Original Research   **Open Access**

Acquisitions of Financially Constrained Targets

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Abstract
We examine the extent to which bidders' stock returns at acquisition announcements reflect the financing needs of the target firm. Using a sample of the United States mergers and acquisitions of a period starts in 1985 and ends in 2012, we find that bidders of financially constrained targets pay lower acquisition premiums and earn higher announcement period cumulative abnormal returns than bidders of unconstrained targets. The lower premium and positive stock market reaction are both sources of value for bidders' shareholders. Our results contrast the findings of the literature that document an insignificant wealth transfer to bidder shareholders.

Keywords: Acquisition announcement; Firms; Bidders.

1. Introduction

In this paper, we examine the wealth effects of targets' financial constraints in mergers and acquisitions (M&A). Kaplan et al. (1997), classify firms as financially constrained as long as there exists a "wedge" between their internal and external costs of finance. Since there always exists an extra cost to raise external finance (for example, flotation costs in raising new equity), all firms are financially constrained by default, albeit to a different degree. We use an index derived from Kaplan et al. (1997) to categorise target firms in domestic US M&As as financially constrained. The benefit of using the KZ classification in M&A is that it allows us to differentiate amongst targets based on their financial constraints. We then test how the target firms' financial constraint affects the premium paid by bidder firms in M&A, as well as its impact on the wealth of the bidder shareholders. We also examine the factors that cause bidders to select targets that are financially constrained.

Lamont et al. (2001), whose study draws heavily from Kaplan et al. (1997), define "financial constraints" as frictions that prevent a firm from financing all its desired investments. The interesting question, therefore, is whether investors perceive the M&A market as a place to resolve target firms' financial constraints.Using a sample of European acquisitions and accounting data, Erel et al. (2015) document a decline in target firms' cash balance, sensitivity of cash-to-cash flow and sensitivity of investment-to-cash flow post-acquisition. The authors conclude that acquisitions relieve financial frictions in target firms and is a potential source of value. However, 97.4% of their sample targets are private firms. It would be of interest to see whether investors reward the acquisitions of publicly-listed traded targets, which are subject to more public scrutiny and have access to more sources of funds (for instance, the stock market) than private firms. Our paper is a test for evidence using a different sample (i.e., US-based domestic acquisitions), wealth variables (i.e., stock market-based M&A announcement period returns and M&A premiums) and measures of targets' financial constraints (i.e., the Kaplan-Zingales Index) to ascertain the value created in acquisitions of financially-constrained targets. The sample of public targets provides a stiffer test of the benefits of M&A since these firms have access to more sources of funds than private firms do and, therefore, they would rely on the M&A market less than private firms do as a mean to resolve their financial constraints.

Following this opening section, we undertake a review of the literature in Section 2, prior to formulating our hypotheses. We also outline the research importance in that section. The third section presents our research approach and sampling procedures. We present and discuss our findings in Section 4; and, conclude the paper in the final section.

2. Literature Review and Hypotheses Development

Kaplan et al. (1997), (henceforth KZ), find that "financially constrained" does not equate to "financially distressed". They find that financially constrained firms are associated with increases in debt. Moreover, firms that are likely or possibly constrained are associated with respectable interest coverage ratios, i.e., their medians range between 2.84 and 4.20. Lastly, possibly constrained firms are as healthy as firms that were never financially constrained. Conversely, using 62 financially distressed firms from 1979-1988 (which coincides with KZ's sample period), Brown et al. (1994) document mean and median interest coverage ratios of 0.634 and 0.434, respectively. Furthermore, the authors document that financially distressed firms are "extremely" highly geared with mean and

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median leverage ratios of 0.83 and 0.792, respectively, which severely handicap their ability to raise further debt and these firms have recourse to asset sales as a means to raise finance. Consequently, the financial characteristics between financially-constrained and financially-distressed/bankrupt firms differ.

Lamont *et al.* (2001) too do not use "financial constraints" to mean financial distress or economic distress or bankruptcy risk though the authors caution that they are possibly correlated (similar to Livdan *et al.* (2009) study of the effects of financial constraints on expected returns). Likewise, while it is well documented that the stock returns of financially distressed firms are negative (see Campbell *et al.* (2011), there is little consensus on the direction of stock returns of financially constrained firms. Lamont *et al.* (2001) report that financial constraints and stock returns are inversely related while Whited and Wu (2006), and Livdan *et al.* (2009) find that they are directly related. Thus, results based on studies of acquisitions of failed/bankrupt/distressed targets (for instance, (Bartunek *et al.*, 1995; Bruyland and Maeseneire, 2016; Faelten and Vitkova, 2014; Hotchkiss and Mooradian, 1998; Jory and Madura, 2009; Meier and Servaes, 2014; Precourt and Oppenheimer, 2016) are not wholly applicable to acquisitions of financially constrained firms.

We briefly summarize the findings of the literature on distressed and bankrupt acquisitions as follows. Bruton *et al.* (1994), examine 51 acquisitions of financially distressed firms and find that acquirer's prior acquisition experience is positively related to acquisition performance. Clark and Ofek (1994), find that restructuring success is positively related to the financial distress of the target. Using a sample of 55 acquisitions in Chapter 11, Hotchkiss and Mooradian (1998) document positive and significant abnormal stock returns for the bidder and bankrupt target at the announcement of the acquisition. The authors conclude that takeovers represent an efficient deployment of bankrupt assets. Bartunek *et al.* (1995), Jory and Madura (2009), and Faelten and Vitkova (2014) find that acquirers of bankrupt assets earn positive abnormal returns at the M&A announcement. Meier and Servaes (2014), document that acquirers of bankrupt companies or assets earn excess returns higher than when they acquire regular targets. The authors conclude that this evidence is consistent with the view that acquirers benefit from fire sales of distressed and bankrupt companies. Precourt and Oppenheimer (2016), find that distressed targets sell their assets at a premium compared to bankrupt firms. They also find that acquisitions in Chapter 11 offer greater economic value than acquisitions outside of bankruptcy. Bruyland and Maeseneire (2016), find that acquisitions of distressed firms lead to an increase in bidder's default risk.

M&A remains an important corporate restructuring and reorganization strategy, and research on the topic has been ongoing for several decades. The findings from the finance literature suggest that while M&A reward target firm shareholders, they fail to deliver for bidder firm shareholders (Agrawal and Jaffe, 2000; Gregory, 1997). There are various propositions advanced to explain this underperformance. For instance, it is likely that managers of the bidding firms view takeovers as a means to maximize their own interests at the expense of their shareholders (Cartwright and Schoenberg, 2006), which is consistent with the classic agency theory of Jensen and Meckling (1976). There is also the possibility that these managers overestimate the value of their target firms (Seth *et al.*, 2000), which is consistent with the managerial hubris hypothesis of Jensen and Ruback (1983) and Fuller *et al.* (2002). Under the managerial hubris hypothesis, managers of the bidding firm erroneously believe that they are better able to extract value from the target firm's assets than the target's current managers.

Besides the finance literature, attempts to explain the disappointing performance of M&A have been made in the strategy and organizational behaviour literature. While not an exhaustive list, the following reasons have been advanced as explanations of the bidding firms' underperformance: wrong decision-making and poor integration processes (also see, Schweiger and Very (2003); poor organizational learning from prior M&A experiments (also see, (Hayward, 2002); and a lack of culture fit between the bidder and the target (also see, Cartwright (2005).

Despite the extant research on M&A, the empirical findings to date suggest that M&A continue to underperform prompting calls for the examination of omitted variables in the literature (King *et al.*, 2004). We examine the financial constraints of the target firms, which is important for various reasons. First, Lamont *et al.* (2001) find that "financial constraints" affect firm value and that the stock performance of financially constrained firms differs from unconstrained ones. Other studies that document how financial constraint affects stock returns include Gomes *et al.* (2006), Whited and Wu (2006), Livdan *et al.* (2009), and Campello and Chen (2010). To the extent that "financial constraints" is a priced factor in stock returns, it would affect the stock returns of acquirers at M&A announcements. To the best of our knowledge, how much of this factor affects bidders' wealth in M&A is yet to be resolved. This paper tests the extent to which part of the factor structure in bidders' stock returns at M&A announcements reflects a particular source of economic information, i.e., the degree of financial constraints in the target firm.

Second, and as documented above, financial constraints do not necessarily imply that the business' survival is at stake to the same extent as financial distress. In the latter case, these firms are close to or already in a bankruptcy state. Firms that are financially distressed often cannot secure financing without major restructuring (mostly through Chapters 7 and 11 of the Bankruptcy Reform Act of 1978). Conversely, financially constrained firms do not require to be restructured to continue in operation.

Third, and to the extent that "financial constraints" and "financial distress" are partially correlated, in many instances it is not possible to calculate an index of financial constraints for bankrupt or distressed targets since many of them become delisted. Conversely, our study offers the possibility to calculate an index of financial distress for all target firms, which should serve to complement prior findings and resolve potential biases inherent in samples of distressed and/or bankrupt targets.

The major difficulty of financially constrained firms is a lack of liquidity and capital, which could be due to internal as well as external factors (for instance, during the peak of the 2007-2008 global financial crisis many firms experienced difficulties in raising finance (Ivashina and Scharfstein, 2010; Mokhova, 2011). These firms could

potentially fare better from external funding. It is in this context that we argue that M&A can be a source of value-added. The bidder firm can possibly extract value from the acquisition of a financially constrained target in two ways: (i) by unblocking vital sources of finances to allow the target firm to realize its potential, and (ii) by negotiating a bargain deal that will benefit its shareholders. To the extent that a target firm is in violation of debt covenants, deprived of its usual sources of credit, renegotiating debt payments, or unable to fund new investments (Kaplan *et al.*, 1997), the combination of its business with another firm would increase the combined entity's asset base, which should improve access to finance for the target firm. All other things being equal, it is unlikely that a bidder firm will pay the same premium for a financially constrained target as for an unconstrained one and does not extract a price for improving the target's access to finance. As far as bidder firms extract a price for improving the sources of finance of target firms (consistent with (Erel *et al.*, 2015; Stein, 1997), acquisitions of financially constrained targets would be associated with lower M&A premium. The lower premium serves to compensate the bidder firm in lessening the financial constraints of the target firm. Thus, in terms of hypotheses, we offer two direct tests as follows:

H1: Bidders of financially constrained targets (FCTs) experience positive announcement period cumulative abnormal returns (CARs).

H2: The M&A premium is inversely related to a target's degree of financial constraint.

3. Data and Methods

3.1. Data and Sampling

Our sample period starts in 1985 and ends in 2012. Domestic M&A data is obtained from the Thomson One Deal database. Both bidders and targets are US publicly-listed firms, and M&A deals are completed as well as the deal value is reported. We exclude firms with SICs 4900-4999 and 6000-6999 since they are highly regulated. Bidder firms should have return data in the Center for Research in Security Prices (CRSP) database and accounting data in the COMPUSTAT database. Target firms should have data in CRSP to calculate the M&A premium and they should have data in COMPUSTAT to calculate their KZ index. The sample distribution is presented in Table 1.

The highest number of M&A occurred in the year 1998 (309 in that year, which represents 7.01% of the total sample). The second highest number of acquisitions occurred in 1999 (n = 280, which represents 6.36% of the overall sample). The total number of M&A over the sample period from 1985 to 2012 is 4,405.

Table-1. Sample Distribution of M&A Involving Financial Constrained Targets (FCTs)

Year of Announcement	N	%
1985	0	0
1986	158	3.59
1987	184	4.18
1988	184	4.18
1989	194	4.40
1990	171	3.88
1991	141	3.20
1992	107	2.43
1993	123	2.79
1994	208	4.72
1995	240	5.45
1996	240	5.45
1997	247	5.61
1998	309	7.01
1999	280	6.36
2000	264	5.99
2001	150	3.41
2002	96	2.18
2003	125	2.84
2004	131	2.97
2005	147	3.34
2006	125	2.84
2007	150	3.41
2008	102	2.32
2009	81	1.84
2010	86	1.95
2011	77	1.75
2012	85	1.93
Total	4,405	100.00

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deal value is reported. We exclude firms with SICs 4900-4999 and 6000-6999 since they are highly regulated. Bidder firms should have return data in the CRSP database and accounting data in the COMPUSTAT database. Target firms should have data in CRSP to calculate the M&A Premium and they should have data in COMPUSTAT to calculate their KZ Index. FCT stands for Financially Constrained Targets.

3.2. KZ Index

Lamont *et al.* (2001) derive an index of financial constraint based on Kaplan *et al.* (1997), which they refer to as the KZ Index and is estimated as follows:

$$KZ\ Index_t = -1.002 \left(\frac{Cash\ Flow_t}{PPE_{t-1}}\right) + 0.283\ Q_t + 3.139 \left(\frac{Debt_t}{Debt_t + Book\ Equity_t}\right)$$
$$- 39.368 \left(\frac{Dividends_t}{PPE_{t-1}}\right) - 1.315 \left(\frac{Cash_t}{PPE_{t-1}}\right) + \epsilon_t \tag{1}$$

where cash flow is computed as Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA), Q is the ratio of (Book Value of Assets minus Book Value of Equity minus Deferred Taxes plus Market Value of Equity)-to-Book Value of Assets; Debt is the sum of long-term debt and current liabilities; and PPE is the value of property, plant and equipment. The KZ index is directly related to a firm's financial constraints. Thus, a financially-constrained firm is one with low cash flow-to-PPE and high debt ratio. The firm also pays low dividends and has a low cash balance relative to its PPE.

3.3. Classification of Target Firms by KZ Index

After calculating the KZ index for each target firm, we form quartiles by ranking all target firms using their KZ index. We refer to the top quartile as financially constrained targets (FCTs) and the bottom quartile as unconstrained targets (non-FCTs). We do this for the sake of analysis and presentation of the results. While there is no certainty that the top and bottom quartiles comprise all financially-constrained and unconstrained targets, respectively, yet, as a group, the top quartile targets are more financially constrained than the bottom quartile. Our classification seems to work since both the mean and median KZ index increase monotonically as we move up the quartiles from 1 to 4 (see Table 2). For instance, the median KZ indices in Quartiles 1 to 4 are -9, 0, 2 and 3, respectively, with higher KZ Index representing more financial constraints. Despite its flaws Hadlock and Pierce (2010), Lamont *et al.* (2001) argue that the KZ index is a useful one out of the measures of financial constraints since it is based on an in-depth study of firms. Many other studies in corporate finance use the KZ index including Baker *et al.* (2003); Almeida *et al.* (2004); Hovakimian (2009); Campello and Chen (2010); and Li (2011).

The classification scheme leaves us with target firms at two ends (Q1 vs. Q4) of the financial constraint spectrum as follows: at one end we have the most financially constrained firms (FCTs) that face the largest "wedge" between their internal and external costs of funds (i.e., Q4 or Quartile 4 firms), and at the other end we end up with the least financially constrained firms with the most amount of liquid assets (i.e., Q1 or Quartile 1 firms). The rank of a quartile increases monotonically with financial constraint.

3.4. Measuring Bidders' Cumulative Abnormal Returns (CARs)

Bidders' abnormal returns are obtained from the following market model:
$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \epsilon_{i,t} \tag{2}$$

where i represents bidder firm i, t represents a day, R represents a bidder's daily return and R_m represents the daily return on the CRSP equally-weighted portfolio. We estimate the market model using the 255 daily returns ending 11 days prior to the M&A announcement. We cumulate the daily abnormal returns surrounding the announcement date to obtain the announcement period cumulative abnormal returns (CARs). Day 0 represents the day of the M&A announcement and we present CARs for the following windows, i.e. (-2, +1), (-2, 0) and (-3, 0). We include the daily returns of the days immediately preceding the announcement to account for possible leakage of the M&A news. To confirm hypothesis 1, we expect bidders' CARs to be positive and statistically significant.

3.5. M&A Premium

To the extent that bidders alleviate the financial constraint of the target firms and enable them to finance their desired investments as well as to reduce their costs of capital, bidders will charge target firms a price for that facility. Consequently, we hypothesize that the M&A premium paid by bidders of financially constrained targets (FCTs) would be lower than that paid for unconstrained targets (non-FCTs). The M&A premium is the surplus by which the deal value exceeds the target firm's market capitalization four weeks prior to the M&A announcement. The M&A premium is expressed as a percentage of the target firm's market capitalization. To confirm hypothesis 2, we expect FCTs and M&A premiums to be inversely related.

$$M\&A\ Premium$$
$$= \frac{Deal\ Value - Target\ Market\ Capitalization\ 4\ wks\ prior\ to\ Announcement}{Target\ Market\ Capitalization\ 4\ wks\ prior\ to\ Announcement} \tag{3}$$

We present descriptive statistics on the KZ Index, CARs and MA Premium for the overall sample in Table 2. In Table 3, we present the various CARs by quartiles of the KZ index. Irrespective of the CAR windows, both the mean and median CARs are negative for targets in the first quartile (i.e., the non-FCTs) and positive for targets in the

fourth quartile (i.e., the FCTs), respectively. Thus, bidders experience a negative market reaction upon announcement of acquiring a non-FCT but experience a positive market reaction in acquisitions of FCTs.

4. Results
4.1. Univariate Tests of CARs by KZ Index

We compare the mean CARs by quartiles of KZ index in Panel A of Table 4. The mean (-3, 0) CARs of bidders of FCTs is 0.7% and the median is -0.1%. The mean is significantly different from 0 but not the median. Conversely, the mean CARs of bidders of non-FCTs is -0.3% and the median is -0.1%, though, both are insignificantly different from zero. Upon comparing the mean CARs between bidders of FCTs and non-FCTs, the mean CARs of bidders of FCTs exceed that of non-FCTs by 1.0%, and the difference is statistically significant. In unreported results, tests based on (-2, +1) CARs and (-2, 0) CARs yield similar findings. Thus, consistent with hypothesis 1, the CARs of bidders of FCTs are positive.

As a robustness check, we combine the third and fourth quartiles of FCTs and compare the mean and median CARs of that group with the first quartile of non-FCTs. Our findings stay the same, i.e., the CARs of bidders of FCTs from quartiles 3 and 4 are significantly higher than the CARs of bidders of non-FCTs from quartile 1. The differences in mean and median CARs are 1.1% and 0.1%, respectively, and both are statistically significant.

Table-2. Descriptive Statistics of M&A Involving FCTs*

	N	Mean	Median	Standard Deviation
Target Characteristics				
Target Size	4405	$2,892,800,000	$248,739,000	$18,645,850,000
KZ Index	4,405	-9.308	1.105	98.526
KZ Index by Quartiles:				
1st Quartile	1085	-43.078***	-9.233***	194.637
2nd Quartile	1115	-0.518***	-0.314***	1.115
3rd Quartile	1104	1.997***	2.045***	0.468
4th Quartile	1101	3.733***	3.205***	5.360
Deal Characteristics				
CAR (-2,0)	4405	0.003	0.002	0.070
CAR (-3,0)	4405	0.004	-0.001	0.086
CAR (-2,+1)	4405	0.006	0.004	0.083
M&A Premium	4005	12.868	-1.693	587.289
Number of days to completion	4405	169.971	92.000	282.696
Bidder Characteristics				
Debt Ratio	4250	1.234	0.989	9.281
Interest Coverage Ratio	3813	45.935	5.336	470.833
Bidder Size	4405	$7,672,290,000	$906,695,000	$28,051,850,000
Tobin's Q	4370	2.160	1.604	2.509

KZ Index is calculated from Equation 1 and represents the financial constraint index of a target firm. The higher the value of the KZ Index, the more financially constrained is the target firm. CAR (-2,0) represents the bidder's three-day cumulative abnormal returns with day 0 being the M&A announcement day; CAR (-3, 0) represents the bidder's four-day cumulative abnormal returns with day 0 being the M&A announcement day; CAR (-2,+1) represents the bidder's four-day cumulative abnormal returns with day 0 being the M&A announcement day. M&A Premium represents the difference between the deal value and the target's market capitalization four weeks prior to the announcement (expressed as a % of the latter). Debt Ratio is the bidder's total liabilities divided by market value of equity, as of four weeks prior to the announcement. Interest coverage ratio of the bidder is calculated as EBIT divided by interest expenses in year t-1. BIDDER SIZE is the natural logarithm of the book value of total assets of the bidder in the year t-1. TARGET SIZE is the natural logarithm of the book value of total assets of the target in the year t-1. TOBIN'S Q equals to market value of assets (market value of equity- book value of equity + total assets) scaled by total assets in the year t-1. Number of days to completion represents the number of days from announcement to completion. *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Table-3. Cumulative Abnormal Returns (CARs) by Quartlies of KZ Index

	N	Mean	Median	Standard Deviation
CAR (-2,0) by Quartiles:				
1st Quartile	1102	-0.076***	-0.059***	0.051
2nd Quartile	992	-0.012***	-0.010***	0.009
3rd Quartile	1209	0.012***	0.010***	0.009
4th Quartile	1102	0.086***	0.070***	0.056
CAR (-3,0) by Quartiles:				
1st Quartile	1101	-0.088***	-0.065***	0.067
2nd Quartile	1121	-0.014***	-0.014***	0.009
3rd Quartile	1082	0.017***	0.016***	0.011
4th Quartile	1101	0.103***	0.076***	0.076
CAR (-2,+1) by Quartiles:				
1st Quartile	1101	-0.090***	-0.070***	0.058
2nd Quartile	994	-0.013***	-0.013***	0.010
3rd Quartile	1209	0.018***	0.016***	0.018
4th Quartile	1101	0.107***	0.083***	0.064

CAR (-2,0) represents the bidder's three-day cumulative abnormal returns with day 0 being the M&A announcement day; CAR (-3, 0) represents the bidder's four-day cumulative abnormal returns with day 0 being the M&A announcement day; CAR (-2,+1) represents the bidder's four-day cumulative abnormal returns with day 0 being the M&A announcement day.

4.2. Univariate Tests of M&A Premiums by KZ Index

In Panel B of Table 4, we compare and contrast the M&A premium paid between bidders of FCTs and non-FCTs. The mean (median) M&A premium paid by bidders of FCTs is 4.4% (-1.5%) and that paid by bidders of non-FCTs is 39% (-1.7%). Using median figures, the M&A premium paid by bidders of FCTs is lower by 0.79% and that difference is statistically significant at the 5% level. Thus, consistent with hypothesis 2, the univariate findings suggest that bidders of FCTs pay lower M&A premiums than bidders of non-FCTs.

4.3. Multiple Regressions of Bidder CARs

To be able to associate the positive announcement period CARs to acquisitions of FCTs and to remove the effects of confounding variables, we perform multiple regressions of bidders' CARs. First, though, we account for endogeneity issues to control for the risk of incorrectly identifying a causal relationship between acquisitions of FCTs and bidders' M&A announcement period CARs, when the observed "relationship" could be due to an unidentified factor that is affecting both variables.

Table-4. Comparison of Cumulative Abnormal Returns (CARs) and M&A Premiums between acquisitions of FCTs and non-FCTs

	N	Mean	Median
Panel A: Comparison of Bidders' (-3, 0) Announcement Period CARs			
4th vs. 1st Quartiles			
Bidder of FCTs (4th Quartile)	1,101	0.007***	-0.001
Bidder of non-FCTs (1st Quartile)	1,085	-0.003	-0.001
Difference		0.010	0.000
t-stat/Wilcoxon		2.580***	1.889*
3rd and 4th as a group vs. 1st Quartiles			
Bidder of FCTs (3rd and 4th Quartiles)	2,205	0.008***	0.000
Bidder of non-FCTs (1st Quartile)	1,085	-0.003	-0.001
Difference		0.011	0.001
t-stat/Wilcoxon		3.290***	2.416**

Panel-B. Comparison of M&A Premiums paid by Bidders of FCTs and non-FCTs

	N	Mean	Median
4th vs. 1st Quartiles			
Bidder of FCTs (4th Quartile)	977	4.3698*	-1.503***
Bidder of non-FCTs (1st Quartile)	1,016	38.937	-1.711***
Difference		-34.567	-0.792
t-stat/Wilcoxon		-0.930	-2.181**
3rd and 4th as a group vs. 1st Quartiles			
Bidder of FCTs (3rd and 4th Quartiles)	1,977	3.502**	-1.662***
Bidder of non-FCTs (1st Quartile)	1,016	38.937	-1.711***
Difference		-35.434	0.049
t-stat/Wilcoxon		-1.350	1.511

CAR (-3, 0) represents the bidder's four-day cumulative abnormal returns with day 0 being the M&A announcement day. In both panels, targets in quartile 1 are unconstrained (i.e., non-FCTs). Financially constrained targets (FCTs) come from quartiles 3 and 4. M&A Premium represents the difference between the deal value and the target's market capitalization four weeks prior to the announcement (expressed as a % of the latter). *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

To control for endogeneity, we use the Heckman two-stage estimation procedure. This method is appropriate since we have a non-random sample selection, i.e., bidder CARs are only observed for targets that accepted an offer. Consequently, our estimators could be biased since we do not know what the outcome would be for those targets that refused a bidder's offer. To control for the sample selection bias, we predict the likelihood of a target firm accepting a bidder's offer at the first stage using a probit model, calculate the predicted inverse Mills ratio (IMR) for each M&A transaction, and in the second stage, estimate the bidders' CAR using the IMR as a predictor in the model (also see (Wooldridge and Jeffrey, 2009). If the coefficient on IMR is statistically equal to zero, there is no evidence of sample selection endogeneity, and ordinary least squares (OLS) regression results are consistent. If the coefficient on IMR is statistically different from zero, then we report the coefficients from the corrected model. To conserve space, the independent variables used are presented in the notes accompanying Tables 5 and 6. The selection of the independent variables follows previous studies on the determinants of M&A premium (Cotter and Zenner, 1994; Flanagan and O'Shaughnessy, 2003; Kaufman, 1988; Lang *et al.*, 1989; Madura and Ngo, 2008; Schwert, 2000; Servaes, 1991; Walkling and Edmister, 1985).

The dependent variable in the first-stage probit regression takes a value of 1 for targets that are in the fourth quartile (i.e., the most financially constrained) and a value of 0 for targets in the first quartile (i.e., the unconstrained firms). We present the findings from the first-stage probit regressions in Table 5. Successful bids of FCTs are characterized as follows: low bidder's interest coverage ratio; large bidder size; stock offers; small target size; acquisitions of certain assets; multiple bids; large number of target firm M&A advisors; and, tech firms.

Table-5. Heckman Two-Stage Regressions of Bidders' CARs

	Panel A		Panel B	
	Sample includes [Q1] vs. [Q4]		*Sample includes [Q1] vs. [Q3 and Q4]*	
	Probit	*CARs*	*Probit*	*CARs*
FCT		0.046**		0.039**
DEBTRATIO	-0.006	0.000	-0.005	0.000*
ICR	-0.000***	0.000	0.000	0.000
BIDDER SIZE	0.068***	-0.003**	0.069***	-0.004***
RELATED	0.146*	-0.011**	0.064	-0.009**
CRISIS	0.042	-0.012	0.157	-0.014
SOX	0.250	0.016	-0.171	0.022**
ALLCASH	-0.329***	0.015***	-0.184***	0.013***
FRIENDLY	0.140	-0.004	0.027	-0.005
AACOUNT	-0.036	0.002	-0.029	0.003
TARGET SIZE	-0.114***	0.000	-0.067***	-0.001
ACA	0.233**	0.010	0.188**	0.009*
TENDER OFFER	-0.112	0.011	-0.093	0.004
BIDDER ROE		0.000		-0.001
TECH BUBBLE		-0.014		-0.023*
MULTIPLE BIDS	0.455***		0.363***	
M&A ACTIVITY	-0.308		0.326	
TACOUNT	0.090		0.076	
COMPLETION	0.000		0.000	
TECH TARGET	0.385***		0.358***	
TECH BIDDER	0.450***		0.444***	
IMR		-0.021*		-0.017*
Constant	2.432	-0.009	-4.629	0.001
Observations	*1810*	*1810*	*2824*	*2824*
Year Dummies	*Yes*	*Yes*	*Yes*	*Yes*
Chi- squared	*250.320*	*172.130*	*225.060*	*174.090*
Pseudo R-squared	*0.100*		*0.066*	

We include the IMR in the multiple regression of bidder CARs and present our findings in Table 5. The coefficient of the IMR is not statistically significant from 0 at the 5% level suggesting that the OLS regression results are consistent. The variable of interest is FCT, which takes a value of 1 for FCTs in quartile 4 and a value of 0 for unconstrained targets in quartile 1. The coefficient of the dummy variable FCT is positive and statistically significant. Our coefficient estimate suggests that bidders' of FCTs experience a 4.60% CARs from day -3 to the day of the M&A announcement higher than the CARs of bidders of unconstrained targets. Considering that the average size of the bidder firm is $7,672 million, the increase in the wealth of the shareholders of a typical bidder of an FCT as opposed to an unconstrained target is an extra $353 million over four days leading up to the M&A announcement.

Our results stay the same if we increase the sample size of FCTs to include quartile 3 firms. As expected, though, there is a decrease in the magnitude of the coefficient from 4.60% to 3.90% given that the enlarged set includes the less financially constrained targets from quartile 3.

We further find that bidder size and strategic acquisitions adversely affect the bidder CARs, while all cash offers and acquisitions of certain assets positively affect bidder CARs. Bidders' CARs are higher post-SOX, and while the global financial crisis starting mid-2007 adversely affected bidder CARs yet the related coefficient is not statistically significant.

4.4. Multiple Regressions of M&A Premiums

We follow the same Heckman two-stage estimation procedure to ascertain the effects of acquisitions of FCTs on the M&A premium paid by bidder firms, and present our findings in Table 6. The size of the coefficient representing FCTs is negative and large, and it is statistically significant. The findings suggest that FCTs are sold at a considerable discount relative to unconstrained targets (i.e., non-FCTs). Our findings stay the same upon enlarging the sample of FCTs to include targets from both quartiles 3 and 4.

Table-6. Heckman Two-Stage Regressions of Bidders' CARs

	Panel A		Panel B	
	Sample includes [Q1] vs. [Q4]		*Sample includes [Q1] vs. [Q3 and Q4]*	
	Probit	*CARs*	*Probit*	*CARs*
FCT		0.046**		0.039**
DEBTRATIO	-0.006	0.000	-0.005	0.000*
ICR	-0.000***	0.000	0.000	0.000
BIDDER SIZE	0.068***	-0.003**	0.069***	-0.004***
RELATED	0.146*	-0.011**	0.064	-0.009**
CRISIS	0.042	-0.012	0.157	-0.014
SOX	0.250	0.016	-0.171	0.022**
ALLCASH	-0.329***	0.015***	-0.184***	0.013***
FRIENDLY	0.140	-0.004	0.027	-0.005
AACOUNT	-0.036	0.002	-0.029	0.003
TARGET SIZE	-0.114***	0.000	-0.067***	-0.001
ACA	0.233**	0.010	0.188**	0.009*
TENDER OFFER	-0.112	0.011	-0.093	0.004
BIDDER ROE		0.000		-0.001
TECH BUBBLE		-0.014		-0.023*
MULTIPLE BIDS	0.455***		0.363***	
M&A ACTIVITY	-0.308		0.326	
TACOUNT	0.090		0.076	
COMPLETION	0.000		0.000	
TECH TARGET	0.385***		0.358***	
TECH BIDDER	0.450***		0.444***	
IMR		-0.021*		-0.017*
Constant	2.432	-0.009	-4.629	0.001
Observations	*1810*	*1810*	*2824*	*2824*
Year Dummies	*Yes*	*Yes*	*Yes*	*Yes*
Chi- squared	*250.320*	*172.130*	*225.060*	*174.090*
Pseudo R-squared	*0.100*		*0.066*	

CAR (-3, 0) represents the bidder's four-day cumulative abnormal returns with day 0 being the M&A announcement day. In both probit regressions, targets in quartile 1 takes a value of 0 since they are the least financially constrained. FCT is a dummy variable representing financially constrained targets (i.e., targets in Quartile 4 and in Quartiles 3 and 4 as a group in Panels A and B, respectively. PREMIUM represents the difference between the deal value and the target's market capitalization four weeks prior to the announcement (expressed as a % of the latter). DEBTRATIO is the bidder's total liabilities divided by market value of equity, as of four weeks prior to the announcement. ICR is the interest coverage ratio of the bidder calculated as EBIT divided by interest expenses in year t-1. BIDDER SIZE is the natural logarithm of the book value of total assets of the bidder in the year t-1. RELATED is a dummy variable representing M&A where the bidder shares the same two-digit SIC as the target. CRISIS is a dummy variable representing the years 2008-2012 related to the global financial crisis that severely restricted the M&A market. SOX is a dummy variable representing the years starting 2002 following the passage of the Sarbanes-Oxley Act. ALLCASH is a dummy variable representing deals financed by all cash. Friendly is a dummy variable representing friendly as opposed to hostile bids. AACOUNT represents the number of bidder's advisors. TARGET SIZE is the natural logarithm of the book value of total assets of the target in the year t-1. ACA is a dummy variable representing acquisitions of certain assets only. TENDER OFFER is a dummy variable representing tender offers. Bidder's ROE is measured at t-1. TECHBUBLE is a dummy variable that takes a value of 1 for the years 2001, 2002, 2003, and 2004 and 0 otherwise. MULTIPLEBIDS represents the number of bidders.

M&A ACTIVITY is the natural logarithm of the total number of M&A in year t. TACOUNT represents the number of target advisors. COMPLETION represents the number of days from announcement to completion. TECH TARGET and TECH BIDDER are dummy variables representing tech- targets and bidders, respectively. IMR is the inverse Mills ratio derived from the probit model. *, **, *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Furthermore, large bidders tend to pay higher M&A premiums and acquisitions of certain assets, acquisitions in the tech industry, and contested bids command higher premiums. Conversely, bidders that pay with cash also pay lower M&A premiums and the smaller the target size, the smaller is the M&A premium.

5. Conclusion

The empirical analysis in this paper establishes two things, i.e. (i) bidders of financially constrained targets (FCTs) pay lower M&A premiums and (ii) earn higher M&A announcement period CARs than bidders of unconstrained targets.

The findings do not necessarily suggest that acquisitions of FCTs are superior than the acquisitions of non-FCTs. As a matter of fact, in undocumented findings we observe that the long run stock performance of bidders of FCTs and their operating performance are not remarkable. However, this paper establishes the merits of acquiring FCTs as a corporate reorganization strategy using market-based data and investors' perceptions of value.

The major difficulty of FCTs is a lack of liquidity and capital, which could be due to both internal and external factors. These firms are not bankrupt and they are not undertaking any financial restructuring. Thus, bidders can extract value from the acquisition of an FCT by unblocking vital sources of finances to allow the firm to realize its potential, which should lead to positive M&A announcement period cumulative abnormal returns (CARs).

To the extent that the M&A enlarges the asset base of the target firm, which should restrict collateral constraints in raising external finance, we would expect bidder firms to charge a price for providing this facility. The discount in the deal value compared to acquisitions of non-FCTs represents a pseudo-fee bidders charge to alleviate the target firm's financial constraints. We are not advocating that post-M&A target firms are in a position to finance all desired investments thanks to bidders' financial power. We only expect that targets are in a better position to bridge the gap between their desired investments and their access to funds following the M&A, i.e., there is a lessening in their pre-M&A level of financial constraints.

Based on the above arguments, which are corroborated by the findings of this paper, acquisition of FCTs represents a viable corporate restructuring and reorganization strategy to lessen the financial constraints of target firms and to extract value for the bidder shareholders.

Acknowledgement

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