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Financing Acquisitions with Earnouts

Thomas W. Bates , Jordan B. Neyland , Yolanda Yulong Wang

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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.

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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.

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 that sufficient capital and liquidity must be available for firms to efficiently reallocate assets following economic and technological shocks. Almeida, Campello, and Hackbarth (2011) highlight the importance of financial slack from credit lines to finance acquisitions. Similarly, 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 be an important liquidity management tool for financially constrained acquirers. On average, earnouts delay the term of the full payment for the acquisition 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 acquisitions announced and completed between 1988 and 2014 that incorporate earnout agreements, and a propensity score matched sample of comparable transactions that do not include 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 17.5% more likely to use an earnout agreement in a transaction relative to acquirers that have a rating. Similarly, a bidder with a Whited-Wu (2006) index above the sample median is 25.4% 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/moral hazard motives and a liquidity explanation 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 whether 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 of an earnout 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. To proxy for the supply of bank credit we measure the net percentage of loan officers reporting tightening of credit standards from Federal Reserve's Senior Loan Officer Opinion Survey (SLOS). A one standard deviation change in this percentage increases the likelihood that an acquisition includes an earnout by 3.8%. 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 14.7% more likely to use an earnout agreement.

We then examine if an 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 activity is associated with a reduction in the probability of an earnout by 5.4% and 3.1%, respectively. This suggests that

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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 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 require purchase method accounting in acquisitions, which means earnouts became relatively less costly for acquirers after 2001. We observe 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 requiring bidders to estimate the fair value of earnouts and record a contingent liability that must be 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 in auditing earnouts due to their greater ability to monitor. Importantly, we expect that the accounting changes had little, if any, impact on the supply or cost of external financing for acquirers. We provide further evidence and discussion on the exogeneity requirement in section V. 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 related to the financial slack of the corporate parents that are selling subsidiaries. In a similar vein, Petersen and Rajan (1997) document that the supply of trade

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credit by non-financial intermediaries is increasing in the liquidity of those intermediaries. We use three proxies for the liquidity of the selling parent company: 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% when transactions occur 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.

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[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 that 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 (2017) 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

In this paper we propose a novel economic explanation for the use of earnout agreements in acquisitions; namely that the financial terms of an earnout present acquirers with a valuable 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. Consistent with this Boone and Mulherin (2007) managers setup "data rooms" and agree to confidentiality agreements to facilitate the flow of information. More generally, Hertzel 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. These efforts reduce the information asymmetry between acquirers and targets, and allow the target to better assess the credit risk of a bidder, relative to a risk assessment

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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 targets, and this financing option will be more valuable for financially constrained acquirers with limited or costly access to external funds.

III. The Prior Literature on Earnouts

Our paper contributes to a broader literature on earnouts. This literature has largely focused on earnouts as a contractual solution to the information asymmetry between bidders and targets as well as post-contractual moral hazard. These motives are not mutually exclusive, in sample, with our financing-based hypothesis. 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 where information asymmetry is likely exacerbated. Datar et al. (2001) also find 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 influence the duration and performance targets of earnout agreements. Reuer, Shenkar, and Raggozino (2004) show that earnouts are 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. Datar et al. (2001) present survey evidence that target managers stay with the combined firm in over two thirds of earnout acquisitions. Consistent with this, Cadman, Carrizosa, and Faurel (2014) show that target managers stay with the combined firm longer in the presence of earnouts.

IV. 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. 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 the 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% (99%) level. We obtain U.S. commercial and industrial loan rate data and the Senior Loan Officer Opinion Survey on Bank Lending Practices from the Federal Reserve.[2] Variable definitions are provided in the appendix.

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 transactions. The use of earnouts roughly doubled between 2000 and 2002, a period that coincides with the elimination of pooling accounting for mergers. Beginning in 2007, there is a marked jump in earnout use, with over 15% of acquisitions including contingent payments that year.

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[2] https://www.federalreserve.gov/data/sloos/201705/chartdata.htm

This increase is somewhat surprising, given the increased accounting disclosures required for contingent payments by SFAS 141(R) starting in 2009, which likely increased the costs and decreased the attractiveness of using earnouts. Notably, the increase in earnout use also 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 in the sample accounts for 32.84% of the transaction value. On average, earnouts account for 10.81% of the bidder's assets and over one quarter of acquirer debt at the median (only around one half of earnout bidders have debt). Earnouts 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, the remaining acquisitions with earnouts breaks down as follows: 20.13% of the earnout deals are acquisitions of companies held as subsidiaries by the selling company, and only 2.02% of earnout observations arise in public target acquisitions. Out of all of the public deals in the sample, earnouts are used in only 1.22% of public acquisitions. In short, earnouts most likely to be used when the seller is a private company or parent of a subsidiary target.

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

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transaction characteristics for the two subsamples. As might be expected, the average transaction value for deals with earnout agreements is approximately $80 million, about one third of the average transaction value for deals without. 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 the 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, the 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 publicly 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 determined by regressing an indicator for the use of an earnout agreement on deal characteristics including the log of 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. 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 exclude deals involving the same acquirer.[3]

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.[4] 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-squared of 0.093.[5] Characteristics of the matching transactions 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

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[3] In unreported an 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 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.

[4] 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 determined by a linear, rather than probit, model.

[5] 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.

transactions, 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 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 Table 2.[6]

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

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

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. 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, which is likely a consequence of matching on deal size.

We 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 debt and equity issuances by the acquirer reported in the SDC issues database over the three years prior to the bid, scaled by deal value.[7] The average ratio of issuance activity to deal value is significantly larger (by around 40%) for bidders that don't use earnouts, relative to bidders that use earnouts. This suggests that acquirers with earnouts are not a likely to obtain funding from capital markets to the same extent as acquirers that don't use earnout agreements. The economic significance of the difference in issuance is large. While acquirers have relatively similar sizes by construction, earnout firms raise $94 million less on average in public markets than the matched firms. Second, we sum the total value of loan packages observed in Dealscan that were issued by acquirers in the three years prior to the bid, scaled by the acquisition deal value.[8] This ratio is negatively related to earnout use. Acquirers that don't use earnouts obtain about 60% more loan financing (relative to deal value) than acquirers using earnouts. This suggests that acquirers that utilize earnout agreements are more constrained in their ability to issue debt.

While capital market access 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

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[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.

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.

Table 2 also includes summary statistics for market-level characteristics related to borrowing costs, as proxied by the C&I spread in the quarter immediately preceding the acquisition 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.

V. Multivariate Analysis

i. Acquirer Financial Constraints and the Use of Earnout Agreements

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. The specifications include target industry, year, and matched-pair fixed effects to account for additional unmodeled heterogeneity.[11] 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 (e.g. Angrist and Pischke, 2008). Horrace and Oaxaca (2006) find that

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[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.

[11] In our models with matched-pair fixed effects, we also cluster standard errors by pair.

LPM coefficients are 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. We also use a matched sample when modelling the effect of financial constraints on earnouts, which limits the chance that extreme observations lead to predictions outside unit interval.[12] Finally, we ensure that our results are robust to correcting for 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 et al. (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 earnout ratios are correlated with proxies for 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 over 100 trading days prior to the acquisition announcement. The specifications also control for cross-industry acquisitions.

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 by acquirers without a credit rating are 17.5% more likely to utilize an earnout. This probability is economically significant and represents an increase of 35.0 percentage points relative to the unconditional probability in our equally-weighted sample.[13] Similar results obtain in Model 2 where we

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[12] 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.

[13] We also examine the adjusted R-squared across different specifications to evaluate 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

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 deal announcement. As in the first two models, the coefficients indicate that the likelihood of an earnout agreement is positively correlated with both measures.[14] In sum, the evidence in the panel provides consistent evidence that financially constrained acquirers are more likely to use earnouts.[15]

In Panel B of Table 3, we use the financial crisis to study how constrained firms alter their contracting choices 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 a 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*, as an indicator equal to one for transactions that are announced in the 10 quarters starting in the fourth

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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.

[14] 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.

[15] 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 (2104) 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.

quarter of 2007, and zero otherwise. In general, acquisitions are 13.4% more likely include an earnout agreement during this period. 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 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 greater 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.[16] 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 markedly more 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 allows for some reporting discretion, which provides another financial benefit from earnouts for constrained acquirers in that they can record a lower liability and preserve financial flexibility against liability-based covenants. The incentive is analogous to managers' incentive to use off-balance sheet lease agreements to reduce reported leverage as documented in Cornaggia, Franzen, and Simin (2013). Similarly, Aleszczyk,

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[16] 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.

De George, Ertan, and Vasvari (2018) find that increases reported fair values of target assets are associated with greater debt capacity and higher post-acquisition debt ratios.

Following 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 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, Gallmeyer, and Park (2015) who use the net percentage of loan officers that report a tightening of their credit standards from the prior quarter as a 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 3.8%. 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 14.7% 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 5.4% 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 over 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 -3.1%. The standard deviation of this log ratio is 1.06, indicating the coefficient represents about a 3.1% decrease in earnout use for a one standard deviation increase in the log ratio of loan to transaction value.

While evidence based on credit market access is suggestive, excess leverage may also create an underinvestment problem for acquirers thereby 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

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positive and significant, which is consistent with the notion 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, we find this indicator is statistically significant and positively related to earnout use with a coefficient of 5.5%.

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), who document that this component of value is positively correlated with 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 (-8.1%), implying that a one standard deviation (0.59) change leads reduces earnout use by 4.8%.

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. 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.[17] 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 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 or below zero in a linear model. Therefore, we model the financing decisions with probit regressions. 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 serving as a substitute for external financing. Model 2 of Table 6 includes 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 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 jointly model the earnout and

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[17] 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 is relative size suggests disclosure of the source of financing may not be related to earnout use in acquisition, limiting the potential for selection bias.

financing choices with a bivariate probit model. 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 are required to use 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 standard, acquirers must record a fair value liability for the earnout and update this liability each quarter. Given the complexity of determining the fair value of a liability with no publicly traded comparable, Allee and Wangerin (2016) conclude that earnouts are more (less) likely for firms with larger (smaller) auditors after the rule change.

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.[18] The models include the two instruments, as well as additional controls for the bidder's auditor size and the 2009 changes to SFAS 141. 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 and positive impact on the use of earnouts. Conversely, the use of a non-Big-N auditor reduces the likelihood of using an earnout after SFAS 141. Given these results, we conclude that our instruments satisfy the relevance criteria.

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

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[18] 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.

only for the *local* average treatment effect, it is possible for estimates to increase in magnitude consistent with a differentially stronger effect for subsamples. Overall, the evidence in Table 6 is consistent with a significant tradeoff between the use of earnout agreements and external financing for acquisitions.

We provide additional evidence for the exogenous nature of our instruments in untabulated analyses. One concern is that auditor changes are correlated with financing decisions. In independent tests, 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. When we use the subsamples of acquirers with no auditor changes, we continue to observe a negative relation between outside financing and earnout use.

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, thus the purchase method could be associated with financing decisions. To mitigate this concern we limit the sample to include only acquirers with abnormal leverage below the sample median, and re-estimate the bivariate probit for this subsample. We continue to find that earnouts are significantly and negatively related to outside financing for this subsample of firms.

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 evaluate the method of payment and contract terms 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.[19] 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. In these models, *Cash Deal* is an indicator variable equal to one for 100% cash-financed bids.

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[19] 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.

To aid in identification, we include the maximum capital gains tax rate (*Capital Gains*) as an instrument for the determinants of cash payment. 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. The capital gains tax has limited influence on the choice of an earnout agreement other than through the choice of form of payment, satisfying the instrument's exclusion restriction.

In Table 7, we estimate four bivariate probit models, each with two equations, for each of the four cross-sectional financial constraints measures employed in Table 3. The coefficients associated with the capital gains rate suggest that taxes are a significant negative determinant of the form of (cash) payment. In the earnout equations, the bivariate probit models each of the measures of financial constraint are 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 robust to conditioning on the form of payment.

iii. Earnouts and the Supply of Seller Financing

In this section, we study how *target seller* liquidity influences 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 the 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 for which data on the cash and marketable securities of their corporate parents are available on Compustat for the quarter prior to acquisition announcement (2,523

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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 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. In Model 1 the coefficient on slack is 0.069 suggesting a positive and statistically significant relation between the cash-to-asset ratio of the target's parent and the use of an earnout. Models 2 and 3 of the table yield similar results using the log of cash-to-transaction value ratio and log value of parent cash holdings. 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 selling subsidiaries 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. Earnouts are almost exclusively used in the acquisition of non-public targets, thus we follow Officer (2007) and use a transaction's value-to-sales multiple. This multiple allows us to examine prices paid relative to a target accounting characteristic and provide evidence on the implied premiums for target firms in transactions as a function of earnout provisions. 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 (often negative) earnings.[20] Consistent with Officer

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

(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 ratio to limit the effect of extreme multiples on the distribution.[21]

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 observations with sales data. Given this limitation, we do not restrict observations to a matched sample. The regressions control for target industry and transaction characteristics. Model 1 of Table 9 presents the baseline regression for the value-to-sales multiple. 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 commensurately 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 a variable *High C&I*, which is equal to one in quarters where the C&I spread is above the sample median. In Model 3, we interact this spread indicator variable with the earnout variable. 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, and this effect is 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.

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[21] While Officer (2007) excludes extreme observations of multiples from his analysis, we take a more conservative approach and wisorize the tails of the distribution.

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 use coefficient estimates from the value multiple regressions to provide an estimate of the "earnout yield". We note that the probability of receiving an earnout payment includes both the probability that the earnout target is met and that the acquirer pays the claim. In short, the earnout includes performance risk that is distinct from default risk, and thus our estimates should be viewed as an upper bound on the implied financing costs of an incorporating an earnout agreement in an acquisition agreement.[22]

The sample mean of the log transaction value-to-sales ratio is 0.346, or 1.41 after taking the exponent. In Model 3 of Table 9 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 marginal effect on the log ratio, 0.045 (=1.15 × 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. It is important to note that this is a marginal increase in price for the entire deal. However, 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, which implies that the annualized earnout yield is 5.6% per annum ($1.15^{[1/2.57]}$) given the estimates in Model 3.[23]

Coefficient estimates from Model 3 of Table 9 suggest an average increase in sales multiples for transactions with earnouts of 0.133 during quarters with high C&I spreads, Again multiplying by the

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[22] We note that that litigation over performance benchmarks can arise between the contracting parties, providing an additional source of risk for target sellers in deals with earnouts. Ex ante, targets rationally anticipate and price (in premium) litigation risk in addition to default and performance risk.

[23] To provide additional evidence on earnout yields for constrained acquirers, we re-estimate a model (untabulated) similar to model 1 of Table 9 for the subsample of transactions with earnout agreements. In this specification we replace the earnout indicator with a variable equal to one when the acquiring firm does not have rated debt. The coefficient on "no rating" is 0.032. While statistically insignificant, there are only 741 observations with data on price multiples for earnout transactions. The subsample average log transaction multiple is 0.364, and the standard deviation log ratio is 1.018. Given these parameters, we estimate the marginal increase in implied yield for earnout transactions by constrained acquirers is 3.37%. Given our base yield to earnout transactions of 5.6%, this incremental yield is roughly in line with the average yield to BB corporate bonds during the sample period.

standard deviation (1.15) provides an estimate of 0.153 (=1.15 × 0.133) for the additional log value ratio in deals with earnouts during periods 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, suggests an earnout yield of 67%, or 22.1% annualized ($1.67^{[1/2.57]}$). The net difference implies that earnouts provide an additional 16.5% yield (22.1%-5.6%) for targets in times of high credit market spreads, relative to quarters with low credit market spreads. This is comparable to changes in high yield debt during our sample period, which ranged from a low of 6% to a high of 22% during the financial crisis.[24]

VI. 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 represent an economically important source of acquisition financing for financially constrained acquirers.

We present evidence that acquirer-level financial constraints have a positive and economically significant impact on the use of earnout provisions in acquisition agreements. These results obtain for a variety of commonly used empirical proxies for financial constraint including the presence of a debt rating, dividends, and the Size-Age and Whited-Wu indices. Furthermore, we find that the marginal effects of financial constraint on earnout use are magnified during the period immediately following the onset of the financial crisis in 2007. Earnouts agreements 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, we find that financially constrained acquirers are more likely to report a lower

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[24] Yields are based on the Bank of America Merrill Lynch High Yield Index.

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-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 sales-based 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 alternative sources of external financing for acquirers.

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 as a solution to problems of information asymmetry and post-contractual moral hazard in acquisitions. The work also adds to the literature concerning the impact of access to external capital (including lines of credit, rated debt, and overvalued equity) on 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 alternative source of acquisition financing constrained firms. Finally, consistent with the literature on the supply of trade credit, our study provides complementary evidence that the supply of earnout financing is positively associated with the liquidity of target corporate parents.

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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

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Panel B: Full Sample Characteristics

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

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Table 2
Deal Characteristics

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

Panel A: Earnouts and Financial Constraints

	(1)	(2)	(3)	(4)
No Credit Rating	0.175***			
	(4.59)			
No Dividend Payout		0.165***		
		(4.47)		
High SA Index			0.181***	
			(5.52)	
High WW Index				0.254***
				(6.92)
Target Industry Volatility	-4.147*	-4.116*	-3.918*	-6.859***
	(-1.81)	(-1.79)	(-1.70)	(-2.59)
Target Industry R&D	11.556**	11.130**	11.522**	15.711***
	(2.56)	(2.47)	(2.57)	(3.05)
Target Industry Market-to-Book	-0.091*	-0.089*	-0.095**	-0.114**
	(-1.91)	(-1.89)	(-2.01)	(-2.14)
Cross Industry	0.027	0.034	0.030	0.014
	(0.84)	(1.04)	(0.93)	(0.39)
Pair Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	4,452	4,452	4,452	3,893
Adjusted R-squared	0.108	0.108	0.112	0.138

Panel B: Earnouts, Constraints, and the Financial Crisis

	(1)	(2)	(3)	(4)	(5)
No Credit Rating		0.135***			
		(3.35)			
Crisis X No Credit Rating		0.303**			
		(2.21)			
No Dividend Payout			0.169***		
			(4.40)		
Crisis X No Dividend Payout			0.057		
			(0.36)		
High SA index				0.108***	
				(3.27)	
Crisis X High SA index				0.252**	
				(2.30)	
High WW index					0.208***
					(5.33)
Crisis X High WW index					0.154
					(1.23)
Crisis	0.134**	-0.104	0.079	0.039	0.048
	(2.30)	(-0.84)	(0.54)	(0.50)	(0.50)
Target Industry Volatility	-9.833***	-10.120***	-10.025***	-10.547***	-11.563***
	(-7.68)	(-7.91)	(-7.89)	(-8.16)	(-7.76)
Target Industry R&D	12.801***	13.391***	12.255***	13.709***	17.049***
	(2.99)	(3.12)	(2.86)	(3.19)	(3.51)
Target Industry Market-to-Book	-0.225***	-0.226***	-0.219***	-0.236***	-0.239***
	(-5.46)	(-5.45)	(-5.30)	(-5.70)	(-5.16)
Cross Industry	0.019	0.022	0.029	0.021	0.010
	(0.57)	(0.69)	(0.89)	(0.64)	(0.27)
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	4,452	4,452	4,452	4,452	3,893
Adjusted R-squared	0.072	0.081	0.081	0.080	0.106

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. Models include fixed effects and clustered standard errors at the matched-pair level. Panel A presents estimates of the impact of variables related to financial constraints and deal characteristics on earnout use. Year and target SIC code indicators control for time and industry effects. Panel B includes the same variables as Panel A and interacts financial constraint variables with an indicator for the financial crisis. Target SIC code indicators control for time industry effects. *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)
Percent Tightening	0.205**	
	(2.03)	
High C&I Spread		0.147***
		(4.79)
Target Industry Volatility	-11.260***	-8.846***
	(-7.68)	(-6.84)
Target Industry R&D	11.334**	12.856***
	(2.38)	(3.08)
Target Industry Market-to-Book	-0.207***	-0.216***
	(-4.68)	(-5.35)
Cross Industry	0.009	0.019
	(0.27)	(0.57)
Pair Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Observations	4,332	4,452
Adjusted R-squared	0.075	0.080

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. Models include fixed effects and clustered standard errors at the matched-pair level. Target SIC code indicators control for industry 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)
Log Proceeds-to-Transaction Value	-0.054***			
	(-4.70)			
Log Loans-to-Transaction Value		-0.031**		
		(-2.27)		
Abnormal Leverage			0.055***	
			(2.60)	
Equity Overvaluation				-0.081***
				(-3.08)
Target Industry Volatility	-3.589	-3.737	-5.857*	-3.286
	(-1.57)	(-1.62)	(-1.76)	(-1.34)
Target Industry R&D	11.130**	11.038**	16.134***	12.137***
	(2.50)	(2.45)	(2.68)	(2.60)
Target Industry Market-to-Book	-0.092*	-0.090*	-0.111*	-0.054
	(-1.95)	(-1.89)	(-1.72)	(-1.00)
Cross Industry	0.023	0.022	0.007	0.026
	(0.71)	(0.66)	(0.16)	(0.76)
Pair Fixed Effects	Yes	Yes	Yes	Yes
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	0.109	0.102	0.132	0.099

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. Models include fixed effects and clustered standard errors at the matched-pair level. Year and target SIC code indicators control for year and industry 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)
Earnout Indicator	-0.061**	-0.060**	-0.052**	-0.157**	
	(-2.47)	(-2.53)	(-2.17)	(-2.10)	
Log of Transaction Value		0.034***	0.035***	0.044***	-0.013***
		(6.67)	(7.22)	(11.06)	(-4.23)
Target Industry Volatility		-1.150	-0.006	-1.593**	-0.249
		(-1.27)	(-0.01)	(-2.41)	(-0.42)
Target Industry R&D		-2.854**	-4.443***	-2.156**	0.670
		(-2.31)	(-2.93)	(-2.02)	(0.78)
Target Industry Market-to-Book		0.010	0.052*	0.022	-0.017
		(0.35)	(1.95)	(1.09)	(-1.04)
Cross Industry		-0.005	-0.008	-0.006	0.018**
		(-0.25)	(-0.44)	(-0.48)	(1.97)
Private Target		0.003	0.009	0.023	0.068***
		(0.15)	(0.56)	(1.59)	(6.86)
Termination Fee		-0.003	0.014	-0.003	-3.183***
		(-0.01)	(0.03)	(-0.01)	(-3.23)
Lock-up		-0.060	-0.055	-0.068*	0.028
		(-1.32)	(-1.32)	(-1.81)	(0.37)
Toehold		-0.017	-0.017	-0.030	0.021
		(-0.34)	(-0.36)	(-0.92)	(0.42)
Tender Offer		-0.122***	-0.124***	-0.150***	-0.139***
		(-5.14)	(-5.45)	(-7.71)	(-2.84)
Cash Deal		-0.056***	-0.051***	-0.035***	-0.019*
		(-3.29)	(-3.30)	(-2.72)	(-1.94)
Crisis		-0.070***	-0.068***	-0.118***	-0.004
		(-4.56)	(-4.98)	(-5.54)	(-0.25)
Non-Big N Auditor				0.064***	0.009
				(3.30)	(0.61)
Post-SFAS 141				-0.136***	0.022
				(-7.83)	(1.53)
Non-Big N Auditor X Post-SFAS 141					-0.066**
					(-2.32)
Post-Pooling Method					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	Earnout	Cash Deal	Earnout	Cash Deal	Earnout	Cash Deal
No Credit Rating	0.141***	-0.210***						
	(7.09)	(-10.36)						
No Dividend Payout			0.127***	-0.182***				
			(6.67)	(-9.08)				
High SA Index					0.144***	-0.214***		
					(9.27)	(-13.26)		
High WW Index							0.169***	-0.226***
							(10.80)	(-13.22)
Capital Gains		-1.641***		-1.829***		-1.322***		-1.298***
		(-10.81)		(-11.85)		(-9.00)		(-8.23)
Cash Deal	0.361***		0.316***		0.412***		0.416***	
	(9.96)		(7.00)		(17.55)		(18.90)	
Target Industry Volatility	-0.075	-6.125***	-0.610	-6.234***	0.334	-5.556***	0.521	-5.749***
	(-0.09)	(-9.02)	(-0.68)	(-9.11)	(0.45)	(-8.21)	(0.67)	(-7.98)
Target Industry R&D	3.448***	1.619	3.450**	2.334*	2.905**	1.456	1.891	2.919**
	(2.69)	(1.27)	(2.57)	(1.80)	(2.48)	(1.19)	(1.54)	(2.24)
Target Industry Market-to-Book	-0.049**	-0.045**	-0.055**	-0.052**	-0.042**	-0.037*	-0.037*	-0.038*
	(-2.35)	(-2.25)	(-2.48)	(-2.56)	(-2.19)	(-1.91)	(-1.90)	(-1.84)
Cross Industry	0.012	-0.018	0.016	-0.027*	0.013	-0.018	0.010	-0.011
	(0.81)	(-1.15)	(1.09)	(-1.69)	(0.98)	(-1.17)	(0.70)	(-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

Model	(1)	(2)	(3)
Parent Cash-to-Assets	0.069*		
	(1.77)		
Log of Parent Cash-to-Transaction Value		0.005**	
		(2.09)	
Log of Parent Cash			0.006**
			(2.46)
Log of Parent Assets	-0.005**	-0.011***	-0.012***
	(-2.47)	(-3.55)	(-3.82)
Log of Transaction Value	-0.001	0.003	-0.001
	(-0.59)	(1.19)	(-0.69)
Target Industry Volatility	0.145	0.169	0.170
	(0.15)	(0.17)	(0.18)
Target Industry R&D	2.355	2.382	2.361
	(1.14)	(1.14)	(1.13)
Target Industry Market-to-Book	0.013	0.013	0.014
	(0.88)	(0.87)	(0.88)
Cross Industry	-0.002	-0.003	-0.003
	(-0.22)	(-0.24)	(-0.23)
Termination Fee	-0.744**	-0.707*	-0.694*
	(-2.05)	(-1.93)	(-1.85)
Lock-up	-0.071***	-0.071***	-0.072***
	(-3.74)	(-3.88)	(-3.95)
Toehold	0.047	0.047	0.047
	(0.57)	(0.56)	(0.56)
Tender Offer	-0.140**	-0.135*	-0.136*
	(-1.96)	(-1.83)	(-1.85)
Cash Deal	-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)
Earnout Indicator	0.101***	0.101***	0.039
	(3.13)	(3.13)	(0.78)
High C&I Spread		0.006	0.081***
		(0.18)	(2.61)
Earnout Indicator X High C&I Spread			0.133**
			(2.04)
Log of Transaction Value	0.195***	0.195***	0.210***
	(18.85)	(18.89)	(22.99)
Target Industry Volatility	5.273**	5.276**	7.093***
	(2.18)	(2.18)	(4.05)
Target Industry R&D	1.949	1.943	4.794*
	(0.80)	(0.80)	(1.90)
Target Industry Market-to-Book	0.268***	0.268***	0.260***
	(8.30)	(8.49)	(7.34)
Cross Industry	0.023	0.023	0.022
	(1.21)	(1.21)	(1.13)
Private Target	0.261***	0.261***	0.290***
	(5.01)	(5.02)	(5.63)
Termination Fee	-1.053	-1.054	-0.499
	(-1.62)	(-1.63)	(-0.77)
Lock-up	0.109*	0.109**	0.081
	(1.95)	(1.97)	(1.31)
Toehold	0.141**	0.141**	0.111*
	(2.11)	(2.10)	(1.68)
Tender Offer	-0.032	-0.032	-0.055
	(-0.59)	(-0.59)	(-1.07)
Cash Deal	-0.048*	-0.048*	-0.019
	(-1.67)	(-1.67)	(-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
Deen Characteristics	
Cash Deal	An indicator variable equal to one if the acquisition is funded by 100% cash.
Cross Industry	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.
Earnout Indicator	An indicator variable equal to one if the merger agreement includes an earnout.
Earnout Value ($mil)	The dollar value of the contingent payments under the earnout agreement, in millions.
Lock-Up	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.
Private Target	An indicator variable equal to one if the target is a private company, zero otherwise.
Relative Size	The ratio of transaction value to the value of an acquirer's book assets.
Target (Acquirer) Earnout Ratio	The ratio of earnout value to transaction value (bidder assets).
Target Industry Market-to-Book	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.
Target Industry R&D	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 Volatility	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.
Tender Offer	An indicator variable equal to one if the deal is a tender offer.
Termination Fee	Target termination fees as a percentage of transaction value.
Toehold	An indicator equal to one if the bidder owns target equity at announcement.
Transaction Value	Value of acquisition reported by SDC in millions of dollars.

Appendix Table A1 - *continued*

Variable	Definition
Acquirer Characteristics	
Abnormal Leverage	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.
Acquirer Assets	Book value of acquirer's assets in millions.
Acquirer Market Cap.	Acquirer's market value of equity in millions.
Equity Overvaluation	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).
Loans-to-Transaction Value	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.
No Credit Rating	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	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.
Proceeds-to-Transaction Value	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.
SA Index	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.
WW Index	The index is constructed following Whited and Wu (2006) and Hennessy and Whited (2007), calculated using Compustat variables as follows: $0.93 - 0.091 [(ib+dp)/at] - 0.062$[indicator set to one if dvc + dvp is positive, and zero otherwise] $+ 0.021[dltt/at] - 0.044[\log(at)] + 0.102$[average industry sales growth (three-digit SIC) and each year] $- 0.035$[sales growth].
Other Variables	
Capital Gains	The maximum individual capital gains rate in a given year.
C&I Spread	The difference between the average borrowing rate on commercial and industrial loans and the federal funds rate.
Crisis	An indicator equal to one in the ten quarters starting in the final quarter of 2007.
Non-Big-N Auditor	An indicator equal to one if the acquirer's auditor is not a large "Big-N" auditor.
Parent Assets	The book asset value of a target's parent.
Parent Cash	The dollar value of cash and marketable securities for the parent of a subsidary target.
Parent Cash-to-Assets	The ratio of cash and marketable securities divided by the book value of assets for parent of a subsidary target.

Appendix Table A1 - *continued*

Variable	Definition
Parent Cash-to-Transaction Value	The ratio of cash and marketable securities of a parent divided by the transaction value of the subsidiary target.
Percent Tightening	The net percentage of loan officers that report tightening credit standards in the Federal Reserve's senior loan officer opinion survey.
Post-Pooling Method	An indicator equal to one after 2001, when the pooling treatment of acquisitions was eliminated.
Post-SFAS 141	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
Log of Transaction Value	-0.006***
	(-4.12)
Private Target	0.082***
	(15.98)
Termination Fee	-0.865**
	(-2.06)
Lock-up	-0.120***
	(-2.87)
Toehold	-0.011
	(-0.58)
Tender Offer	-0.146***
	(-4.88)
Cash Deal	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.