The Agency Costs of Public Ownership: Evidence from Acquisitions by Private Firms *

Andrey Golubov
Rotman School of Management
University of Toronto
andrey.golubov@rotman.utoronto.ca

Nan Xiong
Shanghai Advanced Institute of Finance
Shanghai Jiao Tong University
nxiong@saif.sjtu.edu.cn

July 22, 2016

*We acknowledge helpful comments from Ettore Croci, Olivier Dessaint, Michael Ewens, Brent Glover, Jarrad Harford, Burton Hollifield, Stephen Karolyi, Sonia Konstantinidi, Kai Li, Micah Officer, Dimitris Petmezas, Stefano Sacchetto, Chester Spatt, Nick Travlos, Alfred Yawson, Huizhong Zhang, Chad Zutter, participants at the 2016 Midwest Finance Association Annual Meeting, 2016 Drexel Corporate Governance Conference, and seminar participants at Carnegie Mellon University. We also thank Huasheng Gao for sharing private firm governance data with us. Any errors are our own.

Abstract

We provide the first evidence on value creation in acquisitions by private operating firms. Private bidders experience 16-20 per cent greater operating performance improvements following acquisitions than do public bidders. This difference is not due to differences in target types, merger accounting, financing constraints, private equity ownership or subsequent listing of some private bidders. Further analysis of governance arrangements allows us to attribute this effect to lower agency costs/better incentive alignment in private firms. Overall, not only do private firms pay lower prices for target firm assets, they also operate them more efficiently.

Keywords: private firms, mergers and acquisitions, efficiency gains, agency conflicts

JEL Classification: G34

1 Introduction

Corporate takeovers are among the largest forms of corporate investment that a firm may undertake. However, economists have long worried that agency conflicts between managers and shareholders may distort managerial incentives and eventually lead to value-destroying investments, such as acquisitions (see Berle and Means 1932; Jensen and Meckling 1976; Jensen 1986; Stein 1989; Stulz 1990). The extant empirical evidence shows that shareholders of public acquiring firms earn, on average, close-to-zero and often negative abnormal returns around the time of takeover announcement, and that the projected operational efficiencies between the merging firms often fail to materialize.[1]

Would takeovers benefit acquirers if agency conflicts were minimized? The empirical evidence on this question is scarce. The main challenge is to observe an acquiring firm's performance following a takeover in an environment with few agency conflicts. To address this difficulty, we take advantage of a comprehensive dataset of private acquiring firms. We use large private acquirers as a plausible counterfactual for how public firms would have performed if agency conflicts were moderated. As argued by Jensen and Meckling (1976), the key assumption is that, on average, private firms face fewer agency problems, since private firms typically operate under concentrated ownership and control.[2] This encourages private firms' owners to monitor the management more closely to ensure shareholder value maximization. Thus, private firms should be less affected by agency problems compared to public firms, which, in turn, should have a positive impact on their acquisition decisions.

Using a dataset covering both public and large private firms in the U.S., we examine

[1] Many recent papers provide abnormal return estimates for takeover announcements, including Fuller, Netter, and Stegemoller (2002), Moeller, Schlingemann, and Stulz (2004, 2005), Masulis, Wang, and Xie (2007), and Golubov, Yawson, and Zhang (2015). See also the review paper by Betton, Eckbo, and Thorburn (2008).

[2] Gao, Harford, and Li (2016) provide some of the first evidence on ownership structure of public versus private firms. An average public firm in their sample exhibits CEO ownership of 4.05% and ownership concentration by top 5 outside shareholders of 18.09%. For private firms, these statistics are 10.74% and 49.32%, respectively. Our later analysis confirms this.

differences in post-takeover performance between these two types of acquirers. In the absence of stock price data for private firms, we focus on real operational performance improvements. In addition to the agency cost dimension, private acquirers are of great interest in their own right, as the existing literature on value creation in mergers and acquisitions (M&A) is silent on acquisitions by private acquirers due to obvious data limitations.

While the data on private firms are generally unavailable, we take advantage of the fact that certain private firms are required to disclose their financials to the U.S. Securities and Exchange Commission (SEC) because of the size of their assets or because they have publicly traded debt. Although not representative of a typical private firm, these private firms are observably comparable to public firms in terms of size and information availability through 10-K filings. Therefore, ownership and control is the main source of differences between public and private bidders in our sample.

Our analysis is based on a sample of 6,345 acquisition deals over the period 1997-2010 drawn from Capital IQ, which provides both transaction data as well as the firms' financials. Of these deals, 1,032 were conducted by private bidders and the remaining 5,313 by public bidders. We find that, on average, private bidders experience significantly greater operating performance improvements. Public acquirers increase their return on assets (ROA) by 1.69%, 2.52%, and 2.62%, in the first one, two, and three years after the deal completion, respectively. In contrast, private acquirers experience improvements in ROA of 15.85%, 18.12%, and 19.24% over the same one, two, and three year periods following deal completion. Asset utilization, as measured by asset turnover (ATO) also improves significantly more for private bidders.

Next, we perform regression analysis to show that an acquirer's listing status rather than observable differences in targets or deal types explain the differences in operating performance improvements. In the baseline model, we regress the percentage change in the return on assets (ROA) and asset turnover (ATO) on an indicator for private bidders and controls for

acquiring firms' pre-deal characteristics, bid attributes, as well as year and industry fixed effects (defined by three-digit SIC code). The results confirm that private acquirers have significantly greater increases in ROA and ATO one, two, and three years after the deal. For example, private acquirers realize a 16.0% additional increase in ROA during the year after the acquisition, an 18.1% incremental increase in ROA two years after the acquisition, and a 16.2% incremental increase in ROA in the three years after the acquisition, as compared to to public acquirers. We find that private acquirers achieve additional increases in ROA and ATO after the deal relative to their public counterparts even after controlling for the acquiring firm's growth opportunities (age), target firm types (public versus private), relative deal size, industry relatedness, and hostility. These results are consistent with our conjecture that private bidders are subject to fewer agency conflicts, leading to better acquisitions.

Before examining the agency cost channel, we first rule out several alternative explanations for the private bidder effect in post-takeover performance. Private bidders could be going after targets with higher levels of ROA or ATO than target firms acquired by public firms, resulting in greater combined firm profitability. This does not appear to be the case. In a subsample of deals where the target firms' financials are available, we show that targets of private bidders are not more profitable than those of public bidders.[3] Another potential explanation has to do with merger accounting. If public bidders pay higher prices for target firm assets (as shown by Bargeron, Schlingemann, Stulz, and Zutter (2008) for public targets), then more accounting goodwill is created in acquisitions by public firms, resulting in a higher enlarged book value of assets of the combined firm. Holding cashflows constant, a larger denominator in ROA and ATO ratios would lead to smaller post-deal ROA figures for public bidders. We examine transaction multiples (EV/Book, EV/Sales, EV/EBITDA) paid by private versus public bidders, and find that private bidders, indeed, pay lower prices

[3]In addition, if targets of private bidders were more profitable, this would be reflected in higher prices paid for those assets. In fact, we find the opposite.

for target firm assets. However, we show similar private bidder effects on post-takeover performance when using changes in return on sales (ROS) - a measure of profitability that is free from merger accounting effects. Third, it is possible that private firms are financially constrained and can only finance their best acquisition, whereas public firms can finance more marginal deals, resulting in lower average efficiency gains for public firms. However, we are able to rule out this explanation by showing that the private bidder effect is driven by firms that are characterized by lowest levels of financing constraints. Finally, private acquirers could be going public following acquisitions. If so, greater operating performance improvements of private bidders could be due to IPO-enabled opportunities and not due to better acquisition decisions. Nevertheless, we show that the results continue to hold when we exclude firms that change their listing status in the post-acquisition period.[4]

In the final part of the paper we investigate whether the private bidder effect can, indeed, be attributed to differences in agency costs/incentive alignment between public and private firms. First, we show that the private bidder effect is strongest when external governance pressure from competition in the product markets is weak, necessitating strong internal governance. Second, we compare firm-level governance arrangements of public and private firms in our sample and investigate whether these differences can account for the private bidder effect. We take advantage of Capital IQ's coverage of antitakeover defenses for both public and private firms.[5] We further complement these data with hand-collected information on CEO ownership and ownership concentration by outside shareholders for both public and private firms. As anticipated, private bidders employ significantly fewer provisions

[4]Note that, to the extent that private firms are not subject to capital market pressures that put emphasis on short-term profitability as much as public firms are, private firms are more likely to undertake deals that result in long-term value creation at the expense of immediate effects on earnings. At the same time, public firms may be coerced into deals that result in near-term improvements in profitability. If this is the case, our analysis focusing on the first three years following the deal will not capture these long-run differences. This biases us against finding greater operating performance improvements for private bidders.

[5]Note that most of our private bidders have more than 500 shareholders, rendering takeover defences relevant even for private firms. In addition, these provisions capture limitations to shareholder control more broadly, beyond takeover situations.

limiting shareholder control and exhibit greater levels of CEO ownership and ownership concentration. Finally, and most importantly, we show that the private bidder effect is driven by private bidders with lowest use of takeover defences, highest CEO ownership, and highest ownership concentration by outside shareholders. Overall, the evidence is consistent with the agency cost/incentive alignment channel behind the private bidder effect.

This paper contributes to the M&A literature by providing the first evidence on value creation by private acquirers. Our results thus complement prior research that was limited to public acquirers.[6] In doing so, we also reaffirm one of the major reasons for poor performance of acquiring firms proposed in the literature, namely the agency problem (see, e.g., Masulis, Wang, and Xie (2007), Moeller, Schlingemann, and Stulz (2004)). Moreover, our findings help interpret some of the prior results in this literature. In particular, Bargeron, Schlingemann, Stulz, and Zutter (2008) show that private operating firms pay lower premia relative to public bidders, a result we confirm in a broader sample of deals using transaction multiples. There are two possibilities: either private firms are more disciplined due to better incentive alignment, or they simply enter deals with lower synergy gains that would naturally warrant lower prices. Our results on greater operating performance improvements suggest it is the former case, and further demonstrate that, not only do private bidders pay lower prices for target firm assets, they also operate those assets more efficiently. Finally, our paper contributes to the nascent literature in corporate finance that studies the characteristics of private firms (Brav (2009), Saunders and Steffen (2011), Michaely and Roberts (2012), Gao, Harford, and Li (2013), Asker, Farre-Mensa, and Ljungqvist (2015), Bernstein (2015), Xiong (2015)). We expand this set of studies by providing new evidence on the

[6]The only exception is a study by Maksimovic, Phillips, and Yang (2013) who use plant-level data for U.S. manufacturing firms to study public and private firm participation in merger waves. They show, among, others, that productivity gains (measured by total factor productivity) following plant acquisitions are greater when the buyer is public. Our results are not necessarily in conflict, because i) our sample is not limited to manufacturing firms, and ii) we measure efficiency gains as changes in overall operating profitability at the firm level, which takes account of various expenses not captured in total factor productivity.

effect of private ownership on takeover efficiency gains, and, by extension, on the quality of investment decisions more broadly.

The rest of the paper proceeds as follows. Section 2 reviews related literature. Section 3 describes our sample. Our empirical analysis is presented in Section 4. Finally, Section 5 concludes the paper.

2 Literature Review

There is a large literature examining takeover gains to acquiring firms, though virtually all papers are limited to studying public acquirers and use abnormal stock returns to measure takeover gains (see Betton, Eckbo, and Thorburn (2008) for a complete summary of the literature). In general, evidence on the ability of acquiring firms to generate value through takeovers has been mixed. Fuller, Netter, and Stegemoller (2002) study abnormal returns for public firms that acquired five or more targets within a three-year period, showing that public acquirers gain when buying a private or subsidiary firm, but lose or break-even when buying a public firm. In a sample of acquisitions by public firms from 1980 to 2001, Moeller, Schlingemann, and Stulz (2005) show that acquiring-firm shareholders lose $25.2 million on average upon announcement. Moeller, Schlingemann, and Stulz (2004) show that returns to public bidders decline with the size of the bidder, a result they attribute to greater agency problems/weaker incentive alignment at larger firms. Along these lines, Masulis, Wang, and Xie (2007) show that poorly governed public bidders – as measured by their use of antitakeover provisions – exhibit lower returns than better governed bidders. Since private firms tend to be smaller and use fewer provisions limiting shareholder control, the classic agency view would predict that private bidders should make better M&A decisions.

In the voluminous M&A literature, only two papers have touched upon private acquirers. Bargeron, Schlingemann, Stulz, and Zutter (2008) investigate all-cash takeovers of U.S.

public targets by private and public bidders from 1990 to 2005. They find that private equity bidders pay 63% lower premiums relative to public bidders, and that private operating companies (the focus of our paper) pay 14% lower premiums relative to public firms. Our paper differs in that we study actual efficiency gains realized in takeovers by private firms, and that our sample is not limited to public targets. Maksimovic, Phillips, and Yang (2013) study a sample of acquisitions by manufacturing firms in the U.S. using plant-level data from the Annual Survey of Manufactures. They find that productivity gains, measured by total factor productivity, are greater when the buyer is a public firm. Our sample is not limited to manufacturing firms, and our measures of efficiency gains take into account overall profitability at the firm level.

We also join a small but growing literature that studies private companies. Sheen (2012) and Asker, Farre-Mensa, and Ljungqvist (2015) find that private firms invest more and are more responsive to investment opportunities. Gilje and Taillard (2016) examine a unique dataset of U.S. natural gas producers and show that investment by private firms react less to changes in natural gas prices. Brav (2009) and Saunders and Steffen (2011) investigate the financial policies of private and public firms in the U.K. and find that private firms face higher costs of external finance. Michaely and Roberts (2012) study dividend policies of public and private firms in the U.K. and find that private firms smooth dividends significantly less than public firms. Gao, Harford, and Li (2013) shows that private firms hold, on average, about half as much cash as public firms do. If public firms acquire more to take advantage of their cash holdings rather than to realize synergies, as predicted by Jensen (1986), then we would expect that public acquirers experience lower operating profitability than private acquirers after corporate takeovers. Xiong (2015) quantifies the effects of agency and financing frictions on firm value for private and public firms using a structural estimation approach. He finds that large private firms face fewer agency problems than their public counterparts. This evidence supports the idea, on which we base our empirical strategy, that the performance

of large private acquirers can serve as plausible counterfactual for public acquiring firms in an environment with fewer agency conflicts.

3 Data and Basic Statistics

3.1 The sample

Our primary data source is the Capital IQ database. Starting from the late-1990s, Capital IQ provides data on U.S. firms' M&A activity and financial information with a similar level of detail as provided by SDC Mergers and Acquisitions Database and Compustat for public firms. We start with U.S. public firms traded on the NYSE, Nasdaq, or Amex. A private firm is required not to have shares traded on any major stock exchange or OTC market. In Capital IQ, private firm observations mainly come from Form 10-K and from Form S-1. In U.S., firms have to file financial reports with the Securities and Exchange Commission (SEC), if they have $10 million or more in total assets and 500 or more shareholders (2,000 shareholders since April 2012), or if they list their securities with the SEC, like public debt. Capital IQ collects private firms' financial data from the SEC through 10-K or S-1. In our final sample, data for most private firms (96%) come from 10-K, and the remainder (4%) comes from S-1. Most private firms in the sample are large or have access to public debt. Although they are not representative of a typical private firm, this makes them comparable to public firms in terms of size, disclosure requirements and information availability.

We collect the sample of U.S. mergers and acquisitions from Capital IQ. M&A data from Capital IQ, in particular, data on leveraged buyouts, have been used in a recent study by Axelson, Jenkinson, Stromberg, and Wesibach (2013). Following the literature, we collect all completed transactions for the period 1997 to 2010 (to allow for 3 years worth of post-acquisition performance data) in which the acquirer owns 100% of the shares of the target after the deal. We exclude all deals with non-operating targets, with missing deal values,

and where the bidder is a group of investors. We further remove all regulated or financial bidders with SIC code between 4900 and 4999 or between 6000 and 6999. Since our main variable of interest requires the operating performance before the deal to be available, we require all acquirers to have financial data in the year prior to the deal. The resulting sample consists of 8,760 deals involving a public bidder and 1,176 deals by private bidders.

Since a private bidder does not have publicly traded equity to offer, it is not surprising that most acquisitions by private bidders are cash deals. In the initial sample, more than 90% of acquisitions by private bidders are all-cash deals. In contrast, about 40% of public bidders use all-stock payment or mixed offers. To obtain a sample where deals are most comparable between public and private acquirers, we exclude all non-cash deals. Excluding non-cash deals results in a final sample of 6,345 deals where 5,313 deals involve a public bidder and 1,032 deals by private bidders.[7]

Table 2 reports the distribution of the number and the aggregate value of the transactions measured in 2009 purchasing power through time. In total, public firms participate more than private firms as buyers of assets in mergers and acquisitions. Among all deals, 83% of the deals involve a public bidder, with 17% deals involving a private bidder. In contrast, most target firms are private. The fraction of acquisitions each year made by private firms is highest from 2005 to 2007. The aggregate deal values by private bidders are much larger in 2000, 2004, and 2009 compared to any other year.

[7]We have compared Capital IQ M&A data coverage with that of Thomson Reuters SDC. Applying the same sample selection criteria to both databases, we find that Capital IQ and SDC coverage of acquisitions by public bidders is very similar, but coverage of acquisitions by private bidders is significantly better in Capital IQ. For instance, before requiring financial data to be available, we find 5,322 deals by public bidders in Capital IQ compared to 5,624 deals in SDC. As for deals by private bidders, we find 7,523 deals in Capital IQ but only 978 deals in SDC. Thus, Capital IQ coverage of M&A deals by private firms is more comprehensive.

3.2 Summary statistics

We collect all financial performance measures and deal characteristics from Capital IQ. We focus on bidder and deal characteristics that both empirical and theoretical literature have found to be important. Panel A of Table 3 compares bidder characteristics between public and private acquirers for one year before the deal completion.[8] The first two variables are total assets and operating income measured in CPI-adjusted 2009 dollars. It is not surprising that public bidders are larger than their private counterparts in total assets and operating income. We consider a measure of leverage equal to the ratio of long term debt to total assets. We find that private acquirers are much more levered than public acquirers. Consistent with Gao, Harford, and Li (2013), we also find that public bidders hold, on average, about 50% more cash than private bidders do. As suggested by Jensen (1986), companies with substantial cash flows and low leverage ratio are prone to agency problems of free cash flow, and thus managers of firms with large free cash flows are more likely to undertake inefficient or even value-destroying corporate takeovers.

Private bidders tend to be younger firms, with significantly lower firm age compared to public bidders. Private bidders also have fewer industry segments than public bidders. On average, a private bidder has 1.81 industry segments, whereas an average public bidder has 3.43 segments. There is no significant difference in the ratios of tangible assets to total assets (Tangibility), capital expenditure (CAPEX/Total assets), and one year percentage change in total revenue (Sales growth) between public and private bidders. However, the average public bidder spends 3.2% of capital on R&D, substantially higher than 1.2% of the average private bidder.

Panel B of Table 3 reports several deal characteristics, which are also obtained from Capital IQ. We find no statistical difference in the mean dollar value of the deals measured

[8]It is interesting to also compare the characteristics of target firms. However, financial information for target firms is limited, because most targets are relatively small private firms that are not required to disclose to the SEC. Nevertheless, below we will investigate target firm profitability in a subsample of deals.

in CPI-adjusted 2009 dollars for public acquiring firms relative to private acquiring firms. In other words, the transaction sizes are similar across public and private bidders. The proportion of hostile acquisitions is greater when a bidder is public than when a bidder is private, although the difference is not statistically significant. Public bidders are less likely to be involved in solicited deals than private bidders. A large fraction of targets consist of firms with a two-digit SIC code other than that of the bidder, but that fraction is similar when bidders are public or private. The fraction of non-US targets is slightly higher for private bidders.

Finally, we compare our sample bidders to the full population of firms in Capital IQ (public and private, respectively). We remove observations with missing SIC codes, zero or negative total assets and gross capital stock. Following the literature, we also exclude all financial or regulated firms with SIC codes between 4900-4999 and between 6000-6999. These screens result in a final sample of 23,286 firm-year observations for 2,189 public firms and 9,920 firm-year observations for 3,283 private firms, over the period from 1997 to 2010. Table 4 reports mean values for firm characteristics for bidders and the full population. For both public and private companies, almost every firm characteristic is significantly different between bidders and the average firms. A bidder is much larger than the average firms in terms of total assets and operating income. Typically, a bidder firm tends to be older and have more industry segments than the average firm. We also find that the average firm holds more cash, owns more net property, plant and equipment, invests more, and spends more on its research and development than bidding firms do. However, private bidders rely less on debt compared to all private firms, while public bidders rely slightly more on debt relative to all public firms.

4 Main Results

In this section, we investigate the differences in post-acquisition operating performance improvements between public and private acquiring firms. We focus on operating performance during the first three years after the deal for all bidding firms with post-deal financial information, since market-based valuations for private firms are not available. We first explore these characteristics at the univariate level and then continue with regression analysis.

4.1 Univariate comparisons across bidder types

Our main measure of operating performance is return on assets (ROA): operating income before depreciation divided by total assets. Operating income captures the cashflows of the underlying business and is not affected by differences in capital structure, taxes, and depreciation policy. Scaling by total assets partially controls for divestitures and differences in growth and size. Broadly speaking, ROA can be interpreted as measuring the efficiency with which the acquiring firms use a given amount of assets, and changes in ROA can be interpreted as improvements in this efficiency. As an additional measure of efficiency, we look at asset turnover (ATO), defined as sales divided by total assets. This ratio captures the efficiency with which the firm is using its assets to generate revenue, and the post-takeover changes measure improvements in productive asset utilization. We will also examine return on sales (ROS) in our later analysis.

Following Kaplan (1989) and Maksimovic, Phillips, and Yang (2013), we examine operating performance during the first three years after corporate takeovers. We measure the percentage changes in the variables in the first three years after the deal completion (years +1, +2, +3) relative to the last year before the deal completion (year −1).[9] Results for year

[9]We use percentage changes in our performance measures to facilitate interpretation and to make economic magnitude of the results readily apparent. This is consistent with literature focusing on operating performance improvements following buyouts (e.g. Kaplan (1989) and Guo, Hotchkiss, and Song (2011)). Our conclusions are the same when using percentage point (unscaled) changes in ROA and ATO. These

0, when the deal is completed, are not presented because they are difficult to interpret as pre- or post-deal performance. Furthermore, accounting variables in year 0 maybe inaccurate or biased due to deal-related fees and asset write-ups. In all subsequent tests we trim the sample by removing the 2nd and 98th percentiles of the dependent variable to reduce the influence of outliers.

The first two panels of Table 5 summarize raw (unadjusted) percentage changes in ROA and ATO. During the first three years, ROAs of public bidders on average grow by 1.69%, 2.52%, and 2.62%, while ROAs of private bidders improve by 15.85%, 18.12%, and 19.24%. Turning to ATO, mean increases for public bidders are 1.13%, 1.91%, and 2.49%, in years +1, +2, +3 in comparison with year −1. These increases are significantly greater for private bidders: 9.49%, 13.98%, and 13.53% for years +1, +2, +3, respectively. The differences between public and private firm improvements in ROA and ATO are large and statistically significant at the 1% level across all years. Private bidders exhibit incremental 14-16% improvements in ROA, and additional 8-11% increases in ATO.

The bottom two panels of Table 5 report industry-adjusted performance improvements. To adjust for industry trends, we subtract the median Δ ROA or Δ ATO of the bidder's industry for the same period from the raw values. We continue to find that private bidders exhibit greater improvements in ROA and ATO following acquisitions than public bidders, albeit the magnitude of the difference is reduced somewhat. To control for industry trends in subsequent regression analysis, we will use raw (unadjusted) performance improvements in conjunction with year and industry fixed effects, as recommended by Gormley and Matsa (2014).

Finally, in unreported analysis we also examine the sources of superior improvements in operating performance by private bidders. We find that private bidders experience greater reductions in selling, general, and administrative expenses (SG&A), but no significant dif-

results are available upon request.

ferences in changes in cost of goods sold (COGS). Private bidders also experience greater reductions in CAPEX. It appears that the source of superior operating performance improvements by private bidders lies in better containment of overhead costs and investment efficiency (in addition to greater asset turnover).

One may argue that private bidders could simply by going after more profitable targets, thereby resulting in higher combined firm profitability. However, this is likely to be offset by the higher asset base of the combined firm due to higher prices paid for more profitable assets. Moreover, we will show later that, for a subsample of deals where the target firm financials are available, firms targeted by private bidders are not more profitable than those targeted by public bidders.

We also investigate whether private firms, in general, exhibit higher levels of ROA and ATO growth than public firms do. For this analysis, we focus on the entire population of private firms in Capital IQ and use both the full sample and a matched sample of public firms. Following the literature such as Gao, Harford, and Li (2013) and Asker, Farre-Mensa, and Ljungqvist (2015), we match private and public firms with replacement based on size and industry. For each private firm, we match a public firm closest in size (total assets) and in the same industry (defined by 3 digit SIC code). If no match is found, we discard the observation from the sample. After matching, the sample contains 9,490 observations for 2,189 public firms and an equal number of observations for 3,283 private firms. We have a sample of all public firms collected from Capital IQ and a sample of matched public firms. Then we compare growth in operating performance between private and public firms one, two, and three years in the future. Table 6 presents these results. Panel presents the comparisons for the overall universe of public and private firms. One-year ROA growth is about 4.87% higher for private firms, but this turns negative for a two-year growth measure, and negative and statically significant by year three. There is no significant differences between private and public firms in terms of percentage changes in ATO, except for a small positive difference in

year +3.

Panel B repeats the comparisons using a matched sample of public firms. In this comparison, private firms exhibit significantly lower one-year, two-year, and three-year changes in ROA. Again, there are no significant differences in the ATO changes, except for a three-year ATO change that is marginally higher for private firms. Overall, when looking at the entire population, we do not find consistent evidence of inferior operating performance of public firms relative to private firms. Hence, our results on the higher changes in operating performance for private bidders can be more readily attributed to their acquisitions.

4.2 Baseline regressions

The univariate comparisons provide evidence that private acquiring firms are more successful in generating cash flows than their public counterparts after acquisitions. To investigate whether firm's listing status indeed accounts for these differences between public and private acquirers we conduct regression analysis that controls for main observable differences in deal types and bidder attributes. We first estimate a regression of the changes in ROA on the private bidder indicator and a set of controls. We run the following regression model:

$$\begin{aligned}\Delta ROA(-1,+j) = \alpha + \beta_1 PrivateBidder + \beta_2 ROA + \beta_3 Log(revenue) + \beta X' \\ + IndustryFEs + YearFE + \varepsilon,\ j = 1,2,3\end{aligned} \tag{1}$$

The dependent variables are percentage changes in ROA for acquirers using three windows, $(-1,+1)$, $(-1,+2)$, and $(-1,+3)$, with year 0 being the transaction year. $\Delta ROA(-1,+1)$ is the percentage change in return on assets from $t-1$ to $t+1$. Similarly, $\Delta ROA(-1,+2)$ and $\Delta ROA(-1,+3)$ measure the percentage changes in return on assets from $t-1$ to $t+2$ and from $t-1$ to $t+3$. The variable $PrivateBidder$ is an indicator variable which is equal to one if the bidder is a private firm, and zero otherwise. Variables ROA and $Log(revenue)$ are return on assets and the natural logarithm of total revenue for acquiring firms in $t-1$ that control

for the starting level of performance and the size effect.[10] Vector X' contains additional bidder and deal characteristics found important by prior literature, namely a dummy for private targets, relative size of the deal (deal value to total assets), age of the bidder, and dummies for hostile deals, solicited deals, and diversifying deals. Industry (three-digit SIC) fixed effects and year fixed effects are included to absorb time-invariant industry effects or year-specific variation in operating performance changes (the results are identical if we use industry-year fixed effects). The coefficient on $PrivateBidder$, β_1, is of interest.

Table 7 shows that on average private acquiring firms experience higher growth in future profitability than public acquiring firms in terms of ROA. The coefficient on $PrivateBidder$, the indicator for whether the bidder is private, is positive and significant at the 1% level for all three post-takeover years. Private acquirers realize an incremental 16.0% increase in ROA during the year after the acquisition, 18.1% two years after the acquisition, and 16.2% three years after the acquisition compared to public acquirers. We also find that the coefficients on ROA and $Log(revenue)$ are significant at the 1% level in all columns, suggesting a negative impact of the bidder's pre-deal level of operating performance and size on subsequent improvements. The negative effect of size on post-takeover performance is consistent with evidence in Moeller, Schlingemann, and Stulz (2004) based on announcement period returns.

Table 7 also reports the regression estimates for Δ ATO as the measure of operating performance improvement. Again, we find that private acquirers realize greater improvements in ATO than public acquirers. The coefficients on $PrivateBidder$ are positive and statistically significant at the 1% level in years +1 and +2, and at the 5% level in year +3. The incremental improvements in ATO are on the order of 8-11%. The coefficients on ATO and $Log(revenue)$ are negative and significant in all of our specifications, consistent with

[10] We also experiment with controlling for prior growth in ROA instead of the level and find very similar results.

the regression estimates using ROA as the performance measure.

Overall, there is strong evidence that acquiring firm ownership type strongly affects post-takeover performance. This results holds after controlling for numerous potential confounding effects, such as differences in growth opportunities (firm age), deal size (relative size), and target type (private targets). So far our results are consistent with the notion that private bidders make better acquisition decisions, as predicted by classic agency theory. In the following sections we will explore robustness of this finding, possible mechanical explanations, as well as the hypothesized agency channel behind this association.

4.3 Possible explanations

4.3.1 Do private bidders buy more profitable targets?

So far we find higher improvements in ROA and ATO for private bidders following takeovers. One possible explanation is that private acquirers simply pick targets with higher levels of operating performance. Note that we compare pre-deal operating results of the bidder with the post-deal operating results of the combined firm assets. That is, private bidders go after target firms with higher levels or growth in ROA or ATO than target firms acquired by public firms. To investigate this concern, we examine target firms' pre-deal performance. However, this analysis is limited to a subsample of target firms with financial information available from Capital IQ, because most target firms are private and small. We measure the level as well as the percentage changes of the target firm's ROA and ATO in the last fiscal year prior to deal completion (relative to two years prior in the case of changes). Table 8 reports target's pre-deal performance. We find that public acquirers pick target firms that have somewhat higher levels (Panel A) and growth rates (Panel B) in ROA, although the differences are not statistically significant. This suggests that, if anything, our results are biased against finding greater performance improvements for private bidders. There are no

discernible differences in levels and growth rates of ATO.

Another way to assess whether targets of private bidders are more profitable is to examine prices paid for those assets. If targets acquired by private bidders are more profitable, one would expect higher prices paid for those assets. Panel C examines mean and median transaction multiples paid by public and private bidders. We use deal value to total assets, deal value to sales, and deal value to operating income before depreciation. These multiples approximate price-to-book, EV/Sales and EV/EBITDA valuation multiples. We find that private bidders consistently pay lower prices for their targets: all transaction multiples are significantly lower for targets acquired by private firms. This result confirms the findings of Bargeron, Schlingemann, Stulz, and Zutter (2008) who find that private bidders pay lower bid premiums for comparable public targets. Overall, there is no evidence that targets of private bidders are more profitable, ruling out this as a possible explanation for better post-takeover performance of private firms.

Finally, Panel D repeats the regression analysis in Table 7 on a subsample of deals with target firm financials available, and we use the weighted-average performance of the bidder and the target in year $t-1$ in the computation of the dependent variable. Only the coefficient of interest is reported. While the sample size declines significantly to about 900 observations (with only about 100 acquisitions by private firms), we continue to find positive and significant private bidder effects in 5 out of 6 specifications.

4.3.2 Merger accounting

Second potential explanation we address has to do with merger accounting. Under U.S. Generally Accepted Accounting Principles (GAAP),the bidder has to account for the entire purchase price on its balance sheet. Any value in excess of the (stepped-up) value of identifiable assets is recognized as goodwill.[11] If public bidders pay higher prices (as we have

[11]This is also the case under International Financial Reporting Standards (IFRS).

shown above), then more accounting goodwill is created, resulting in a higher accounting asset base for the combined firm. Since we measure ROA as the ratio to total assets, this can potentially explain why public acquirers have smaller post-deal ROA and the associated change. To mitigate this measurement concern, we use return on sales (ROS), as in Custodio (2014) study of the diversification discount. Similar to ROA, we measure the annual percentage changes in ROS in the first three years following deal completion (years +1, +2, +3) relative to the most recent fiscal year prior the deal completion (year −1). Panel A of Table 9 reports univariate analysis, and Panel B the results of regressions analysis this alternative measure of performance improvements. Our results continue hold. Univariate differences in ROS improvements are significant at the 1% level for all windows. Similarly, the coefficients on the *PrivateBidder* indicator are positive and significant at the 1% level for windows $(-1, +1)$ and $(-1, +2)$, and at the 5% level for window $(-1, +3)$. The magnitude of the effect is large, with 7-10% greater improvements in profit margins for private bidders. Therefore, merger accounting effects cannot be the explanation behind better ROA and ATO improvements for private bidders.

4.3.3 Access to capital

Another reason for better performance of private bidders could be the fact that they are more financially constrained. If this is the case, private bidders could finance only their best deals, whereas less constrained public bidders are able to finance more marginal deals, bringing the average post-takeover performance of public firms down. Note that this still implies that private firms make more value-creating deals, it is just that agency conflicts that we alluded to in the introduction is not the reason behind it. Preliminary investigation of the data suggests that this is a valid concern: private bidders in our sample conduct an average of two acquisitions, while public firms conduct an average of four deals.

To formally test this explanation, we proxy for financing constraints with three different

variables. First, we employ the SA index from Hadlock and Pierce (2010), who show that it performs better than the Kaplan-Zingales index (Lamont, Polk, and Saa-Requejo (2001)) and the Whited-Wu index (Whited and Wu (2006)).[12] The SA index is based on firm characteristics that predict actual qualitative assessments by management of their firms' ability to access capital. Hadlock and Pierce (2010) show that firm size, size-squared, age, leverage and free cash flow are consistently associated with financing constraints. While leverage and free cash flow do incrementally predict the level of financing constraints (positively and negatively, respectively), Hadlock and Pierce (2010) choose to avoid these arguably more endogenous variables in the construction of their index.[13] We therefore use leverage and free cash flow separately as additional indicators of financing constraints. According to Hadlock and Pierce (2010), high levels of SA index, high leverage, and low free cash flow are symptomatic of high levels of financing constraints. If limited access to capital is the reason why private firms do better deals, we should find that the private bidder effect is driven by these categories of private bidders.

Table 10 presents the results of our baseline regressions augmented with measures of financing constraints (we use terciles to maximize the signal-to-noise ratio of the proxies) and their interactions with the private bidder dummy. Panel A uses the SA index of Hadlock and Pierce (2010) as our first proxy for financing constraints. Interestingly, the private bidder effect is driven by private bidders with medium and low levels of SA index - opposite to what the access to capital explanation predicts. Panels B and C use free cash flow and leverage, respectively, as two additional proxies for financing constraints. Once again, we find results

[12]Besides, the computation of the Kaplan-Zingales and Whited-Wu indices require numerous financial variables that are often missing for private firms.

[13]Specifically, we construct the SA index as $(-0.737 * Size) + (0.043 * Size^2) - (0.040 * Age)$, where $Size$ is the log of book assets, and Age is the number of years from foundation. Following Hadlock and Pierce (2010), size is winsorized (i.e., capped) at the log of $4.5 billion, and age is winsorized at 37 years (In Hadlock and Pierce (2010) age is measured as the number of years with non-missing stock price in Compustat. We replace this with the year of foundation since private firms do not have a stock listing. This should not introduce any bias since we are using relative rankings of the index).

inconsistent with access to capital explanation of the private bidder effect: it is driven by private bidders with medium and high free cash flow, and with medium and low leverage (less constrained private bidders). Finally, in unreported results we also verify that the private bidder effect continues to hold after controlling for a deal order variable, defined as the number of deals conducted by the bidder since the start of our sample. Overall, it appears that more selective deal making as a result of greater challenges in accessing capital cannot explain the private bidder effect.

4.3.4 Subsequent listing and organizational form

Finally, successful acquirers may change their listing status after the acquisition. For example, a successful private acquirer may go public after the deal. If so, higher future profitability of private acquirers may benefit from IPO and subsequent infusion of capital to fund growth, not from mergers and acquisitions. In the sample, only 127 (10.8%) private acquirers go public within 3 years after the deal, and no public acquirer goes private within 3 years after the deal. We eliminate these bidders from the sample and rerun the regressions. The results are shown in Panel A of Table 11.[14] The coefficients on *PrivateBidder* remain positive and significant at the 1% level across all specifications, with magnitudes comparable to those in prior analysis.

We further examine the organizational form of private bidders in our sample. First, we distinguish between independent private firms and those whose ultimate parent is a listed firm. We find that 25% of private bidders in our sample have public firms as their ultimate parents. We then examine whether these bidders perform any differently to independent private firms (one prediction could be that private firms whose ultimate parents are public may suffer from similar agency conflicts as their parents). Panel B of Table 11 reports the coefficient estimates. The indicator *PublicParent* takes the value of one if the bidder

[14] We report only the coefficients of interest. The specifications are otherwise identical to those in Table 7.

is private and its ultimate parent is public, and zero otherwise. It should therefore be interpreted as interaction effect. Somewhat surprisingly, the coefficient on this variable is statistically insignificant, suggesting that private firms with public parents do not perform any differently to independent private firms.

Second, we also investigate whether the private bidder effect is driven by the private equity ownership model. Capital IQ provides information on whether the firm has received private equity sponsorship at any point in time. Similar to the public parent analysis, we define an indicator variable $Non - PEBacked$ that takes the value of one if the bidder is private and has never received private equity investment, and zero otherwise. Panel C of Table 11 reports the estimation results. We find that private bidders that are not currently under private equity equity ownership and have never received private equity backing experience the same levels of operating performance improvements as independently owned private bidders. Overall, the private bidder effect is common to the private ownership model more broadly.

4.3.5 Endogeneity of listing status

Being public or private is, of course, an endogenous decision. The listing status can be correlated with firm's financing or investment decisions, thus affecting firms' operating performance. Of particular concern is a variable that is positively correlated with the propensity to stay private and, at the same time, positively affects post-takeover operating performance improvements.[15] To mitigate the concern of selection on observable characteristics, we employ a propensity score matching procedure to reduce the potential selection bias. The matching technique we use is a one-to-one nearest neighbour matching with replacement (Heckman, Ichimura, and Todd (1998)). We start with a probit regression with the private

[15]Note that if the omitted variable correlated with the propensity to stay private negatively affects post-takeover value creation, this would bias our results downward, working against our finding of a positive private bidder effect.

bidder indicator variable as the dependent variable, using as explanatory variables the logarithm of total assets, ROA or ATO one year before the deal, and industry fixed effects. We then use the results from the first-stage probit regression to calculate an acquiring firm's propensity scores (i.e., the probability that an acquirer is private, given the set of observable characteristics). We match each private acquirer with a public acquirer by minimizing the absolute value of the differences between their propensity scores. The matched sample shrinks to 1,032 private acquirers firm-year observations and an equal number of public acquirers firm-year observations.

Table 12 presents the results based on our matching procedure. Panel A shows differences in the performance percentage changes after the deal between private acquirers and their propensity-score-matched public acquirers. We find that private acquirers improve significantly more in terms of post-deal ROA and ATO than their matched public acquirers. After matching between samples, we find that differences are of comparable magnitude to those in the unmatched sample. Panel B of Table 12 shows the regression results for the matched sample. We use the same explanatory variables as before. The coefficient on the *PrivateBidder* indicator is positive and significant at the 1% level for both ROA and ATO across all windows.

It appears that selection on observable characteristics does not bias our results. Of course, it is still possible that there is an unobserved characteristic that is positively correlated with both private firm status and post-takeover performance. In the absence of a source of exogenous variation in the firms' listing status, we stop short of making strong causal statements. Nevertheless, note that the typical narrative, whereby high quality firms/assets select into public status, would bias our results downward - to the extent that asset quality is positively related to gains in takeovers, public firms would be expected to do better than private firms.

4.4 The Agency Cost Channel

Our results suggest that post-deal operating results of private acquirers are better than public acquirers. We have examined and ruled out several possible explanations, such as more profitable target firms, merger accounting, access to capital, or benefits of subsequent IPOs.

Why do then private acquirers outperform? We have argued that public ownership comes with greater agency conflicts relative to the more concentrated private ownership. We now investigate directly whether agency costs are, indeed, behind the private bidder effect.

We now investigate directly whether differences in post-takeover performance between public and private firms can be explained by governance quality. While data on the governance arrangements in private firms is scarce, we are able to obtain four such variables, namely CEO ownership, ownership concentration by the top 1 and top 5 outside shareholders, and a takeover defence score.[16] The latter variable comes from Capital IQ, while data on CEO ownership and ownership concentration come from Gao and Li (2015) and Gao, Harford, and Li (2016).[17]

We begin by summarizing the four governance variables for public and private firms. Table 13 presents the statistics. As expected, private firms exhibit significantly higher levels of CEO ownership (0.068 vs 0.036), and ownership concentration by top 1 and top 5 outside shareholders (0.492 vs. 0.097 and 0.605 vs. 0.168, respectively). In addition, the average takeover defence score for private firms is significantly lower than for public firms (0.24 versus

[16] Capital IQ covers 24 unique antitakeover and corporate governance provisions, from which it constructs a takeover defence score. In addition to standard antitakeover provisions such as poison pills and classified boards, this index captures such limitations/enhancements of shareholder rights as cumulative voting for board seats, causes for director removal, and limits to amend the corporate charter and bylaws, among others. The score is a number between 0 and 1, where a higher score indicates stronger takeover defences. This takeover defence score is similar to corporate governance indices computed in Gompers, Ishii, and Metrick (2003) and Masulis, Wang, and Xie (2007). Note that most private acquirers in the sample have more than 500 shareholders, resulting in some separation of ownership and control and necessitating the use of takeover defences.

[17] We would like to thank Huasheng Gao for kindly sharing these variables with us.

0.31), indicating that private firms use fewer provisions limiting shareholder rights. Overall, these statistics are consistent with private firms having better incentive alignment between managers and shareholders, as well as monitoring by shareholders. If the private bidder effect is driven by differences in governance quality, we should find that the effect is strongest for private bidders characterized by better governance. To that effect, we augment our baseline specifications with these governance proxies (as before, we use terciles to maximize the signal-to-noise ratio) and their interactions with the private bidder dummy. Table 14 presents the results.

Panel A uses CEO Ownership as our first governance proxy. As predicted by the agency channel, the private bidder effect is driven by firms with high CEO ownership. Panels B and C use the concentration of ownership by the top 5 and top 1 outside shareholders, respectively. Once again, we find that the private bidder effect is driven by firms in the highest tercile of ownership concentration by outside shareholders. The results are somewhat noisier here due to loss of observations (onwership concentration is available only after 2003).

Panel D utilizes takeover defence score as our final direct governance proxy. The private bidder effect is driven by private firms with the lowest level of takeover defence use - again consistent with the agency channel behind the private bidder effect. Finally, Panels E and F employ a proxy for governance pressure from outside the firm, namely, the extent of product market competition. Giroud and Mueller (2010) and Giroud and Mueller (2011) show that pressure from product markets is a powerful governance mechanism that can render firm-level governance arrangements irrelevant. Following these authors, we use the Herfindahl-Hirschman Index (HHI) to measure product market competition. We employ two versions of HHI: one based on 3-digit SIC industries and sales of all firms covered in Compustat, and another one provided by Hoberg and Phillips (2016) that benefits from incorporating sales by private firms (from U.S. Census data) into the computation of market concentration. The results are again consistent with the agency cost explanation behind

the private bidder effect: differences in post-takeover performance are largest for medium and high levels of HHI using both definitions. This implies that the private bidder effect is strongest when products markets are less competitive, necessitating the need for strong firm-level governance arrangements. We argue that private firm ownership structure provides such arrangements, and the above results using direct governance measures confirm this intuition.

Overall, the results reported in this section suggest that agency problems are, indeed, a channel through which private acquirers outperform public acquirers. While it is possible that there may be other mechanisms at play that we have not considered, the agency cost/incentive alignment is clearly among the mechanisms behind the private bidder effect.

5 Conclusions

Using a dataset covering large U.S. private acquiring firms, we examine the effect of public versus private ownership on real post-takeover operational improvements. This comparison allows us to study the effect of incentive alignment on takeover efficiency gains. Besides, private acquirers are of great interest in their own right, since all existing evidence on value creation from acquisitions is limited to public bidders.

Our evidence supports the agency view that private firms make better investment decisions. On average, private acquirers experience 16-20 per cent greater operating performance improvements following takeovers. This effect is not driven by differences in target types, merger accounting effects, financing constraints, private equity ownership, or benefits of subsequent listing. Further tests suggest that incentive alignment can, indeed, account for the private bidder effect. Differences in operating performance improvements are largest when external pressure from product market competition is weak, and the private bidder effect is driven by firms with high CEO ownership and ownership concentration, and fewer limits to shareholder rights.

Our findings help interpret some of the existing results in the literature. Private bidders are known to pay lower premiums in acquisitions of public firms (Bargeron, Schlingemann, Stulz, and Zutter (2008)) - a result we confirm in a broader sample of deals using transaction multiples. This could be due to discipline coming from stronger incentive alignment in private firms, but lower prices could also be due to private firms engaging in deals with lower overall synergy gains (perhaps because they cannot compete for better deals with less financially constrained public bidders). Overall, not only do private firms pay lower prices for target firm assets, they also operate those assets more efficiently.

References

Asker, J., J. Farre-Mensa, and A. Ljungqvist, 2015, "Corporate Investment and Stock Market Listing: A Puzzle?," *Review of Financial Studies*, 28(2), 342–390.

Axelson, U., T. Jenkinson, P. Stromberg, and M. S. Wesibach, 2013, "Borrow Cheap, Buy High? The Determinants of Leverage and Pricing in Buyouts," *The Journal of Finance*, 68(6), 2223–2267.

Bargeron, L. L., F. P. Schlingemann, R. M. Stulz, and C. J. Zutter, 2008, "Why do private acquirers pay so little compared to public acquirers?," *Journal of Financial Economics*, 89(3), 375–390.

Berle, A. A., and G. G. C. Means, 1932, *The modern corporation and private property*. MacMillan, New York.

Bernstein, S., 2015, "Does Going Public Affect Innovation?," *The Journal of Finance*, 70(4), 1365–1403.

Betton, S., B. E. Eckbo, and K. S. Thorburn, 2008, "Corporate Takeovers," in *Handbook of Empirical Corporate Finance*, ed. by B. E. Eckbo. Elsevier, Amsterdam, Handbooks in Finance, pp. 291 – 429.

Brav, O., 2009, "Access to capital, capital structure, and the funding of the firm," *The Journal of Finance*, 64(1), 263–308.

Custodio, C., 2014, "Mergers and acquisitions accounting and the diversification discount," *The Journal of Finance*, 69(1), 219–240.

Fuller, K., J. Netter, and M. Stegemoller, 2002, "What do returns to acquiring firms tell us? Evidence from firms that make many acquisitions," *The Journal of Finance*, 57(4), 1763–1793.

Gao, H., J. Harford, and K. Li, 2013, "Determinants of corporate cash policy: Insights from private firms," *Journal of Financial Economics*, 109(3), 623–639.

——— , 2016, "CEO Turnover-Peformance Sensitivities in Private Firms," *Journal of Financial and Quantitative Analysis*, forthcoming.

Gao, H., and K. Li, 2015, "A comparison of CEO pay-performance sensitivity in privately-held and public firms," *Journal of Corporate Finance*, 35, 370–388.

Gilje, E., and J. Taillard, 2016, "Do Public Firms Invest Differently than Private Firms? Taking Cues from the Natural Gas Industry," *The Journal of Finance*, forthcoming.

Giroud, X., and H. M. Mueller, 2010, "Does corporate governance matter in competitive industries?," *Journal of Financial Economics*, 95(3), 312 – 331.

——— , 2011, "Corporate Governance, Product Market Competition, and Equity Prices," *The Journal of Finance*, 66(2), 563–600.

Golubov, A., A. Yawson, and H. Zhang, 2015, "Extraordinary acquirers," *Journal of Financial Economics*, 116(2), 314 – 330.

Gompers, P., J. Ishii, and A. Metrick, 2003, "Corporate Governance and Equity Prices," *The Quarterly Journal of Economics*, 118(1), 107–155.

Gormley, T. A., and D. A. Matsa, 2014, "Common Errors: How to (and Not to) Control for Unobserved Heterogeneity," *Review of Financial Studies*, 27(2), 617–661.

Guo, S., E. S. Hotchkiss, and W. Song, 2011, "Do Buyouts (Still) Create Value?," *The Journal of Finance*, 66(2), 479–517.

Hadlock, C. J., and J. R. Pierce, 2010, "New Evidence on Measuring Financial Constraints: Moving Beyond the KZ Index," *Review of Financial Studies*, 23(5), 1909–1940.

Heckman, J. J., H. Ichimura, and P. Todd, 1998, "Matching as an econometric evaluation estimator," *The Review of Economic Studies*, 65(2), 261–294.

Hoberg, G. H., and G. Phillips, 2016, "Text-Based Network Industries and Endogenous Product Differentiation," *Journal of Political Economy*, forthcoming.

Jensen, M. C., 1986, "Agency costs of free cash flow, corporate finance, and takeovers," *American Economic Review*, 76(2), 323–329.

Jensen, M. C., and W. H. Meckling, 1976, "Theory of the firm: Managerial behavior, agency costs and ownership structure," *Journal of Financial Economics*, 3(4), 305–360.

Kaplan, S., 1989, "The effects of management buyouts on operating performance and value," *Journal of Financial Economics*, 24(2), 217–254.

Lamont, O., C. Polk, and J. Saa-Requejo, 2001, "Financial Constraints and Stock Returns," *Review of Financial Studies*, 14(2), 529–554.

Maksimovic, V., G. Phillips, and L. Yang, 2013, "Public and private merger waves," *The Journal of Finance*, 68(5), 2177–2217.

Masulis, R. W., C. Wang, and F. Xie, 2007, "Corporate governance and acquirer returns," *The Journal of Finance*, 62(4), 1851–1889.

Michaely, R., and M. R. Roberts, 2012, "Corporate Dividend Policies: Lessons from Private Firms," *Review of Financial Studies*, 25(3), 711–746.

Moeller, S. B., F. P. Schlingemann, and R. M. Stulz, 2004, "Firm size and the gains from acquisitions," *Journal of Financial Economics*, 73(2), 201–228.

——— , 2005, "Wealth destruction on a massive scale? A study of acquiring-firm returns in the recent merger wave," *The Journal of Finance*, 60(2), 757–782.

Saunders, A., and S. Steffen, 2011, "The costs of being private: Evidence from the loan market," *Review of Financial Studies*, 24(12), 4091–4122.

Sheen, A., 2012, "Do public and private firms behave differently? An examination of investment in the chemical industry," *Working paper, University of Oregron*.

Stein, J. C., 1989, "Efficient capital markets, inefficient firms: A model of myopic corporate behavior," *The Quarterly Journal of Economics*, 104(4), 655–669.

Stulz, R., 1990, "Managerial discretion and optimal financing policies," *Journal of Financial Economics*, 26(1), 3–27.

Whited, T. M., and G. Wu, 2006, "Financial Constraints Risk," *Review of Financial Studies*, 19(2), 531–559.

Xiong, N., 2015, "How costly are agency and financing frictions for private firms?," *Working paper, Carnegie Mellon University*.

Table 1: **Variable Definitions**

Variable	Definition
Total assets	Capital IQ item Total Assets, reported in CPI-adjusted 2009 millions of dollars
Operating income	Total Revenue less Cost of Goods Sold and Selling General & Admin Exp, reported in CPI-adjusted 2009 millions of dollars
Book leverage	Long term debt scaled by total Assets
Cash	Total Cash & ST Investments scaled by total Assets
Age	Firm's age since the year founded
Segment	Number of business segments
Tangibility	Net property, plant & Equipment scaled by total assets
CAPEX	Capital expenditure scaled by total assets
R&D	R&D expenditure scaled by total assets
Relative size	Deal value scaled by total assets of the bidder
Sale growth	Annual increase in total revenue scaled by beginning-of-year Total Revenue
Deal value	Total transaction value, reported in CPI-adjusted 2009 millions of dollars
Return on assets (ROA)	Operating income scaled by total assets
Asset turnover (ATO)	Total revenue scaled by total assets
Return on sales (ROS)	Operating income scaled by total revenue

Table 2: **Sample Distribution by Bidder Type**

The sample includes all Capital IQ completed cash-only mergers and acquisitions announced between 1997 and 2010 that result in 100% ownership by the bidder. The aggregate deal value is in CPI-adjusted 2009 millions of dollars. The sample contains 5,313 deals involving public bidders and 1,032 deals involving private bidders.

	All deals		Public bidders		Private bidders		Private percentage	
Year	n	Deal value ($m)	n	Deal value ($m)	n	Deal value ($m)	Private bidders	Private targets
1997	48	11,013	23	5,528	25	5,451	0.52	0.73
1998	152	54,733	110	39,244	42	14,624	0.28	0.76
1999	200	94,380	138	74,019	62	19,154	0.31	0.69
2000	303	142,163	239	107,839	64	33,084	0.21	0.85
2001	351	121,848	278	103,947	73	17,366	0.21	0.86
2002	340	52,589	284	49,186	56	2,807	0.16	0.91
2003	426	63,361	344	51,070	82	11,862	0.19	0.90
2004	517	142,570	442	68,532	75	67,520	0.15	0.94
2005	638	140,931	522	115,597	116	21,553	0.18	0.92
2006	694	190,187	587	166,632	107	21,251	0.15	0.92
2007	766	197,152	647	185,585	119	8,434	0.16	0.90
2008	706	128,918	633	112,484	73	14,464	0.10	0.92
2009	459	102,550	404	69,250	55	31,253	0.12	0.95
2010	745	125,339	662	119,259	83	5,509	0.11	0.92
Total	6,345	1,567,734	5313	1,268,172	1,032	274,332	0.16	0.90

Table 3: **Summary Statistics on Bidder and Deal Characteristics**

The sample includes all Capital IQ completed cash-only mergers and acquisitions announced between 1997 and 2010 that result in 100% ownership by the bidder. The sample contains 5,313 deals involving public bidders and 1,032 deals involving private bidders. Panel A reports mean values for bidder characteristics one year before the announcement date. All variables are from Capital IQ. Total assets and operating income are in CPI-adjusted 2009 millions of dollars. Book leverage is the long term debt scaled by total assets. Tangibility is calculated as net property, plant & equipment divided by total assets. Age is the number of years since the firm has been founded. Segment is the number of business segments reported on Capital IQ. R&D is the expense on research and development scaled by total assets. Sale growth is the change in total revenue from $t-2$ to $t-1$ with t being the year when the deal is announced. In panel B, mean values are reported for deal characteristics. The deal value (Deal value) is the total value of consideration paid by the acquirer (in CPI-adjusted 2009 millions of dollars). Relative size is deal value scaled by total assets of the bidder. Hostile, Solicited, and Diversifying are indicator variables equal to one if the deal is hostile, solicited, or involves a target with a two-digit SIC code other than that of the bidder, respectively.

	Public bidder	Private bidder	Public−Private	
			Difference	p-value
Panel A: Bidder characteristics (one year before deal)				
Total assets ($m)	6,378.230	4,428.700	1,949.530	0.000
Operating income ($m)	1,136.290	444.070	692.220	0.000
Return on assets (ROA)	0.153	0.147	0.005	0.118
Asset turnover (ATO)	0.101	0.098	0.003	0.237
Return on sales (ROS)	0.208	0.230	-0.021	0.000
Book leverage	0.190	0.367	-0.177	0.000
Cash	0.148	0.097	0.051	0.000
Age	46.090	33.970	12.120	0.000
Segment	3.432	1.812	1.620	0.000
Tangibility	0.212	0.221	-0.009	0.135
CAPEX/Total assets	0.047	0.047	0.000	0.841
R&D	0.032	0.012	0.020	0.000
Sale growth	-0.004	0.006	-0.010	0.243
Panel B: Deal characteristics				
Deal value ($m)	238.860	269.930	-31.070	0.442
Relative size	0.094	0.193	-0.098	0.000
Private target	0.897	0.910	-0.013	0.754
Non-US target	0.166	0.125	0.041	0.000
Hostile	0.002	0.001	0.001	0.841
Solicited	0.055	0.086	-0.031	0.000
Diversifying	0.261	0.295	-0.034	0.023

Table 4: **Summary Statistics on Bidders vs. All Firms**

The sample includes all Capital IQ completed cash-only mergers and acquisitions announced between 1997 and 2010 that result in 100% ownership by the bidder. The sample also contains 23,286 firm-year observations for 2,189 public firms and 9,920 firm-year observations for 3,283 private firms, collected from Capital IQ. This table compares the bidder's characteristics one year before the deal to all firms in Capital IQ. Panel A reports mean values for public companies. Panel B reports mean values for private companies. All variables are from Capital IQ.

	Bidder	All firms	bidder−all firms	
			Difference	p-value
Panel A: public companies				
Total assets ($m)	6,378.230	2,611.579	3,766.651	0.000
Operating income ($m)	1,136.290	252.145	884.145	0.000
Return on assets (ROA)	0.153	0.081	0.089	0.000
Asset turnover (ATO)	0.101	0.002	0.099	0.000
Return on sales (ROS)	0.208	0.086	0.122	0.000
Book leverage	0.190	0.184	0.006	0.042
Cash	0.161	0.181	-0.020	0.000
Age	46.090	43.912	2.178	0.000
Segment	3.432	2.846	0.586	0.000
Tangibility	0.212	0.257	-0.045	0.000
CAPEX/Total assets	0.047	0.069	-0.022	0.000
R&D	0.032	0.038	-0.006	0.501
Sales growth	-0.004	0.121	-0.125	0.000
Panel B: private companies				
Total assets ($m)	4,428.700	1,011.778	3416.922	0.000
Operating income ($m)	444.070	56.859	387.211	0.000
Return on assets (ROA)	0.147	0.056	0.091	0.000
Asset turnover (ATO)	0.098	0.026	0.072	0.000
Return on sales (ROS)	0.230	0.073	0.157	0.000
Book leverage	0.367	0.405	-0.038	0.002
Cash	0.097	0.134	-0.037	0.000
Age	33.970	24.905	9.065	0.000
Segment	1.812	1.409	0.403	0.000
Tangibility	0.221	0.306	-0.085	0.000
CAPEX/Total assets	0.047	0.070	-0.023	0.000
R&D	0.012	0.023	-0.011	0.000
Sales growth	0.006	0.496	-0.490	0.000

Table 5: **Operating Performance Improvements Following Takeovers**

This table reports operating performance improvements (percentage change in ROA and ATO) for public and private bidders over the sample period 1997–2010. Year -1 is the last fiscal year prior deal completion. Year $+i$ is the ith fiscal year after deal completion. This table also reports industry-adjusted performance improvements. Symbols ***, **, and * denote the significant differences at the 1%, 5% and 10% levels, repectively.

From year i year j	Private bidder	Public bidder	Test of differences
		Δ Return on assets (ROA)	
-1 to $+1$	15.85%	1.69%	14.16%***
-1 to $+2$	18.12%	2.52%	15.60%***
-1 to $+3$	19.24%	2.62%	16.62%***
		Δ Asset turnover (ATO)	
-1 to $+1$	9.49%	1.13%	8.36%***
-1 to $+2$	13.98%	1.91%	12.07%***
-1 to $+3$	13.52%	2.49%	11.03%***
		Industry-adjusted Δ ROA	
-1 to $+1$	11.82%	4.42%	7.40%***
-1 to $+2$	12.73%	5.41%	7.31%***
-1 to $+3$	12.69%	6.04%	6.64%**
		Industry-adjusted Δ ATO	
-1 to $+1$	5.51%	0.99%	4.51%***
-1 to $+2$	8.64%	1.97%	6.67%***
-1 to $+3$	8.18%	3.72%	4.45%***

Table 6: **Operating Performance Changes across Firm Type in the Population**

The sample contains 23,286 firm-year observations for 2,189 public firms and 9,920 firm-year observations for 3,283 private firms, collected from Capital IQ. For each private firm, we match a public firm closest in size (total assets) and in the same industry (defined by 3 digit SIC code). This table reports the differences of mean percentage changes in total revenue as a percentage of assets (Δ ATO), and in operating income as a percentage of assets (Δ ROA) between all private firms and all public firms, or between all private firms and their matched public firms. Year 0 represents current fiscal year. Year $+i$ is ith year after. Symbols ***, **, and * denote the significant differences at the 1%, 5% and 10% levels, respectively.

	From year i to year j		
Percentage changes	0 to +1	0 to +2	0 to +3
Panel A: Private firms − Public firms			
Δ Return on assets (ROA)	4.87%***	−3.56%	−6.14%**
Δ Asset turnover (ATO)	0.01%	0.79%	2.99%***
Panel B: Private firms − Matched public firms			
Δ Return on assets (ROA)	−5.23%*	−7.59%**	−7.71%*
Δ Asset turnover (ATO)	0.81%	−0.15%	3.61%*

Table 7: **Operating Performance Improvements: Regression Analysis**

This table reports regression estimates on changes in ROA or ATO for acquirers. The dependent variables are Δ ATO$(-1,+j)$ or Δ ROA$(-1,+j)$ $(j = 1, 2, 3)$. Private bidder is an indicator variable that equals one if the bidder is a private firm. ATO/ROA and Log(revenue) measure asset turnover, return on assets and the log of total revenue in $t-1$. Private target indicates whether the target firm is private or not. To control for relative size of the deal, we use the deal value scaled by bidder's assets. Log(age) measures the log of bidder's age before the deal. Hostile, Solicited, and Diversifying are indicator variables equal to one if the deal respectively is hostile, is solicited, or involves a target with a two-digit SIC code other than that of the bidder. Industry (based on three-digit SIC) and year fixed effects are included. Standard errors allow for clustering at the firm level and are reported in parentheses. Coefficients denoted by *, **, or *** are significant at the 10%, 5%, or 1% level, respectively.

	Δ ROA			Δ ATO		
	$(-1,+1)$	$(-1,+2)$	$(-1,+3)$	$(-1,+1)$	$(-1,+2)$	$(-1,+3)$
Private bidder	0.160***	0.181***	0.162***	0.090***	0.106***	0.080**
	(0.040)	(0.053)	(0.062)	(0.026)	(0.029)	(0.034)
ROA/ATO	−1.181***	−1.634***	−2.116***	−0.154***	−0.199***	−0.236***
	(0.152)	(0.219)	(0.284)	(0.012)	(0.017)	(0.017)
Log(revenue)	−0.016**	−0.025***	−0.023**	−0.010**	−0.018***	−0.018***
	(0.007)	(0.009)	(0.009)	(0.004)	(0.005)	(0.005)
Private target	−0.015	−0.005	−0.035	−0.010	−0.001	−0.001
	(0.020)	(0.025)	(0.031)	(0.012)	(0.016)	(0.017)
Relative size	−0.261***	−0.220***	−0.222**	−0.219***	−0.199***	−0.204***
	(0.046)	(0.054)	(0.088)	(0.029)	(0.031)	(0.033)
Log(age)	−0.001	0.012	−0.003	−0.005	0.003	−0.015
	(0.012)	(0.015)	(0.016)	(0.007)	(0.008)	(0.010)
Hostile	0.011	−0.007	−0.067	−0.150***	−0.190***	−0.226***
	(0.054)	(0.095)	(0.102)	(0.041)	(0.070)	(0.085)
Solicited	0.104***	0.107**	0.125**	0.036*	0.053**	0.052**
	(0.037)	(0.043)	(0.053)	(0.019)	(0.021)	(0.020)
Diversifying	−0.006	0.023	−0.027	−0.012	−0.008	−0.022*
	(0.018)	(0.024)	(0.025)	(0.010)	(0.011)	(0.012)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. Observations	5,817	5,781	5,720	5,808	5,771	5,712
Adjusted R^2	0.135	0.147	0.170	0.155	0.170	0.194

Table 8: **Do Private Bidders Buy More Profitable Targets?**

Panel A reports the mean ROA and ATO of target firms acquired by public and private bidders one year before the deal. Panel B reports the mean percentage changes in ROA and ATO of target firms acquired by public and private bidders from the last fiscal year prior deal completion relative to the year before. Panel C reports mean and median transaction multiples (Deal value/Assets, Deal Value/Sales, and Deal value/Operating Income) paid by public and private bidders. Panel D reports the coefficients of similar regressions in Table 7. With target firm financials available, we use the weighted average performance of the bidder and the target in year $t-1$ in the computation of dependent variable. Standard errors are reported in parentheses. Tests for differences are also shown. Symbols ***, **, and * denote the significant differences at the 1%, 5% and 10% levels, respectively.

Target's characteristics	Acquired by Private firms	Acquired by Public firms	Test of differences
	Panel A: Level		
Return on asset (ROA)	1.80%	4.31%	−2.51%
Asset turnover (ATO)	14.61%	13.57%	1.04%
	Panel B: Growth		
Δ Return on asset (ROA)	14.12%	20.43%	−6.31%
Δ Asset turnover (ATO)	8.78%	8.57%	0.21%
	Panel C: Prices Paid		
Deal value/Assets			
Mean	2.30	3.10	−0.80***
Median	1.77	2.14	−0.37***
Deal value/Sales			
Mean	2.31	3.79	−1.48***
Median	1.52	1.99	−0.47***
Deal value/Operating Income			
Mean	7.49	15.34	−7.85***
Median	9.81	11.77	−1.96**

Panel D: Regressions using combined firm performance in year $t-1$

	Δ ROA			Δ ATO		
	(−1,+1)	(−1,+2)	(−1,+3)	(−1,+1)	(−1,+2)	(−1,+3)
Private bidder	0.244*	0.058	0.346**	0.066*	0.077*	0.160**
	(0.131)	(0.094)	(0.152)	(0.040)	(0.055)	(0.071)

Table 9: **Merger Accounting? Changes in Return on Sales (ROS)**

This table reports the percentage changes and regression estimates on the percentage changes of ROS for acquirers. The dependent variables are Δ ROS$(-1,+j)$ $(j = 1, 2, 3)$. Other variables are similar to Table 7. Industry (based on three-digit SIC) and year fixed effects are included. Standard errors allow for clustering at the firm level and are reported in parentheses. Coefficients denoted by *, **, or *** are significant at the 10%, 5%, or 1% level, respectively.

Panel A: univariate analysis

	Δ Return on sales (ROS)		
From year i year j	Private bidder	Public bidder	Test of differences
-1 to $+1$	13.37%	1.53%	11.84%***
-1 to $+2$	11.4%	1.96%	9.44%***
-1 to $+3$	9.11%	2.18%	6.93%***

Panel B: regression analysis

	Δ ROS(−1,+1)	Δ ROS(−1,+2)	Δ ROS(−1,+3)
Private bidder	0.094***	0.102***	0.072**
	(0.030)	(0.036)	(0.032)
ROS	−0.819***	−1.038***	−1.218***
	(0.092)	(0.098)	(0.106)
Log(revenue)	−0.010	−0.009	−0.005
	(0.006)	(0.007)	(0.007)
Private target	−0.009	−0.006	−0.005
	(0.018)	(0.023)	(0.021)
Deal size	0.030	−0.040	−0.099**
	(0.045)	(0.047)	(0.049)
Log(age)	0.004	0.005	−0.003
	(0.011)	(0.011)	(0.013)
Hostile	0.084**	0.089	0.134
	(0.042)	(0.068)	(0.096)
Solicited	0.046	0.061*	0.055*
	(0.032)	(0.032)	(0.031)
Diversifying	0.006	0.007	−0.016
	(0.015)	(0.017)	(0.018)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
No. observations	5,466	5,415	5,356
Adjusted R^2	0.114	0.138	0.155

Table 10: **Access to Capital**

This table reports the results of tests conditioning the private bidder effect on proxies for financing constraints. The dependent variables are Δ ROA$(-1,+j)$ or Δ ATO$(-1,+j)$ $(j = 1, 2, 3)$. Only the coefficients of interests are shown. The specifications are otherwise identical to those in Table 7. Standard errors allow for clustering at the firm level and are reported in parentheses. Coefficients denoted by *, **, or *** are significant at the 10%, 5%, or 1% level, respectively.

	Δ ROA			Δ ATO		
	$(-1,+1)$	$(-1,+2)$	$(-1,+3)$	$(-1,+1)$	$(-1,+2)$	$(-1,+3)$
Panel A. SA Index						
Private bidder×SA index(low)	0.165**	0.187**	0.230	0.162**	0.218***	0.183**
	(0.069)	(0.091)	(0.140)	(0.078)	(0.079)	(0.079)
Private bidder×SA index(medium)	0.216***	0.209**	0.199	0.107***	0.190***	0.170***
	(0.061)	(0.083)	(0.130)	(0.038)	(0.060)	(0.065)
Private bidder×SA index(high)	0.093	0.135*	0.119	0.060	0.025	−0.025
	(0.060)	(0.073)	(0.088)	(0.037)	(0.040)	(0.048)
Panel B. Free Cash Flows (FCF)						
Private bidder×FCF(low)	0.103	0.094	−0.011	0.093	0.046	0.027
	(0.081)	(0.126)	(0.110)	(0.069)	(0.064)	(0.073)
Private bidder×FCF(medium)	0.175***	0.164**	0.105*	0.095***	0.158***	0.095*
	(0.058)	(0.065)	(0.063)	(0.031)	(0.054)	(0.052)
Private bidder×FCF(high)	0.176***	0.141**	0.107	0.075***	0.040	0.067*
	(0.061)	(0.065)	(0.074)	(0.028)	(0.032)	(0.040)
Panel C. Leverage						
Private bidder×Leverage(low)	0.220**	0.226*	0.305**	0.108	0.141*	0.079
	(0.108)	(0.117)	(0.152)	(0.075)	(0.074)	(0.087)
Private bidder×Leverage(medium)	0.152**	0.113	0.027	0.122***	0.140**	0.143**
	(0.064)	(0.095)	(0.082)	(0.039)	(0.057)	(0.063)
Private bidder×Leverage(high)	−0.051	0.054	0.007	0.027	0.062*	0.028
	(0.045)	(0.055)	(0.065)	(0.031)	(0.037)	(0.037)

Table 11: **Subsequent Listing and Organizational Form**

This table reports the results of several robustness checks and additional tests. The dependent variables are Δ ROA$(-1,+j)$ or Δ ATO$(-1,+j)$ $(j = 1, 2, 3)$. Only the coefficients of interests are shown. The specifications are otherwise identical to those in Table 7. Standard errors allow for clustering at the firm level and are reported in parentheses. Coefficients denoted by *, **, or *** are significant at the 10%, 5%, or 1% level, respectively.

	Δ ROA			Δ ATO		
	$(-1,+1)$	$(-1,+2)$	$(-1,+3)$	$(-1,+1)$	$(-1,+2)$	$(-1,+3)$
Panel A. Firms not Changing Listing Status Following Takeovers						
Private bidder	0.159***	0.183***	0.203***	0.112***	0.131***	0.112***
	(0.041)	(0.057)	(0.069)	(0.029)	(0.033)	(0.040)
Panel B. Public Parent Ownership						
Private bidder	0.170***	0.182***	0.160**	0.083***	0.088***	0.071**
	(0.042)	(0.055)	(0.069)	(0.030)	(0.032)	(0.038)
Public parent	−0.051	−0.005	0.011	−0.034	0.096	0.056
	(0.096)	(0.140)	(0.185)	(0.054)	(0.081)	(0.083)
Panel C. Private Equity Ownership						
Private bidder	0.131***	0.137**	0.134**	0.089***	0.108***	0.083**
	(0.042)	(0.057)	(0.067)	(0.028)	(0.032)	(0.038)
Non-PE backed	0.052	0.138	0.031	−0.065	−0.080*	−0.074
	(0.093)	(0.119)	(0.167)	(0.040)	(0.044)	(0.056)

Table 12: **Selection on Observables: Propensity Score Matching**

The sample consists of 6,469 deals where 5,367 deals involve a public bidder and the remaining deals have a private bidder from 1997-2010, obtained from Capital IQ. We match each deal with a private bidder to a deal with a public bidder using the nearest neighbour. The variables we use to match are Log(total assets), operating performance one year before the deal and industry fixed effects. Panel A presents differences in the percentage changes of ROA and ATO between private bidders and their propensity score matched public bidders. Symbols *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Panel B reports regression estimates on performance changes of ROA and ATO for the matched sample. Other variables are similar to those in Table 7. Industry (based on three-digit SIC) and year fixed effects are included. Standard errors allow for clustering at the firm level and are reported in parentheses. Coefficients denoted by *, **, or *** are significant at the 10%, 5%, or 1% level, respectively.

Panel A. Differences in the Percentage Change

	From year i to year j		
Private bidder − Matched public bidder	−1 to +1	−1 to +2	−1 to +3
Δ Return on assets (ROA)	14.16%***	15.73%***	19.30%***
Δ Asset turnover (ATO)	8.69%***	10.21%***	10.31%***

	Δ ROA			Δ ATO		
	(−1,+1)	(−1,+2)	(−1,+3)	(−1,+1)	(−1,+2)	(−1,+3)
Private bidder	0.171***	0.197***	0.170***	0.098***	0.127***	0.106***
	(0.044)	(0.052)	(0.058)	(0.026)	(0.031)	(0.034)
ROA/ATO	−0.757***	−0.852***	−1.194***	−0.224***	−0.263***	−0.280***
	(0.131)	(0.189)	(0.278)	(0.026)	(0.034)	(0.033)
Log(revenue)	−0.038**	−0.039*	−0.033	0.003	−0.001	0.018
	(0.019)	(0.021)	(0.025)	(0.014)	(0.014)	(0.015)
Private target	−0.033	−0.016	−0.153	−0.059	−0.061	−0.072
	(0.071)	(0.077)	(0.169)	(0.042)	(0.063)	(0.054)
Relative size	−0.395***	−0.290***	−0.168	−0.217***	−0.217***	−0.187***
	(0.090)	(0.099)	(0.213)	(0.060)	(0.068)	(0.067)
Log(age)	−0.041	−0.009	−0.041	−0.014	−0.010	−0.057**
	(0.027)	(0.034)	(0.036)	(0.015)	(0.023)	(0.023)
Hostile	0.375***	0.354**	0.195	−0.128	−0.083	−0.206**
	(0.143)	(0.157)	(0.321)	(0.093)	(0.117)	(0.101)
Solicited	0.521***	0.443***	0.515*	0.137**	0.147**	0.109
	(0.122)	(0.139)	(0.263)	(0.069)	(0.068)	(0.072)
Diversifying	0.027	0.102	0.072	−0.001	0.023	−0.020
	(0.053)	(0.076)	(0.089)	(0.034)	(0.043)	(0.034)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. Observations	1,205	1,157	1,100	1,182	1,144	1,086
Adjusted R^2	0.157	0.175	0.121	0.186	0.200	0.237

Table 13: **Governance Across Private and Public Bidders**

This table presents descriptive statistics on direct firm-level governance measures for public and private bidders. Takeover Defence Score is an index of 24 of corporate governance provisions from Capital IQ, scaled to range from 0 to 1, with higher values indicating stronger limits to shareholder rights. CEO ownership is the fraction of company shares owned by the CEO (available from year 2000). Outside Top1 Ownership and Outside Top 5 Ownership are the fractions of company shares owned by top 1 and top 5 outside shareholders, respectively (available from year 2004). Symbols *, **, and *** denote values that are significantly different between public and private bidders at the 10%, 5%, and 1% level, respectively.

	Private Bidders			Public Bidders		
	Mean	Median	Obs.	Mean	Median	Obs.
Takeover Defence Score	0.243	0.21	754	0.321***	0.30***	4,960
CEO Ownership	0.068	0.017	423	0.036***	0.002***	4,670
Outside Top1 Ownership	0.492	0.512	237	0.097***	0.071***	3,235
Outside Top5 Ownership	0.605	0.623	184	0.168***	0.136***	3,234

Table 14: **The Agency Cost Channel**

This table reports the results of tests conditioning the private bidder effect on governance characteristics. The dependent variables are Δ ROA$(-1,+j)$ or Δ ATO$(-1,+j)$ $(j = 1, 2, 3)$. Only the coefficients of interests are shown. The specifications are otherwise identical to those in Table 7. Standard errors allow for clustering at the firm level and are reported in parentheses. Coefficients denoted by *, **, or *** are significant at the 10%, 5%, or 1% level, respectively.

	Δ ROA			Δ ATO		
	(−1,+1)	(−1,+2)	(−1,+3)	(−1,+1)	(−1,+2)	(−1,+3)
Panel A. CEO Ownership						
Private bidder×CEO(low)	−0.054	0.079	0.002	0.073	0.166	0.149
	(0.082)	(0.101)	(0.178)	(0.059)	(0.101)	(0.110)
Private bidder×CEO(medium)	0.049	0.218	−0.049	0.083	0.143**	0.122
	(0.101)	(0.203)	(0.172)	(0.066)	(0.071)	(0.081)
Private bidder×CEO(high)	0.199**	0.289***	0.314**	0.143**	0.089**	0.119
	(0.082)	(0.104)	(0.135)	(0.062)	(0.045)	(0.076)
Panel B. Outside Top5 Ownership						
Private bidder×Outside Top5(low)	−0.019	0.094	−0.022	0.065	0.124*	0.117
	(0.059)	(0.097)	(0.076)	(0.064)	(0.073)	(0.079)
Private bidder×Outside Top5(medium)	−0.095	0.016	0.012	0.087	0.096	0.041
	(0.150)	(0.202)	(0.326)	(0.097)	(0.106)	(0.068)
Private bidder×Outside Top5(high)	0.608**	0.734**	0.827***	0.151	0.110	0.294***
	(0.296)	(0.310)	(0.278)	(0.106)	(0.076)	(0.103)
Panel C. Outside Top1 Ownership						
Private bidder×Outside Top1(low)	−0.044	0.084	−0.004	0.026	0.085	0.075
	(0.061)	(0.099)	(0.086)	(0.064)	(0.071)	(0.075)
Private bidder×Outside Top1(medium)	0.011	0.050	0.040	0.086	0.082	0.029
	(0.111)	(0.130)	(0.195)	(0.070)	(0.079)	(0.074)
Private bidder×Outside Top1(high)	0.361*	0.613***	0.725***	0.082	0.061	0.197*
	(0.204)	(0.229)	(0.245)	(0.092)	(0.071)	(0.110)
Panel D. Takeover Defence Score						
Private bidder×TakeoverDefScore(low)	0.149***	0.161***	0.220***	0.132***	0.218***	0.170***
	(0.055)	(0.059)	(0.082)	(0.042)	(0.052)	(0.056)
Private bidder×TakeoverDefScore(medium)	0.042	0.104	0.081	0.120**	0.088	0.097
	(0.054)	(0.125)	(0.074)	(0.056)	(0.064)	(0.079)
Private bidder×TakeoverDefScore(high)	0.082	0.092	0.051	0.032	0.061	0.045
	(0.066)	(0.083)	(0.108)	(0.047)	(0.077)	(0.089)
Panel E. SIC3 HHI						
Private bidder×HHI(low)	0.056	−0.019	0.008	0.012	0.013	−0.035
	(0.071)	(0.077)	(0.114)	(0.037)	(0.044)	(0.044)
Private bidder×HHI(medium)	0.262***	0.287***	0.236**	0.110***	0.062	0.020
	(0.067)	(0.096)	(0.108)	(0.037)	(0.047)	(0.058)
Private bidder×HHI(high)	0.128**	0.230***	0.213**	0.132***	0.234***	0.252***
	(0.062)	(0.076)	(0.097)	(0.051)	(0.056)	(0.056)
Panel F. Hoberg-Philips HHI						
Private bidder×HHI(low)	0.153*	0.170	0.085	0.050	−0.044	−0.115**
	(0.082)	(0.111)	(0.115)	(0.055)	(0.046)	(0.053)
Private bidder×HHI(medium)	0.209***	0.080	0.201	0.114**	0.144**	0.141**
	(0.079)	(0.080)	(0.124)	(0.052)	(0.060)	(0.070)
Private bidder×HHI(high)	0.146***	0.232***	0.215*	0.083***	0.185***	0.163***
	(0.056)	(0.079)	(0.110)	(0.025)	(0.048)	(0.043)