)	(6)	(7)
CL	-9.394***			-10.297***	-8.188**		
	(3.94)			(3.23)	(2.58)		
OLDCL		-15.814***				-13.657***	
		(4.38)				(3.19)	
REVISECL		-5.476**				-4.407	
		(2.12)				(1.49)	
CL_PCT			-0.132***				-0.095*
			(3.44)				(1.82)
Large Relative Size	13.003***	12.326***	11.604***		24.334***	23.079***	24.343***
	(5.82)	(5.49)	(5.30)		(4.07)	(3.90)	(3.74)
Public Target	48.341***	48.045***	49.246***		46.461***	45.801***	46.482***
	(11.71)	(11.60)	(12.79)		(9.36)	(9.23)	(8.60)
Tender Offer	-22.512***	-22.708***	-22.893***		-31.184***	-31.048***	-31.244***
	(3.98)	(4.04)	(4.13)		(4.94)	(4.97)	(4.72)
Hostile	26.462	27.642	19.042		34.980	36.169	22.231
	(1.13)	(1.15)	(0.86)		(1.53)	(1.54)	(1.01)
Under FTC/DOJ	126.494***	125.479***	139.506***		116.888***	115.501***	123.706***
	(7.56)	(7.46)	(8.30)		(4.82)	(4.67)	(4.43)
Shareholder voting	39.144***	39.456***	38.807***				
	(7.30)	(7.31)	(8.03)				
All Cash	-10.350	-9.755	-9.545				
	(1.47)	(1.35)	(1.36)				
All Stock	-1.308	-0.746	-1.457				
	(0.22)	(0.12)	(0.25)				
Firm Controls	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y	Y
Observations	2,995	2,995	2,918	1,074	1,074	1,074	1,014
Adjusted R-squared	0.325	0.325	0.332	0.169	0.339	0.341	0.339

8. Appendix

APPENDIX 1. Examples of financing disclosure for SOF manually collected from SEC filings.

The Securities Exchange Act of 1934 requires the registrant to file an 8K filing within 15 calendar days following the occurrence of major corporate events, for instance, completion of acquisition or disposition of assets, unregistered sales of equity securities, and the entry into private loan commitments. In the case of an acquisition, the sources of the funds used to finance the purchase are often disclosed. In addition, forms 10Ks and 10Qs often provide a more comprehensive summary of a company's financial performance and more specific information, including sources of funds, the amount of the financing sources, and the loan contract used to finance the merger bid.

1. ICF International Inc
(*Announcement - Effective merger dates: 30.Mar.2009 – 01.Apr.2009*)
Form 8-K filed on 06-Apr-2009, and form 10-Q filed on 08-May-2009

"Under the terms of the Purchase Agreement, ICF paid an aggregate purchase price of approximately $155 million in exchange for all of the shares of common stock of Macro. The purchase price was financed primarily through ICF's credit line, as disclosed in Item 1.01 above.

On March 31, 2009, ICF International, Inc. modified their existing credit agreement by entering into a First Modification to the Second Amended and Restated Business Loan. The following primary changes were made pursuant to the First Modification: (i) the Agent and *Lenders consented to the Borrowers' acquisition of Macro.*

As of March 31, 2009, we had $226.0 million borrowed under our revolving line of credit and unused borrowing capacity of $48.0 million on our Credit Facility."

The takeover was financed 100% credit lines (new loan).

2. ICF International Inc.
Announcement - Effective merger dates: 12-Nov-2007 - 03-Dec-2007
Sources: Form 8-K filed on 07-Dec-2007, and form 10-K, filed on 17-Mar-2008

"Effective December 3, 2007, we acquired all the outstanding common stock of SH&E. The aggregate purchase price of SH&E was approximately $51.9 million. On December 3, 2007, we and our lenders agreed to a fifth amendment to our Amended and Restated Credit Agreement, which increased our revolving line of credit from $95.0 million to $115.0 million and included *consent from our lenders for us to acquire SH&E.*

As of September 30, 2007, we had a borrowing base of $95 million, with $0 million outstanding on our revolving line of credit and letters of credit outstanding totaling $0.5 million, resulting in a borrowing availability of $94.5 million."

The takeover was financed entirely with credit lines (amended loan). The acquirer had access to full capacity of the credit lines prior to the takeover.

3. Examworks Group Inc
(*Announcement - Effective merger dates: 03.Feb.2014 – 03.Feb.2014*)
Form 8-K filed on 04-Feb-2014, and form 10-K filed on 06-Mar-2014

"On February 3, 2014, ExamWorks Group, Inc., a Delaware corporation, through its wholly-owned subsidiary, ExamWorks, Inc., acquired 100% of the issued and outstanding shares of capital stock of G&L Intermediate Holdings, Inc. for a purchase price of approximately $75 million in cash plus a potential earnout payment. The Company *financed the purchase price for the Acquisition with proceeds from its senior revolving credit facility.*

On February 3, 2014, we entered into a sixth amendment to our Senior Secured Revolving Credit Facility (the "Sixth Amendment"). The Sixth Amendment (i) *allowed us to consummate the acquisition of Gould & Lamb*, and (ii) allows us to acquire a target (a) with negative trailing twelve month adjusted EBITDA (as defined in the Senior Secured Revolving Credit Facility) if the purchase price of such acquisition is less than $5.0 million, (b) with trailing twelve month adjusted EBITDA (as defined in the Senior Secured Revolving Credit Facility) of less than or equal to $3,000,000 without delivering to the lenders a quality of earnings report regarding such target and (c) without delivering pro forma projections to our lenders if the purchase price of such acquisition is less than $75.0 million, in each case, without prior lender consent. We financed the $75.0 million purchase price for the Gould & Lamb acquisition in February 2014 with proceeds from the Senior Secured Revolving Credit Facility. As of December 31, 2013, we had $45.0 million outstanding under the Senior Secured Revolving Credit Facility, bearing interest at a rate of LIBOR plus 3.00%, resulting in $217.5 million of undrawn commitments."

The takeover was financed 100% credit lines (amended loan).

4. XTO Energy Inc
(*Announcement - Effective merger dates: 11.Jan.2005 - 01.Apr.2005*)
Form 8-K filed on 04-Apr-2005, and form 10-Q filed on 05-May-2005

"On April 1, 2005, we acquired Antero Resources Corporation. The purchase price was approximately $685 million. The cash portion of the acquisition was *funded with borrowings under our revolving credit facility.*

On April 1, 2005, the Company entered into an amended and restated $1.5 billion five-year senior revolving credit agreement with J.P. Morgan Chase Bank, N.A., as Administrative Agent and a syndicate of banks, as lenders, that provides for an initial commitment amount of $1.5 billion, which may be increased to a maximum of $2 billion by the Company with the approval of the administrative agent and the banks who provide the increased loan amount. The new agreement amends and restates the existing five-year revolving credit agreement dated February

17, 2004. Changes included modifications in the permitted encumbrances and permitted investments definitions. The facility will be used by the Company to fund acquisitions, repay outstanding bank debt, as a backup facility for commercial paper and for general corporate purposes. As of April 1, 2005, the Company had drawn down $840 million of the facility, primarily in connection with the acquisition of Antero Resources Corporation.

On April 6, 2005, we sold $400 million of 5.3% senior notes that were issued at 99.683% of par to yield 5.338% to maturity. Net proceeds of approximately $395.5 million were used to reduce borrowings under our bank revolving credit facility."

The takeover was financed with 100% credit lines (new loan). Subsequent to the closing of the merger, the bidder refinanced 57% of the revolving loan by net proceeds of notes issuance.

5. Guidant Corp
(*Announcement - Effective merger dates: 04.Aug.1998 - 31.Dec.1998*)
Form 10-K405, filed on 24-Mar-1999

" On September 15, 1998, Guidant completed its cash tender offer for all of the outstanding common shares of InControl, Inc., (InControl) at a total cost of $137.5 million. This acquisition was financed through the issuance of commercial paper.

The Company's commercial paper borrowings are supported by two credit facilities with certain banks. This includes a $400 million facility that permits borrowings through August 2003 and a $200 million facility that permits borrowings through August 1999. At December 31, 1998, the Company had outstanding commercial paper borrowings of $230.5 million and bank borrowings of $214.0 million at a weighted-average interest rate of 5.39%."

The takeover was financed entirely with commercial papers. The acquirer had access to full capacity of an existing credit line before the takeover.

6. DRS Technologies Inc
(*Announcement - Effective merger dates: 15.Aug.2003 - 04.Nov.2003*)
Form 8-K filed on 05-Nov-2003, and form 10-Q filed on 17-Feb-2004

"To finance the acquisition of Integrated Defense Tech (IDTs), the registrant entered into a *new credit facility and issued senior subordinated notes.* The total consideration for the acquisition was approximately $543 million before transaction expenses. The credit facility was entered into on November 4, 2003 with Wachovia Bank, National Association and Bear, Stearns Corporate Lending, Inc.

The credit facility consists of (1) a seven-year term loan in an aggregate principal amount of $236 million, (2) a five-year revolving credit facility in an aggregate principal amount of $175 million. The registrant issued $350

million aggregate principal amount senior subordinated notes due 2013 (the "Notes") on October 30, 2003. The Company *drew down the full amount of the term loan to fund a portion of the Merger*, to repay certain of its and IDTs outstanding indebtedness and to pay related fees and expenses. As of December 31, 2003, there were no initial borrowings under the revolving line of credit."

The takeover was financed with a combination of new term loan ($236 million) and note issuance ($307 million). The acquirer had access to full capacity of a new credit line before the takeover.

Table A.1: Variable Definitions

Variable	Sources	Definition
Bidder characteristics		
ln(Size)	Compustat	Natural logarithm of book assets (6), where assets are adjusted to 2000 dollars
Total debt	Compustat	Debt in current liabilities (34) + Long-term debt (9)
Book leverage	Compustat	Total debt / book value of total assets (6)
Cash holdings	Compustat	Cash and cash equivalents / total assets (6)
Excess cash	Compustat	Fitted residual from the regression for bidder cash holdings (as in Eckbo et al.(2018))
Profitability	Compustat	Operating income before depreciation (13) / total assets (6)
MVE	Compustat, CRSP	Market value of equity (199*25)
Tobin Q	Compustat	(MVE + total debt) / total assets
Asset Tangibility	Compustat	Net property, plant, and equipment (8) / total assets (6)
CF Volatility	Compustat	Standard deviation of quarterly operating income (13) over previous 5 years scaled by total assets, requiring at least 3 years of data.
Stock Returns	CRSP	The firm's annual stock return.
Deal characteristics		
Relative Size	SDC	The natural logarithm of the ratio of transaction value to total assets of the acquirer at the end of the fiscal year prior to the acquisition announcement.
Public Target	SDC	An indicator that takes value of 1 if the target status is "Public", and 0 otherwise
CARs	SDC, CRSP	Cummulative abnormal return in a 5-day window around the merger announcement. Abnormal stock returns are estimated using the market model over the trading days (-252,-42) before the deal announcement. Requires a minimum of 60 days of non-missing returns during the estimation period. The benchmark returns are the value-weighted index of returns including dividends for all combined NYSE, AMEX and NASDAQ.
Offer Premium	SDC, CRSP	OP/P(-42)-1, where OP is the initial offer price and P(-42) is the target closing price (Betton et al., (2014))
Industry Relatedness	SDC	An indicator variable that takes value of 1 if the acquirer is from the same 3-digit SIC industry as the target firm, 0 otherwise
Tender offer	SDC	An indicator variable that takes value of 1 if the deal is reported as tender offer, and 0 otherwise
Hostile	SDC	An indicator variable that takes value of 1 if the deal is reported as hostile, and 0 otherwise
Shareholder Voting	CRSP	An indicator variable that takes value of 1 if a deal has the fraction of shares to be issued (the number of new shares to be issued divided by the total number of shares outstanding) greater than 20%, and 0 otherwise
Under FTC/DOJ	Hand-collected	An indicator variable equals 1 if the deal is under FTC/DOJ antitrust scrutiny
Industry and time characteristics		
Industry Wave	SDC	As Maksimovic et al. (2013) , the z -score of MTA , where MTA = (aggregate volume of mergers)/(aggregate total assets of Compustat firms in the bidder's SIC2 industry and year), normalized by its time series mean and standard deviation
Wave	SDC	An indicator variable equals 1 if z-score of MTA is greater than 1
Credit Spread	FRED	Moody's yield on AAA seasoned corporate bonds – three-month Treasury bill (secondary market rate), Federal Reserve's website (https://fred.stlouisfed.org)
Recession	NBER	The number of months from the periods of peak to trough (contraction), as defined by NBER US Business Cycle Dates, NBER's website (https://www.nber.org/research/data/us-business-cycle-expansions-and-contractions)

All Compustat variables are measured at the end of the fiscal year-end prior to the merger announcement, and all continuous variables are winsorized at the 1st and 99th percentiles.

Table A.2: Choice-of-financing regressions in full sample

The table reports the coefficient estimates from OLS regressions for Columns (1)-(4), and from tobit regressions for Columns (5)-(6). The sample consists of 3,199 takeover bids for U.S. targets by U.S. nonfinancial public acquirers between 1994 and 2020. CL equals one if the acquisition is at least partially financed with credit lines and equals zero otherwise. CLONLY equals one when the acquisition is entirely financed by credit lines and equals zero otherwise. CLPCT is the amount of credit line financing scaled by transaction value. The explanatory variables control for bidder- and deal characteristics. Firm-level variables are lagged by one year. A constant term is included but not reported. Absolute values of t-statistics are reported in the parentheses. All standard errors adjust for heteroskedasticity and clustering at the industry level. Coefficients marked with *** , ** , and * are significant at the 1%, 5%, and 10% level, respectively.

Dependent variables	CL (1)	CL (2)	CLONLY (3)	CLONLY (4)	CLPCT (5)	CLPCT (6)
Undrawn CL	0.004***	0.004***	0.001***	0.001***	0.002***	0.002***
	(13.81)	(12.88)	(7.27)	(6.69)	(10.95)	(9.94)
Cash holdings	-0.526***	-0.434***	-0.379***	-0.312***	-0.476***	-0.399***
	(6.06)	(4.63)	(4.81)	(4.01)	(6.30)	(5.21)
Profitability	0.133**	0.131**	0.104*	0.095*	0.127**	0.118**
	(2.27)	(2.26)	(1.81)	(1.72)	(2.22)	(2.17)
Log(Size)	-0.033***	-0.029***	-0.026***	-0.022***	-0.030***	-0.025***
	(3.45)	(3.01)	(3.55)	(3.43)	(3.61)	(3.30)
Asset Tangibility	0.042	0.103	0.090	0.088	0.095	0.107
	(0.72)	(0.97)	(1.33)	(1.09)	(1.37)	(1.20)
EBITDA Volatility	-0.126	-0.099	-0.074	-0.096	-0.103	-0.113
	(1.50)	(1.10)	(1.18)	(1.37)	(1.56)	(1.49)
Tobin Q	-0.010***	-0.010***	-0.001	0.000	-0.003	-0.001
	(3.79)	(3.26)	(0.49)	(0.07)	(1.31)	(0.64)
Book Leverage	0.061	0.074	0.037	0.052	0.002	0.021
	(0.95)	(1.63)	(0.69)	(1.08)	(0.03)	(0.49)
Large Relative Size	-0.051***	-0.045***	-0.123***	-0.116***	-0.121***	-0.109***
	(3.37)	(3.11)	(4.04)	(3.92)	(4.96)	(4.84)
Public Target	-0.122***	-0.116***	-0.079***	-0.077***	-0.107***	-0.101***
	(6.02)	(5.43)	(4.75)	(4.15)	(6.40)	(5.41)
Tender offer	0.229***	0.228***	0.109***	0.114***	0.173***	0.173***
	(6.31)	(6.03)	(5.00)	(5.20)	(5.96)	(5.88)
Year FE	Y	Y	Y	Y	Y	Y
Industry FE		Y		Y		Y
Observations	1,983	1,980	1,983	1,980	1,910	1,910
Adjusted R-squared	0.313	0.331	0.128	0.170		
Pseudo R-squared					0.310	0.391

Table A.3: Acquirer cumulative abnormal returns

The table reports mean, median, 25th and 75th percentile of cumulative abnormal bidder returns (CARs) for the sample of 3,199 takeovers between 1994 and 2020, and for subsamples where the acquisition was financed with all stock, all cash, at least partially credit lines, internal funds, term loan, note issuance, and equity issuance. The source of financing for these takeovers is obtained from SEC filings, business news and press releases. CARs(-2,+2) is the five-day cumulative abnormal returns to the acquirer from two days before to two days after the announcement date.

Sample	Statistics	Mean	Median	p25	p75	Observations
Full Sample	CARs1	1.33%	0.32%	-3.72%	4.98%	3055
	CARs2	1.38%	0.27%	-4.27%	5.81%	3055
	Premium	50.3%	39.2%	19.7%	68.2%	810
Takeovers financed with 100% stock	CARs1	0.79%	-0.46%	-5.15%	4.81%	1726
	CARs2	0.88%	-0.68%	-5.82%	5.87%	1726
	Premium	51.1%	36.8%	11.7%	74.0%	442
Takeovers financed with 100% cash	CARs1	1.78%	1.09%	-1.96%	4.64%	1030
	CARs2	1.68%	1.07%	-2.27%	5.01%	1030
	Premium	52.4%	44.3%	25.7%	66.6%	288
Takeovers financed with CL	CARs1	2.45%	1.42%	-1.66%	5.71%	757
	CARs2	2.56%	1.55%	-2.01%	6.25%	757
	Premium	44.0%	43.7%	26.9%	66.0%	163
Takeovers financed with revised CL	CARs1	3.28%	1.89%	-1.45%	6.87%	466
	CARs2	3.42%	1.97%	-1.94%	7.35%	466
	Premium	37.2%	38.9%	22.9%	55.9%	113
Takeovers financed with old CL	CARs1	1.17%	1.04%	-1.97%	4.12%	293
	CARs2	1.23%	1.04%	-2.20%	4.97%	293
	Premium	59.4%	60.8%	33.9%	97.7%	51
Takeovers financed with internal funds	CARs1	1.50%	1.11%	-2.00%	4.36%	652
	CARs2	1.28%	0.77%	-2.48%	4.83%	652
	Premium	50.6%	40.4%	25.0%	61.0%	207
Takeovers financed with term loan	CARs1	3.10%	1.79%	-2.29%	7.77%	388
	CARs2	3.09%	2.18%	-2.84%	8.16%	388
	Premium	38.3%	35.5%	24.2%	52.3%	125
Takeovers financed with note issuance	CARs1	2.65%	1.54%	-2.07%	6.26%	169
	CARs2	2.84%	1.90%	-1.94%	6.75%	169
	Premium	40.8%	35.1%	23.0%	54.4%	65
Takeovers financed with equity issuance	CARs1	4.25%	1.97%	-3.19%	7.48%	62
	CARs2	4.21%	1.42%	-3.60%	8.06%	62
	Premium	60.4%	54.4%	29.9%	86.3%	13

Table A.4: Regressions of three-day acquirer cumulative abnormal returns

Regressions of acquirer returns. The table reports coefficient estimates of acquirer returns which are calculated over a three-day event window (one day before and one day after the announcement date). The sample consists of 3,199 merger bids of U.S. nonfinancial, publicly listed acquirers to U.S. targets between 1994 and 2020. Variable definitions are in the Appendix A.1. Absolute values of t-statistics are are given in parentheses and are adjusted for heteroskedasticity and for clustering by industry. Coefficients marked with *** , ** , and * are significant at the 1%, 5%, and 10% level, respectively.

Models	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CL	0.005	0.005			-0.007	-0.007		
	(1.29)	(1.21)			(1.51)	(1.42)		
OLDCL			-0.007	-0.007			-0.003	-0.003
			(1.45)	(1.40)			(0.50)	(0.50)
REVISECL			0.012**	0.012**	0.019***	0.019***	0.012**	0.012**
			(2.42)	(2.29)	(3.10)	(3.24)	(2.13)	(2.13)
TLOAN							0.013**	0.013**
							(2.38)	(2.38)
BOND							0.011	0.011
							(1.32)	(1.32)
CPO							-0.010	-0.010
							(1.34)	(1.34)
SI							0.001	0.001
							(0.04)	(0.04)
Large Relative Size	0.007	0.007	0.006	0.006	0.006	0.006	0.004	0.004
	(1.14)	(1.11)	(0.96)	(0.96)	(0.96)	(0.96)	(0.73)	(0.73)
Public Target	-0.037***	-0.037***	-0.037***	-0.037***	-0.037***	-0.037***	-0.037***	-0.037***
	(8.94)	(8.94)	(8.99)	(9.01)	(9.00)	(9.02)	(8.93)	(8.93)
Tender Offer	0.027***	0.029***	0.026***	0.028***	0.026***	0.028***	0.028***	0.028***
	(4.36)	(4.51)	(4.28)	(4.43)	(4.27)	(4.42)	(4.43)	(4.43)
Industry Relatedness	0.005	0.005	0.004	0.005	0.004	0.005	0.004	0.004
	(1.40)	(1.57)	(1.26)	(1.43)	(1.26)	(1.43)	(1.29)	(1.29)
Hostile	-0.012	-0.012	-0.011	-0.012	-0.011	-0.012	-0.012	-0.012
	(1.62)	(1.29)	(1.40)	(1.11)	(1.45)	(1.16)	(1.55)	(1.55)
All Cash	-0.006	-0.006	-0.005	-0.005	-0.005	-0.005	-0.004	-0.004
	(0.92)	(0.87)	(0.79)	(0.75)	(0.79)	(0.74)	(0.63)	(0.63)
All Stock	-0.016*	-0.014*	-0.015*	-0.013	-0.015*	-0.013	-0.009	-0.009
	(1.94)	(1.69)	(1.86)	(1.59)	(1.87)	(1.60)	(1.00)	(1.00)
Firm Controls	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE		Y		Y		Y		Y
Observations	3,053	3,049	3,053	3,049	3,053	3,049	3,053	3,053
Adjusted R-squared	0.056	0.059	0.057	0.060	0.058	0.060	0.059	0.059

Table A.5: Regressions of acquirer CARs in all-cash sample

Regressions of acquirer returns. Acquirer returns are calculated over a five-day event window (two days before and two days after the announcement date). The sample is restricted to 1,078 all-cash bids of U.S. nonfinancial, publicly listed acquirers to U.S. targets between 1994 and 2020. Variable definitions are in Appendix A.1. Absolute values of t-statistics are are given in parentheses and are adjusted for heteroskedasticity and for clustering by industry. Coefficients marked with *** , ** , and * are significant at the 1%, 5%, and 10% level, respectively.

Models	(1)	(2)	(3)	(4)	(7)	(8)
CL	0.009*	0.011*				
	(1.84)	(1.91)				
OLDCL			0.003	0.006	0.006	0.007
			(0.48)	(0.97)	(0.92)	(1.12)
REVISECL			0.014**	0.014**	0.014**	0.013**
			(2.35)	(2.18)	(2.38)	(2.19)
TLOAN					0.013**	0.012*
					(2.07)	(1.89)
BOND					0.005	-0.000
					(0.52)	(0.03)
CPO					-0.001	-0.003
					(0.07)	(0.33)
SI					-0.000	0.002
					(0.01)	(0.13)
Large Relative Size	0.020**	0.015	0.017*	0.014	0.012	0.009
	(2.09)	(1.54)	(1.85)	(1.41)	(1.41)	(1.09)
Public Target	-0.002	-0.002	-0.002	-0.002	-0.004	-0.003
	(0.18)	(0.18)	(0.22)	(0.22)	(0.35)	(0.28)
Tender Offer	0.008	0.010	0.008	0.010	0.010	0.011
	(0.97)	(1.16)	(0.95)	(1.15)	(1.08)	(1.19)
Industry Relatedness	0.010	0.013*	0.010	0.012*	0.010	0.012*
	(1.65)	(1.92)	(1.55)	(1.85)	(1.51)	(1.78)
Hostile	-0.032*	-0.027	-0.032*	-0.028	-0.033*	-0.029
	(1.86)	(1.45)	(1.85)	(1.46)	(1.96)	(1.55)
Firm Controls	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Industry FE		Y		Y		Y
Observations	1,029	1,025	1,029	1,025	1,029	1,025
Adjusted R-squared	0.013	0.015	0.015	0.015	0.016	0.014

Table A.6: Regressions of acquirer CARs (robustness)

Regressions of acquirer returns. Acquirer returns are calculated over a five-day event window (two days before and two days after the announcement date). Firm and/or year fixed effects are included. The sample consists of 1,957 control bids of 675 U.S. nonfinancial, publicly listed acquirers that make more than one acquisition between 1994 and 2020. Variable definitions are in Appendix A.1. Absolute values of t-statistics are are given in parentheses and are adjusted for heteroskedasticity and for clustering by industry. Coefficients marked with *** , ** , and * are significant at the 1%, 5%, and 10% level, respectively.

Models	(1)	(2)	(3)	(4)	(5)	(6)
CL	0.015**	0.019**				
	(2.21)	(2.30)				
OLDCL			0.009	0.016*	0.012	0.017*
			(1.33)	(2.00)	(1.40)	(1.86)
REVISECL			0.019**	0.021**	0.020**	0.023**
			(2.16)	(2.16)	(2.18)	(2.23)
TLOAN					-0.001	-0.006
					(0.05)	(0.66)
BOND					0.013	0.012
					(1.06)	(0.87)
CPO					-0.008	-0.006
					(0.41)	(0.34)
SI					0.004	0.007
					(0.23)	(0.36)
Large Relative Size	0.004	0.003	0.003	0.002	0.003	0.002
	(0.28)	(0.21)	(0.26)	(0.19)	(0.19)	(0.20)
Public Target	-0.034***	-0.035***	-0.034***	-0.035***	-0.034***	-0.035***
	(4.48)	(4.83)	(4.52)	(4.83)	(4.40)	(4.73)
Tender Offer	0.018*	0.021**	0.017*	0.021**	0.018*	0.022**
	(1.76)	(2.24)	(1.72)	(2.22)	(1.76)	(2.27)
Industry Relatedness	0.010	0.012*	0.010	0.012*	0.010	0.012*
	(1.64)	(1.96)	(1.56)	(1.90)	(1.56)	(1.92)
Hostile	-0.017	-0.016	-0.017	-0.017	-0.017	-0.016
	(0.71)	(0.56)	(0.77)	(0.63)	(0.79)	(0.63)
All Cash	0.007	0.006	0.007	0.007	0.007	0.006
	(0.60)	(0.53)	(0.63)	(0.56)	(0.59)	(0.49)
All Stock	-0.013	-0.006	-0.013	-0.006	-0.011	-0.006
	(0.79)	(0.39)	(0.76)	(0.37)	(0.61)	(0.35)
Firm Controls	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Firm FE		Y		Y		Y
Observations	1,923	1,923	1,923	1,923	1,923	1,923
Adjusted R-squared	0.119	0.117	0.119	0.117	0.118	0.115

Table A.7: Probit estimates for credit line financing

The table reports the first stage (selection model) in the Heckman sample selection model. The sample consists of 3,199 control bids of U.S. nonfinancial, publicly listed acquirers to U.S. targets between 1994 and 2020. Undrawn credit is the ratio of undrawn credit lines to total lines of credit prior to the takeover. The hand-collected data on undrawn credit results in 1,991 nonmissing values. Variable definitions are in Appendix A.1.

Variable	Coefficient	Z-statistic	P-value	Marginal Effect
Undrawn credit	0.0216822	14.55	0.000	69.54
Cash holdings	-2.378035	-7.37	0.000	0.16
Profitability	1.081995	2.79	0.005	0.13
Size	-0.0973255	-3.9	0.000	6.12
Asset Tangibility	-0.2950279	-1.62	0.106	0.23
EBITDA Volatility	-0.5519281	-1.74	0.081	0.07
Tobin Q	-0.0839408	-2.95	0.003	2.19
Book Leverage	0.0722846	0.34	0.734	0.20
R&D	-4.418022	-4.99	0.000	0.04
Large Relative Size	-0.1492623	-1.64	0.101	0.22
Public Target	-0.5155475	-5.94	0.000	0.40
Tender Offer	0.6638267	5.79	0.000	0.13
Industry Relatedness	0.1241297	1.67	0.096	0.36
Merger Wave	-0.2517917	-2.57	0.010	0.24
Credit Spread	-0.0111312	-0.12	0.904	1.34
GDP Rate	-0.0236067	-0.77	0.444	2.97
Recession	0.0082706	0.73	0.467	0.85
Constant	-0.63051	-2.33	0.020	0.25
Observations				1,991
Log likelihood				-907.32
Pseudo R2				0.32
% of credit line financing				38.82