Returns to Acquirers of Public and Subsidiary Targets [*]

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Abstract

Prior research documents that acquirers of public targets earn zero or negative announcement period returns, while acquirers of private and subsidiary targets earn positive returns. This finding is clearly important to managers and stockholders of acquirers and targets. We employ a large sample of public and subsidiary targets to test four previously unexamined theories of the return differential: synergy, target financial liquidity, target valuation uncertainty, and target bid resistance. We find that none of the empirical measures related to these four theories explains the return differential. This is surprising, since the theories have generally found empirical support in other financial areas.

1. Introduction

Prior research documents that acquirers of unlisted targets achieve higher announcement returns than do acquirers of public targets. This return differential holds whether the sample of unlisted targets includes both private firms and subsidiaries together, private firms only, or subsidiaries only.[1] While, a few papers have investigated the causes of the differential, the differential does not appear to have yet been explained. For example, Faccio, McConnell, and Stolin (2006), referring to the prior literature, write (p.197) "Although various hypotheses have been proffered to explain this phenomenon, none have been fully successful (Chang (1998), Fuller, Netter, and Stegemoller (2002), and Hansen and Lott (1996))." Faccio, McConnell, and Stolin are also unable to explain the differential, concluding that (p. 197) "[t]he fundamental factors that give rise to this listing effect…remain elusive."

This acquirer announcement period return differential is important to a number of parties.[2] For example, managers of acquiring firms should be aware of the return differential when selecting acquisition targets. This information likely improves the bargaining ability of both acquirer and target managers as well. Moreover, knowledge of the return differential should benefit the monitoring function of both acquiring and target stockholders. Finally, increased awareness of acquirer returns should inform public policy on takeovers and their regulation.

Our paper tests potential explanations of the acquirer return differential between subsidiary and public targets for a large sample of U. S. mergers. We limit ourselves to subsidiaries because of the difficulty in obtaining data on private targets. In particular, our work employs data,

[1] Some studies (Fuller, Netter, and Stegemoller (2002), Moeller, Schlingemann, and Stulz (2004), Faccio, McConnell, and Stolin (2006), Masulis, Wang, and Xie (2007), Lin, Officer, Zou (2011), and Louis (2013)) report announcement period return performance for private, public and subsidiary targets, other studies (Hansen and Lott (1996), Chang (1998), Ang and Kohers (2001), Capron and Shen (2007), and Mantecon (2008)) report this performance for public and private targets, and Draper and Paudyal (2006) report this performance for listed and unlisted targets.

[2] We refer to the difference in announcement returns to acquirers of public and subsidiary targets as the "acquirer announcement return differential" and the "acquirer return differential" interchangeably.

previously not used in this context, on operating performance, ownership structure, corporate governance, and insider characteristics, information which is not easily obtained for a large sample of private firms.

To our knowledge, only two papers specifically test explanations of the acquirer return differential between subsidiary and public targets. Fuller, Netter, and Stegemoller (2002) suggest diversification discount and liquidity as explanations of the differential. While they do not test the liquidity explanation empirically, they examine the diversification discount hypothesis, concluding that the results in their Table IV provide (p. 1782) "weak evidence that diversified parents will sell subsidiaries at a discount relative to nondiversified parents." Faccio, McConnell, and Stolin (2006) investigate a number of hypotheses including method of payment, blockholder creation, acquirer size, cross-border acquisition, predictability of acquisition, information leakage, and acquirer ownership structure, concluding, as quoted above, that the fundamental factors giving rise to the acquirer return differential "remain elusive."

To test explanations of the acquirer announcement return differential, we use a large sample of U.S. acquisitions of subsidiary and public targets over the period from 1981 to 2012. Consistent with prior literature, we find that acquirers of subsidiary and public targets achieve three-day announcement period returns averaging 2.14% and –1.46%, respectively. The difference is statistically significant and persists over several subperiods.

Our potential explanations, previously unexamined for the acquirer return differential, involve synergy, target financial liquidity (Officer (2007)), target valuation uncertainty (Cooney, Moeller, and Stegemoller (2009)), and target bid resistance (Baron (1983)). A simple explanation for the acquirer return differential is that subsidiary acquisitions generate higher total gains to acquiring and target firms than do public takeovers. However, we find little difference between

the synergies created in public and subsidiary deals. Officer reports that, on average, unlisted targets face greater liquidity constraints than do public targets. Since the need for liquidity may weaken the seller's bargaining position, Fuller, Netter, and Stegemoller (2002) and Officer (2007) posit that the acquisition discount is related to the financial condition of the unlisted target. Yet, we find no relation between the return differential and liquidity. Cooney, Moeller, and Stegemoller (2009) examine returns to acquirers purchasing private targets that had previously withdrawn their IPOs. They argue that, under the assumption that managers are risk-averse and under-diversified, the return differential should reflect compensation for the transfer of uncertainty from the target to the bidder. However, we find little evidence of a relation between the return differential and target valuation uncertainty. Baron (1983) presents a model where, in order to maintain control, the target CEO may resist a merger offer. Resistance, however, may not prevent a successful bid in Baron's model, since the bidder can increase the premium offered. We argue resistance is negatively related to both inside ownership and CEO age and positively related to the relative size of the subsidiary. Our results do not provide evidence that the acquirer return differential is related to any of these three variables. Our paper concludes that none of the four above hypotheses can explain the acquirer announcement return differential. We view this differential as an unsolved puzzle.

The rest of the paper is organized as follows. Our data are described in Section 2. In Section 3, we confirm the acquirer announcement return differential for our sample. Tests of alternative explanations of the return differential are presented in Section 4. Conclusions are drawn in Section 5.

2. Sample Characteristics and Data

Following Fuller, Netter, and Stegemoller (2002), our sample includes all mergers and acquisitions, both foreign and domestic, from Securities Data Corporation's (SDC) Mergers and Acquisitions Database meeting the following criteria:

- The announcement date occurred between January 1, 1981 and December 31, 2012.
- The deal was completed and had a disclosed dollar value.
- The value of the deal was at least $1 million.
- The acquirer purchased more than 50% of the target firm in the transaction.
- The acquirer was a U.S. public company traded on the New York Stock Exchange, American Stock Exchange, or NASDAQ.
- The target was either a public company or a subsidiary of a public company.
- The takeover did not occur within five trading days of another takeover by the same bidder.
- The bidder's share price was above $2 two trading days prior to the announcement.
- Stock prices and accounting data for acquirers, public targets, and parents of subsidiaries are available in the Center for Research in Security Prices (CRSP) U.S. Stock Database and Compustat.

Since our focus is on acquisitions of public and subsidiary targets, we exclude any acquisitions involving private standalone targets. We also exclude acquisitions for which either the SDC can only estimate the announcement date or the SDC finds that the announcement date occurs after the date when the target company is first publicly disclosed as a possible takeover target. Consistent with Moeller, Schlingemann, and Stulz (2004) and Masulis, Wang, and Xie (2007), we eliminate all acquisitions in which the transaction value of the deal is less than 2% of

the acquirer market value, measured two trading days prior to the acquisition announcement date. Finally, we also require that the subsidiary transactions in our sample account for at least 2% of the parent's size in terms of market capitalization.

We read the SDC synopsis of each subsidiary transaction, finding that 125 targets classified as subsidiaries were actually either public or private target firms. News stories reporting these transactions confirm they do not involve a subsidiary. Appendix Table A1 lists these misclassified acquisitions. Excluding these observations, our final sample contains 835 acquisitions of subsidiaries and 2571 acquisitions of public targets.

Table 1 shows the year-by-year breakdown of our full sample as well as the sub-samples of public and subsidiary targets. There is a marked increase in acquisition activity from 1991 through 1998, driven mostly by a rise in acquisitions of public targets. Subsidiaries account for slightly less than a quarter of the acquisitions in our sample.

Descriptive statistics for our full sample as well as for the two subsamples are reported in Table 2. The detailed definitions of all variables are provided in Appendix Table A2. We first report a number of acquisition-specific characteristics. Form of payment is an important determinant of acquirer announcement returns (Travlos (1987), Huang and Walkling (1987), and Wansley, Lane, and Yang (1983)). We collect information on form of payment from the SDC database. About 31% of the acquisitions in our sample are paid for fully with stock. This percentage is comparable to Moeller, Schlingemann, and Stulz (2004), who report that 28% of the acquisitions in their sample are pure equity deals. Deal hostility is another important determinant of acquirer announcement returns (Servaes (1991)). The SDC classifies about 98% of the acquisitions in our sample as friendly. In comparison, Moeller, Schlingemann, and Stulz (2004) report that 99% are friendly acquisitions in their sample. Walkling and Edmister (1985)

and Bradley, Desai, and Kim (1988) conclude that bidder competition reduces acquirer announcement returns. Accordingly, we collect information regarding the existence of multiple bidders from the SDC. Somewhat less than 2% of our deals involve competing bidders, a figure comparable to the prior literature (Moeller, Schlingemann, and Stulz (2004)). Morck, Shleifer, and Vishny (1990) argue that firms benefit from focus within a particular industry, suggesting that mergers with both acquirer and target in the same industry are more beneficial than mergers involving parties in different industries. We consider target and acquirer to be in the same industry if they share the same four-digit SIC code. Of the acquisitions in our sample, about 37% involve target and acquirer in the same industry. Walkling and Edmister (1985) show that the higher the acquirer ownership of target shares prior to an acquisition, the lower the takeover premium. We collect information on acquirer ownership of target shares prior to the announcement from the SDC database. The average toehold in our full sample is less than 1%. Finally, Asquith, Brunner, and Mullins (1983) and Jarrell and Poulsen (1989) find that acquirer returns are positively related to the target's size relative to the acquirer. We define the relative size of the target as the ratio of the value of the deal, as reported by the SDC, to the market value of the acquirer's equity two days prior to the announcement date. While the mean ratio is slightly above 40% for the full sample, the median ratio is around 19%.

We collect the following data on acquirer-specific characteristics: acquirer size, Q-ratio, operating performance, and cash holdings. Moeller, Schlingemann, and Stulz (2004 and 2005) show that acquirer size negatively affects acquirer announcement returns. We measure acquirer size as the market value of equity two trading days prior to the announcement of the acquisition. Acquirer size is positively skewed with a mean (median) value of $5.471 billion ($989 million). Moeller, Schlingemann, and Stulz (2004) report a mean (median) market value for the acquirer

of $3.1 billion ($807 million), while Masulis, Wang, and Xie (2007) report a mean (median) of $5.6 billion ($1.6 billion). Lang, Stulz, and Walkling (1989, 1991) and Servaes (1991) find that acquirers' announcement returns are positively related to their Q-ratios. We calculate the Q-ratio as (market value of equity + book value of total assets – book value of equity) divided by book value of total assets. Market and book values are measured as of the fiscal year end immediately preceding the acquisition announcement. The average Q-ratio for acquirers in our sample of 1.983 is essentially the same as the average acquirer Q of 1.98 reported by Masulis, Wang, and Xie (2007). The average operating cash flows scaled by total assets, our measure of acquirer's operating performance, is 6.8%. On average, acquirers in our sample hold 21.9% of their assets in cash. Moeller, Schlingemann, and Stulz (2004) report higher average operating cash flows of 11.4% but lower average acquirer cash holdings of 14.5%.

Turning to target-specific characteristics, the average deal value of target firms is slightly above $1.25 billion. The distribution of the deal value is positively skewed, with a median of $206 million. Prior research on acquisition pricing controls for the effect of target growth opportunities on takeover premia (see for example, Walkling and Edmister (1985) and Bargeron, Schlingemann, Stulz, and Zutter (2008)). The target Q is on average 1.684, somewhat above the average Q of 1.48 reported by Bargeron et al. (2008). Finally, subsidiary sales account, on average, for 30.8% of the parent's market value, though the median ratio is a much lower 14.2%. Overall, we observe that our sample is comparable to the large acquisition samples used in the prior literature.

We next analyze the differences in means and medians of the samples of subsidiary and public standalone acquisitions, as reported in the last three columns of Table 2. Acquisitions of public standalone targets are significantly more likely to involve stock payments, be hostile, have

competing bidders, and have larger acquirer toeholds. With respect to acquirer characteristics, acquirers of public standalone targets relative to subsidiary targets are larger, have higher Q, and hold more cash. Finally, with respect to target characteristics, public targets are smaller than subsidiary targets but have higher Q-ratios. The remaining characteristics reported in Table 2 are discussed in later sections.

3. Acquirer Announcement Return Differential

In this section, we first estimate the acquirer return differential in our sample. We calculate the acquirer cumulative abnormal return (CAR) as the difference between the return on the acquirer's stock and the return on the CRSP value-weighted market index over the three-day period centered on the acquisition announcement date. Average and median acquirer announcement returns are reported in Panel A of Table 3. For the overall sample, the acquirer announcement returns are, on average, -0.58%. Consistent with prior literature, we observe significantly positive announcement returns to acquirers of subsidiaries and significantly negative announcement returns to acquirers of public targets. The differences in means and medians of 3.61% and 2.13%, respectively, are both statistically significant at the 0.01 level.

Consistent with prior literature, we control for a variety of deal-, acquirer-, and target-specific characteristics discussed previously. We set a public target indicator equal to one if the acquisition involves a public standalone target and zero if the acquisition involves a subsidiary. We use the characteristics in Table 2 of either the acquisition or the acquirer, as well as Target Q, as control variables. In addition, all regressions include acquirer industry indicators (based on one-digit SIC code) and indicators for the year of the acquisition. The standard errors are clustered at the acquirer level to account for multiple takeovers by the same acquirer.

Panel B of Table 3 reports the results of our base regression model. In regression (1), the coefficient on the public target indicator is negative and significant at the 0.01 level. The size of the coefficient indicates that, after controlling for our other variables, announcement returns to acquirers of subsidiaries are on average 2.72% higher than announcement returns to acquirers of public targets. This result is consistent with prior studies documenting that the acquirer return differential between takeovers of subsidiary and public targets is significant and robust to standard control variables.

Among the control variables, acquirers using stock to purchase targets experience significantly lower announcement returns, a result consistent with the prior literature. The coefficient on acquirer size is significantly negative, which is also consistent with prior findings (Moeller, Schlingemann, and Stulz (2004, 2005)). Acquirer cash holdings have a significantly detrimental effect on acquirer announcement returns. Our base model explains about 9% of the variation in the dependent variable, a fit that is also consistent with findings in the prior literature.

In regressions (2), (3), and (4), we split our sample into acquisitions announced in the 1980s, 1990s, and 2000s, respectively. In all three regressions, the coefficients on the public target indicator are significantly negative at the 0.01 level, indicating that the acquirer return differential has persisted over time.

4. Analysis of the Acquirer Announcement Return Differential

In this section, we search for explanations of the acquirer return differential.

A. Synergy

One rationale for mergers is the redeployment of assets to higher-valued uses (Bradley, Desai, and Kim (1988)). Acquisitions may unlock value through more efficient management, economies of scale, improved production techniques, increased market power, or other value-creating mechanisms. Consistent with this theory, Bradley, Desai, and Kim (1988) find that, on average, acquisitions generate a synergy gain around the announcement of a deal.

If acquisitions of subsidiaries create greater synergies than do acquisitions of public targets, acquirer announcement returns may be higher in subsidiary acquisitions. Prior research measures synergy, expressed as a percentage of value, as the combined dollar CAR of both acquirer and target scaled by the market values of the sum of the target and acquirer firms (see for example, Bradley, Desai, and Kim (1988) and Moeller, Schlingemann, and Stulz (2004)). Specifically,

$$Combined\ CAR = \frac{Target\ CAR * Target\ MV + Acquirer\ CAR * Acquirer\ MV}{Target\ MV + Aquirer\ MV} \quad (1)$$

where MV stands for market value.

In column (1) of Table 4, we regress Combined CAR, measured over the three-day period surrounding the announcement date of the acquisition, on the independent variables in Table 3. The coefficient on the public target indicator is significantly positive at the 0.01 level, a result apparently contrary to the hypothesis that subsidiary acquisitions create more value.

However, formula (1) likely biases downward the estimate of synergistic gain for a subsidiary acquisition. While the numerator properly estimates the dollar gain from a subsidiary acquisition, the denominator includes the entire market value of both the target and the bidder.

Since only the subsidiary is being acquired, one can argue that the rest of the target's value should be ignored in the denominator, leaving:

$$Implied\ Combined\ CAR = \frac{Target\ CAR * Target\ MV + Acquirer\ CAR * Acquirer\ MV}{Subsidiary\ Value + Acquirer\ MV} \quad (2)$$

In regression (2) of Table 4, we use Implied Combined CAR as the dependent variable for subsidiary acquisitions, while keeping Combined CAR as the dependent variable for public targets. The coefficient on the public target indicator is negative but indistinguishable from zero, indicating that acquisitions of subsidiaries do not lead to significantly higher Implied Combined CARs than do acquisitions of public targets.

However, since Target CAR and Target MV in formulas (1) and (2) are from the parent, not the subsidiary, measurement errors in both Combined CAR and Implied Combined CAR are likely high when a subsidiary's value is a small fraction of the parent's value. To reduce measurement error here, regressions (3) and (4) repeat the first two regressions of Table 4, excluding any subsidiary whose size is less than 10% of the parent's market value. As with regression (2), the coefficients on the public target indicator in (3) and (4) are insignificantly different from zero. The coefficients on the various independent variables in (3) and (4) are quite similar to each other, perhaps because the difference between the value of Combined CAR and the value of Implied Combined CAR is reduced as the ratio of Subsidiary Value to Target MV rises. We conclude that the acquirer return differential cannot be explained by different levels of synergies in acquisitions of subsidiaries and public targets.

B. Target Financial Liquidity

Fuller, Netter, and Stegemoller (2002) propose that, because of their illiquidity, private and subsidiary targets receive lower prices than do public targets, and acquirers of private and subsidiary targets receive higher returns. For example, the authors state in their conclusion (p. 1792) "We suggest that when bidders acquire private firms or subsidiaries, they are purchasing assets in a relatively illiquid market. Thus, the valuation of those assets reflects a liquidity discount, resulting in a higher return to bidder shareholders."

Officer (2007) studies the acquisition discounts of both subsidiaries and private stand-alone firms. Parallel to Fuller, Netter, and Stegemoller (2002), Officer argues that these unlisted targets face less attractive alternatives to sale than do public stand-alone firms, leading him to conjecture that subsidiaries and private firms sell at discounts relative to publicly-listed targets. This view is reflected in his Hypothesis 1 (p. 576): "On average, unlisted targets sell at discount to (or at a lower premium over "fair value" than) comparable listed targets." His empirical results indicate average multiples for unlisted targets between 15% and 30% less than those paid for public targets. Though Officer examines discounts, he also discusses returns to acquirers, saying in his conclusion (p. 597) "the price paid to access liquidity by selling unlisted assets is reflected in the discounted sale price and, potentially, in the returns accruing to the buyers of unlisted firms."

The empirical literature's finding of high acquirer returns in acquisitions of subsidiary and private targets is consistent with Fuller, Netter, and Stegemoller's and Officer's view on liquidity. However, to test whether liquidity can explain the acquirer return differential, we employ another implication of Officer's work. Officer argues that, if acquirers of unlisted firms receive discounts in exchange for their transfer of liquidity, these discounts should increase with

the seller's liquidity need. This relation is reflected in Officer's Hypothesis 2a (p. 576): "Unlisted targets sell at a greater discount to comparable listed targets when the seller's pre-sale financial condition is worse (fire sales)". The empirical evidence in Officer's article is consistent with this relation.

Our paper studies acquirer returns from acquisitions of subsidiaries. Given Officer's Hypothesis 2a and his empirical finding that the acquisition discount of a subsidiary is negatively related to the parent's liquidity, it is reasonable to hypothesize that Acquirer CARs are negatively related to the liquidity of the subsidiary's parent. The top line in Figure 1 illustrates this negative relation between Acquirer CAR and the parent's liquidity.

Other authors have argued that liquidity needs can also impact acquisitions of public targets. For example, Almeida, Campello, and Hackbarth (2011) model the effect of liquidity on mergers, writing (p. 551), "Our model implies that financially distressed firms might be acquired by other firms in the same industry, even when there are no operational synergies. We call such transactions 'liquidity mergers.' The main purpose of these deals is to reallocate liquidity from firms that have liquidity to those that may be inefficiently liquidated due to a liquidity shortfall." Since ACH's model applies to public, as well as private, targets, we extend Officer's Hypothesis 2a by also considering the liquidity of public targets. Specifically, the other line in our Figure 1 shows a downward relation between Acquirer CAR and the liquidity of a public target. However, one might reasonably expect that the slope is shallower for public targets since, given Officer's point that unlisted targets have less attractive alternatives to sale, an identical decrease in liquidity might well lead to a larger reduction in bargaining power for unlisted targets.

Figure 1 only allows for the possibility that the slope for public targets differs from the slope for subsidiaries. Even if the two lines were identical, liquidity might still explain the acquirer

return differential if the parents of subsidiary targets were, on average, less liquid than public targets. Following Officer (2007), we measure the financial liquidity of a target by its 12-month pre-acquisition CAR (-12,-1), industry-adjusted leverage, industry-adjusted operating cash flows, and industry-adjusted cash holdings.[3] We also measure target liquidity by its Z-score (Altman (2012))[4]. As reported in Table 2, both the average and median values for 12-month pre-acquisition CAR (-12,-1), industry-adjusted cash holdings, and Z-scores are significantly lower for the parents of subsidiaries, while the average and median values for industry-adjusted leverage are significantly higher for these parents. In addition, while average industry-adjusted operating cash flows are insignificantly different between the two samples, median cash flows are significantly higher for public targets. Taken together, these results suggest that the parents of subsidiary targets have less liquidity than do public targets.

We also use four measures of financial constraints as indicators of illiquidity: the WW Index and the WW Index Constrained Indicator, both from Whited and Wu (2006), the HP Index from Hadlock and Pierce (2010), and a Bond Rating Constrained Indicator from Almeida, Campello, and Hackbarth (2011). For the first and third of these measures, Table 2 shows that both the average and median values are significantly lower for parents of subsidiaries than for public targets. In addition, the average values of both the second and fourth measures are significantly lower for the parents of subsidiaries[5]. Since the values of these four measures increase with financial constraints, the evidence suggests that public targets are more constrained than are parents of subsidiaries.

[3] Definitions of all variables are provided in the Appendix Table 2A.
[4] Since Fuller, Netter, and Stegemoller and Officer argue that the subsidiary of an illiquid parent is likely to sell at a discount, it is important to emphasize that, for all our liquidity measures, the tests in this section, like those of Officer, are concerned with the liquidity of the parent, not the liquidity of the subsidiary.
[5] Since both the WW Index Constrained Indicator and the Bond Rating Constrained Indicator can only take on values of 0 and 1, we do not report their medians.

Finally, we employ three measures of financial flexibility as indicators of liquidity: the Agha and Faff (2014) and Uysal (2011) measures of a firm's deviation from its target leverage and the Rapp, Schmid, and Urban (2014) VOFF (for value of financial flexibility) measure. For the Agha-Faff and Uysal measures, both the mean and median leverage deviations are significantly higher for parents of subsidiary targets than for public targets, implying that public targets are less leveraged. Conversely, both the mean and median values of the VOFF measure are significantly higher for public targets, suggesting that shareholders of these firms place more importance on financial flexibility.

In total, the comparisons in Table 2 do not suggest that parents of subsidiaries are less liquid than public targets. While the five financial liquidity measures all imply lower liquidity for parents of subsidiaries, all three measures of financial constraint suggest stronger constraints for public targets. And, while the Agha-Faff and Uysal measures imply higher relative leverage for parents of subsidiaries, the VOFF measure suggests that shareholders of public targets consider financial flexibility to be more valuable. However, these univariate comparisons are not determinative; the relation between acquirer returns and liquidity may still differ between subsidiary and public targets.

Since Officer presents evidence that the relation between acquisition discount and prior stock return is strongest for sales of subsidiaries outside of the parent's main business line, we interact prior stock return with an indicator variable equal to one if the subsidiary is in the parent's core business and zero otherwise. In our regression analyses, we multiply a number of our variables by -1, so that higher values of all of our variables imply greater liquidity. Furthermore, we include (-1 times) the difference between the yield on a Moody's AAA-rated long-dated

corporate bond and the yield on a 30-year Treasury bond to control for the effects of market-wide liquidity.

Parallel to Officer's Hypothesis 2a, we examine in Table 5 whether liquidity can explain the acquirer return differential by regressing Acquirer CAR on our liquidity variables, as well as all the control variables in Panel B of Table 3. Panel A of Table 5 reports findings for the parents of subsidiaries only. We include one measure of the parent's financial liquidity at a time in regressions (1) through (13), while including a number of these financial liquidity variables together in regressions (14) and (15). The regression coefficients on the measures of parent financial liquidity are all insignificantly different from zero at the 5% level in regressions (1), (2), and (5) through (13), findings consistent with the null hypothesis of no relation between Acquirer CAR and the liquidity of the subsidiary's parent. The coefficient on (-1 times) industry-adjusted leverage is positive and significant in regression (3), a result inconsistent with the liquidity of the subsidiary's parent explaining the acquirer return differential. Conversely, the coefficient on industry-adjusted operating cash flows in regression (4) is significantly negative, a result consistent with the liquidity explanation of the differential. Overall, only one of the 13 coefficients on our firm-specific liquidity proxies is consistent with the liquidity explanation of the acquirer return differential; the coefficients on the other 12 variables are either insignificant or inconsistent with the explanation. In addition, the coefficient on (-1 times) the AAA/30-year T-Bond Spread, our measure of market-wide level of liquidity, is significantly positive at the 10% level in regression (12) and significantly positive at the 5% level in the rest of the 13 regressions, results inconsistent with the liquidity explanation.[6]

[6] As alternative measures of market-wide liquidity conditions, we separately use (1) the yield spread between AAA-rated and BBB-rated corporate bonds, (2) the yield spread between AAA-rated corporates and 30-year Treasury bonds, (3) the yield spread between commercial paper and Treasury bills and (4) the annual return on a CRSP 20-

We include most, but not all, of the liquidity measures together as independent variables in regressions (14) and (15). Specifically, we exclude both pre-acquisition CAR interacted with same industry parent and the WW Index in regression (14), since they are highly correlated with pre-acquisition CAR and the WW Index Constrained Indicator, respectively. We also exclude the leverage deviations of both Agha-Faff and Uysal in regression (14), since a number of observations would be lost if these variables were included. None of the measures of parent financial liquidity have significantly negative coefficients in regression (14). In addition, the coefficient on (-1 times) the AAA/30-year T-bond spread, our measure of market-wide financial liquidity, is significantly positive. We include both the Agha-Faff and Uysal measures of leverage deviation in regression (15). None of the measures of parent financial liquidity are significantly negative in this regression. And, as in regression (3), the coefficient on (-1 times) Industry-Adjusted Leverage is significantly positive, a result inconsistent with the liquidity explanation.

Taken together, the results in Panel A do not seem consistent with the liquidity explanation, since none of the coefficients on our liquidity variables are consistently significantly negative. However, the coefficients on liquidity for the parents of subsidiaries could still be different from these coefficients for public targets. We consider this possibility in Panel B, where we use the full sample of subsidiary and public targets. Here, we keep the liquidity variables from Panel A but also interact the public target indicator with our various liquidity measures. The signs, sizes, and significance of the coefficients on the firm liquidity measures are generally consistent with those from Panel A. In particular, while Industry-Adjusted Operating Cash Flows has

year bond. In untabulated results, we find that the coefficients on these variables are generally insignificantly different from zero.

significantly negative coefficients in both panels, no other liquidity variable has a significantly negative coefficient (at the 5% level) in either panel.

In addition, while the coefficient on the interaction between the public target indicator and industry-adjusted leverage times negative one in regression (3) and the coefficient on the interaction between the public target indicator and the Z-score in regression (15) are significantly negative, the coefficients on all other interaction terms in Panel B are insignificant at the 5% level. These results suggest little difference between the liquidity coefficients for parents of subsidiary targets and public targets. We also perform a Chow test in regressions (14) and (15) in order to determine whether the coefficients on the firm-specific liquidity variables jointly differ between public targets and parents of subsidiaries. As reported at the bottom of Panel B of Table 5, the p-values are insignificant, indicating that the coefficients on these liquidity variables do not differ between the two sets of targets. Furthermore, the coefficients on the AAA/30-year T-bond spread are all insignificant at the 5% level. Finally, the coefficients on the public target indicator are significantly negative in 12 of the first 13 regressions in Panel B, as they were in all of the regressions in Table 3B. This constancy in the indicator coefficient is not surprising, since the relation between Acquirer CAR and liquidity is significantly different between subsidiary and public targets for only one financial liquidity measure (-1 times Industry-Adjusted Leverage) in the first 13 regressions. However, the coefficient on the public target indicator variable is insignificant in both regressions (14) and (15), perhaps leading one to conclude that financial liquidity explains the acquirer return differential. Nevertheless, we are skeptical of this interpretation, since so few of the liquidity measures in Panel B have significant coefficients.

The two lines in Figure 1 were drawn to intersect each other at some level of liquidity. While all but one of the coefficients on liquidity variables interacted with the public target indicator in

Table 5 are insignificant, a statistical equivalent of this intersection might still be obtained. That is, the difference between the Acquirer CAR for subsidiaries and the Acquirer CAR for public targets might be insignificantly different from zero at some level of liquidity. To test for this possibility, we follow the procedure of Greene (2011). Specifically, the regressions in Panel B can be written as:

$$\text{Acquirer CAR} = a + \beta_{\text{Public}}\, x\, \text{Public Target Dummy} + \sum_{i=1}^{4} \beta_{\text{Liq}_i}\, x\, \text{Liquidity}_i + \sum_{i=1}^{4} \beta_{\text{Liq}_{i,\text{Public Target}}}\, \text{Liquidity}_i\, x\, \text{Public Target Dummy}, \quad (3)$$

where Liquidity is measured by each of the 13 firm-specific liquidity variables. The marginal effect from switching from a subsidiary target to a public target in equation (3) above is

$$\frac{\partial \text{Acquirer CAR}}{\partial \text{Public Target Indicator}} = \beta_{\text{Public}} + \sum_{i=1}^{4} \beta_{\text{Liq}_{i,\text{Public Target}}} \text{Liquidity}_i \quad (4)$$

Panel C of Table 5 shows that, evaluated at the mean of each financial liquidity variable, the marginal effect is always negative and highly significant.[7] Thus, the acquirer return differential persists at average levels of target liquidity. However, the acquirer return differential may vary with liquidity. For instance, a parent firm with high liquidity may not need to sell its subsidiary at a discount to raise cash. Therefore, we may not observe the return differential when parent firms and public targets are liquid. To examine this possibility, we calculate the marginal effect at the 10th, 25th, 50th, 75th, and 90th percentiles of the target's liquidity distribution. As shown in Panel C of Table 5, the marginal effect remains highly significant in regressions (1) through (13), regardless of the level of the target's liquidity. Hence, the acquirer return differential is still

[7] Standard error is calculated following Greene (2011).

significant across all percentiles. The marginal effect is insignificant at the 10th percentile in regression (14) and insignificant at both the 10th and the 25th percentiles in regression (15), while remaining significant at higher levels of liquidity. Since the financial liquidity explanation implies that the marginal effect vanishes at high, not low, levels of liquidity, the results in regressions (14) and (15) of Panel C are not consistent with this explanation.

This section examines whether the differential between Acquirer CARs for subsidiary and public targets can be explained by liquidity. The results in Table 5 are, as we see it, at odds with this explanation. The relation between Acquirer CAR and liquidity is consistent with the liquidity explanation of the acquirer return differential for only one of the 13 liquidity proxies in Panels A and B. The coefficients on the interaction between liquidity variables and the public target dummy variable in Panel B are almost always insignificantly different from zero. Chow tests jointly examining differences in the liquidity coefficients between public targets and the parents of subsidiaries generate insignificant p-values. The coefficients on our market-wide financial liquidity variable are mostly significantly positive in Panel A, and they are all insignificant in Panel B. The coefficient on the public target indicator variable is almost always significant in regressions (1) through (13) of Panel B and the marginal effects are always significant in regressions (1) through (13) of Panel C. Now, the coefficient on the public target indicator is insignificant in both regressions (14) and (15) of Panel B. However, the marginal effects become insignificant in regressions (14) and (15) of Panel C only at low levels of liquidity, while the liquidity explanation implies that marginal effects should become insignificant at high levels of liquidity. Thus, we interpret our findings as contrary to those of Officer (2007), who reports a negative relation between the subsidiary acquisition discount and

the liquidity of the subsidiary's parent. In conclusion, we do not believe that the acquirer return differential can be explained by financial liquidity.

C. Target Valuation Uncertainty

Cooney, Moeller, and Stegemoller (2009) examine returns to acquirers purchasing private targets that had previously withdrawn their IPOs. The authors argue that, under the assumption that managers are risk-averse and under-diversified, Acquirer CARs should reflect compensation for the transfer of uncertainty from the target to the bidder.[8] They conclude that their findings are consistent with target valuation uncertainty positively affecting acquirer announcement returns. Boone and Mulherin (2008) also document a positive relation between bidder returns and uncertainty.

As with private targets, Acquirer CARs may also be positively related to the valuation uncertainty of either subsidiary or public targets. However, one might expect higher valuation uncertainty for subsidiary targets than for public targets, because of the lack of market prices for subsidiaries. This section investigates whether target valuation uncertainty can explain the differential between Acquirer CARs for acquisitions of subsidiary and public targets.

We employ 10 proxies for target valuation uncertainty, where the target refers to the parent, not the subsidiary, in subsidiary transactions. Following Cooney, Moeller, and Stegemoller (2009), we use the standard deviations of both market-to-book ratios and price-to-earnings ratios for public firms in the same industry as the target. As reported in Table 2, the average and median standard deviations of both market-to-book ratios and price-to-earnings ratios are significantly higher for public targets than for parents of subsidiary targets. In addition,

[8] Mantecon (2008) also offers uncertainty as an explanation of the acquirer return differential in acquisitions of private stand-alone and public targets.

following Officer, Poulsen, and Stegemoller (2009), we use the volatility of the target's residual return calculated over the period from -210 to -11 days prior to the acquisition announcement. As shown in Table 2, residual return volatility is significantly higher for public targets. We use the number of public firms in the target's three-digit SIC code with assets between 20% and 120% of the acquisition's size. The intuition here is that information on comparable public firms facilitates valuation. For the targets in our sample, there are, on average, about 45 comparable firms in the same three-digit SIC codes as our targets. In untabulated results, we find that about 5% of targets in our sample have no similarly-sized public industry peers.[9] Results in Table 2 show that parents of subsidiaries operate in industries with significantly fewer peers than do public targets, suggesting greater uncertainty for parents of subsidiaries.

Following Rhodes-Kropf, Robinson, and Viswanathan (2005), we decompose each firm's market-to-book ratio into three components (expressed in logarithms): (1) a firm-specific error, which captures the difference between a firm's market value and its fundamental value conditional on a specific time and the firm's sector, (2) a sector-specific error, which captures the difference between a firm's fundamental value as of a particular time and its long-run value, and (3) a long-run value-to-book component, which captures the difference between a firm's long-run value and its book value. We use the absolute value of the first component and the absolute value of the sum of the first two components as measures of a target's valuation uncertainty. Both the means and medians of the absolute values of both Firm-Specific Error and the sum of Firm-Specific Error plus Sector-Specific Error are significantly higher for the parents of subsidiaries than for public targets, suggesting greater uncertainty for parents.

[9] When we use two-digit SIC codes, we find that fewer than 0.6% of the targets in our sample come from industries with no other publicly traded firm of similar size. Defining industries by two-digit, rather than three-digit, SIC codes does not affect our conclusions. When we winsorize the number of public peers at the 99th or the 95th percentile, our conclusions are not affected.

In addition to the valuation uncertainty hypothesis, Cooney, Moeller, and Stegemoller also proffer a behaviorally-based hypothesis that a target is likely to bargain less (more) aggressively if the acquirer's offer price is high (low) relative to a prior value, leading to a higher (lower) Acquirer CAR. We use the signed values, as opposed to the absolute values, of both Firm-Specific Error and the sum of Firm-Specific Error plus Sector-Specific Error to test Cooney, Moeller, and Stegemoller's behavioral hypothesis. The median of Firm-Specific Error is significantly higher for the parents of subsidiaries, while the mean of the sum of the two errors is significantly higher for public targets.

Following Zhang (2006), we use both the number of analysts following the firm and the dispersion in analysts' forecasts. Both the mean and median values for Number of Analysts are significantly higher for parents of subsidiaries, a result suggesting more uncertainty for public targets. However, both the mean and median values of Analyst Forecast Dispersion are significantly higher for parents of subsidiaries, suggesting more uncertainty for parents.

Our 11th proxy, which follows Mantecon (2008), uses the number of news releases of the public target and the subsidiary[10] as a measure of valuation uncertainty. Both the mean and the median values of Number of News Releases are significantly higher for public firms, evidence suggesting greater valuation uncertainty for subsidiaries.[11]

Taken as a whole, the comparisons in Table 2 are not supportive of the valuation uncertainty explanation of the acquirer return differential. For four of the 11 proxies (Standard Deviation of Industry Market-to-Book Ratio, Standard Deviation of Industry Price-to-Earnings Ratio, Residual Volatility, and Number of Analysts), the significant differences in both means and

[10] We thank the referee for suggesting the number of news releases of the public target and the subsidiary as a measure of target valuation uncertainty.

[11] As with Mantecon (2008), we adjust Number of News Releases for firm size, which explains the reported negative means and medians in Table 2.

medians suggest less uncertainty for parents of subsidiaries than public targets. Conversely, for five proxies (Number of Similarly-Sized Public Firms in the Same Industry, Absolute Value of Firm-Specific Error, Absolute Value of the Sum of Firm-Specific and Sector-Specific Error, Analyst Forecast Dispersion, and Number of News Releases), the significant differences in means and medians suggest less uncertainty for public targets. Furthermore, Cooney, Moeller, and Stegemoller's behaviorally-based hypothesis implies that Acquirer CARs should be higher for targets with either a higher Firm-Specific Error or a higher sum of Firm-Specific Error plus Sector-Specific Error. However, while the median Firm-Specific Error is significantly higher for parents of subsidiaries, the mean of the sum of the two errors is significantly higher for public targets. Nevertheless, these univariate comparisons are not determinative; the relation between acquirer returns and valuation uncertainty may still differ between public and subsidiary targets.

In Panel A of Table 6, we regress Acquirer CARs on our various measures of target valuation uncertainty, as well as on the independent variables of Table 3, Panel B.[12] We multiply the number of similarly-sized firms in the industry, the number of analysts, and the number of news releases by negative one so that, like our other variables, a higher value implies greater uncertainty.

We use the subsample of subsidiary acquisitions in Panel A of Table 6. We include one measure of the parent's uncertainty at a time in regressions (1) through (11), while including a number of these uncertainty measures together in regressions (12) through (15). In regression (4), the coefficient on (-1 times) Number of Similarly-Sized Public Firms in Same Industry is significantly positive, a result consistent with the target valuation uncertainty explanation of the acquirer return differential. However, the regression coefficients on the various measures of

[12] We lose observations relative to the sample used in Table 3 due to insufficient data. We note that, in unreported results, the loss of observations does not affect the conclusions of Table 3.

uncertainty are insignificantly different from zero at the 5% level in regressions (1), (3), and (5) through (11). In addition, the regression coefficient on Industry P/E Stdev in (2) is significantly negative at the 10% level, a result inconsistent with the uncertainty explanation.

We include most, but not all, of the uncertainty measures as independent variables in regressions (12) through (15). Specifically, only one of the four variables from Rhodes-Kropf, Robinson, and Viswanathan is included in each of these regressions. We also exclude both Number of Analysts and Analyst Forecast Dispersion / Price in all four of these regressions, since a number of observations would be lost if these variables were included. Only (-1 times) Number of Similarly-Sized Public Firms in Same Industry has a significantly positive coefficient in regressions (12) through (15).

Panel B of Table 6 uses the combined sample of subsidiary and public acquisitions. As in Panel A, the coefficient on (-1 times) Number of Similarly-Sized Public Firms in Same Industry is significantly positive at the 5% level in regressions (4) and (12) through (15), a result consistent with the target valuation uncertainty explanation. However, also as in Panel A, the coefficients on the other measures of uncertainty are either insignificant or, in the case of Industry P/E Stdev, significantly negative at the 10% level.

As with the tests on liquidity in Table 5, our measures of valuation uncertainty are also interacted with the public target indicator. If, due to the lack of market prices, valuation uncertainty is actually greater for subsidiary acquisitions, the coefficients on the interaction terms might be significantly negative. However, the coefficients on the interaction terms are, except for the interaction term involving (-1 times) Number of Analysts which has a significantly positive coefficient, all insignificant (at the 5% level), results we view as inconsistent with the target valuation uncertainty hypothesis. In accord with these results, Chow tests examining

whether the coefficients on the valuation uncertainty variables jointly differ between public targets and parents of subsidiaries generate insignificant p-values in regressions (12) through (15).

In all 15 regressions of Panel B, the coefficient on the Public Target Indicator is significantly negative at the 5% level (and significantly negative at the 1% level for 14 of the 15 regressions), results similar to those in Panel B of Table 3. However, when discussing the results of Table 5, we noted that the difference between the Acquirer CAR for subsidiaries and the Acquirer CAR for public targets might still be insignificantly different from zero at some level of liquidity. Panel C of Table 5 tested this proposition. Analogously, we now test in Panel C of Table 6 the proposition that the differences in Acquirer CARs are insignificantly different from zero at some level of valuation uncertainty. In 10 of the 11 regressions involving a single measure of valuation uncertainty, the marginal effect of the public target indicator is significantly different from zero at either the 5% or the 1% level for all percentiles. Regressions (12) through (15) employ multiple uncertainty measures as independent variables. While most of the percentiles in these regressions show significance for the marginal effect of the public target indicator, the marginal effect is insignificant at the 10^{th} percentile in regressions (14) and (15), results suggesting that the acquirer return differential vanishes at low levels of uncertainty.

The results in Table 6 show little relation between Acquirer CAR and our measures of target valuation uncertainty. In Panels A and B, Acquirer CAR is significantly positively related (at the 5% level) to one measure of uncertainty, (-1 times) Number of Similarly-Sized Firms, while being insignificantly related (at the 5% level) to the other 10 measures. In Panel B, Acquirer CAR is significantly related to the interaction of the Public Target Indicator and (-1 times) Number of Analysts, while being insignificantly related to the other 10 interaction terms. Chow

tests jointly examining differences in the valuation uncertainty coefficients between public targets and parents of subsidiaries provide insignificant p-values. The coefficient on Public Target Indicator is always significantly negative in Panel B. Finally, the great majority of the marginal effects coefficients in Panel C are significant at either the 5% or the 1% level. However, the marginal effect coefficient is insignificant at the 10^{th} percentile in regressions (14) and (15), a result consistent with the target valuation uncertainty hypothesis implying no acquirer return differential at low levels of uncertainty.

One interpretation is simply that, taken as a whole, our results suggest that the impact of target valuation uncertainty on Acquirer CAR is weak at best and non-existent at worse. There is, however, another interpretation. Building on the theoretical model of Hansen (1987), Officer, Poulsen, and Stegemoller (2009) present empirical evidence that, for acquisitions of private firms where the method of payment is less than 90% stock, Acquirer CARs are negatively related to the asymmetric information of the target. Since (1) Hansen shows that stock consideration mitigates the asymmetric information effect, (2) our sample contains many cash deals, and (3) targets with high valuation uncertainty likely have high levels of asymmetric information, our mixed results might reflect the offsetting effects of a positive relation between Acquirer CAR and uncertainty and a negative relation between Acquirer CAR and asymmetric information. A sample of only stock deals might allow one to examine the relation between Acquirer CAR and uncertainty, while abstracting from the relation between Acquirer CAR and asymmetric information. In untabulated results, we consider only the stock deals in our sample, finding similar results to those reported in Table 6. Hence, even in a sample of stock deals, target valuation uncertainty does not explain the acquirer return differential.

D. Target Bid Resistance

Prior empirical work indicates that takeovers are a significant and direct threat to target CEOs and other managers. For example, Jensen (1988) finds that approximately 50% of top-level target managers are separated from their company within three years of acquisition. Agrawal and Walkling (1994) report that 55% of target executives are unemployed during the three years after the announcement of a deal and identify only four cases where a target firm CEO assumes a senior executive position at another firm in the year following the bid. Hartzell, Ofek, and Yermack (2004) document that, within two years of a takeover, the target CEO has an 18.6% chance of staying with the combined firm, an 8.1% probability of serving as Chairman, CEO, or President of the combined firm, and a 14.8% chance of becoming the CEO of another firm. The authors conclude that (p. 49) "for those CEOs who leave, their exit from the firm very often represents the end of their careers."

Target CEOs may resist a takeover in order to maintain control. Baron (1983) presents a model where the target's management considers rejecting a deal. Resistance, however, may not prevent a successful bid in the model, since the bidder can increase the premium offered. If the acquiring firm is intent on completing the deal, the target firm CEO will eventually succumb to the inevitability of a rich premium.

Since the Baron model predicts higher premiums for resisting firms, one would expect a negative relation between bid resistance and Acquirer CARs.[13] However, resistance should be stronger when the target is a public firm rather than a subsidiary, because executives of parent

[13] Alternatively, one might test the bid resistance hypothesis by analyzing premiums. That is, if the acquirer return differential is driven by target CEOs' career considerations, such an effect should also be present in the premiums that target shareholders receive. However, the premiums for subsidiary sales are not directly observable. Furthermore, imputing a premium to a subsidiary sale introduces measurement error and results in a variable with a wide and non-normal distribution (skewed and platykurtic). Due to these reasons and due to the focus of our research, we examine acquirer returns.

firms selling subsidiaries, unlike their standalone counterparts, are unlikely to lose their positions as a direct result of the acquisition. Therefore, bid resistance is a possible explanation for the differential between Acquirer CARs in subsidiary and public acquisitions. We test this bid resistance hypothesis by examining three variables potentially related to target resistance: inside ownership, subsidiary size, and CEO age.

i. Inside Ownership

While job security is a powerful incentive to oppose takeovers, target managers owning their company's stock also gain from takeovers. Therefore, bid resistance is likely negatively related to the inside ownership of target managers. Since the bid premium is related to the level of resistance in the Baron model, we posit a positive relation between Acquirer CAR and inside ownership. We collect inside ownership from Compact Disclosure. Due to data availability, our sample is reduced to 1,710 observations. Table 7 reports the results of two regressions of Acquirer CAR on inside ownership, as well as the control variables of Table 3. In regression (1), the coefficient on inside ownership is insignificantly different from zero for the sample of parents of subsidiary targets. This finding deviates from the positive relation between Acquirer CAR and ownership under the target resistance hypothesis. However, it is perhaps not surprising since, as we said above, resistance is likely stronger when the target is a public firm.

We add both an indicator variable for public targets and an interaction term between inside ownership and this indicator variable in regression (2). The coefficients on both inside ownership and the interaction term are insignificantly different from zero while the coefficient on the public target indicator is still significantly negative, again results inconsistent with the bid resistance hypothesis. The results in Panel A of Table 7 do not suggest that the difference in Acquirer CAR between subsidiary and public targets can be explained by inside ownership. Nevertheless, this

difference may still be insignificantly different from zero at some level of inside ownership. Panel B tests this possibility. We find, however, that the marginal effects of the subsidiary indicator are significantly different from zero at all percentiles represented in the panel, implying that the differential in CARs is still significant at these percentiles.

Stulz, Walkling, and Song (1990) argue that target premia should be positively related to inside ownership since, as inside ownership increases, a greater percentage of outside owners must tender to effectuate a successful acquisition. The empirical evidence in both Stulz, Walkling, and Song (1990) and Song and Walkling (1993), both using data from the 1970s and 1980s, supports their hypothesis. The view of Stulz, Walkling and Song (1990) might well lead to a negative relation between inside ownership and Acquirer CAR. Conversely, Moeller (2005) points out that managerial control is likely positively related to inside ownership. As control increases, target managers become better able to tradeoff premium for side benefits, such as lucrative retirement packages. Furthermore, Moeller states (p. 168) “Mergers and acquisition activity in the 1980s was characterized by spectacular hostile transactions, while in the 1990s the vast majority of transactions were on friendly terms.” Because target managers should have more control in friendly transactions, Moeller posits that the negative relation between inside ownership and target premia should be stronger in the 1990s and, using data beginning in 1990, he indeed finds evidence of this negative relation.

Since the relation between Acquirer CAR and inside ownership might be stronger over a later time period, we rerun the regressions of Table 7 using only mergers with announcement dates subsequent to Moeller’s starting date. In untabulated work, we find results qualitatively similar to those in the table. However, we lose only 44 observations in regression (1) and 71 observations in regression (2) by eliminating earlier observations, so it is perhaps not surprising

that the results are qualitatively the same for this smaller sample. Nevertheless, the results in Table 7 do not suggest that the difference in bidder returns between subsidiary and public targets can be explained by the bid resistance hypothesis.

ii. Relative Size of the Subsidiary

For three reasons, we conjecture that bid resistance among parents selling subsidiaries is positively related to the relative size of the subsidiary. First, while we argued above that executives of parent firms selling subsidiaries, unlike their public counterparts, are not likely to lose their jobs as a direct result of a merger, the resulting reduction in firm size may increase the likelihood that the entire firm itself will be acquired at a later date. For example, Comment and Schwert (1995) compare target and non-target public firms, stating (p. 14) "the largest *t*-statistic [for differences-in-means tests] is by far for (the log of) size, confirming the well-known fact that small firms are more likely to be acquired." In fact, among accounting and stock market predictors of takeover activity, only firm size is statistically significant (Betton, Eckbo, and Thorburn (2008) and Cremers, Nair, and John (2009)), though its economic significance is limited. Second, CEO pay is positively related to firm size (see, for example, Rosen (1982) and Gabaix and Landier (2008)), perhaps inducing a CEO to resist large asset sales more forcefully. Third, the distinction between the sale of a subsidiary and the sale of an entire firm is likely blurred as the size of the subsidiary increases. In the limit, the sale of a subsidiary containing 100% of the parent's assets is identical to the sale of a public firm.

We relate Acquirer CAR to the size of the subsidiary in Table 8. In the first model, Acquirer CAR is regressed on the relative size of the subsidiary, defined as the ratio of the subsidiary's sale price to the market value of the parent's assets. The control variables of Table 3 are also included as independent variables here. The coefficient on relative size, while positive, is

insignificantly different from zero. To test for non-linearities, we define an indicator variable equal to one if the relative size of the subsidiary is above the 90^{th} (75^{th}) percentile of our sample of subsidiary sales and zero otherwise. Acquirer CAR is separately regressed on these two indicator variables in regressions (2) and (3). In both regressions, the coefficient on the indicator variable is insignificantly different from zero. Taken together, the insignificant coefficients on various specifications of relative size in Table 8 do not support the idea that bid resistance is related to the relative size of the subsidiary.

iii. Age of the CEO

Finally, since a job loss from merger may impact a younger executive more negatively, due to the length of his remaining working life, age might explain the difference in Acquirer CARs between public and subsidiary targets. Acquirer CARs involving public targets might be lower for younger target CEOs, since they would resist takeovers more strongly. However, the age of the target CEO should be less important for subsidiary acquisitions, since the target CEO would not expect to be removed upon sale of the subsidiary.

Jenter and Lewellen (2011) present evidence that, in a sample of public mergers, the probability of a takeover bid is higher, while the takeover premium and the target announcement return are both lower, for targets with CEOs above 65. The authors conclude that the threat of job loss from merger impacts younger target CEOs more adversely, increasing their resistance to takeovers. Furthermore, Jenter and Lewellen (2011) present evidence that bid resistance falls discretely at 65, rather than diminishing monotonically with age. However, using a number of age specifications, the authors find no evidence that age affects Acquirer CAR.

For our sample of public targets only, we also perform a number of regressions of Acquirer CAR on age. We specify age as a continuous variable, as a dummy variable equal to one if the

CEO is 65 or older and zero otherwise, and as a dummy variable equal to one if the CEO is 60 or older (Kaplan and Minton (2010)). As with Jenter and Lewellen (2011), we find no relation between Acquirer CAR and age in any of our (untabulated) regressions. In addition, using our sample of both public and subsidiary targets, we regress Acquirer CAR on age, also interacting age with a dummy variable equal to one if the acquisition is a subsidiary. Again, all coefficients in our (untabulated) regressions relating Acquirer CAR to age for public targets and all coefficients relating the difference between Acquirer CARs in the subsidiary and public samples to age are insignificant. We conclude that age does not explain the Acquirer CAR differential between public and subsidiary targets.

In conclusion, our tests do not find evidence that bid resistance explains the differential in Acquirer CAR between subsidiary and public mergers. Baron's model (1983) predicts higher premiums from target resistance. We posit that this resistance is negatively related to both inside ownership and age and positively related to the relative size of the subsidiary. However, we do not find evidence that Acquirer CAR is related to any of these three variables.

5. Conclusion

The empirical literature documents that acquirers of public targets earn zero or negative announcement period returns, while acquirers of both private and subsidiary targets earn positive returns. This acquirer return differential is obviously important to a number of parties. Managers of acquiring firms should be aware of the differential when selecting targets. In addition, this information likely improves the bargaining ability of both acquirer and target managers. Knowledge of the differential should enhance the monitoring function of both acquiring and target stockholders as well. And, awareness of acquirer returns should inform public policy on takeovers and their regulation.

While a few papers have investigated the causes of the acquirer return differential, the differential does not appear to have yet been explained. Our paper attempts to provide an explanation. We limit ourselves to subsidiaries and public targets because of the difficulty in obtaining data on private targets. We first confirm that the acquirer return differential exists in a large sample of U.S. acquisitions and show that the differential is robust to time period, as well as to a number of acquirer and target characteristics.

We then analyze explanations of the acquirer return differential related to synergy, target financial liquidity, target valuation uncertainty, and target bid resistance. Acquirer returns would likely be higher with subsidiary acquisitions if these acquisitions create larger synergies. However, we find that synergies, as measured by the combined announcement period return of both acquirer and target, are similar for public and subsidiary deals. Prior research (Officer (2007)) has documented that liquidity constraints are greater for subsidiary than for public targets. Because these constraints are likely to weaken a firm's bargaining position, both Fuller, Netter, and Stegemoller (2002) and Officer suggest that an unlisted target's financial condition affects its acquisition discount. However, we find no relation between the liquidity of the subsidiary's parent and the acquirer's announcement return. Cooney, Moeller, and Stegemoller (2009) argue that, if acquiring managers are under-diversified and risk-averse, acquirer returns should reflect the transfer of risk from the target to the acquirer. Nevertheless, we find little evidence of a relation between valuation uncertainty and Acquirer CARs. Baron (1983) develops a model where the management of a target considers declining a merger offer in order to maintain control. However, if the acquirer is intent on completing the transaction, the target firm's CEO may eventually accept a large premium. We posit that resistance is negatively related to both insider ownership and age, but positively related to the relative size of the

subsidiary. However, we do not find a relation between any of these three variables and acquirer returns. We conclude that none of these theories explain the difference in acquirer performance. This conclusion is surprising, since the hypotheses have generally found empirical support in other financial areas. Our results suggest that the announcement return differential between subsidiaries and public targets continues as an unexplained empirical phenomenon.

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Figure 1 - Acquirer CAR vs. Target Financial Liquidity

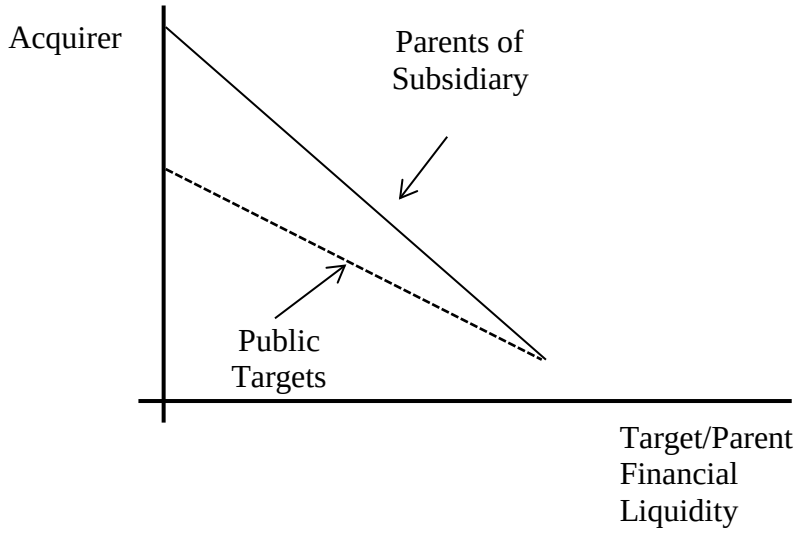

Table 1 - Sample Distribution

This table shows the distributions of acquisitions of subsidiary and public standalone targets. The sample comes from SDC and includes completed acquisitions of at least $1 million announced between 1981 and 2012 by U.S. acquirers traded on the AMEX, NASDAQ, or NYSE in which the bidder acquires at least 50% of the target company. It excludes deals occurring within two trading days of another of the acquirer's acquisitions, deals of bidders with a stock price less than $2 two days prior to the announcement, deals for which CRSP data are unavailable for the bidder, deals for which SDC can only estimate the announcement date, deals for which SDC finds that the announcement date occurs after the date when the target company is first publicly disclosed as a possible takeover target. Subsidiaries smaller than 2% of market value of parent's equity are deleted. Acquisitions for which the target is smaller than 2% of acquirer's market value are deleted.

Year	Full Sample	Subsidiary		Public Standalone	
1981	32	7	21.9%	25	78.1%
1982	35	7	20.0%	28	80.0%
1983	53	24	45.3%	29	54.7%
1984	92	51	55.4%	41	44.6%
1985	74	26	35.1%	48	64.9%
1986	75	21	28.0%	54	72.0%
1987	77	26	33.8%	51	66.2%
1988	68	25	36.8%	43	63.2%
1989	61	27	44.3%	34	55.7%
1990	41	19	46.3%	22	53.7%
1991	52	27	51.9%	25	48.1%
1992	66	29	43.9%	37	56.1%
1993	75	35	46.7%	40	53.3%
1994	161	47	29.2%	114	70.8%
1995	188	45	23.9%	143	76.1%
1996	192	45	23.4%	147	76.6%
1997	252	47	18.7%	205	81.3%
1998	267	49	18.4%	218	81.6%
1999	244	39	16.0%	205	84.0%
2000	175	27	15.4%	148	84.6%
2001	128	13	10.2%	115	89.8%
2002	106	39	36.8%	67	63.2%
2003	115	19	16.5%	96	83.5%
2004	125	20	16.0%	105	84.0%
2005	109	26	23.9%	83	76.1%
2006	106	14	13.2%	92	86.8%
2007	97	14	14.4%	83	85.6%
2008	72	13	18.1%	59	81.9%
2009	70	13	18.6%	57	81.4%
2010	73	11	15.1%	62	84.9%
2011	52	15	28.8%	37	71.2%
2012	73	15	20.5%	58	79.5%
Total	3,406	835	24.5%	2,571	75.5%

Table 2 - Sample Characteristics

This tables shows the distibution of sample characteristics. Sample is described in Table 1. The variables are defined in Appendix Table A2. ***, **, and * denote statistical significance at 0.01, 0.05, and 0.1 level, respectively.

		All	Subsidiary	Public	Difference: Sub - Pub
Acquisition Characteristics					
Consideration = Stock	*Ave*	0.313	0.019	0.409	-0.390 ***
Friendly	*Ave*	0.981	0.996	0.976	0.021 ***
Competing Bidder Indicator	*Ave*	0.016	0.002	0.020	-0.017 ***
Acquirer = Parent/Target Industry	*Ave*	0.367	0.349	0.373	-0.024
Toehold	*Ave*	0.006	0.000	0.008	-0.007 ***
	Med	0.000	0.000	0.000	0.000
Relative Size	*Ave*	0.405	0.372	0.416	-0.044 *
	Med	0.194	0.140	0.214	-0.074 ***
Acquirer Characteristics					
Acquirer MV (million)	*Ave*	$5,471	$2,492	$6,439	-$3,946 ***
	Med	$989	$525	$1,238	-$712 ***
Acquirer Q	*Ave*	1.983	1.691	2.078	-0.387 ***
	Med	1.367	1.345	1.375	-0.030 ***
Acquirer Operating CF	*Ave*	0.068	0.074	0.066	0.008 *
	Med	0.071	0.080	0.066	0.014 ***
Acquirer Cash Holdings	*Ave*	0.219	0.185	0.230	-0.045 ***
	Med	0.101	0.088	0.105	-0.018 ***
Target Characteristics					
Deal Value (million)	*Ave*	$1,257	$2,342	$905	$1,437 ***
	Med	$206	$556	$162	$394 ***
Target Q	*Ave*	1.684	1.382	1.782	-0.401 ***
	Med	1.217	1.196	1.231	-0.035 ***
Subsidiary Relative Size	*Ave*	0.308	0.308		
	Med	0.142	0.142		

Table 2, continued

		All	Subsidiary	Public	Difference: Sub - Pub
Target Characteristics, continued					
12-Month Pre-Acquisition CAR (-12,-1)	*Ave*	0.029	-0.032	0.050	-0.082 ***
	Med	-0.047	-0.064	-0.038	-0.026 ***
Industry-Adjusted Leverage	*Ave*	-0.011	0.010	-0.018	0.028 ***
	Med	-0.029	-0.010	-0.033	0.023 ***
Industry-Adjusted Operating CF	*Ave*	0.032	0.102	0.009	0.093
	Med	0.000	-0.008	0.002	-0.010 ***
Industry-Adjusted Cash Holdings	*Ave*	0.002	-0.033	0.013	-0.047 ***
	Med	-0.029	-0.038	-0.026	-0.012 ***
Z-score	*Ave*	4.115	2.778	4.549	-1.771 ***
	Med	2.335	2.229	2.397	-0.169 **
Whited-Wu (WW) Index	*Ave*	-0.298	-0.361	-0.278	-0.083 ***
	Med	-0.296	-0.369	-0.276	-0.093 ***
Whited-Wu (WW) Index Constrained Indicator	*Ave*	0.095	0.035	0.114	-0.078 ***
Hadlock-Pierce (HP) Index	*Ave*	-3.298	-3.746	-3.154	-0.592 ***
	Med	-3.257	-3.710	-3.127	-0.583 ***
Bond Rating Constrained Indicator	*Ave*	0.498	0.245	0.580	-0.335 ***
Agha-Faff (AF) Leverage Deviation	*Ave*	0.011	0.028	0.005	0.023 ***
	Med	-0.012	-0.004	-0.014	0.010 **
Uysal Leverage Deviation	*Ave*	-0.001	0.013	-0.005	0.018 ***
	Med	-0.002	0.005	-0.004	0.008 ***
Value of Financial Flexibility (VOFF)	*Ave*	0.765	0.711	0.783	-0.072 ***
	Med	0.796	0.711	0.820	-0.109 ***
Industry M/B Stdev	*Ave*	1.066	0.811	1.149	-0.337 ***
	Med	0.574	0.487	0.618	-0.131 ***
Industry P/E Stdev	*Ave*	84.0	60.7	91.5	-30.8 ***
	Med	21.1	13.4	24.4	-11.0 ***
Residual Volatility (-210,-11)	*Ave*	0.032	0.028	0.033	-0.005 ***
	Med	0.027	0.022	0.028	-0.006 ***
Number of Similarly-Sized Public Firms in Same Industry	*Ave*	45.18	16.75	54.42	-37.67 ***
	Med	15.00	6.00	25.00	-19.00 ***
|Firm-Specific Error|	*Ave*	0.476	0.584	0.442	0.142 ***
	Med	0.347	0.390	0.333	0.057 ***
|Sum of Firm-/Sector-Specific Errors|	*Ave*	0.511	0.608	0.480	0.128 ***
	Med	0.388	0.423	0.382	0.041 ***
Firm-Specific Error	*Ave*	0.081	0.052	0.091	-0.039
	Med	0.090	0.140	0.073	0.067 **
Sum of Firm-/Sector-Specific Errors	*Ave*	0.135	0.085	0.151	-0.066 **
	Med	0.136	0.154	0.130	0.024
Number of Analysts	*Ave*	6.94	9.44	6.36	3.08 ***
	Med	5.00	8.00	4.00	4.00 ***
Analyst Forecast Dispersion / Price	*Ave*	0.008	0.013	0.007	0.006 **
	Med	0.002	0.003	0.002	0.001 ***
Number of News Releases (Sub/Pub Tgt)	*Ave*	-0.017	-13.750	4.442	-18.192 ***
	Med	-8.469	-24.993	-4.728	-20.264 ***

Table 3 - Analysis of Acquirer CAR (-1,+1)

This table reports the analysis of acquirer announcement returns. Panel A shows univariate tests of Acquirer CAR around the announcements of acquisitions. The sample is described in Table 1. The variables are defined in Appendix Table A2. Panel B shows regression analyses of Acquirer CAR. All regressions include acquisition year and acquirer industry indicators. Regression 2 includes period indicators. Heteroskedastic standard errors corrected for clustering due to multiple acquisitions by the same acquirer are used. *p*-values (in parentheses). ***, **, and * denote statistical significance at 0.01, 0.05, and 0.1 level, respectively.

Panel A		All (N = 3,406)	Subsidiary (N = 835)	Public (N = 2,571)	*Difference:* Subsidiary - Public
Acquirer CAR	*Ave*	-0.58% ***	2.14% ***	-1.46% ***	3.61% ***
	Med	-0.52% ***	1.06% ***	-1.08% ***	2.13% ***

Table 3, continued

Panel B	(1)	(2)	(3)	(4)
	Full Sample	1981-1989	1990-1999	2000-2012
Public Target Indicator	-2.72***	-1.64***	-2.94***	-2.85***
	(0.000)	*(0.007)*	*(0.000)*	*(0.000)*
Control Variables:				
Consideration = Stock	-1.33***	-0.87	-1.42***	-1.21*
	(0.000)	*(0.263)*	*(0.001)*	*(0.054)*
Friendly	-1.17	0.52	-1.60	-2.06
	(0.127)	*(0.601)*	*(0.260)*	*(0.195)*
Competing Bidder Indicator	0.68	-1.40	-0.23	2.50
	(0.481)	*(0.305)*	*(0.896)*	*(0.145)*
Acquirer SIC = Parent/Target SIC	0.39	1.61**	0.73*	-0.34
	(0.136)	*(0.014)*	*(0.059)*	*(0.457)*
Toehold	0.01	-0.01	0.04	-0.01
	(0.538)	*(0.699)*	*(0.423)*	*(0.886)*
Relative Size	0.54	1.54***	0.19	-0.34
	(0.208)	*(0.000)*	*(0.808)*	*(0.708)*
log(Acquirer MV)	-0.34***	-0.57***	-0.34**	-0.31**
	(0.000)	*(0.008)*	*(0.012)*	*(0.020)*
Acquirer Q	0.01	0.05	0.08	-0.02
	(0.910)	*(0.842)*	*(0.643)*	*(0.735)*
Acquirer Operating CF	1.34	-0.52	1.68	1.14
	(0.413)	*(0.934)*	*(0.478)*	*(0.664)*
Acquirer Cash Holdings	-1.99***	-1.65	-2.58**	-1.34
	(0.005)	*(0.397)*	*(0.017)*	*(0.228)*
Target Q	0.01	0.29	-0.07	0.05
	(0.960)	*(0.494)*	*(0.620)*	*(0.909)*
Intercept	8.43***	2.21	6.53***	9.41***
	(0.000)	*(0.332)*	*(0.003)*	*(0.003)*
Adjusted R-squared	0.091	0.164	0.118	0.072
Observations	3,406	567	1,538	1,301

Table 4 - Regression Analysis of Combined CAR (-1,+1) and Implied Combined CAR (-1,+1)

This table shows regression analyses of Combined CAR and Implied Combined CAR. The sample is described in Table 1. The variables are defined in Appendix Table A2. In regressions 1 and 2, the whole sample is used. In regressions 3 and 4, only subsidiaries that are larger than 10% of parents' market value of equity are included. All regressions include acquisition year and acquirer industry indicators. Heteroskedastic standard errors corrected for clustering due to multiple acquisitions by the same acquirer. *p* -values (in parentheses). ***, **, and * denote statistical significance at 0.01, 0.05, and 0.1 level, respectively.

	(1)	(2)	(3)	(4)
	Full Sample		Subsidiary Relative Size > 10%	
	Combined CAR	Implied Combined CAR	Combined CAR	Implied Combined CAR
Public Target Indicator	1.69***	0.09	0.33	0.44
	(0.000)	*(0.898)*	*(0.502)*	*(0.349)*
Control Variables:				
Consideration = Stock	-1.94***	-1.85***	-1.94***	-1.96***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*
Friendly	-3.59***	-2.77***	-3.17***	-3.12***
	(0.000)	*(0.007)*	*(0.001)*	*(0.001)*
Competing Bidder Indicator	0.29	-0.20	-0.05	-0.12
	(0.752)	*(0.831)*	*(0.956)*	*(0.896)*
Acquirer SIC = Parent/Target SIC	0.42*	0.68*	0.43	0.42
	(0.079)	*(0.073)*	*(0.127)*	*(0.133)*
Toehold	-0.03	-0.04*	-0.03	-0.03
	(0.205)	*(0.092)*	*(0.197)*	*(0.196)*
Relative Size	1.93***	2.92***	2.51***	2.51***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*
log(Acquirer MV)	-0.50***	-0.62***	-0.60***	-0.59***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*
Acquirer Q	0.03	0.02	0.04	0.03
	(0.602)	*(0.734)*	*(0.501)*	*(0.529)*
Acquirer Operating CF	1.25	0.48	1.88	1.83
	(0.394)	*(0.779)*	*(0.292)*	*(0.304)*
Acquirer Cash Holdings	-1.27**	-2.29***	-1.79**	-1.82**
	(0.037)	*(0.008)*	*(0.012)*	*(0.010)*
Target Q	-0.10	0.01	-0.05	-0.05
	(0.677)	*(0.962)*	*(0.841)*	*(0.845)*
Intercept	12.65***	12.91***	14.96***	14.73***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*
Adjusted R-squared	0.117	0.071	0.147	0.147
Observations	3,406	3,406	2,772	2,772

Table 5 - Regression Analysis of Acquirer CAR (-1,+1): Target Financial Liquidity

This table shows regression analyses of Acquirer CAR. The sample is described in Table 1. The variables are defined in Appendix Table A2. All regressions include acquisition year and acquirer industry indicators. Heteroskedastic standard errors corrected for clustering due to multiple acquisitions by the same acquirer are used in calculating p values (in parentheses). Panels A and B report the regression coefficients. Panel C reports the marginal effects at various points of distribution. Chow Test in Panel B reports the p-value of testing that the coefficients on all variables interacted with Public Indicator are jointly different from zero (F test). *, **, and *** denote statistical significance at 0.1, 0.05, and 0.01 level, respectively.

Panel A: Regression Analysis	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Parent of Subsidiary														
Tgt/Parent Financial Liquidity:															
12-Month Pre-Acquisition CAR (-12,-1)	0.28	-0.10												0.41	-0.19
	(0.590)	*(0.909)*												*(0.441)*	*(0.785)*
12-Month Pre-Acquisition CAR (-12,-1) **x** Parent in Same Industry as Subsidiary		0.76													
		(0.484)													
-1 ***X*** Industry-Adjusted Leverage			3.53**											3.84*	6.65**
			(0.039)											*(0.051)*	*(0.040)*
Industry-Adjusted Operating CF				-0.08**										0.34	-0.83
				(0.013)										*(0.919)*	*(0.846)*
Industry-Adjusted Cash Holdings					0.32									-0.08	-1.47
					(0.798)									*(0.951)*	*(0.358)*
Z-score						0.02								-0.05	0.20
						(0.802)								*(0.558)*	*(0.114)*
-1 X Whited-Wu (WW) Index							1.43								
							(0.471)								
-1 X Whited-Wu (WW) Index Constrained Ind								-2.45*						-2.38	-2.52
								(0.055)						*(0.148)*	*(0.201)*
-1 X Hadlock-Pierce (HP) Index									0.15					0.50	0.37
									(0.763)					*(0.400)*	*(0.663)*
-1 X Bond Rating Constrained Indicator										-0.41				-0.51	-0.74
										(0.501)				*(0.438)*	*(0.350)*
-1 X Agha-Faff (AF) Leverage Deviation											1.67				-4.77
											(0.352)				*(0.110)*
-1 X Uysal Leverage Deviation												1.24			1.75
												(0.781)			*(0.729)*
-1 X Value of Financial Flexibility (VOFF)													0.69	0.65	0.41
													(0.563)	*(0.618)*	*(0.822)*
Market-Wide Financial Liquidity:															
-1 X AAA - 30-Year T-Bond Spread	4.07**	4.10**	3.93**	4.19**	4.11**	4.26**	4.51**	4.63**	4.35**	4.33**	4.67**	4.40*	4.70**	4.68**	4.63*
	(0.039)	*(0.038)*	*(0.045)*	*(0.034)*	*(0.038)*	*(0.032)*	*(0.027)*	*(0.022)*	*(0.029)*	*(0.029)*	*(0.031)*	*(0.096)*	*(0.027)*	*(0.029)*	*(0.087)*
Control Variables and Intercept:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.142	0.143	0.147	0.143	0.142	0.142	0.146	0.149	0.142	0.142	0.141	0.181	0.143	0.156	0.197
Observations	829	829	829	829	829	820	787	787	819	819	717	560	753	746	524

Table 5, continued

Panel B: Regression Analysis	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Full Sample														
Public Target Indicator	-2.68***	-2.68***	-2.70***	-2.68***	-2.70***	-2.41***	-1.94**	-2.60***	-1.17	-2.77***	-2.75***	-2.32***	-3.15***	-0.73	0.89
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.028)*	*(0.000)*	*(0.511)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.002)*	*(0.793)*	*(0.797)*
Tgt/Parent Financial Liquidity:															
12-Month Pre-Acquisition CAR (-12,-1)	0.36	0.16												0.41	-0.23
	(0.474)	*(0.849)*												*(0.431)*	*(0.738)*
12-Month Pre-Acquisition CAR (-12,-1) **x** Parent in Same Industry as Subsidiary		0.39													
		(0.708)													
-1 ***X*** Industry-Adjusted Leverage			4.59***											4.79**	7.23**
			(0.007)											*(0.015)*	*(0.030)*
Industry-Adjusted Operating CF				-0.05**										0.19	-0.64
				(0.019)										*(0.954)*	*(0.875)*
Industry-Adjusted Cash Holdings					0.69									0.17	-1.18
					(0.544)									*(0.897)*	*(0.451)*
Z-score						0.05								-0.01	0.28**
						(0.502)								*(0.943)*	*(0.024)*
-1 X Whited-Wu (WW) Index							0.20								
							(0.918)								
-1 X Whited-Wu (WW) Index Constrained Indicator								-1.71						-1.74	-1.95
								(0.180)						*(0.296)*	*(0.319)*
-1 X Hadlock-Pierce (HP) Index									0.36					0.59	0.50
									(0.415)					*(0.276)*	*(0.486)*
-1 X Bond Rating Constrained Indicator										-0.11				-0.39	-0.59
										(0.853)				*(0.549)*	*(0.446)*
-1 X Agha-Faff (AF) Leverage Deviation											2.70				-5.17*
											(0.106)				*(0.084)*
-1 X Uysal Leverage Deviation												3.60			1.94
												(0.365)			*(0.670)*
-1 X Value of Financial Flexibility (VOFF)													1.26	1.48	1.29
													(0.240)	*(0.214)*	*(0.432)*
Public Target Indicator ***X*** :															
12-Month Pre-Acquisition CAR (-12,-1)	-0.27	-0.07												-0.38	0.29
	(0.620)	*(0.934)*												*(0.501)*	*(0.691)*
-1 ***X*** Industry-Adj. Leverage			-4.24**											-3.87	-4.57
			(0.044)											*(0.109)*	*(0.240)*
Industry-Adj. Operating CF				0.32										-0.09	3.27
				(0.750)										*(0.980)*	*(0.467)*
Industry-Adj. Cash Holdings					-0.89									-0.08	-0.07
					(0.509)									*(0.958)*	*(0.969)*
Z-score						-0.09								-0.04	-0.26**
						(0.276)								*(0.691)*	*(0.040)*
-1 X Whited-Wu (WW) Index							-2.81								
							(0.323)								
-1 X Whited-Wu (WW) Index Constrained Ind								1.74						1.92	1.87
								(0.212)						*(0.298)*	*(0.386)*
-1 X Hadlock-Pierce (HP) Index									-0.41					-0.67	-0.52
									(0.411)					*(0.285)*	*(0.523)*
-1 X Bond Rating Constrained Indicator										-0.05				0.15	0.65
										(0.941)				*(0.844)*	*(0.470)*
-1 X Agha-Faff (AF) Leverage Deviation											-3.04				3.08
											(0.161)				*(0.423)*
-1 X Uysal Leverage Deviation												-1.84			-1.23
												(0.679)			*(0.810)*
-1 X Value of Financial Flexibility (VOFF)													-0.50	-0.80	0.34
													(0.704)	*(0.570)*	*(0.859)*
Market-Wide Financial Liquidity:															
-1 X AAA - 30-Year T-Bond Spread	1.45	1.45	1.36	1.48	1.46	1.59	1.72*	1.74*	1.53	1.53	1.70	1.73	1.95*	1.92*	2.02
	(0.152)	*(0.151)*	*(0.174)*	*(0.143)*	*(0.148)*	*(0.119)*	*(0.093)*	*(0.089)*	*(0.132)*	*(0.132)*	*(0.128)*	*(0.162)*	*(0.063)*	*(0.068)*	*(0.129)*
Control Variables and Intercept:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Chow Test p-value														0.622	0.524
Adjusted R-squared	0.096	0.096	0.098	0.096	0.096	0.098	0.098	0.098	0.097	0.097	0.103	0.122	0.105	0.110	0.139
Observations	3,208	3,208	3,208	3,208	3,208	3,184	3,061	3,061	3,184	3,184	2,509	2,196	2,842	2,814	1,835

Table 5, continued

Panel C: Marginal Effect Public Target Indicator	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Full Sample														
Mean	-2.69***	-2.68***	-2.74***	-2.67***	-2.70***	-2.78***	-2.78***	-2.76***	-2.53***	-2.74***	-2.71***	-2.32***	-2.77***	-2.80***	-2.63***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
10th Percentile (Low Liquidity)	-2.55***	-2.64***	-1.99***	-2.71***	-2.48***	-2.43***	-2.37***	-2.60***	-2.17***	-2.72***	-2.14***	-2.12***	-2.65***	-0.85	-1.62
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.001)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.435)*	*(0.271)*
25th Percentile	-2.60***	-2.66***	-2.50***	-2.69***	-2.60***	-2.46***	-2.54***	-2.60***	-2.34***	-2.72***	-2.52***	-2.25***	-2.69***	-1.77**	-1.83*
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.029)*	*(0.091)*
50th Percentile	-2.67***	-2.68***	-2.82***	-2.68***	-2.67***	-2.62***	-2.77***	-2.60***	-2.52***	-2.77***	-2.78***	-2.33***	-2.76***	-2.47***	-1.80**
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.026)*
75th Percentile	-2.73***	-2.69***	-3.04***	-2.66***	-2.75***	-2.84***	-2.99***	-2.60***	-2.71***	-2.77***	-2.99***	-2.41***	-2.84***	-3.30***	-2.50***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.002)*
90th Percentile (High Liquidity)	-2.82***	-2.72***	-3.34***	-2.63***	-2.97***	-3.30***	-3.19***	-2.60***	-3.00***	-2.77***	-3.15***	-2.52***	-2.92***	-4.53***	-3.99***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.006)*

Table 6 - Regression Analysis of Acquirer CAR (-1,+1): Target Valuation Uncertainty

This table shows regression analyses of Acquirer CAR. The sample is described in Table 1. The variables are defined in Appendix Table A2. With the exception of News Releases, all uncertainty proxies are specific to the parent/public target. All regressions include acquisition year and acquirer industry indicators. In regressions using Firm-/Sector-Specific Errors of Target Q, the Long-Run Value-to-Book Ratio is used as a control variable instead of Target Q. Heteroskedastic standard errors corrected for clustering due to multiple acquisitions by the same acquirer are used in calculating p values (in parentheses). Panels A and B report the regression coefficients. Panel C reports the marginal effects at various points of distribution. Chow Test in Panel B reports the p-value of testing that the coefficients on all variables interacted with Public Indicator are jointly different from zero (F test). *, **, and *** denote statistical significance at 0.1, 0.05, and 0.01 level, respectively.

Panel A: Regression Analysis	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Subsidiary														
Target Valuation Uncertainty:															
Industry M/B Stdev	-0.132											0.096	0.091	0.080	0.083
	(0.600)											*(0.768)*	*(0.780)*	*(0.810)*	*(0.802)*
Industry P/E Stdev		-2.666*										-2.063	-2.103	-2.032	-2.028
		(0.060)										*(0.142)*	*(0.135)*	*(0.148)*	*(0.149)*
Residual Return Volatility (-210,-11)			-10.950									2.209	2.642	1.025	0.774
			(0.498)									*(0.900)*	*(0.880)*	*(0.953)*	*(0.965)*
-1 ***X*** Number of Similarly-Sized Public Firms in Same Industry				0.019**								0.018**	0.018**	0.018**	0.018**
				(0.025)								*(0.040)*	*(0.040)*	*(0.042)*	*(0.041)*
|Firm-Specific Error|					-0.547							-0.597			
					(0.289)							*(0.253)*			
|Sum of Firm-/Sector-Specific Errors|						-0.698							-0.742		
						(0.168)							*(0.149)*		
Firm-Specific Error							-0.082							-0.184	
							(0.807)							*(0.600)*	
Sum of Firm-/Sector-Specific Errors								-0.102							-0.194
								(0.749)							*(0.556)*
-1 X Number of Analysts									0.003						
									(0.947)						
Analyst Forecast Dispersion / Price										-1.953					
										(0.756)					
-1 X Number of News Releases (Sub/Pub Tgt)											-0.004	-0.005	-0.005	-0.006	-0.006
											(0.586)	*(0.469)*	*(0.473)*	*(0.426)*	*(0.425)*
Control Variables and Intercept:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.140	0.145	0.140	0.145	0.145	0.146	0.144	0.144	0.208	0.208	0.140	0.153	0.154	0.152	0.152
Observations	727	727	729	729	696	696	696	696	381	381	729	694	694	694	694

Table 6, continued

Panel B: Regression Analysis	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
								Full Sample							
Public Target Indicator	-2.412***	-2.790***	-2.766***	-2.671***	-3.157***	-3.180***	-2.798***	-2.744***	-1.697**	-2.603***	-2.822***	-3.118***	-3.155***	-2.740***	-2.649***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.012)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Target Valuation Uncertainty:															
Industry M/B Stdev	0.187											0.416	0.414	0.404	0.398
	(0.397)											*(0.151)*	*(0.156)*	*(0.174)*	*(0.177)*
Industry P/E Stdev		-1.918*										-1.750	-1.782*	-1.692	-1.704
		(0.100)										*(0.103)*	*(0.097)*	*(0.115)*	*(0.114)*
Residual Return Volatility (-210,-11)			-11.153									-4.378	-3.976	-4.711	-3.657
			(0.466)									*(0.794)*	*(0.813)*	*(0.777)*	*(0.826)*
-1 ***X*** Number of Similarly-Sized Public Firms in Same Industry				0.015**								0.016**	0.016**	0.015**	0.015**
				(0.031)								*(0.030)*	*(0.031)*	*(0.033)*	*(0.037)*
|Firm-Specific Error|					-0.352							-0.437			
					(0.445)							*(0.347)*			
|Sum of Firm-/Sector-Specific Errors|						-0.472							-0.549		
						(0.309)							*(0.240)*		
Firm-Specific Error							0.060							0.009	
							(0.854)							*(0.979)*	
Sum of Firm-/Sector-Specific Errors								0.111							0.047
								(0.726)							*(0.886)*
-1 X Number of Analysts									-0.009						
									(0.871)						
Analyst Forecast Dispersion / Price										-4.782					
										(0.392)					
-1 X Number of News Releases (Sub/Pub Tgt)											-0.007	-0.008	-0.008	-0.008	-0.008
											(0.342)	*(0.257)*	*(0.256)*	*(0.245)*	*(0.251)*
Public Target Indicator ***X***:															
Industry M/B Stdev	-0.315											-0.513*	-0.510*	-0.498	-0.486
	(0.177)											*(0.094)*	*(0.097)*	*(0.111)*	*(0.118)*
Industry P/E Stdev		1.400										1.524	1.551	1.452	1.470
		(0.290)										*(0.230)*	*(0.222)*	*(0.254)*	*(0.249)*
Residual Return Volatility (-210,-11)			3.846									2.001	2.072	3.252	1.181
			(0.826)									*(0.919)*	*(0.916)*	*(0.867)*	*(0.952)*
-1 ***X*** Number of Similarly-Sized Public Firms in Same Industry				-0.008								-0.009	-0.009	-0.009	-0.009
				(0.284)								*(0.234)*	*(0.245)*	*(0.251)*	*(0.249)*
|Firm-Specific Error|					0.603							0.731			
					(0.308)							*(0.225)*			
|Sum of Firm-/Sector-Specific Errors|						0.551							0.702		
						(0.376)							*(0.266)*		
Firm-Specific Error							-0.275							-0.155	
							(0.526)							*(0.727)*	
Sum of Firm-/Sector-Specific Errors								-0.653							-0.496
								(0.152)							*(0.283)*
-1 X Number of Analysts									0.198***						
									(0.001)						
Analyst Forecast Dispersion / Price										-1.543					
										(0.881)					
-1 X Number of News Releases (Sub/Pub Tgt)											0.009	0.011	0.011	0.011	0.011
											(0.225)	*(0.165)*	*(0.164)*	*(0.167)*	*(0.183)*
Control Variables and Intercept:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Chow Test p-value												0.324	0.322	0.462	0.319
Adjusted R-squared	0.094	0.094	0.094	0.096	0.094	0.094	0.094	0.095	0.106	0.095	0.094	0.099	0.099	0.099	0.099
Observations	3,235	3,235	3,237	3,237	3,144	3,144	3,144	3,144	2,163	2,163	3,237	3,142	3,142	3,142	3,142

Table 6, continued

Panel C: Marginal Effect	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Public Target Indicator	Full Sample														
Mean	-2.74***	-2.66***	-2.64***	-2.32***	-2.67***	-2.67***	-2.68***	-2.72***	-3.04***	-2.62***	-2.82***	-2.41***	-2.42***	-2.43***	-2.47***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
10th Percentile	-2.43***	-2.78***	-2.71***	-1.59*	-3.26***	-3.30***	-2.72***	-2.42***	-4.86***	-2.60***	-3.11***	-2.34**	-2.43**	-1.90	-1.59
(Low Uncertainty)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.076)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.044)*	*(0.036)*	*(0.120)*	*(0.195)*
25th Percentile	-2.46***	-2.78***	-2.69***	-2.16***	-3.03***	-3.05***	-2.71***	-2.58***	-3.48***	-2.60***	-2.89***	-2.47***	-2.52***	-2.19***	-2.06***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.001)*
50th Percentile	-2.59***	-2.76***	-2.66***	-2.55***	-2.76***	-2.76***	-2.69***	-2.73***	-2.69***	-2.61***	-2.75***	-2.57***	-2.57***	-2.49***	-2.53***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
75th Percentile	-2.82***	-2.70***	-2.61***	-2.64***	-2.37***	-2.35***	-2.63***	-2.85***	-2.09***	-2.61***	-2.63***	-2.33***	-2.30***	-2.56***	-2.79***
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.001)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.001)*	*(0.000)*	*(0.000)*
90th Percentile	-3.18***	-2.50***	-2.54***	-2.66***	-1.98**	-1.96**	-2.62***	-3.01***	-1.89***	-2.63***	-2.54***	-2.07**	-2.02*	-2.65**	-3.05***
(High Uncertainty)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.018)*	*(0.023)*	*(0.001)*	*(0.000)*	*(0.003)*	*(0.000)*	*(0.000)*	*(0.049)*	*(0.057)*	*(0.015)*	*(0.006)*

Table 7 - Regression Analysis of Acquirer CAR (-1,+1): Insider Ownership

This table shows regression analyses of acquirer announcement returns. Sample is described in Table 1. The variables are defined in Appendix Table A2. All regressions include acquisition year and acquirer industry indicators. Heteroskedastic standard errors corrected for clustering due to multiple acquisitions by the same acquirer are used in calculating p values (in parentheses). Panel A reports the regression coefficients. Panel B reports the marginal effects at various points of distribution. *, **, and *** denote statistical significance at 0.1, 0.05, and 0.01 level.

Panel A: Regression Analysis	(1)	(2)
	Subsidiary	Full Sample
Public Target Indicator		-3.36***
		(0.000)
Insider Ownership	1.57	0.31
	(0.305)	*(0.839)*
Insider Ownership ***X*** Public Target Indicator		0.20
		(0.914)
Control Variables and Intercept:	Yes	Yes
Adjusted R-squared	0.199	0.115
Observations	425	1,710
Panel B: Marginal Effect - Public Target or Subsidiary Indicator		
Mean		-3.33***
		(0.000)
10th Percentile		-3.36***
		(0.000)
25th Percentile		-3.36***
		(0.000)
50th Percentile		-3.35***
		(0.000)
75th Percentile		-3.32***
		(0.000)
90th Percentile		-3.27***
		(0.000)

Table 8 - Regression Analysis of Acquirer CAR (-1,+1): Subsidiary Size

This table shows regression analyses of acquirer announcement returns. Sample is described in Table 1. The variables are defined in Appendix Table A2. All regressions include acquisition year and acquirer industry indicators. Heteroskedastic standard errors corrected for clustering due to multiple acquisitions by the same acquirer are used in calculating p values (in parentheses). *, **, and *** denote statistical significance at 0.1, 0.05, and 0.01 level.

	(1)	(2)	(3)
	Subsidiary		
Subsidiary Value / Parent Value	0.72 *(0.653)*		
High Sub/Parent Indicator (90*th %*)		0.93 *(0.382)*	
High Sub/Parent Indicator (*75th %*)			-0.64 *(0.326)*
Control Variables and Intercept:	Yes	Yes	Yes
Adjusted R-squared	0.139	0.140	0.140
Observations	835	835	835

Table A1 - SDC Misclassified Subsidiary Transactions

Acquiror	Target	Date Announced
American General Corp	NLT Corp	6/22/82
Mid-Continent Telephone Corp	Allied Telephone Co	6/30/83
Standard Oil Co of California	Gulf Oil Corp(Gulf Corp)	3/5/84
Chicago Pacific Corp	Hoover Co(Matyag Corp)	10/15/85
Burroughs Corp	Sperry Corp	5/5/86
NRM Energy Co LP	Mesa LP-Oil and Gas Properties	11/18/86
Anchor Glass Container Corp	Diamond-Bathurst Inc	6/25/87
Talley Industries Inc	John J McMullen Associates Inc	3/9/88
Penn Central Corp	Republic American Corp,Encino California	7/28/88
Bristol-Myers Co	Squibb Corp	7/27/89
Ford Motor Co	Jaguar PLC	10/24/89
RR Donnelley & Sons Co	Meredith-Burda Cos	12/22/89
Avery International Corp	Dennison Manufacturing Co	5/25/90
Tultex Corp	Universal Industries Inc	6/12/92
Oceaneering International Inc	Eastport International Inc (Ketema Inc)	7/14/92
Echlin Inc	Sprague Devices Inc (Sprague Technologies)	8/27/92
Taco Cabana Inc	Two Pesos Inc-Mexican Restaurant Chain	1/12/93
Resurgens Communications Group Inc	LDDS Communications Inc	5/14/93
Cyprus Minerals Co	AMAX Inc	5/25/93
AmSouth Bancorp,Birmingham, Alabama	Citizens National Corp(Ambanc Corp)	8/10/93
Continuum Co Inc	Vantage Computer Systems Inc (DST Systems Inc/Kansas City Southern Inds)	8/31/93
Primerica Corp	Travelers Corp	9/22/93
Society Corp	KeyCorp,Albany,New York (Key Corp,Cleveland Ohio)	10/1/93
Columbia Healthcare Corp	HCA-Hospital Corp of America	10/3/93
Interpublic Group of Cos Inc	Ammirati & Puris Inc(Boase Massimi Pollitt Partnership)	1/31/94
Hibernia Corp,New Orleans, Louisiana	First State Bank & Trust Co, Bogalusa,Louisiana(Hancock Holding Co)	8/16/94
Digital Recorders Inc	Digital Audio Corp	1/19/95
Coventry Corp	HealthCare USA Inc(Maxicare Health Plans)	2/6/95
Alabama National BanCorp, Birmingham,Alabama	National Commerce Corp (Union Planters Corp)	6/2/95
Luxtec Corp	Cardiodyne Electronics Inc	6/29/95
NBD Bancorp,Detroit,Michigan	First Chicago Corp,Illinois	7/12/95
Amax Gold Inc	Cyprus Magadan Gold Mining Co (Cyprus Amax Minerals)	10/17/95
Compaq Computer Corp	NetWorth Inc(Ungermann-Bass Inc/Tandem Computers)	11/6/95
Banner Aerospace Inc	Harco Inc(Fairchild Corp)	12/20/95
EchoStar Communications Corp	Direct Broadcasting Satellite Corp(SSE Telecom Inc)	12/22/95
Protocol Systems Inc	Pryon Corp(Zemex Corp)	2/20/96
Battle Mountain Gold Co	Hemlo Gold Mines Inc	3/11/96
AirTouch Communications Inc	Cellular Communications Inc (Bell South Business Systems)	4/8/96
National Data Corp	CIS Technologies Inc	4/16/96
Pharmaceutical Product Development Inc{PPD Inc}	Applied Bioscience International Inc(IMS Intl Inc/D&B Corp)	6/21/96
Delmarva Power & Light	Atlantic Energy Inc	8/12/96
Doubletree Corp	Red Lion Hotels Inc(Red Lion Inns LP)	8/28/96
Ohio Edison Co	Centerior Energy Corp	9/16/96
Nextel Communications Inc	Pittencrieff Communications Inc(Pittencrieff PLC)	10/3/96
Durco International Inc	BW/IP Inc	5/6/97
Public Storage Properties XI Inc	American Office Park Properties(Public Storage Inc)	8/18/97
Computer Products Inc	Zytec Corp	9/3/97
International FiberCom Inc	Compass Communications Inc (AutoInfo Inc)	9/15/97
MiniMed Inc	Home Medical Supply Inc (American HomePatient Inc)	10/20/97
Travelers Group Inc	Citicorp	4/6/98
NationsBank Corp,Charlotte, North Carolina	BankAmerica Corp,San Francisco,CA	4/13/98
Quantum Corp	ATL Products Inc(Odetics)	5/19/98
Meridian Diagnostics Inc	Gull Laboratories Inc (Fresenius AG)	7/27/98
Newell Co	Rubbermaid Inc	10/21/98
Trans World Entertainment Corp	Camelot Music Holdings	10/26/98
UNUM Corp	Provident Cos	11/23/98
BEC Energy Co	Commonwealth Energy System	12/7/98
American Oncology Resources Inc	Physician Reliance Network Inc	12/14/98
Fleet Financial Group Inc, Boston,Massachusetts	BankBoston Corp,Boston, Massachusetts	3/14/99
Synetic Inc	Medical Manager Corp	5/17/99
AlliedSignal Inc	Honeywell Inc	6/7/99
ONSALE Inc	Egghead.com Inc	7/14/99
CE Software Holdings Inc	ATIO Corp USA Inc(Venturian Corp)	12/28/99
America Online Inc	Time Warner Inc	1/10/00
Wit Soundview Group Inc	E*Offering(E*Trade Group Inc)	5/15/00
Medical Assurance Inc	Professionals Group Inc	6/23/00
Philip Morris Cos Inc	Nabisco Holdings Corp(Nabisco Group Holdings Corp)	6/25/00
Forest Oil Corp	Forcenergy Inc	7/10/00
Antigenics Inc	Aquila Biopharmaceuticals Inc	8/21/00
Chevron Corp	Texaco Inc	10/16/00
Onvia.com Inc	DemandStar.com Inc(HTE Inc)	11/20/00
Ticketmaster Online-CitySearch Inc	Ticketmaster Group Inc(USA Networks Inc)	11/21/00
Suiza Foods Corp	Dean Foods Co	4/5/01
First Union Corp,Charlotte, North Carolina	Wachovia Corp,Winston-Salem, North Carolina	4/16/01
Landmark Bancshares Inc,Dodge City,Kansas	MNB Bancshares Inc,Manhattan, Kansas	4/20/01
GlobeSpan Inc	Virata Corp	10/1/01
Digi International Inc	NetSilicon Inc	10/30/01
Medical Advisory Systems Inc	Digital Angel Corp	11/6/01
Western Multiplex Corp	Proxim Inc	1/17/02
Janus Capital Group Inc	DST Output Marketing Services Inc	8/25/03
St Paul Cos Inc	Travelers Property Casualty Corp	11/17/03
Enterprise Products Partners LP	Gulfterra Energy Partners LP	12/15/03

Acquiror	Target	Date Announced
Zhone Technologies Inc	Sorrento Networks Corp	4/22/04
Digitas Inc	Modem Media Inc	7/15/04
PacifiCare Health Systems Inc	American Medical Security Group Inc	9/15/04
TransPro Inc	Modine Aftermarket Holdings Inc	10/29/04
General Binding Corp	ACCO World Corp	3/16/05
RR Donnelley & Sons Co	Astron Group Ltd	4/18/05
Certegy Inc	Fidelity National Information Services Inc	9/15/05
Valor Communications Group Inc	Alltel Holding Corp	12/9/05
Westside Energy Corp	Crusader Energy Corp	1/2/08
MasTec Inc	Pumpco Inc	6/3/08
Polaris Acquisition Corp	HUGHES Telematics Inc	6/16/08
inTEST Corp	Sigma Systems Corp	10/10/08
IDEX Corp	Semrock Inc	10/20/08
Transcontinental Realty Inv	Income Opportunity Realty Inv	7/22/09
Blackstone Group LP	Lloyd Center,Portland,Oregon	11/5/09
Comcast Corp	NBC Universal Inc	12/3/09
Deluxe Corp	Custom Direct Inc	4/12/10
Brown Shoe Co Inc	Edelman Shoe Inc	6/4/10
Brandywine Realty Trust	Bell Atlantic Tower	8/5/10
Fortress Investment Group LLC	American General Finance Inc	8/11/10
Dun & Bradstreet Corp	Dun & Bradstreet Australia	8/31/10
KIT digital Inc	Brickbox Digital Media sro	9/21/10
Vail Resorts Inc	NorthstaratTahoe Resort	10/26/10
Vanguard Natural Resources LLC	Encore Energy Partners GP LLC	11/17/10
Cardinal Health Inc	Zuellig Pharma China Corp	11/29/10
Ball Corp	Aerocan SAS	12/8/10
Blackstone Group LP	Chiswick Park Ltd	1/6/11
DealerTrack Holdings Inc	TriVIN Inc	1/10/11
Vanguard Natural Resources LLC	Encore Energy Partners LP	3/25/11
Level 3 Communications Inc	Global Crossing Ltd	4/11/11
Globe Specialty Metals Inc	Alden Resources LLC	6/3/11
Nordson Corp	Value Plastics Inc	7/20/11
CTS Corp	ValpeyFisher Corp	11/17/11
Apache Corp	Cordillera Energy Partners III	1/23/12
Walker & Dunlop Inc	CWCapital LLC	6/8/12
Cypress Semiconductor Corp	Ramtron International Corp	6/12/12
Holly Energy Partners LP	UNEV Pipeline LLC	6/28/12
Genesee & Wyoming Inc	RailAmerica Inc	7/23/12
Kinder Morgan Energy Partners	Tennessee Gas Pipeline Co LLC	8/6/12
Bottomline Technologies Inc	Albany Software Ltd	9/11/12
TempurPedic International Inc	Sealy Corp	9/27/12
Ocwen Financial Corp	Homeward Residential Hldg Inc	10/3/12
Apollo Global Management LLC	McGrawHill Education LLC	11/26/12

Table A2 - Variable Definitions

Variable	Definition
AAA - 30-Year T-Bond Spread	Difference in yields between Moody's rated AAA long-dated corp bond and 30-year Treasury. From FRED
Acquirer (Target) MV	Market value of acquirer measured two trading days prior to the announcement date. From CRSP.
Acquirer CAR (-1,+1)	Acquirer cumulative abnormal return during a three-trading-day period centered on the announcement date. Abnormal return is calculated as the actual return less market return. From CRSP.
Acquirer Cash Holdings	Cash and marketable securities scaled by total assets, measure at the fiscal year end immediately prior to the acquisition announcement. From Compustat.
Acquirer Operating CF	Operating cash flows scaled by total assets, measured at the fiscal year end immediately prior to the acquisition announcement. From Compustat.
Acquirer Q	Market value of acquirer equity plus book value of debt scaled by book value of total assets. From Compustat.
Acquirer SIC = Parent/Target SIC	Indicator variable set equal to one if the acquirer 4-digit SIC code is the same as the 4-digit SIC code of the target/parent firm and to zero otherwise.
Competing Bidder Indicator	Indicator set equal to one if the acquisition involved multiple bidders and to zero otherwise. From SDC.
Consideration = Stock	Indicator set equal to one if the payment included stock and to zero otherwise. From SDC.
Friendly	Indicator set equal to one if the SDC reports the attitude as "Friendly" and to zero otherwise. From SDC.
High Sub/Parent Indicator (*75th, 90th %*)	Indicator set equal to one if the Subsidiary Value / Parent Value exceeds the 75th or 90th percentile of the in-sample distribution and to zero otherwise. From SDC and Compustat.
Number of Similarly-Sized Public Firms in Same Industry	Number of public firms in the target's/subsidiary's three-digit SIC code with total assets within 80% and 120% of the deal size. From Compustat.
Public (Subsidiary) Indicator	Set equal to one if acquisition involves public standalone (subsidiary) target and to zero otherwise. From SDC.
Relative size	Ratio of the value of the deal, as reported by the SDC, to the market value of the acquirer's equity two days prior to the announcement date. From SDC and CRSP.
Subsidiary Value/ Parent Value	Deal value from SDC divided by the parent's total assets prior to the announcement of the acquisition. From SDC & Compustat.
Target Characteristics:	
12-Month Pre-Acquisition CAR (-12,-1)	Target cumulative abnormal return for a 12 month period ending one month prior to the announcement date of the acquisition. From CRSP.
Agha-Faff (AF) Leverage Deviation	Actual - Target Market Leverage based on AF model of target leverage. Values > (<) 0 indicate over(under)leveraged. Agha and Faff (Forthcoming) - Leverage Deviation. From Compustat.
Analyst Forecast Dispersion / Price	Analyst forecast dispersion scaled by year end stock price. From IBES.
Bond Rating Constrained Indicator	Indicator variable equal to one if firm's bonds were never rated (more constrained) during the full sample period. Equal to zero for firms without long-term debt. Almeida, Campello and Weisbach (2004). From Compustat.
Hadlock-Pierce (HP) Index	Hadlock and Pierce (2010) Size-Age Index (proxy for financial constraints). More constrained firms have higher HPIndex values. From Compustat.

Table A2, continued

Variable	Definition
Target Characteristics, continued:	
Industry M/B (P/E) Stdev	The standard deviation of market to-book (price-to-earnings) ratios for public firms in the same industry as the target/parent. Industry is defined based on the four-digit SIC code. If there are fewer than ten public firms within a particular four-digit (three-digit) SIC code, we relax our definition to three-digit (two-digit) SIC codes. From Compustat.
Industry-Adjusted Cash Holdings	Cash and marketable securities scaled by total assets, measured at the fiscal year end immediately prior to the acquisition announcement adjusted by the average cash holdings of firms in the same 2-digit SIC code with total assets within 80% and 120% of the target/subsidiary firm's total assets. From Compustat.
Industry-Adjusted Leverage	Target total liabilities divided by book value of total assets in the fiscal year immediately prior to the announcement date adjusted by the average leverage of firms in the same 2-digit SIC code with total assets within 80% and 120% of the target/parent firm's total assets. From Compustat.
Industry-Adjusted Operating CF	Operating cash flows scaled by total assets, measured at the fiscal year end immediately prior to the acquisition announcement adjusted by the average cash flows of firms in the same 2-digit SIC code with total assets within 80% and 120% of the target/parent firm's total assets. From Compustat.
Insider Ownership	Ownership of insiders immediately prior to the acquisition. From Compact Disclosure and Execucomp.
Number of Analysts	Number of analysts following the firm in the month before acquisition announcement. From IBES.
Number of News Releases (Sub/Pub Tgt)	Number of news releases (headline/first paragraph) for one year ending 7 calendar days prior to the merger announcement for the subsidiary/public target firm controlling for firm size (Mantecon (2008)). From Factiva and Compustat.
Target Q	Market value of equity plus book value of debt scaled by book value of total assets. From Compustat.
Target Q decomposition variables:	
|Firm-Specific Error|	Absolute value of Rhodes-Kropf, Robinson, and Viswanathan (2005) Market-to-Book firm specific error component. From Compustat.
Firm-Specific Error	Rhodes-Kropf, Robinson, and Viswanathan (2005) Market-to-Book firm specific error component. From Compustat.
|Sector-Specific Error|	Absolute value of Rhodes-Kropf, Robinson, and Viswanathan (2005) Market-to-Book sector specific error component. From Compustat.
Sector-Specific Error	Rhodes-Kropf, Robinson, and Viswanathan (2005) Market-to-Book sector specific error component. From Compustat.
|Sum of Firm-/Sector-Specific Errors|	Absolute value of the sum of Rhodes-Kropf, Robinson, and Viswanathan (2005) Market-to-Book firm-/sector-specific error components. From Compustat.
Sum of Firm-/Sector-Specific Errors	Sum of Rhodes-Kropf, Robinson, and Viswanathan (2005) Market-to-Book firm-/sector-specific error components. From Compustat.
Long-Run Target Value-to-Book	Rhodes-Kropf, Robinson, and Viswanathan (2005) Market-to-Book long-run value-to-book component. From Compustat.
Residual Volatility (-210,-11)	Volatility of the public target's/parent's residual return calculated over the period from 210 to 11 days prior to the acquisition announcement. From CRSP.
Uysal Leverage Deviation	Actual - Target Market Leverage based on Uysal model of target leverage. Positive (Negative) values indicate over(under)leveraged firms (Uysal (2011)) - Leverage Deviation. From Compustat.
Value of Financial Flexibility (VOFF)	Higher values indicate firms for which shareholders consider financial flexibility more valuable. From Compustat.
Whited-Wu (WW) Index	Whited and Wu (2006) financial constraint index. More constrained firms have higher WWIndex values. From Compustat.
Whited-Wu (WW) Index Constrained Indicator	Indicator variable equal to one if WW Index value is in the highest quartile based on annual distribution of WW Index.
Z-Score	Z score for manufacturing firms is calculated as 1.2*(working capital/ assets) + 1.4*(retained earnings/ assets) + 3.3*(EBIT/ assets) + 0.6*(market value of equity/book value of total liabilities) + 0.999*(sales/ assets); Z score for non-manufacturing firms is calculated as 6.56*(working capital/ assets) + 3.2*(retained earnings/ assets) + 6.72*(EBIT/ assets) + 1.05*(market value of equity/ book value of total liabilities). Working capital is calculated as current assets minus current liabilities. EBIT is "Earnings before interest and taxes" as reported by Compustat ("ebit"). Book value of total liabilities is "Liabilities - Total" as reported by Compustat ("lt"). From Compustat.
Toehold	Percentage of target shares held by the acquirer on the announcement date of the acquisition. From SDC.