

Financing Acquisitions with Earnouts

Thomas W. Bates
Arizona State University
thomas.bates@asu.edu

Jordan B. Neyland*
George Mason University
jneylan2@gmu.edu

Yolanda Yulong Wang
University of Melbourne
yulong.wang@unimelb.edu.au

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Abstract

We present evidence that earnout agreements in acquisition contracts provide a substantial source of financing for acquirers. Acquirers in transactions with earnouts are significantly more likely to be financially constrained, face tighter credit market conditions, and use less debt and equity to fund acquisitions. Financially constrained acquirers also book lower fair values for the contingent claim. Earnout use is more likely in transactions that involve liquid sellers, and earnout bids garner higher transaction valuation multiples. Overall, the evidence suggests that earnouts are an economically material and increasingly common source of acquisition financing for acquirers with limited access to external capital.

*The corresponding author is Jordan Neyland. jneylan2@gmu.edu Tel: (703) 993-8639. We thank seminar and conference participants at American University, the 2015 FIRN meetings, HSBC Peking University, Miami University, The U.S. Securities and Exchange Commission, Texas Christian University, The University of Auckland, University of Pennsylvania Law School, University of Melbourne, University of Queensland, and Queensland University of Technology. We also appreciate helpful comments from Douglas Foster, Neal Galpin, Jay Li, Roni Michaely, Peter Pham, Henri Servaes, and an anonymous referee.

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Abstract

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I. Introduction

In Modigliani and Miller's (1958) perfect capital market, all profitable investments receive funding. However, market frictions can drive a wedge between the efficient allocation of capital and value-increasing investment. Without access to capital markets, firms must forego valuable projects, engage in liquidity management, or find alternative sources of capital to fund investments. In the context of corporate mergers, Harford (2005) shows sufficient capital and liquidity must be available for firms to effectively reallocate assets after economic and technological shocks. Almeida, Campello, and Hackbarth (2011) highlight the importance of financial slack from credit lines to finance acquisitions. In addition, Harford and Uysal (2014) note that the intensity of acquisition activity is greater for firms with a debt rating. In this paper, we consider how a contracting provision in acquisition contracts, commonly referred to as an earnout agreement, represents a valuable and increasingly common source of liquidity for financially constrained acquirers.

Earnout agreements stipulate that acquirers withhold a portion of the total merger consideration until target managers achieve pre-specified performance objectives. These objectives are typically related to post-merger performance measures such as cash flows, sales, or earnings. Given their contingent nature, the prior literature has largely focused on the use of earnouts as a contracting device to resolve conflicts between acquirers and targets when transactions entail significant information asymmetry about the value of target assets, or when there are concerns about post-contractual moral hazard. A variety of papers including Kohers and Ang (2000), Datar, Frankel, and Wolfson (2001) and Cain, Denis, and Denis (2011) provide substantial evidence that is consistent with information-based explanations for the use of earnouts.

Earnout agreements can also provide an important liquidity management tool to financially constrained acquirers. On average, earnouts delay the term of the full payment from the acquirer by approximately three years. The relative size of earnouts suggests that they can represent a material source of transaction financing for acquirers. For example, the value of the average earnout in our sample is approximately 11% of the book value of the acquirer, and accounts for just over 30% of

transaction value. For additional perspective, the average earnout constitutes over three times the acquirer's cash and marketable securities in the fiscal quarter before the acquisition announcement. The use of earnouts has become increasingly common over the last three decades, peaking at almost 18% of all of the acquisitions observed in the years immediately following the financial crisis in the late 2000s. We hypothesize that this option to defer a substantial fraction of the acquisition payment can be a source of seller financing and represents an increasingly important alternative to costly external funds for acquirers.

Our analysis utilizes a sample of 2,226 completed acquisitions announced and completed between 1988 and 2014 that incorporate earnout agreements, and a propensity score matched sample of comparable transactions without earnouts. Consistent with the liquidity hypothesis, we find that financially constrained acquirers are much more likely to use an earnout agreement than unconstrained acquirers. For example, after controlling for transaction and target characteristics, we find that acquirers without a credit rating are 7.9% more likely to use an earnout agreement in a transaction relative to transactions by acquirers that have a rating. Similarly, a bidder with a Whited-Wu (2006) index above the sample median is 11.6% more likely to use an earnout relative to a firm with a below median index. Our results are robust to a variety of alternative acquirer-level measures of financial constraints including Hadlock and Pierce's (2010) "SA Index" and dividend payout. It is important to note that information and liquidity explanations for the use of earnouts in acquisition agreements are not mutually exclusive, and our results hold even after controlling for characteristics of the target firm tied to contracting costs.

We also consider how an acquiring firm's financial constraints affect earnout accounting. Following the adoption of revisions to SFAS 141 (R), acquirers must record the fair value of any material contingent consideration as a liability on the balance sheet. Flexibility in estimating the fair value provides another benefit for constrained acquirers, as they can record a lower liability on their balance sheet, and preserve flexibility against liability-based covenants. Overall, we find that

financially constrained acquirers are more likely to report fair values, scaled by maximum earnout size, in the lowest quartile.

We extend our analysis of the effects of bidder-level financial constraints by providing evidence on the use of earnouts following the onset of the financial crisis in 2007, which resulted in a negative quasi-exogenous shock to the supply of credit for non-financial firms. Duchin, Ozbas and Sensoy (2010) document a significant decline in investment by non-financial firms following the onset of the crisis. Consistent with a causal effect of this shock, they find that decline in investment during this period is greatest for financially constrained firms. We interact an indicator for the financial crisis with proxies of bidder financial constraints and document that the likelihood of using an earnout increased substantially for constrained bidders during the ten quarters immediately following the onset of the crisis. This result suggests that earnouts became an increasingly valuable alternative source of transactional liquidity following this shock to the supply of credit.

We complement our firm-level study of financial constraints with an analysis of how market-level measures of access to capital relate to the use of earnouts over time. We use the net percentage of loan officers reporting tightening of credit standards from Federal Reserve's Senior Loan Officer Opinion Survey (SLOS) to proxy for the supply of bank credit. A one standard deviation change in this percentage increases the likelihood that an acquisition includes an earnout by 1.9%. The use of earnouts also increases in the C&I spread (the difference between the average borrowing rate on commercial and industrial loans and the federal funds rate). For example, in quarters where the C&I spread is above the sample median, acquirers are 7.7% more likely to use an earnout agreement.

We then examine if acquirers' access to capital markets supports a financing motivation for the use of earnouts. We find that the level of proceeds from public security issuances and commercial loans issued by acquirers over the three years preceding an acquisition, scaled by transaction value, is negatively related to the use of earnouts. A one standard deviation change in pre-bid issuance is associated with a reduction the probability of an earnout by 3.0% and 1.6%, respectively. This

suggests that greater access to public and commercial loan markets is associated with a lower dependence on earnout financing.

To directly address the question of substitution between earnouts and other forms of acquisition financing, we consider the use of earnouts in the context of the acquiring firm's decision to use external funding for an acquisition. Earnouts are significantly negatively correlated with an acquirer's reported use of external debt and equity to finance acquisitions, where the use of any form of external financing is 5.0% to 6.0% lower in acquisitions with an earnout. As managers consider both the source of financing and the terms of an acquisition agreement simultaneously, we must account for endogenous selection of earnouts and financing. We use two instruments to aid in identification. The first is the change in accounting standards in 2001 that eliminated the pooling-of-interests method of acquisition accounting. Earnouts must be used with the purchase method, which means earnouts became relatively less costly for acquirers after 2001. We see an increase in the proportion of transactions with earnouts after 2001.

Our second instrument relates to the adoption SFAS 141, which changed the accounting treatment of contingent consideration in 2009 to require bidders to estimate the fair value of earnouts and record a contingent liability that must be updated, and hence audited, quarterly. Allee and Wangerin (2016) contend that SFAS 141 increased the complexity and monitoring cost of earnout contracting, and they suggest high-quality auditors have a relative advantage due to their greater ability to monitor. Importantly, we do not expect that either of the accounting changes had any impact on access to, or the cost of, external financing for acquirers, satisfying the exclusion restriction. We provide further evidence and discussion on the exogeneity requirement in section IV. After correcting for selection, we find that earnouts continue to be negatively related to the use of outside financing for acquisitions.

While our evidence is consistent with demand effects driving the use of earnout agreements, we also consider whether the use of earnouts is correlated with the financial slack of corporate parents of subsidiary targets. Petersen and Rajan (1997) document that the supply of trade credit by

non-financial intermediaries is increasing in the liquidity of those intermediaries. We use three proxies for the target's supply of funds: the parent's cash-to-asset ratio, the cash-to-transaction value ratio, and the dollar value of cash holdings, each of which is positively correlated with the likelihood that an acquisition includes an earnout agreement. Standardizing the cash variables reveals that a one standard deviation change in parent liquidity leads to an increase in the probability of an earnout between 1.0% and 1.6% for each of the measures of parent cash. This evidence suggests that the liquidity of corporate parents of targets is an important determinant of the supply of acquisition financing through earnouts.

Finally, we examine the financial benefits of earnouts for target shareholders by analyzing prices paid for targets, and the incremental cost to acquirers that use earnouts. Since earnouts are almost exclusively used in the acquisition of non-public targets, we follow Officer (2007) and rely on a transaction's value-to-sales multiple. Our evidence suggests that transactions structured with earnout agreements garner higher transaction multiples for targets, and this premium is higher when a transaction occurs during periods of relatively high C&I spreads.

To provide perspective on the cost of earnout financing, we estimate the increase in transaction multiples, and the proportion of the transaction financed with an earnout, to estimate an average "earnout yield". Based on transactions with available data, our estimates suggest that this yield averages about 5.6% per annum, but can range as high as 22.1% on average when transactions are negotiated following quarters where the C&I spread is particularly high. For comparison, the yield of the Bank of America Merrill Lynch High Yield Index varies in our sample period from lows around 6% to highs around 22% during the financial crisis.¹ Overall, the results suggest that the financing benefits of earnouts are recognized by merger parties and are incorporated into prices with implied yields that are comparable to an acquirer's alternative sources of external capital.

¹ We describe our calculations in detail in Section IV of the paper. Data on yields are available from the St. Louis Fed. <https://fred.stlouisfed.org>.

Our evidence contributes to the literature on financial constraints and underinvestment. Following Fazzari, Hubbard, and Petersen (1988), this literature emphasizes problems in financial contracting as an explanation for firms' reliance on internal financial slack to finance investment. More directly, our paper relates to studies on the role of financial slack in facilitating acquisitions. Myers and Majluf (1984) suggest mergers can create value by allocating financial resources to slack-poor firms if managers can communicate the value of investments during negotiations. Cornaggia and Li (2016) infer that targets' access to bank finance motivates acquisitions, especially for constrained bidders. Williamson and Yang (2013) show that diversifying acquisitions can loosen bidders' financial constraints. In terms of targets' access to finance, Erel, Jang, and Weisbach (2015) provide evidence that targets receive financial slack from acquirers, and Smith and Kim (1994) find higher announcement returns in acquisitions combining slack-rich and slack-poor firms. In this paper, we show that the deferred payment of an earnout agreement provides an increasingly common and valuable source financial slack for financially constrained acquirers.

The remainder of the paper is organized as follows. In Section 2, we summarize the literature concerning earnouts and present our hypotheses on earnouts and financial constraints. Section 3 describes the data and variables of interest. Section 4 presents the multivariate results. Section 5 concludes the paper.

II. Earnouts and Acquirer Financial Constraints

Since earnout agreements require that the acquirer withholds a portion of the final merger consideration until the target meets a pre-specified performance objective, prior literature has largely emphasized earnouts as a contracting device to resolve conflicts between bidders and targets arising from information asymmetry and moral hazard. The existing evidence supports the information-based explanation for earnouts. Kohers and Ang (2000) document an increased likelihood of earnouts in deals for private targets or targets in the high tech and service industries; evidence that is consistent with earnouts as a contracting term that moderates information asymmetry between acquirers and targets. Consistent with this, Datar et al.(2001) note that acquirers are more likely to

include earnouts in acquisitions of private firms, as well as deals involving high growth, high-tech, and service sector targets. Cain et al.(2011) present evidence that valuation and contracting frictions also influence the duration and performance targets of earnout agreements. Reuer, Shenkar, and Ragozzino (2004) find that earnouts are more often used by acquirers with little acquisition experience.

The evidence also suggests that the deferred payment from earnouts tied to post-contractual performance can resolve moral hazard issues in acquisitions. Barbopoulos and Wilson (2013) find that long-run returns are higher in acquisitions of financial targets with earnout agreements. The incentive effects of earnouts are particularly salient if the acquirer intends to retain target management. Consistent with this, Cadman, Carrizosa, and Faurel (2014) show that target managers stay with the combined firm longer in the presence of earnouts.

In this paper we propose an alternative (but not mutually exclusive) explanation for earnout agreements; namely that the financial terms of an earnout present acquirers with a valuable alternative source of acquisition financing. The deferred consideration makes an earnout resemble a financial contract, and makes the target shareholder a claimant on the cash flows of the acquirer and combined firm, a position similar to the acquirer's creditors. In addition, there is no requirement or contractual obligation for the acquirer to invest the contingent consideration in particular assets, hence, the retained payment is a source of financial slack, as a cash reserve, unused credit, or unissued equity.

Earnouts can provide financial slack to managers when other sources of funds are unavailable or prohibitively costly. The literature has emphasized that firms often rely on alternative sources of investable capital when access to external capital is limited or costly. For example, Almeida, Campello, and Weisbach (2004) find that constrained firms save cash from cash flow to invest in profitable projects. Faulkender and Wang (2006) and Denis and Sibilkov (2009) note that the value of cash is higher for financially constrained firms as cash holdings mitigate underinvestment.

Financial constraints also lead firms to seek credit arrangements with non-financial institutions. For example, Biais and Gollier (1997) and Petersen and Rajan (1997) note that suppliers find it beneficial to provide trade-credit to customers who do not have access to credit from financial institutions. In this relationship, suppliers can use their private information about the customer to exert more control over the customer's assets and mitigate the informational disadvantage faced by the financial institution, thereby allowing them to provide a cost-effective alternative source of capital for constrained customers.

More generally, earnout agreements allow the terms of payment to be negotiated with an informed seller. As noted in Myers and Majluf (1984) underinvestment problems arise if the suppliers of financing are relatively uninformed about the value of a firm, and suggest one means for overcoming this problem is through a merger, as private information is shared in negotiations. Hertzl and Smith (1993) propose that obtaining financing with a small set of private investors can overcome equity market frictions, as private investors can become informed about the firm's value during private placements. In the context of an acquisition, target and acquirer managers have candid conversations about potential synergies and the value and credit worthiness of the combined firm. As noted in Boone and Mulherin, (2007) managers setup "data rooms" and agree to confidentiality agreements to facilitate the flow of information. These efforts reduce the information asymmetry between acquirers and targets, and thus allow the target to better assess the credit risk of a bidder, relative to a risk assessment by outside creditors. The benefits of target-supplied finance are enhanced to the extent that the earnout itself mitigates post-contractual moral hazard problems for target management. Thus, the deferred payment through an earnout can represent an efficient form of alternative credit supplied by the target shareholders, and this financing option will be more valuable for financially constrained acquirers with limited or costly access to external funds.

III. Data

i. Sampling

We obtain our sample of acquisitions from Thomson Financial's Securities Data Company (SDC) database. We include transactions completed by U.S. listed public companies between January 1, 1988 and December 31, 2014 with an announced transaction value of at least \$1 million. We restrict the sample to transactions in which the bidder owns less than 50% of the target equity prior to the bid announcement, and only transactions where the acquirer is seeking majority control of a target. We require targets to be public, private, or subsidiary companies, and we exclude equity carveouts, spinoffs, splitoffs, recaps, privatizations, repurchases, and restructurings from the sample.

We obtain accounting information from the Compustat quarterly database and equity price data from CRSP. Accounting and stock data are matched to SDC transactions from the quarter ending prior to acquisition announcement. We restrict our sample to transactions with non-missing data on book asset value for acquirers in the sample. We drop financials and utilities (SIC 6000-6999 and 4900-4999) due to the regulatory environment of these industries. The merged sample contains 22,323 transactions. To mitigate the effect of outliers, we winsorize all continuous variables at the 1% level. We obtain U.S. commercial and industrial loan rate spread data and the Senior Loan Officer Opinion Survey on Bank Lending Practices from the Federal Reserve.² Variable definitions are provided in the appendix of the paper.

Panel A of Table 1 summarizes the incidence of earnouts in acquisitions for each year of our sample. Earnout use has become increasingly popular over time, peaking during the financial crisis at almost 18% of the sample. The use of earnouts roughly doubled between 2000 and 2002, a period that coincides with the elimination of pooling accounting for mergers. In 2007, there is also a marked jump in earnout use, with over 15% of acquisitions including contingent payments. This increase is somewhat surprising, given the increased accounting disclosures required for contingent payments by

² <https://www.federalreserve.gov/data/sloos/201705/chartdata.htm>

SFAS 141(R) starting in 2009, which likely increased the costs and decreased the attractiveness of using earnouts. Notably, the increase in earnout use coincides with negative shock to the supply of external credit during the financial crisis.

The last three columns of Panel A outline the relative value of the earnout agreements in our sample. Earnout value is reported for 1,633 of the sampled transactions. *Earnout Value* is the dollar value (millions) of the contingent payments specified in the earnout contracts, as reported in SDC. The mean value of an earnout is \$25.99 million. *Target Earnout Ratio* is the ratio of the earnout value to transaction value while *Acquirer Earnout Ratio* is the value of the earnout divided by the book value of the acquirer. While relatively small in absolute size, the average earnout is in the sample accounts for 32.84% of the transaction value. On average, earnouts account for 10.81% of the bidder's assets and thus represent a significant liability to acquirers and an economically large potential source of financial slack.

In untabulated statistics, we find that the majority of the targets in deals involving earnouts in our sample are private firms (77.85%) and 14.64% of transactions involving private firms have earnouts. The prevalent use of earnouts in deals involving private targets is consistent with transaction statistics in the literature. In our sample, 20.13% of the earnout deals are subsidiary acquisitions, and earnouts are used in 6.61% of all of the subsidiary acquisitions. Only 2.02% of earnout observations arise in public target acquisitions, and earnouts were found in only 1.22% of public acquisitions.

Panel B of Table 1 illustrates a number of important differences between transactions with and without earnouts. On average, acquirers in earnout transactions are roughly one half the size of acquirers in deals without, as measured both in market capitalization and book value, while the relative size of the transaction is approximately 7% larger for deals with earnouts. The panel also reports a number of transaction characteristics for the two subsamples. As might be expected, the average earnout transaction value is approximately \$80 million, about one third of the average transaction value for deals without earnout agreements. Statistically significant differences also obtain

across most of the other transactions characteristics with the exception of the prevalence of cash exchanges. For example, earnout transactions are more likely to involve private targets, and are somewhat more likely to involve acquirers and targets from different industries. The deals also tend to feature very different contracting terms. Given the contracting environment, earnout deals are rarely used in tender offers. The use of earnouts also coincides with higher target payable termination fees, a greater incidence of asset lockups, and a lower presence of a pre-bid toehold by an acquirer.

ii. Propensity Score Matching

Panel B highlights substantial and pervasive heterogeneity in transaction characteristics across deals with and without earnouts agreements. While our analysis of the determinants of earnouts agreements allows for heterogeneity in the characteristics of acquiring and target firms, allowing for substantial heterogeneity in transaction characteristics is problematic if these characteristics can't be adequately controlled for. Contracting with earnouts may be much less efficient in deals involving larger targets and targets that are public listed. For example, Officer, Poulsen, and Stegemoller (2009) note private targets provide less public information than public targets. The greater relative frequency of earnout agreements in private company and subsidiary transactions is consistent with earnouts bridging valuation differences in acquisitions with high information asymmetry. However, we also note that this is consistent with financial contracting as smaller deals are more likely to be executed by relatively smaller acquirers. Similarly, transactions structured as tender offers are less likely to be earnout deals given the closely held equity of private targets.

To limit unwanted transactional heterogeneity we estimate a propensity score for the use of an earnout agreement for our full sample of transactions. This propensity score is estimated by regressing an indicator for the use of an earnout agreement on deal characteristics including the log of the transaction value, private target status, the size of the target-payable termination fee, the use of a lockup agreement, an indicator for a pre-bid toehold, tender offer/merger status, and a cash payment indicator. The model also includes bidder industry fixed effects at the 2-digit SIC code

level.³ We then match each earnout deal to a transactional equivalent drawn from the subsample of non-earnout transactions with the closest propensity score. Matched transactions are drawn without replacement and do not match deals from the same acquirer.⁴

The results of our propensity scoring model are presented in Table A2 of the Appendix. The probit regression uses all of the 22,323 observations in the full sample.⁵ The sign and statistical significance of the marginal effects (and t-stats in parentheses) included in the table generally support the conclusions drawn from Panel B of Table 1. For example, the likelihood of using an earnout in a transaction is decreasing in transaction size and is higher when the target firm is not public. Differences include an insignificant coefficient on toehold, which is likely attributable to the very low incidence of toeholds in our sample which has a large number of private targets. In addition, the coefficient on cash transactions is positive which is consistent with acquirer's use of earnouts in deals that have a direct negative effect on corporate liquidity.

The propensity model has substantial explanatory power in predicting earnout use with an adjusted R-square of 0.093. Its efficacy is also exhibited in the quality of the matching transactions, which exhibit none of the heterogeneity observed in Panel B of Table 1. In untabulated univariate comparisons of mean and median differences in deal characteristics between transactions with earnouts and the matched transactions indicate that none of the significant differences observed for the full sample obtain for the matched sample of transactions. For example, the average transaction value for earnout deals is just over \$80 million, and \$91.8 million for the average propensity matched

³ We find strong evidence for covariate balance. We follow Imbens and Rubin (2015) and compare differences in average linearized propensity scores. This difference is 0.0004, suggesting little difference in propensity scores across matched and earnout subsamples, providing evidence of a good match. Individual deal and target covariates also show no significant differences across the subsamples.

⁴ In unreported analysis we check that our results are robust to alternative matching methods. For example, we match three deals without earnouts to each earnout deal with replacement. We continue to find financial constraints relate to the use of an earnout. We also create a matched sample in which the matched deals occur in the same calendar year to control for time-specific effects. The firm-level financial constraints continue to correlate positively with earnout use, but we cannot accurately estimate the effect of time-series measures of financial constraints (e.g., the C&I spread) under this matching procedure.

⁵ We use a probit model given its prevalent use for propensity matching in prior literature. We note that probabilities predicted from a linear model (LPM) have a Spearman rank correlation over 98% with the probit predicted probabilities. This suggests the matched sample would be very similar if it were based off of a linear, rather than probit, model.

transaction. Similarly, 77.9% of the earnout transactions involve private targets, while 77.3% of the matched transactions are acquisitions of private targets.

iii. Descriptive Statistics

Table 2 reports descriptive statistics on characteristics of acquirers in earnout transactions and their matched transaction peers. The table also provides summary statistics for macroeconomic measures of the price and the supply of credit, as well as various characteristics of acquisition targets that have been shown in the literature to be significant determinants of earnout use. We also present the results of t-tests comparing the mean differences between the earnout sub-sample and the non-earnout sub-sample in column 8 of the table.⁶

The first three rows of the table recap acquirer size and relative size for the earnout transactions and the match transactions. Average acquirer size, as measured by the book value of assets and acquirer market capitalization, is statistically equivalent between the two subsamples. The relative size of the average earnout transaction is 28.5% of the book value of the acquirer, which is also statistically equivalent to the relative size of 29.1% in deals without earnout agreements.

The next four rows of Table 2 summarize several proxies for the extent of an acquirer's financial constraint. Following Kashyap, Lamont, and Stein (1994), Almeida et al. (2004), and Harford and Uysal (2014), we consider the firm's access to credit with an indicator for the presence of rated debt. We also proxy for a firm's payout policy using an indicator variable equal to one if a firm pays a regular dividend (Lamont, Polk, and Saa-Requejo, 2001). We also estimate financial constraints using the size and age (SA) index of Hadlock and Pierce (2010) and the Whited-Wu (2006) index. Higher values of both indices are associated with greater financial constraints.

The univariate evidence in Table 2 suggests that bidders' access to debt capital and overall degree of financial constraint is significantly related to the propensity to use an earnout agreement.

⁶ For discrete variables, results using Wilcoxon rank-sum tests and tests of proportions provide similar statistical significance as T-tests.

For example, 82.3% of acquirers in deals with earnouts do not have a credit rating, which is 3.4% higher than the proportion of acquirers in the matched transactions. Similarly, acquirers in earnout deals are approximately 5.0% less likely to pay a regular dividend. Acquirers using earnout deals are also more financially constrained as proxied by the SA and Whited-Wu indices, although the univariate difference on the SA index is not statistically different from zero, consistent with insignificant differences in bidder size resulting from matching on deal size.

We also provide direct evidence on the acquiring firm's access to capital prior to the bid with two variables. The first measure is the total value of issuances by the acquirer (debt and equity) reported in the SDC issues database over the three years prior to the bid, scaled by deal value.⁷ This ratio is about 1.4 times higher than for firms that do not use earnouts, consistent with the notion that earnouts are negatively correlated with an acquirer's access to external capital. The economic significance of the difference in issuance is large. While acquirers have relatively similar sizes, earnout firms raise \$94 million less on average than the matched sample if they use public market issuances. Second, we sum the total value of loan packages issued in the three years prior to the bid from the Dealscan database, scaled by deal value.⁸ The value of loans is negatively related to earnout use, with non-earnout acquirers having a ratio higher by about 1.6.

While access to capital markets could substitute for earnouts, excess borrowing may result in significant debt overhang. We follow Uysal (2011) and model abnormal leverage for an acquirer as the residual from a model of leverage. Consistent with the negative effects of overhang on external financing, earnouts are positively correlated with abnormal leverage. Finally, we consider an acquirer's ability to finance transactions with overvalued equity estimated using the market-to-book decomposition of Rhodes-Kropf, Robinson, and Viswanathan (2005). Univariate differences suggest that the use of earnouts is negatively correlated with overvaluation of the acquirer's equity.

⁷ From the SDC issues database, we pull public debt and equity issues over \$1 million. We exclude carveouts, LBOs, closed-end funds/trusts, unit investment trusts, REITs, limited partnerships, and rights issues.

⁸ Dealscan provides information on private commercial loans from bank and non-bank lenders. Chava and Roberts (2008) suggest the data provide coverage of much of the commercial loan market.

Table 2 also includes summary statistics for market-level financial characteristics related to an acquirer's borrowing costs, as proxied by the C&I spread in the quarter immediately preceding the announcement date.⁹ We also measure the supply of bank credit as the net percentage of loan officers that report a tightening of their credit standards from the prior quarter using the Federal Reserve's Senior Loan Officer Surveys (SLOS).¹⁰ The summary statistics suggest that transactions with earnout agreements are somewhat more likely to occur immediately following quarters in which the C&I spread is high and, although not significant, when loan officers report tightening credit standards.

IV. Multivariate Analysis

i. The Use of Earnout Agreements and Acquirer Financial Constraints

In Table 3 we summarize multivariate estimates of the likelihood that an acquisition includes an earnout agreement as a function of acquirer financial constraints and various controls for characteristics of the target firm. Our specifications include target industry and year fixed effects to account for any additional unmodeled heterogeneity. We model the dichotomous choice of an earnout using linear probability models (LPM). We use the LPM due to the ease of coefficient interpretation and the fact that we do not have to make assumptions on the appropriate non-linear functional form or convert parameters into marginal effects (Angrist and Pischke, 2008). Horrace and Oaxaca (2006) find that the LPM is biased and inconsistent when values lie outside the [0, 1] range, but these limitations are not likely to apply in our setting, as most independent variables are binary, and we use the matched sample when modelling the effect of financial constraints on earnouts, which limits the chance that extreme observations lead to predictions outside unit

⁹ Harford (2005) suggests that the C&I spread is correlated with overall market liquidity.

¹⁰ Lown and Morgan (2006) document that changes in commercial lending standards as proxied using the SLOS data are significantly correlated with the future supply of bank credit as well as future real output, and they suggest that changes in lending standards are more informative about future lending than are the rates charged for bank credit.

interval.¹¹ Finally, we ensure that our results are robust to correcting for the heteroscedasticity induced by the LPM.

The models include control variables that account for adverse selection problems faced by acquirers. Kohers and Ang (2000) and Datar, Frankel, and Wolfson (2001) find that acquisitions are more likely to include an earnout agreement when the target is private or a subsidiary, when target firms have high growth opportunities, and in cross-industry deals. Similarly, Cain et al. (2011) document that the earnout ratio is correlated with proxies of valuation uncertainty and moral hazard. Due to a lack of firm-level data for private firms and subsidiaries, we follow Cain et al. (2011) and proxy for information about target assets using the target-industry characteristics of public companies. We measure the median return volatility, R&D expense, and market-to-book ratio for public firms in each industry-quarter using 2-digit SIC code industry definitions. Volatility is the annualized volatility of the value-weighted return of the target's 2-digit SIC industry, estimated for the 100 trading days prior to the acquisition announcement. The specifications also control for cross-industry deals.

Panel A of Table 3 summarizes the results of our regressions modeling the likelihood of using an earnout agreement. In Model 1 the coefficient on the credit rating indicator suggests that transactions executed by acquirers without a credit rating are 7.9% more likely utilize an earnout. This probability is economically significant and represents an increase of 15.8 percentage points relative to the unconditional probability in our equally-weighted sample.¹² Similar results obtain in Model 2 where we estimate the likelihood of using an earnout as a function of the acquirer's dividend status. In Models 3 and 4 we create indicators equal to one for bidders with SA and Whited-Wu indices above the sample median, measured the quarter before announcement. As in the first two

¹¹ Less than 1% of our predictions are greater than one or less than zero. Nevertheless, LPM coefficients are similar to probit marginal effects, which are available upon request.

¹² We also study the adjusted R-squared across different specifications to assess the relative importance of financial constraints and target information asymmetry on the use of earnouts. Across Tables 3, 4, and 5, if we exclude our financial constraint measures, then adjusted R-squared declines by 10-25%, relative to a baseline model with only target characteristics. This change in goodness of fit, however, likely serves as a lower bound on the explanatory power of financial motivations for earnout use, as any information asymmetry about a bidder's investment in a target's assets can increase the cost of external finance.

models, the coefficients in Models 3 and 4 indicate that the likelihood of an earnout agreement is positively correlated with both measures.¹³ In sum, the evidence in the panel provides substantial evidence that financially constrained acquirers are more likely to use earnouts.¹⁴

In Panel B of Table 3, we use the financial crisis to study how constrained firms alter their contracting choice when credit and liquidity are in unexpectedly short supply. Duchin et al. (2010) document a significant decline in investment by non-financial firms following the onset of the crisis in 2007, particularly for firms with low liquidity and financially constrained firms. Cooper and Jensen (2016) find that the relation between cash holdings and equity returns is most pronounced during periods of high financing costs, including the financial crisis. Given the greater need for liquidity and higher cost of debt during times of tight credit conditions, we expect greater earnout use during the financial crisis. As in Duchin et al. (2010) we also consider whether, consistent with a causal effect of this shock on investment, any increase in earnout contracting is most pronounced for financially constrained firms following the onset of the crisis.

In Model 1 of Panel B, we extend the regressions of Panel A by adding a variable, *Crisis*, which is an indicator variable equal to one for transactions that are announced in the 10 quarters starting in the fourth quarter of 2007, and zero otherwise. In general, acquisitions are 7.9% more likely include an earnout agreement during the financial crisis. In Model 2, we interact the crisis indicator with the credit rating indicator. The marginal effect of the financial crisis for firms without a credit rating is positive and very significant, suggesting that acquirers with limited access to public debt were increasingly reliant on earnouts as an alternative source of funding. This result is consistent with the

¹³ The results presented in the table are extremely robust to alternative measures of financial constraint which we omit from our analysis for brevity. In unreported tests we proxy for an acquirer's financial constraints using the bidder's size (market value), the relative size of the deal, the acquirer's industry cash flow volatility, and the acquirer's expected cash holdings as defined in Bates, Kahle and Stulz (2009). In all cases, these alternative measures of financial constraints are positively correlated with the use of earnout agreements.

¹⁴ In untabulated results, we examine the prior acquisition activity of acquirers involved in earnout deals relative to acquirers that do not use earnouts. Harford and Uysal (2014) find that financially constrained firms, defined by their access to credit, make fewer acquisition attempts. We reduce the confounding effects of the observed transaction by examining the likelihood that a given acquirer is engaged in another acquisition in the years (365 days) prior to the announcement of the sampled transaction. In multivariate analysis, we find that acquirers using earnout agreements are 2-3% less likely to have undertaken an acquisition in the (2, 3, or 5) years prior to a bid, relative to acquirers who did not use an earnout.

conclusion in Ivashina and Scharfstein (2010) that the financial crisis resulted in a rapid and extreme decline in the supply of bank credit. In Model 3, we find that while earnouts are more likely to be used by acquirers that do not pay a regular cash dividend, the propensity to use earnouts for non-dividend payers is not higher in the 10 quarters following the onset of the financial crisis. Finally, Models 4 and 5 confirm the notion that financially constrained firms are more likely to use earnout transactions, and that this propensity is higher in the period immediately following the onset of the financial crisis.¹⁵ Overall, the findings in Panel B suggest that the use of earnouts increased substantially for financially constrained firms during the ten quarters immediately following the onset of the financial crisis; a result that suggests that earnouts became an increasingly valuable alternative source of transactional liquidity following a sudden shock to the supply of credit.

We also consider how a firm's financial constraints affect earnout accounting. Following the adoption of revisions to SFAS 141 (R), acquirers must record the fair value of any material contingent consideration as a liability on the balance sheet. These fair values are reported in the 10-Q with quarterly updates. The difficulty in estimating a fair value due to a lack of market values for earnouts likely generates some reporting flexibility. Any flexibility provides another financial benefit for constrained acquirers in that they can record a lower liability and preserve flexibility against liability-based covenants. The incentive is analogous to managers' incentive to use off-balance sheet lease agreements to appear less levered as documented in Cornaggia, Franzen, and Simin (2013).

As in Cadman et al. (2014) we collect data on the reported fair value of the earnouts in our sample following the adoption of SFAS 141 (R) in 2009 and calculate the ratio of the fair value of the earnout relative to the maximum earnout payment. Data on fair values are only required after 2009, yielding 320 reported fair value estimates for which we also have a maximum earnout value in our sample. In unreported multivariate analyses, we estimate the likelihood that the reported fair value, scaled by earnout size, is in the bottom quartile of the sample as a function of our firm-level proxies

¹⁵ While the results in Model 3 seem to be at odds with those in the rest of the panel, we note that the dividend indicator is a unique measure of financial constraint that is most often tied to growth opportunities and the incentives to hold cash balances, while the presence of a credit rating and the SA and Whited-Wu measures are measured directly or indirectly using a proxy for a firm's access to credit.

for the acquirer's financial constraint, as well as transaction and acquirer characteristics. Overall, we find that constrained acquirers are more likely to report scaled fair values of earnouts in the lowest quartile. For example, firms with no credit rating are 10.4% more likely to report low earnout values. Positive and significant coefficients also obtain for dividend payers, and acquiring firms with high SA and Whited-Wu indices. In sum, this evidence suggests another financial benefit of earnouts for financially constrained acquirers, in that the arrangements can result in lower reported liabilities for the acquirer relative to the expected liability.

In Table 4 we extend our results related to firm-level constraints to consider the effect of market-wide measures of the supply and cost of credit on the propensity to use an earnout agreement. We use the Federal Reserve's Senior Loan Officer Opinion Survey (SLOS) to proxy for changes in the supply of credit. We follow Lown and Morgan (2006) and Chava et al. (2015) who use the net percentage of loan officers that report a tightening of their credit standards from the prior quarter to proxy for the expected change in the supply of credit. The results summarized in Model 1 indicate that tightening standards increases the propensity to use an earnout. Standardizing the variable indicates that a one standard deviation change in percentage of loan officers tightening their standards, increases the likelihood of using an earnout in the following quarter by 1.9%. The results in Model 2 of the table indicate that the use of earnouts increases in the C&I spread, measured as the difference between the average borrowing rate on commercial and industrial loans and the federal funds rate. *High C&I Spread* is an indicator equal to one for quarters in which the spread is above the sample median. In quarters where the C&I rate is above the sample median C&I spread, acquirers are 7.7% more likely to incorporate an earnout into an acquisition agreement. Overall, the results of Table 4 are consistent with the notion that the market-wide supply and cost of credit have an economically significant influence on the propensity to use earnouts.

We next consider an acquiring firm's pre-bid capital market activity to directly assess their ability to raise funds to finance investment. If bidders are able to access funds from public markets, they should be less likely to use earnouts with the caveat that a significant debt overhang may serve

as an impediment to further external finance. In Model 1 of Table 5 we estimate the likelihood of an earnout as a function of the total proceeds from public debt and equity issuance by the acquirer during the three years prior to the acquisition announcement. Proceeds from issuances are negatively, significantly related to earnout use, where a one standard deviation increase (1.27) in the log proceeds-to-transaction value ratio is associated with a 3% reduction in the probability of using an earnout.

In Model 2 of Table 5, we examine the probability of using an earnout as a function of the acquiring firm's pre-bid borrowing, scaled by transaction value. Data on loan packages comes from the LPC Dealscan database, and we sum the total value of borrowing by bidders during the three years prior to the acquisition announcement. The log of the ratio of the loan values divided by the transaction value is also negatively related to earnout use with a coefficient of -1.6%. The standard deviation of this log ratio is 1.06, indicating the coefficient represents a 1.6% decrease in earnout use for an increase in the log ratio by one standard deviation. While the access to credit is suggestive, excess leverage may create an underinvestment problem for acquirers increasing the demand for earnouts. We calculate abnormal leverage as the difference between an acquirer's pre-bid total debt and the predicted determinants of leverage modeled in Uysal (2011). In Model 3, the coefficient on abnormal leverage is positive and significant, suggesting that debt overhang can make earnouts more attractive to acquirers. We also create an indicator for firms in the top decile of abnormal leverage to capture the effects of extreme overhang. In an untabulated multivariate analysis otherwise equivalent to that in Model 3, this indicator is significantly positively related to earnout use with a coefficient of 5.7%.

Finally, in Model 4 of Table 5, we estimate the effects of equity overvaluation on an acquirer's propensity to use an earnout agreement. *Equity Overvaluation* is measured as the firm-specific error from the market-to-book decomposition of Rhodes-Kropf et al. (2005). These authors document that this short-term component of value is positively correlated with a firm's acquisition activity and the propensity to use equity as an acquisition currency. The availability of overvalued equity lowers

the relative value of an earnout agreement as an alternative source of merger financing, while undervalued equity would increase the value of this tradeoff. Consistent with this hypothesis, the coefficient on equity overvaluation is negative and significant with a coefficient of -4.9%, implying that a one standard deviation (0.59) change leads to a decrease in earnout use of 2.9%.

ii. Earnouts, Acquisition Financing, and the Method of Payment

The slack from earnouts could provide financing for the acquisition itself if outside capital is costly, or it could provide a hedge to allow the bidder to continue financing further investments. For acquirers, the benefits for the slack vary with the financing options available. In this section we provide evidence on the benefits of this financial slack by examining financing decisions for the sample acquisitions.

Table 6 presents the results of regressions modelling the choice of outside financing for sample acquisitions. Our sample is significantly reduced due to a lack of data availability. Regulatory requirements do not specifically require firms to disclose the source of financing for acquisitions. Notwithstanding this limitation, SDC collects data from SEC filings and press releases, which frequently provide data on the source of financing for the acquisition.¹⁶ We classify bids as externally financed if SDC reports the source of funds as borrowings, debt issuance, bridge loan, credit line, or common stock. If SDC reports the source as corporate funds, we designate the deal as internally financed. If internal and external sources are used in combination, we classify the bid as externally financed, but our results are robust if we classify bids with combinations of internal and external financing as internal financing. Given limited data availability, we rely on the full sample of transactions for this analysis, of which 3,700 observations have reported financing information.

Because we do not use the matched sample, we control for deal characteristics in our regression, and there is a possibility for extreme observations to generate expected values above one

¹⁶ We study the observations without financing data due to concerns of selection bias. We find that the propensity to report financing data is positively related to the relative size of the deal. We posit firms disclose financing information when acquisitions are (relatively) material. We note that the relative size of deals to bidders is similar across earnout and non-earnout deals, given disclosure status. The similarity in relative size suggests disclosure of the source of financing may not be related to earnout use in acquisition, limiting the potential for selection bias.

or below zero, therefore we model the financing decisions with probit regressions, rather than linear models. Table 6 reports marginal effects from models estimating the likelihood that the acquirer uses external financing for an acquisition. The first model presents the univariate regression with only an indicator for the presence of an earnout and an intercept term. The presence of an earnout is associated with a 6.1% lower probability of external financing, consistent with earnouts as a substitute for external financing. Model 2 of Table 6 includes several deal and target characteristics related to the use of earnouts and choice of financing. After controlling for these determinants, we find that the relation between earnout use and external financing remains negative and significant at the 5% level with an equivalent marginal effect. In Model 3, we include industry-fixed effects and find that the negative relation between earnouts and external financing remains with a marginal effect of 5.2%.

While the negative relation between earnouts and outside financing is consistent with a trade-off between earnouts and the use of external capital, we recognize the endogenous nature of the choice of earnout and acquisition financing. To alleviate selection concerns, we model the earnout and financing choices jointly using a bivariate probit. We identify the model using two instruments for the propensity to use an earnout agreement. First, we create an indicator equal to one following the 2001 change in accounting standards that eliminated the pooling-of-interests method of accounting for acquisitions. We expect this change increased the relative use of earnouts, because acquisitions with earnouts must be accounted for with the purchase method. Second, we create an indicator equal to one for acquirers with smaller (non-Big-N) auditors after 2009, when SFAS 141 increased the reporting requirements associated with contingent consideration in acquisitions. Under the new accounting standards, acquirers must record a fair value liability for the earnout and update this liability each quarter. Due to the onerous nature of determining the fair value of a liability with no publicly traded comparable, Allee and Wangerin (2016) provide evidence that earnouts are more (less) likely for firms with larger (smaller) auditors after the rule change. Importantly, we do not

expect the elimination of pooling accounting or the use of small auditors to be significantly related to the choice of acquisition financing.

With the inclusion of the two instruments as well as additional controls for the bidder's auditor size and the changes to SFAS 141 in 2009, we examine the endogenous relation between the choice of earnout and external financing with a bivariate probit regression summarized in the last two columns of Table 6.¹⁷ In column 5, we present marginal effect estimates of the equation of the choice of earnout. As predicted, the elimination of the pooling method of accounting had a significant, positive impact on the use of earnouts. Conversely, the use of a non-Big-N auditor significantly reduces the likelihood of using an earnout after SFAS 141. Given these results, we conclude that our instruments satisfy the relevance requirement.

After instrumenting for the choice of earnout, we examine the choice of external financing in column 4 of Table 6. The marginal effect of the use of an earnout agreement on the probability of external financing is -15.7%. Because estimation with instrumental variables provides causal estimates only for the *local* average treatment effect, it is not uncommon for estimates to increase, indicating a differentially stronger effect for subsamples. While we are cautious to interpret this result given the data limitations, this evidence is consistent with a significant tradeoff between the use of earnout agreements and external financing of acquisitions.

We provide additional support for the exogeneity of our instruments in unreported analysis. First, we check that small auditors serve as a valid instrument in the results related to earnout use and outside financing. One concern is that auditor changes are correlated with financing decisions. In two separate analyses, we exclude firms that do not report the same auditor in a) the year before and the year after the deal and b) two years before and one year after the deal. Studying only bidders with no auditor changes, we continue to find the negative relation between outside financing and earnout use.

¹⁷ The bivariate probit jointly models the dichotomous financing choice variable with the endogenous binary choice of earnout use. Since the dependent and endogenous variables are binary, two stage least squares estimates can suffer from similar limitations as the linear probability model with predictions of probabilities outside the unit interval. The bivariate probit uses the bivariate normal to model probabilities, and analogous to the probit model, does not suffer from issues that arise in the full sample from linear models.

Aboody, Kasznik, and Williams (2000) suggest that the increase in book assets with the purchase method can benefit firms with debt covenants related to the debt-to-asset ratio. Hence, the purchase method could be associated with financing decisions. To mitigate this concern we limit the sample of bids to include only acquirers with abnormal leverage below the sample median, and estimate the bivariate probit for this subsample of transactions. For this subsample we continue to find that earnouts are significantly and negatively related to outside financing.

We recognize that the inclusion of an earnout agreement is determined at the same time as the form of payment (i.e., cash vs. stock payment). Merger parties jointly choose a method of payment and whether or not to use an earnout when considering the effect of the merger on their liquidity. For example, it's reasonable to assume that cash transactions, which have immediate negative implications for an acquirer's balance sheet, are more likely use an earnout to defer payment.¹⁸ To adequately control for the effect of form of payment on earnout use, these decisions should be modeled simultaneously. In Table 7, we address this issue by modelling earnout use and cash payment in bivariate probit models. *Cash Deal* is an indicator equal to 1 for 100% cash-financed bids.

To aid in identification, we include an instrument for the determinants of cash payment that is excluded from the earnout equation which is the maximum individual capital gains rate, *Capital Gains*. Because capital gains taxation applies more frequently to cash acquisitions than stock acquisitions, we expect variation in the capital gains rate influences the decision to use cash as a form of payment. In Table 7, the negative, significant coefficient on the tax rate in each model suggests that higher taxes reduce the likelihood of a cash payment, validating our choice of instrument. Because the choice of an earnout agreement has limited capital gains tax implications, we do not expect the tax rate influences the choice of an earnout significantly, other than through the choice of form of payment, providing some support for the instrument's exclusion restriction.

¹⁸ In untabulated results, we randomly review the earnout agreements of 110 randomly sampled transactions in our sample for which the form of payment is referred to as "cash only" by SDC. Of this subsample, all but one required cash compensation in the earnout as well.

In Table 7, we run four bivariate probit models, each with two equations, for each of the four cross-sectional financial constraints measures. In essence, we re-run each model of Panel A of Table 3 in a bivariate probit, rather than a single-equation models, to check that the interpretation of our results in Table 3 are robust to endogenous selection of form of payment. Marginal effect estimates reveal that taxes are significantly negatively related to cash payment. In the earnout equations, all bivariate probit models continue to show all measures of financial constraints remain significantly, positively related to the use of earnouts, with marginal effects ranging between 12.7% and 16.9%. In sum, the results in Table 7 suggest that the relation between financial constraints and earnout use is quite robust to conditioning on the firm of payment.

iii. Earnouts and the Supply of Seller Financing

In this section, we study how target liquidity affects the use of earnouts. Petersen and Rajan (1997) document that the supply of trade credit by non-financial intermediaries is increasing in the liquidity of those intermediaries. In the same vein, we expect that sellers with more liquidity will be more likely to accept deferred payment. Hence, it is not only acquirer's demand for acquisition finance that motivates the use of earnouts, but also target shareholders ability to provide such financing.

We examine the financial slack of targets by studying the cash holdings of ultimate corporate parents in subsidiary sales. Given the limited number of observations for this subsample analysis, we use the full sample of transactions and control for deal and target characteristics in our regressions. We limit our sample to subsidiary acquisitions in which the cash and marketable securities of their parents are available in Compustat in the quarter prior to acquisition announcement yielding 2,523 observations. We use three proxies for the target's supply of funds: the parent's cash-to-asset ratio, the cash-to-transaction value ratio, and the dollar value of cash holdings. We take the log of the cash-to-transaction value ratio and the dollar value of cash to reduce skew in the variables. To ensure we are not capturing a size effect, we control for the size of the parent with the log of the book value of parent assets.

Table 8 presents the results of regressions of estimating the probability of using an earnout as a function of financial slack in the target's parent and various controls for characteristics of the target and transaction. Model 1 reveals a positive and statistically significant relation between the cash-to-asset ratio of the target's parent and the use of an earnout, with a coefficient of 0.069 and statistical significance at the 10% level. Columns 2 and 3 show similar results with the log of cash-to-transaction value ratio and log value of parent cash holdings. That is, parents are more willing to provide earnout agreements when they hold sufficient financial slack. Standardizing the variables reveals that a one standard deviation change in parent liquidity leads to an increase in the probability of an earnout between 1.0% and 1.6% for each of the measures of parent cash. This evidence suggests that the liquidity of corporate parents of targets is an important determinant of the supply of acquisition financing through earnouts.

iv. Earnouts and Target Price Multiples

In this section, we examine the financial benefits of earnouts for target shareholders by analyzing prices paid for targets, and the incremental costs to acquirers that use earnouts. Since earnouts are almost exclusively used in the acquisition of non-public targets, we follow Officer (2007) and use a transaction's value-to-sales multiple, allowing us to examine prices paid relative to a target accounting characteristic and provide evidence on the implied premiums for target firms in transactions that include an earnout agreement. The transaction value includes the maximum value of earnout payments. We focus on a multiple of sales as many other multiples require earnings data and the targets in our sample are generally small, with highly volatile (and often negative) earnings.¹⁹ Consistent with Officer (2007) we find a very large skew in sales multiples, thus we winsorize this data at the 5% level and take the log of the ratios to limit the effect of extreme multiples on the distribution.²⁰

¹⁹ In unreported specifications, we replicate this analysis using a value-to-assets ratio, the results of which yield similar conclusions to those discussed here.

²⁰ While Officer (2007) excludes extreme observations of multiples from his analysis, we elect to take a more conservative approach and winsorize the tails of the distribution.

Table 9 presents coefficient estimates of regressions of transaction multiples on the use of earnouts. Due to data limitations for private targets, the number of observations is limited to 8,761 in regressions requiring sales data. Given this limitation, we do not restrict observations to the matched sample. The regressions control for target industry characteristics, as well as characteristics of the transaction. Model 1 of Table 9 presents the baseline regression for the transaction value-to-sales multiple. After controlling for target industry and deal characteristics, the sales multiple is significantly higher in transactions with earnout agreements. We standardize the ratio by subtracting the mean (0.35) and dividing by the standard deviation (1.15). The coefficient implies the use of an earnout is associated with an increase in the price multiple of one tenth of a standard deviation. This result is consistent with the notion that the parties to an acquisition recognize the value of the deferred payment which is incorporated into prices.

The evidence in Model 1 relays the average effect of earnouts on transaction prices. To identify the transaction pricing attributable to the market-wide price of risk, a variable most relevant to acquisitions by financially constrained acquirers, we incorporate the C&I spread in Model 2 of Table 9. We expect that tighter credit conditions increase the returns to creditors and the opportunity cost to sellers of providing acquisition financing. We proxy for market returns with, *High C&I*, which is equal to one in quarters with above-sample median C&I spreads. In Model 3 we interact the spread indicator with the earnout variable in Table 9. We also include the un-interacted spread to measure the unconditional effect of spreads on acquisition prices. The results of the models suggest that transactions are increasing in the C&I spread, an effect more pronounced in deals with earnout agreements. Using an earnout during quarters with high spreads increases the log value-to-sales ratio by 13.3% of a standard deviation.

We use coefficient estimates from the value multiple regressions to provide an estimate of the “earnout yield”. We benchmark the price ratios against the sample average (log) value-to-sales multiple. The average percentage increase in the multiple over the sample average represents the additional consideration a bidder must pay to finance an acquisition with an earnout. We note that

the probability of receiving an earnout payment includes both the probability that the earnout target is met and that the bidder repays the claim. In short, the earnout includes performance risk that is distinct from default risk, and thus our estimate is an upper bound on the implied financing costs of an earnout agreement.

The sample mean of the log transaction value-to-sales ratio is 0.346, or 1.41 after taking the exponent. In a multiples regression in Table 9 that includes earnouts and an interaction of earnouts with an indicator for high C&I spreads, the coefficient on the earnout indicator is 0.039. As the log value-to-sales ratio is scaled by its standard deviation, we multiply the coefficient by standard deviation of the log ratio, 1.15, to obtain the effect on the log ratio, 0.045 ($=1.15 \times 0.039$). Adding this coefficient to the mean produces a ratio of 1.48 ($\exp[0.346+0.045]$). This is a relative increase of about 5% ($1.48/1.41$) in the transaction multiple over the sample average. This is the increase in price for the entire deal, but only the earnout portion of the payment is deferred. We lever up the 5% by the inverse of the average ratio of the earnout to deal value (32.76%). The average increase in the transaction multiple attributed to an earnout is thus around 15% of the size of the earnout. Cain et al. (2011) report an average earnout length of 2.57 years, implying an annualized earnout yield of 5.6% per annum ($1.15^{1/2.57}$).

During quarters with high C&I spreads, coefficient estimates from Table 9 suggest an average increase in multiples for transactions with earnouts of 0.133. Again multiplying by the standard deviation (1.15) provides an estimate of 0.153 ($=1.15 \times 0.133$) for the additional log ratio applied to earnouts during times of high spreads. Adding this to the average ratio for earnout deals provides an average ratio of 1.72 ($\exp[0.346+0.045+0.153]$), an increase of 22% ($1.72/1.41$) over the sample average. Attributing this increase to only the fraction of the payment deferred by the earnout agreement, which averages 32.76% of transaction value, provides an earnout yield of 67%, or 22.1% annualized ($1.67^{1/2.57}$). The net difference implies earnouts provide an additional 16.5% yield ($22.1\%-5.6\%$) in times of high credit market spreads, relative to quarters with low credit market

spreads. This is comparable to changes in high yield debt, which ranges between 6% and 22% during the sample period.²¹

V. Conclusion

In this paper we present a financing explanation for the use of earnout agreements in acquisition contracts. The contingent payments to earnouts constitute over 30% of the average value of an acquisition, and over three times the level of cash and marketable securities carried by acquirers. As such, earnout agreements are an important source of acquisition financing for financially constrained acquirers.

The evidence presented here suggests that acquirer-level financial constraints have a positive and economically significant impact on the likelihood that an earnout will be used in an acquisition agreement. The results obtain for a host of proxies for financial constraint including the presence of a debt rating, dividend policy, and the Size-Age and Whited-Wu indices, and are magnified following the onset of the financial crisis in 2007. Earnouts can also convey financial flexibility to acquirers in that they allow for some discretion in the reporting the earnout liability under SFAS 141(R). Consistent with this advantage, financially constrained acquirers are more likely to report a lower liability for earnout values. Our evidence on the influence of financial constraints on earnout use extends to market-wide measures of the supply and cost of credit. Specifically, we find that the propensity to use earnouts is increasing during periods of tightening loan standards and higher C&I spreads. Our results concerning earnout use in the context of financial constraints are robust to modeling the endogenous choice of the use of external debt or equity to finance a transaction, as well as the use of cash as an acquisition currency.

While our evidence is consistent with demand effects driving the use of earnout agreements, we also consider whether the use of earnouts is correlated with the financial slack of corporate parents of subsidiary targets. We use three proxies for the target's supply of funds: the parent's cash-

²¹ Estimates are based of the Bank of America Merrill Lynch High Yield Index.

to-asset ratio, the cash-to-transaction value ratio, and the dollar value of cash holdings, each of which is positively correlated with the likelihood that an acquisition includes an earnout agreement.

To provide perspective on the cost of earnout financing, we estimate the increase in transaction multiples, and the proportion of the transaction financed as an earnout, to estimate an average “earnout yield”. Based on transactions with available data, our estimates suggest that this yield averages about 5.6% per annum, but can range as high as 22.1% on average when transactions are negotiated in quarters where the C&I spread is particularly high. For comparison, the yield of the Bank of America Merrill Lynch High Yield Index varies in our sample period from lows around 6% to highs around 22% during the financial crisis. Overall, the results suggest that the financing benefits of earnouts are recognized by the merger parties and are incorporated into prices with implied yields that are comparable to an acquirer’s alternative sources of external capital.

This paper contributes to a number of important strands of the literature. First, it complements a growing literature that documents the contracting benefits of earnout agreements in transactions that entail a substantial information asymmetry between bidders and targets. The work also adds to the literature on access to external capital (including lines of credit, rated debt, and overvalued equity) and acquisition activity. This literature highlights the importance of internal cash holdings and the supply of credit from non-financial intermediaries in mitigating underinvestment problems for financially constrained firms. Our evidence suggests that earnouts are an economically material and increasingly common source of acquisition financing constrained firms. Consistent with the literature on the supply of trade credit, we find the provision of earnouts are positively correlated with liquidity of the selling firm.

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Table 1
Descriptive Statistics

Panel A: Earnout Use by Year

Year	All Mergers	Mergers with Earnouts	Percentage with Earnouts	Mean Earnout Value (\$mil)	Mean Target Earnout Ratio	Mean Acquirer Earnout Ratio
1988	375	12	3.20%	34.64	56.58%	22.96%
1989	433	29	6.70%	8.61	34.81%	17.80%
1990	385	30	7.79%	4.99	36.12%	18.67%
1991	427	36	8.43%	3.87	37.00%	22.00%
1992	628	47	7.48%	11.77	38.99%	26.22%
1993	858	89	10.37%	8.74	33.21%	16.57%
1994	1,058	87	8.22%	4.36	34.14%	14.33%
1995	1,186	80	6.75%	9.39	30.46%	17.35%
1996	1,466	79	5.39%	20.07	32.70%	8.61%
1997	1,766	128	7.25%	11.40	36.49%	11.91%
1998	1,746	130	7.45%	9.85	30.66%	8.09%
1999	1,522	92	6.04%	14.67	30.95%	11.72%
2000	1,401	100	7.14%	27.61	33.50%	15.26%
2001	855	83	9.71%	26.18	28.70%	7.85%
2002	787	108	13.72%	17.19	33.30%	7.88%
2003	742	88	11.86%	16.61	31.14%	6.62%
2004	839	107	12.75%	30.94	35.70%	9.20%
2005	837	123	14.70%	16.90	30.65%	6.52%
2006	839	108	12.87%	26.63	28.87%	11.56%
2007	807	126	15.61%	28.63	30.57%	8.96%
2008	560	93	16.61%	22.44	34.90%	8.88%
2009	395	71	17.97%	41.51	36.20%	6.92%
2010	468	74	15.81%	68.41	36.52%	6.11%
2011	504	88	17.46%	42.64	38.34%	9.29%
2012	516	87	16.86%	64.56	28.11%	6.55%
2013	420	56	13.33%	51.02	33.70%	10.69%
2014	503	75	14.91%	52.93	27.51%	13.09%
Sample Average	827	82	9.97%	25.99	32.84%	10.81%
Total	22,323	2,226	N/A	N/A	N/A	N/A

Panel B: Full Sample Characteristics

	Mergers with Earnouts			Mergers without Earnouts			Difference (5)-(2)	
	Obs. (1)	Mean (2)	Std. Dev. (3)	Obs. (4)	Mean (5)	Std. Dev. (6)	Mean (7)	T-statistic (8)
<u>Acquirer Characteristics</u>								
<i>Acquirer Assets</i>	2,226	1,650.189	7,615.018	20,097	3,186.301	11,193.240	1,536.112	8.55
<i>Relative Size</i>	2,226	0.285	0.567	20,097	0.354	0.700	0.069	5.32
<i>Acquirer Market Cap.</i>	2,213	2,625.574	11,447.890	19,824	4,783.484	16,522.660	2,157.910	7.99
<u>Deal Characteristics</u>								
<i>Transaction Value</i>	2,226	80.361	258.397	20,097	250.406	794.735	170.044	21.70
<i>Cross Industry</i>	2,226	0.424	0.494	20,097	0.398	0.490	-0.026	-2.36
<i>Private Target</i>	2,226	0.779	0.415	20,097	0.503	0.500	-0.276	-29.06
<i>Termination Fee</i>	2,226	0.001	0.012	20,097	0.004	0.016	0.004	12.56
<i>Lock-up</i>	2,226	0.001	0.030	20,097	0.015	0.123	0.015	13.49
<i>Toehold</i>	2,226	0.009	0.094	20,097	0.017	0.131	0.008	3.83
<i>Tender Offer</i>	2,226	0.002	0.042	20,097	0.040	0.195	0.038	22.99
<i>Cash Deal</i>	2,226	0.513	0.500	20,097	0.503	0.500	-0.010	-0.90
<i>Target Industry Volatility</i>	2,226	0.035	0.012	20,097	0.036	0.013	0.001	2.31
<i>Target Industry R&D</i>	2,226	0.008	0.010	20,097	0.006	0.009	-0.002	-8.86
<i>Target Industry Market-to-Book</i>	2,226	1.688	0.456	20,097	1.634	0.481	-0.054	-5.22

This table reports descriptive statistics for a sample of 22,323 mergers completed between 1988 and 2014. 2,226 mergers include an earnout provision with 1,633 disclosing the value of the earnout. Panel A presents sample statistics by year for the sample of bids. *Target Earnout Ratio* is the value of an earnout divided by the total value of the transaction. The *Acquirer Earnout Ratio* is the value of an earnout relative to the book value of acquirer assets. The value of an earnout is the dollar value in millions. Panel B reports summary statistics of earnout acquisitions and acquisitions without earnouts from the full sample. All continuous variables are winsorized at the 1% and 99% levels to reduce the impact of outliers. *Acquirer Assets* is the book value of acquirer assets. *Relative Size* is the ratio of transaction value to the book value of acquirer's assets. *Acquirer Market Capitalization* is the market capitalization of the acquirer from CRSP measured at the end of the previous fiscal quarter before bid announcement. *Transaction Value* is the total transaction value of the takeover. *Cross Industry* is an indicator variable equal to one if the target and acquirer do not share the same two-digit SIC code, zero if they are in the same two-digit industry. *Private Target* is an indicator variable equal to one if the target is a private company, zero otherwise. *Termination Fee* is value of any termination fee payable by the target scaled by the transaction value. *Lock-up* is an indicator equal to one if the acquisition agreement contains a lock-up provision, zero otherwise. *Toehold* is an indicator equal to one if the bidder owns target shares prior to the acquisition announcement. *Tender Offer* is an indicator equal to one if the deal is structured as a tender offer, zero if it is structured as a statutory merger. *Cash Deal* equals one if SDC records the consideration as 100% cash, zero otherwise. *Target Industry Volatility* is the annualized volatility of the value-weighted return of the target two-digit SIC industry, measured over the last 100 days prior to the acquisition announcement. *Target Industry R&D* is the median R&D to sales ratio of the target two-digit SIC industry in the fiscal quarter prior to the acquisition announcement. *Target Industry Market-to-Book* is the median ratio of market value of total assets to the book value of total assets of the target two-digit SIC industry in the fiscal quarter prior to the acquisition announcement. The mean difference between transactions without and with earnouts is reported in column (7) and corresponding t-statistic in column (8).

Table 2
Deal Characteristics

	Mergers with Earnouts			Matched Sample			Difference (5)-(2)	
	Obs. (1)	Mean (2)	Std. Dev. (3)	Obs. (4)	Mean (5)	Std. Dev. (6)	Mean (7)	T-statistic (8)
<u>Acquirer Characteristics</u>								
<i>Acquirer Assets</i>	2,226	1,650.189	7,615.018	2,226	1,713.393	6,351.039	63.204	0.30
<i>Relative Size</i>	2,226	0.285	0.567	2,226	0.291	0.614	0.006	0.33
<i>Acquirer Market Cap.</i>	2,213	2,625.574	11,447.890	2,192	3,084.568	12,347.550	458.994	1.28
<i>No Credit Rating</i>	2,226	0.823	0.381	2,226	0.789	0.408	-0.034	-2.88
<i>No Dividend Payout</i>	2,226	0.827	0.378	2,226	0.779	0.415	-0.049	-4.07
<i>SA Index</i>	2,226	-3.026	0.719	2,226	-3.053	0.749	-0.028	-1.26
<i>WW Index</i>	1,974	-0.138	0.135	1,919	-0.157	0.133	-0.019	-4.37
<i>Proceeds-to-Transaction Value</i>	2,226	2.442	8.959	2,226	3.810	13.043	1.368	4.08
<i>Loans-to-Transaction Value</i>	2,226	3.262	13.034	2,226	4.818	18.537	1.556	3.24
<i>Abnormal Leverage</i>	1,632	0.015	0.069	1,531	0.010	0.067	-0.005	-2.05
<i>Equity Overvaluation</i>	2,126	0.089	0.574	2,083	0.161	0.598	0.072	3.97
<u>Market Characteristics</u>								
<i>Percent Tightening</i>	2,170	0.040	0.184	2,162	0.035	0.166	-0.005	-0.86
<i>C&I Spread</i>	2,226	2.249	0.494	2,226	2.122	0.439	-0.127	-9.07

This table reports summary statistics of earnout acquisitions and a matched sample from the SDC database for the years 1988 through 2014. All continuous variables are winsorized at the 1% and 99% levels to reduce the impact of outliers. *Acquirer Assets* is the book value of acquirer assets. *Relative Size* is the ratio of transaction value to the book value of acquirer's assets. *Acquirer Market Capitalization* is the market capitalization of the acquirer from CRSP measured at the end of the previous fiscal quarter before bid announcement. *No Credit Rating* is an indicator variable equal to one if the acquirer did not have a credit rating from S&P, Moody's, Fitch, or Duff & Phelps in the fiscal quarter preceding the announcement of the acquisition, zero otherwise. *No Dividend Payout* is an indicator variable equal to one if the acquirer did not pay a dividend in the fiscal quarter preceding the announcement of the acquisition, zero otherwise. *SA Index* is an index constructed following Hadlock and Pierce (2010). *WW Index* is an index constructed following Whited and Wu (2006) and Hennessy and Whited (2007). *Proceeds-to-Transaction Value* is the total value of proceeds from issues reported in SDC over the past three years scaled by the value of the transaction. *Loans-to-Transaction Value* is the total value of all loan packages for a bidder in the past three years scaled by the value of the transaction, as reported by DealScan. *Abnormal Leverage* is leverage net of predicted determinants of leverage, following Uysal (2011). *Equity Overvaluation* is the overvaluation of a bidder's equity, measured as a decomposition of market value based on Rhodes-Kropf, Robinson, and Viswanathan (2005). *Percent Tightening* is the net percentage of loan officers that report tightening credit standards in the Federal Reserve's loan officer survey. *C&I Spread* is the difference between the average borrowing rate on commercial and industrial loans and the federal funds rate. The mean difference between transactions without and with earnouts is reported in column (7) and corresponding t-statistic in column (8).

Table 3
Determinants of Earnout Use

<i>Panel A: Earnouts and Financial Constraints</i>					
	(1)	(2)	(3)	(4)	
<i>No Credit Rating</i>	0.079*** (3.15)				
<i>No Dividend Payout</i>		0.080*** (3.46)			
<i>High SA Index</i>			0.090*** (4.92)		
<i>High WW Index</i>					0.116*** (5.70)
<i>Target Industry Volatility</i>	-1.844* (-1.88)	-1.809* (-1.92)	-1.845* (-1.91)		-2.727*** (-2.58)
<i>Target Industry R&D</i>	6.678*** (2.58)	6.542** (2.52)	6.615*** (2.58)		7.368*** (2.94)
<i>Target Industry Market-to-Book</i>	-0.044 (-1.15)	-0.045 (-1.19)	-0.043 (-1.10)		-0.048 (-1.14)
<i>Cross Industry</i>	0.010 (0.50)	0.013 (0.62)	0.011 (0.53)		0.003 (0.13)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	4,452	4,452	4,452	4,452	3,893
Adjusted R-squared	0.043	0.043	0.046	0.051	0.051
<i>Panel B: Earnouts, Constraints, and the Financial Crisis</i>					
	(1)	(2)	(3)	(4)	(5)
<i>No Credit Rating</i>		0.057** (2.30)			
<i>Crisis X No Credit Rating</i>		0.170*** (3.21)			
<i>No Dividend Payout</i>			0.086*** (3.75)		
<i>Crisis X No Dividend Payout</i>			0.005 (0.11)		
<i>High SA index</i>				0.051** (2.44)	
<i>Crisis X High SA index</i>				0.130*** (6.27)	
<i>High WW index</i>					0.089*** (3.83)
<i>Crisis X High WW index</i>					0.080** (2.56)
<i>Crisis</i>	0.079** (2.37)	-0.055 (-1.49)	0.071*** (3.26)	0.032 (0.79)	0.033 (0.94)
<i>Target Industry Volatility</i>	-4.844*** (-5.77)	-5.001*** (-5.79)	-4.959*** (-6.05)	-5.231*** (-5.71)	-5.414*** (-6.40)
<i>Target Industry R&D</i>	7.025*** (2.89)	7.242*** (2.99)	6.867*** (2.81)	7.409*** (3.01)	8.478*** (3.65)
<i>Target Industry Market-to-Book</i>	-0.112*** (-5.19)	-0.114*** (-5.35)	-0.112*** (-5.32)	-0.115*** (-5.40)	-0.115*** (-4.85)
<i>Cross Industry</i>	0.005 (0.22)	0.006 (0.28)	0.009 (0.46)	0.005 (0.24)	-0.000 (-0.02)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	4,452	4,452	4,452	4,452	3,893
Adjusted R-squared	0.026	0.030	0.031	0.030	0.038

This table reports linear probability (OLS) regressions of earnout use, measured as an indicator equal to one if an earnout is included in a bid, zero otherwise. The sample bids occur between 1988 and 2014 and include deals with earnouts and a matched sample. All continuous variables are winsorized at the 1% and 99% levels to reduce the impact of outliers. *, **, and *** represent statistical significance at the ten, five, and one percent levels, respectively. Standard errors are clustered by acquirer and year. Year and target SIC code indicators control for fixed effects. Panel A presents estimates of the impact of variables related to financial constraints and deal characteristics on earnout use. Panel B includes the same variables as Panel A and interacts financial constraint variables with an indicator for the financial crisis. *No Credit Rating* is an indicator variable equal to one if the acquirer did not have a credit rating from S&P, Moody's, Fitch, or Duff & Phelps in the fiscal quarter preceding the announcement of the acquisition, zero otherwise. *No Dividend Payout* is an indicator variable equal to one if the acquirer did not pay a dividend in the fiscal quarter preceding the announcement of the acquisition, zero otherwise. *High SA Index* is an indicator variable equal to one if an acquirer's SA Index (Hadlock and Pierce, 2010) is higher than the median. *High WW Index* is an indicator variable equal to one if the acquirer's WW Index (Whited and Wu, 2006) is higher than the median. *Crisis* is an indicator equal to one in the ten quarters starting in the final quarter of 2007, zero otherwise. *Cross Industry* is an indicator variable equal to one if the target and acquirer do not share the same two-digit SIC code, zero if they are in the same two-digit industry. *Target Industry Volatility* is the annualized volatility of the value-weighted return of the target two-digit SIC industry, measured over the last 100 days prior to the acquisition announcement. *Target Industry R&D* is the median R&D to sales ratio of the target two-digit SIC industry in the fiscal quarter prior to the acquisition announcement. *Target Industry Market-to-Book* is the median ratio of market value of total assets to the book value of total assets of the target two-digit SIC industry in the fiscal quarter prior to the acquisition announcement.

Table 4
Earnout Use and Financial Market Conditions

	(1)	(2)
<i>Percent Tightening</i>	0.111** (2.13)	
<i>High C&I Spread</i>		0.077*** (3.52)
<i>Target Industry Volatility</i>	-5.423*** (-6.69)	-4.307*** (-5.31)
<i>Target Industry R&D</i>	5.800** (2.26)	7.066*** (3.08)
<i>Target Industry Market-to-Book</i>	-0.106*** (-4.27)	-0.109*** (-4.02)
<i>Cross Industry</i>	0.001 (0.06)	0.005 (0.30)
Industry Fixed Effects	Yes	Yes
Observations	4,332	4,452
Adjusted R-squared	0.025	0.030

This table reports linear probability (OLS) regressions of earnout use, measured as an indicator equal to one if an earnout is included in a bid, zero otherwise. The sample bids occur between 1988 and 2014 and include deals with earnouts and a matched sample. All continuous variables are winsorized at the 1% and 99% levels to reduce the impact of outliers. *, **, and *** represent statistical significance at the ten, five, and one percent levels, respectively. Standard errors are clustered by acquirer and year. Target SIC code indicators control for fixed effects. *Percent Tightening* is the net percentage of loan officers that report tightening credit standards in the Federal Reserve's loan officer survey. *High C&I Spread* equals one if the difference between the average borrowing rate on commercial and industrial loans and the federal funds rate is higher than the median. *Cross Industry* is an indicator variable equal to one if the target and acquirer do not share the same two-digit SIC code, zero if they are in the same two-digit industry. *Target Industry Volatility* is the annualized volatility of the value-weighted return of the target two-digit SIC industry, measured over the last 100 days prior to the acquisition announcement. *Target Industry R&D* is the median R&D to sales ratio of the target two-digit SIC industry in the fiscal quarter prior to the acquisition announcement. *Target Industry Market-to-Book* is the median ratio of market value of total assets to the book value of total assets of the target two-digit SIC industry in the fiscal quarter prior to the acquisition announcement.

Table 5
Earnout Use and Acquirer Financing Activities

	(1)	(2)	(3)	(4)
<i>Log Proceeds-to-Transaction Value</i>	-0.027*** (-5.12)			
<i>Log Loans-to-Transaction Value</i>		-0.016** (-2.47)		
<i>Abnormal Leverage</i>			0.020* (1.76)	
<i>Equity Overvaluation</i>				-0.049*** (-3.83)
<i>Target Industry Volatility</i>	-1.547 (-1.61)	-1.677* (-1.71)	0.018 (0.02)	-1.481 (-1.56)
<i>Target Industry R&D</i>	6.589*** (2.59)	6.483** (2.46)	2.899 (1.37)	6.686** (2.52)
<i>Target Industry Market-to-Book</i>	-0.044 (-1.16)	-0.043 (-1.14)	-0.038 (-0.89)	-0.014 (-0.43)
<i>Cross Industry</i>	0.009 (0.44)	0.008 (0.39)	0.007 (0.32)	0.009 (0.40)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	4,452	4,452	3,163	4,209
Adjusted R-squared	0.044	0.041	0.032	0.039

This table reports linear probability (OLS) regressions of earnout use, measured as an indicator equal to one if an earnout is included in a bid, zero otherwise. The sample bids occur between 1988 and 2014 and include deals with earnouts and a matched sample. All continuous variables are winsorized at the 1% and 99% levels to reduce the impact of outliers. *, **, and *** represent statistical significance at the ten, five, and one percent levels, respectively. Standard errors are clustered by acquirer and year. Year and target SIC code indicators control for fixed effects. *Proceeds-to-Transaction Value* is the total value of proceeds from issues reported in SDC over the past three years, scaled by the value of the transaction. *Loans-to-Transaction Value* is the total value of all loan packages for a bidder in the past three years, as reported by Dealscan, and scaled by the value of the transaction. *Abnormal Leverage* is leverage net of predicted determinants of leverage, following Uysal (2011). *Equity Overvaluation* is the overvaluation of a bidder's equity, measured as a decomposition of market value based on Rhodes-Kropf, Robinson, and Viswanathan (2005). *Cross Industry* is an indicator variable equal to one if the target and acquirer do not share the same two-digit SIC code, zero if they are in the same two-digit industry. *Target Industry Volatility* is the annualized volatility of the value-weighted return of the target two-digit SIC industry, measured over the last 100 days prior to the acquisition announcement. *Target Industry R&D* is the median R&D to sales ratio of the target two-digit SIC industry in the fiscal quarter prior to the acquisition announcement. *Target Industry Market-to-Book* is the median ratio of market value of total assets to the book value of total assets of the target two-digit SIC industry in the fiscal quarter prior to the acquisition announcement.

Table 6
Earnout Use and the Funding of Acquisitions

	(1)	(2)	(3)	(4)	(5)
<i>Earnout Indicator</i>	-0.061** (-2.47)	-0.060** (-2.53)	-0.052** (-2.17)	-0.157** (-2.10)	
<i>Log of Transaction Value</i>		0.034*** (6.67)	0.035*** (7.22)	0.044*** (11.06)	-0.013*** (-4.23)
<i>Target Industry Volatility</i>		-1.150 (-1.27)	-0.006 (-0.01)	-1.593** (-2.41)	-0.249 (-0.42)
<i>Target Industry R&D</i>		-2.854** (-2.31)	-4.443*** (-2.93)	-2.156** (-2.02)	0.670 (0.78)
<i>Target Industry Market-to-Book</i>		0.010 (0.35)	0.052* (1.95)	0.022 (1.09)	-0.017 (-1.04)
<i>Cross Industry</i>		-0.005 (-0.25)	-0.008 (-0.44)	-0.006 (-0.48)	0.018** (1.97)
<i>Private Target</i>		0.003 (0.15)	0.009 (0.56)	0.023 (1.59)	0.068*** (6.86)
<i>Termination Fee</i>		-0.003 (-0.01)	0.014 (0.03)	-0.003 (-0.01)	-3.183*** (-3.23)
<i>Lock-up</i>		-0.060 (-1.32)	-0.055 (-1.32)	-0.068* (-1.81)	0.028 (0.37)
<i>Toehold</i>		-0.017 (-0.34)	-0.017 (-0.36)	-0.030 (-0.92)	0.021 (0.42)
<i>Tender Offer</i>		-0.122*** (-5.14)	-0.124*** (-5.45)	-0.150*** (-7.71)	-0.139*** (-2.84)
<i>Cash Deal</i>		-0.056*** (-3.29)	-0.051*** (-3.30)	-0.035*** (-2.72)	-0.019* (-1.94)
<i>Crisis</i>		-0.070*** (-4.56)	-0.068*** (-4.98)	-0.118*** (-5.54)	-0.004 (-0.25)
<i>Non-Big N Auditor</i>				0.064*** (3.30)	0.009 (0.61)
<i>Post-SFAS 141</i>				-0.136*** (-7.83)	0.022 (1.53)
<i>Non-Big N Auditor X Post-SFAS 141</i>					-0.066** (-2.32)
<i>Post-Pooling Method</i>					0.043*** (3.34)
Industry Fixed Effects	No	No	Yes	Yes	Yes
Observations	3,700	3,700	3,700	3,700	3,700
Pseudo R-squared	0.003	0.068	0.078		

This table reports probit regressions of the use of external finance. The dependent variable equals one if SDC classifies the source of acquisition funds as borrowings, debt issuances, bridge loans, credit lines, or common stock issues. The sample bids occur between 1988 and 2014. All continuous variables are winsorized at the 1% and 99% levels to reduce the impact of outliers. Marginal effect estimates are presented with t-statistics reported in parentheses. *, **, and *** represent statistical significance at the ten, five, and one percent levels, respectively. Standard errors are clustered by acquirer and year. Columns (4) and (5) present the two equations in a single bivariate probit model that accounts for the endogenous selection of an earnout in the choice of financing. Industry fixed effects are defined by Target SIC code. *Earnout Indicator* is equal to one if the bid includes an earnout, zero otherwise. *Transaction Value* is the total transaction value of the takeover. *Cross Industry* is an indicator variable equal to one if the target and acquirer do not share the same two-digit SIC code. *Private Target* is an indicator variable equal to one if the target is a private company, zero otherwise. *Termination Fee* is value of any termination fee payable by the target scaled by the transaction value. *Lock-up* is an indicator equal to one if the acquisition agreement contains a lock-up provision, zero otherwise. *Toehold* is an indicator equal to one if the bidder owns target shares prior to the acquisition announcement. *Tender Offer* is an indicator equal to one if the deal is structured as a tender offer, zero if it is structured as a statutory merger. *Cash Deal* equals one if SDC records the consideration as 100% cash, zero otherwise. *Target Industry Volatility* is the annualized volatility of the value-weighted return of the target two-digit SIC industry, measured over the last 100 days prior to the acquisition announcement. *Target Industry R&D* is the median R&D to sales ratio of the target two-digit SIC industry in the fiscal quarter prior to the acquisition announcement. *Target Industry Market-to-Book* is the median ratio of market value of total assets to the book value of total assets of the target two-digit SIC industry in the fiscal quarter prior to the acquisition announcement. *Non-Big N Auditor* is an indicator equal to one if the acquirer uses an auditor outside of the “Big N”. *Post-SFAS 141* is an indicator equal to one if a bid was announced after January 1, 2009. *Post-Pooling Method* is an indicator equal to one if a bid was announced after January 1, 2001, zero otherwise.

Table 7
Earnout Use and Cash Payment

Model	(1)		(2)		(3)		(4)	
	Earnout	Cash Deal						
<i>No Credit Rating</i>	0.141*** (7.09)	-0.210*** (-10.36)						
<i>No Dividend Payout</i>			0.127*** (6.67)	-0.182*** (-9.08)				
<i>High SA Index</i>					0.144*** (9.27)	-0.214*** (-13.26)		
<i>High WW Index</i>							0.169*** (10.80)	-0.226*** (-13.22)
<i>Capital Gains</i>		-1.641*** (-10.81)		-1.829*** (-11.85)		-1.322*** (-9.00)		-1.298*** (-8.23)
<i>Cash Deal</i>	0.361*** (9.96)		0.316*** (7.00)		0.412*** (17.55)		0.416*** (18.90)	
<i>Target Industry Volatility</i>	-0.075 (-0.09)	-6.125*** (-9.02)	-0.610 (-0.68)	-6.234*** (-9.11)	0.334 (0.45)	-5.556*** (-8.21)	0.521 (0.67)	-5.749*** (-7.98)
<i>Target Industry R&D</i>	3.448*** (2.69)	1.619 (1.27)	3.450** (2.57)	2.334* (1.80)	2.905** (2.48)	1.456 (1.19)	1.891 (1.54)	2.919** (2.24)
<i>Target Industry Market-to-Book</i>	-0.049** (-2.35)	-0.045** (-2.25)	-0.055** (-2.48)	-0.052** (-2.56)	-0.042** (-2.19)	-0.037* (-1.91)	-0.037* (-1.90)	-0.038* (-1.84)
<i>Cross Industry</i>	0.012 (0.81)	-0.018 (-1.15)	0.016 (1.09)	-0.027* (-1.69)	0.013 (0.98)	-0.018 (-1.17)	0.010 (0.70)	-0.011 (-0.65)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,452	4,452	4,452	4,452	4,452	4,452	3,893	3,893

This table reports marginal effect estimates of bivariate probit models that account for the endogenous selection of the form of payment and the inclusion of earnout agreements. The second column of each model reports marginal effect estimates of a model of cash payment. This column includes the maximum individual capital gains rate, *Capital Gains*, as an excluded instrument in the determinants of an all-cash payment. For each model, the determinants of cash payment are modelled jointly with the determinants of the presence of an earnout agreement, which are reported in the first column of each model. Control variables include *Target Industry Volatility*, *Target Industry R&D*, *Target Industry Market-to-Book*, *Cross Industry*, defined in the Appendix. Financial constraint proxies in Models (1)-(4) include *No Credit Rating*, *No Dividend Payout*, *High SA Index*, and *High WW Index*. The sample bids from SDC occur between 1988 and 2014 and are restricted to a matched sample. All continuous variables are winsorized at the 1% and 99% levels to reduce the impact of outliers. T-statistics are reported in parentheses. *, **, and *** represent statistical significance at the ten, five, and one percent levels, respectively. Standard errors are clustered by acquirer.

Table 8
Earnout Use and Target Parent Liquidity

	(1)	(2)	(3)
<i>Parent Cash-to-Assets</i>	0.069*		
	(1.77)		
<i>Log of Parent Cash-to-Transaction Value</i>		0.005**	
		(2.09)	
<i>Log of Parent Cash</i>			0.006**
			(2.46)
<i>Log of Parent Assets</i>	-0.005**	-0.011***	-0.012***
	(-2.47)	(-3.55)	(-3.82)
<i>Log of Transaction Value</i>	-0.001	0.003	-0.001
	(-0.59)	(1.19)	(-0.69)
<i>Target Industry Volatility</i>	0.145	0.169	0.170
	(0.15)	(0.17)	(0.18)
<i>Target Industry R&D</i>	2.355	2.382	2.361
	(1.14)	(1.14)	(1.13)
<i>Target Industry Market-to-Book</i>	0.013	0.013	0.014
	(0.88)	(0.87)	(0.88)
<i>Cross Industry</i>	-0.002	-0.003	-0.003
	(-0.22)	(-0.24)	(-0.23)
<i>Termination Fee</i>	-0.744**	-0.707*	-0.694*
	(-2.05)	(-1.93)	(-1.85)
<i>Lock-up</i>	-0.071***	-0.071***	-0.072***
	(-3.74)	(-3.88)	(-3.95)
<i>Toehold</i>	0.047	0.047	0.047
	(0.57)	(0.56)	(0.56)
<i>Tender Offer</i>	-0.140**	-0.135*	-0.136*
	(-1.96)	(-1.83)	(-1.85)
<i>Cash Deal</i>	-0.035**	-0.036**	-0.036**
	(-2.22)	(-2.28)	(-2.29)
Industry Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	2,523	2,523	2,523
Adjusted R-squared	0.028	0.028	0.028

This table reports linear probability (OLS) regressions of earnout use, measured as an indicator equal to one if an earnout is included in a bid, zero otherwise. The sample bids occur between 1988 and 2014 and include only subsidiary acquisitions. All continuous variables are winsorized at the 1% and 99% levels to reduce the impact of outliers. *, **, and *** represent statistical significance at the ten, five, and one percent levels, respectively. Standard errors are clustered by acquirer and year. Year and target SIC code indicators control for fixed effects. *Parent Cash-to-Assets* is the ratio of cash and marketable securities to book value of assets for the parent of the target. *Parent Cash-to-Transaction Value* is the ratio of parent cash to the value of the bid. *Parent Cash* is the dollar holdings of cash and marketable securities for the parents of subsidiary targets. *Parent Assets* is the book value of parent assets. *Transaction Value* is the total transaction value of the takeover. *Cross Industry* is an indicator variable equal to one if the target and acquirer do not share the same two-digit SIC code. *Termination Fee* is value of any termination fee payable by the target scaled by the transaction value. *Lock-up* is an indicator equal to one if the acquisition agreement contains a lock-up provision, zero otherwise. *Toehold* is an indicator equal to one if the bidder owns target shares prior to the acquisition announcement. *Tender Offer* is an indicator equal to one if the deal is structured as a tender offer, zero if it is structured as a statutory merger. *Cash Deal* equals one if SDC records the consideration as 100% cash, zero otherwise. *Target Industry Volatility* is the annualized volatility of the value-weighted return of the target two-digit SIC industry, measured over the last 100 days prior to the acquisition announcement. *Target Industry R&D* is the median R&D to sales ratio of the target two-digit SIC industry in the fiscal quarter prior to the acquisition announcement. *Target Industry Market-to-Book* is the median ratio of market value of total assets to the book value of total assets of the target two-digit SIC industry in the fiscal quarter prior to the acquisition announcement.

Table 9
Earnout Use and Target Transaction Multiples

	Log of Transaction Value-to-Sales		
	(1)	(2)	(3)
<i>Earnout Indicator</i>	0.101*** (3.13)	0.101*** (3.13)	0.039 (0.78)
<i>High C&I Spread</i>		0.006 (0.18)	0.081*** (2.61)
<i>Earnout Indicator X High C&I Spread</i>			0.133** (2.04)
<i>Log of Transaction Value</i>	0.195*** (18.85)	0.195*** (18.89)	0.210*** (22.99)
<i>Target Industry Volatility</i>	5.273** (2.18)	5.276** (2.18)	7.093*** (4.05)
<i>Target Industry R&D</i>	1.949 (0.80)	1.943 (0.80)	4.794* (1.90)
<i>Target Industry Market-to-Book</i>	0.268*** (8.30)	0.268*** (8.49)	0.260*** (7.34)
<i>Cross Industry</i>	0.023 (1.21)	0.023 (1.21)	0.022 (1.13)
<i>Private Target</i>	0.261*** (5.01)	0.261*** (5.02)	0.290*** (5.63)
<i>Termination Fee</i>	-1.053 (-1.62)	-1.054 (-1.63)	-0.499 (-0.77)
<i>Lock-up</i>	0.109* (1.95)	0.109** (1.97)	0.081 (1.31)
<i>Toehold</i>	0.141** (2.11)	0.141** (2.10)	0.111* (1.68)
<i>Tender Offer</i>	-0.032 (-0.59)	-0.032 (-0.59)	-0.055 (-1.07)
<i>Cash Deal</i>	-0.048* (-1.67)	-0.048* (-1.67)	-0.019 (-0.60)
Industry Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	8,761	8,761	8,761
Adjusted R-squared	0.383	0.383	0.374

This table reports regressions of the ratio of transaction value to target sales. The sample bids occur between 1988 and 2014. All continuous variables are winsorized at the 1% and 99% levels to reduce the impact of outliers. The dependent variable is winsorized at the 5% level due to the large skew in its distributions. *, **, and *** represent statistical significance at the ten, five, and one percent levels, respectively. Standard errors are clustered by acquirer and year. Year and target SIC code indicators control for fixed effects. *Transaction Value-to-Sales* is the ratio of the value of the bid divided by target sales. The ratio is demeaned and scaled by its standard deviation to standardize the ratio. *Earnout Indicator* equals one if the bid includes an earnout, zero otherwise. *Transaction Value* is the total transaction value of the takeover. *Cross Industry* is an indicator variable equal to one if the target and acquirer do not share the same two-digit SIC code. *Private Target* is an indicator variable equal to one if the target is a private company, zero otherwise. *Termination Fee* is value of any termination fee payable by the target scaled by the transaction value. *Lock-up* is an indicator equal to one if the acquisition agreement contains a lock-up provision, zero otherwise. *Toehold* is an indicator equal to one if the bidder owns target shares prior to the acquisition announcement. *Tender Offer* is an indicator equal to one if the deal is structured as a tender offer, zero if it is structured as a statutory merger. *Cash Deal* equals one if SDC records the consideration as 100% cash, zero otherwise. *Target Industry Volatility* is the annualized volatility of the value-weighted return of the target two-digit SIC industry, measured over the last 100 days prior to the acquisition announcement. *Target Industry R&D* is the median R&D to sales ratio of the target two-digit SIC industry in the fiscal quarter prior to the acquisition announcement. *Target Industry Market-to-Book* is the median ratio of market value of total assets to the book value of total assets of the target two-digit SIC industry in the fiscal quarter prior to the acquisition announcement. *High C&I Spread* is an indicator variable equal to one if C&I loan rate spread is higher than the median.

**Appendix Table A1
Variable Definitions**

Variable	Definition
Deal Characteristics	
<i>Cash Deal</i>	An indicator variable equal to one if the acquisition is funded by 100% of cash.
<i>Cross Industry</i>	An indicator variable equal to one if the target and acquirer do not share the same two-digit SIC code, zero if they are in the same two-digit industry. SIC codes are provided by SDC.
<i>Earnout Indicator</i>	An indicator variable equal to one if the merger agreement includes an earnout.
<i>Earnout Value (\$mil)</i>	The dollar value of the contingent payments under the earnout agreement, in millions.
<i>Lock-Up</i>	An indicator variable equal to one if the target grants the acquirer an option to purchase stock or assets (e.g. a division or subsidiary) in order to make a competing bid more expensive or less attractive.
<i>Private Target</i>	An indicator variable equal to one if the target is a private company, zero otherwise.
<i>Relative Size</i>	The ratio of transaction value to the value of an acquirer's book assets.
<i>Target (Acquirer) Earnout Ratio</i>	The ratio of earnout value to transaction value (bidder assets).
<i>Target Industry Market-to-Book</i>	The median ratio of market value of total assets (book value of total assets - book value of equity + market value of equity) to the book value of total assets of the target two-digit SIC industry in the fiscal quarter prior to the acquisition announcement.
<i>Target Industry R&D</i>	The median R&D to sales ratio of the target two-digit SIC industry in the fiscal quarter prior to the acquisition announcement.
<i>Target Industry Volatility</i>	The annualized volatility of the value-weighted return of the target two-digit SIC industry, measured over the last 100 days prior to the acquisition announcement.
<i>Tender Offer</i>	An indicator variable equal to one if the deal is a tender offer.
<i>Termination Fee</i>	Target termination fees as a percentage of transaction Value.
<i>Toehold</i>	An indicator equal to one if the bidder owns target equity at announcement.
<i>Transaction Value</i>	Value of acquisition reported by SDC in millions of dollars.

Appendix Table A1 - continued

<u>Variable</u>	<u>Definition</u>
<u>Acquirer Characteristics</u>	
<i>Abnormal Leverage</i>	The error term of a model of firm market leverage regressed on lagged sales, market-to-book, R&D-to-assets, a missing R&D indicator, selling expense-to-sales, ROA, returns, market leverage, and industry fixed effects. Parameters are estimated using the full Compustat panel over the sample period. See Uysal (2011) for details.
<i>Acquirer Assets</i>	Book value of acquirer's assets in millions.
<i>Acquirer Market Cap.</i>	Acquirer's market value of equity in millions.
<i>Equity Overvaluation</i>	The overvaluation of a bidder's equity, measured as a decomposition of market value based on the third model of Rhodes-Kropf, Robinson, and Viswanathan (2005).
<i>Loans-to-Transaction Value</i>	The sum of the total dollar value of all loan packages for a bidder in the past three years, as reported by Dealscan, scaled by the value of the transaction.
<i>No Credit Rating</i>	An indicator variable equal to one if the acquirer did not have a credit rating from S&P, Moody's, Fitch, or Duff & Phelps in the fiscal quarter preceding the announcement of the acquisition, zero otherwise.
<i>No Dividend Payout</i>	An indicator variable equal to one if the acquirer did not pay a dividend in the fiscal quarter preceding the announcement of the acquisition, zero otherwise.
<i>Proceeds-to-Transaction Value</i>	The total value of proceeds from issues reported in SDC over the past three years. Issues include debt and equity, excluding spinoffs, LBOs, closed-end and unit investment, REITs, limited partnerships, rights issues, and issues less than \$1 million.
<i>SA Index</i>	The index is constructed following Hadlock and Pierce (2010) as $-0.737\text{Size} + 0.043\text{Size}^2 - 0.040\text{Age}$, where Size equals the log of inflation-adjusted Compustat item at (in 2004 dollars), and Age is the number of years the firm is listed on Compustat.
<i>WW Index</i>	The index is constructed following Whited and Wu (2006) and Hennessy and Whited (2007), calculated using Compustat variables as follows: $0.93 - 0.091 [(ib+dp)/at] - 0.062[\text{indicator set to one if } dvc + dvp \text{ is positive, and zero otherwise}] + 0.021[dltt/at] - 0.044[\log(at)] + 0.102[\text{average industry sales growth (three-digit SIC) and each year}] - 0.035[\text{sales growth}]$.
<u>Other Variables</u>	
<i>Capital Gains</i>	The maximum individual capital gains rate in a given year.
<i>C&I Spread</i>	The difference between the average borrowing rate on commercial and industrial loans and the federal funds rate.
<i>Crisis</i>	An indicator equal to one in the ten quarters starting in the final quarter of 2007.
<i>Non-Big-N Auditor</i>	An indicator equal to one if the acquirer's auditor is not a large "Big-N" auditor.
<i>Parent Assets</i>	The book asset value of a target's parent.
<i>Parent Cash</i>	The dollar value of cash and marketable securities for the parent of a subsidiary target.
<i>Parent Cash-to-Assets</i>	The ratio of cash and marketable securities divided by the book value of assets for parent of a subsidiary target.

Appendix Table A1 - continued

<i>Variable</i>	<i>Definition</i>
<i>Parent Cash-to-Transaction Value</i>	The ratio of cash and marketable securities of a parent divided by the transaction value of the subsidiary target.
<i>Percent Strong Demand</i>	The net percentage of loan officers that report strong demand for loans in the Federal Reserve's senior loan officer opinion survey.
<i>Percent Tightening</i>	The net percentage of loan officers that report tightening credit standards in the Federal Reserve's senior loan officer opinion survey.
<i>Post-Pooling Method</i>	An indicator equal to one after 2001, when the pooling treatment of acquisitions was eliminated.
<i>Post-SFAS 141</i>	An indicator equal to one after the year 2009, when the accounting treatment of contingent payments was revised.

Appendix Table A2
Earnout Prediction Model

	Earnout Indicator
<i>Log of Transaction Value</i>	-0.006*** (-4.12)
<i>Private Target</i>	0.082*** (15.98)
<i>Termination Fee</i>	-0.865** (-2.06)
<i>Lock-up</i>	-0.120*** (-2.87)
<i>Toehold</i>	-0.011 (-0.58)
<i>Tender Offer</i>	-0.146*** (-4.88)
<i>Cash Deal</i>	0.017*** (3.73)
Acquirer Industry Fixed Effects	Yes
N	22,323
Pseudo R2	0.093

This table reports a probit regression of earnout use, measured as an indicator equal to one if an earnout is included in a bid, zero otherwise. The sample bids occur between 1988 and 2014. All continuous variables are winsorized at the 1% and 99% levels to reduce the impact of outliers. *, **, and *** represent statistical significance at the ten, five, and one percent levels, respectively. Bidder SIC code indicators control for fixed effects. *Transaction Value* is the total transaction value of the takeover. *Termination Fee* is value of any termination fee payable by the target scaled by the transaction value. *Lock-up* is an indicator equal to one if the acquisition agreement contains a lock-up provision, zero otherwise. *Toehold* is an indicator equal to one if the bidder owns target shares prior to the acquisition announcement. *Tender Offer* is an indicator equal to one if the deal is structured as a tender offer, zero if it is structured as a statutory merger. *Cash Deal* equals one if SDC records the consideration as 100% cash, zero otherwise.