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Do bidders pay cash for underleveraged targets?

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Abstract

The relationship between acquirer capital structure and the payment choice in acquisitions is well documented. However, the target firm's capital structure has been overlooked. We find that acquisitions of underleveraged targets are more likely to be financed by cash than by equity. A 1% increase of the target firm's deviation from normal leverage decreases the proportion of cash used by 0.76%. We conclude that target firm capital structure is important for the choice of payment.

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1. Introduction

Acquisitions are an investment decision that, depending on the financing mix, can have a large impact on the acquiring firm's capital structure. The widely recognized trade-off theory predicts realignments of capital structure to a long-term target level (e.g. Kayhan and Titman, 2007). In line with the trade-off theory recent studies report that deviations from the acquirer's own target capital structure affect the choice between cash or equity as means of payment (e.g. Harford et al., 2009; Uysal, 2011; Karampatsas et al., 2014, Ang et al., 2014). Our study extends the existing literature by explicitly focusing on how the target firm's deviation from optimal capital structure affects the acquirer's choice of payment. We argue that both conditional and unconditional on the acquiring firm's capital structure dislocation, the target firm's capital structure is important in determining the means of payment.[1]

The means of payment determine the financing of the equity stake in an acquisition. In a stock sale buying shareholders assume existing target debt. If the acquirer pays cash instead of offering shares the merged firm's debt-ratio increases. Buying overleveraged targets with cash may push acquirer's leverage past optimal levels. Acquirers with a balanced capital structure should finance overleveraged targets with an offsetting amount of equity, depending on the degree of target firm overleverage. In general, both acquirer's and target's capital structure dislocations thus influence the expected fraction of cash in the acquisition. We test our proposition by first estimating deviations from expected cash percentage used by acquirers, and then by regressing the unexpected proportion of cash on target firm leverage deviations.

2. Data and Method

We use U.S. acquisition data from Thomson SDC platinum, including transactions with above $1 million in value, taking place between January 1, 1988 and December 12, 2015. Both the target and the acquiring firm must be included in CRSP and COMPUSTAT. We exclude financial firms, utilities and transactions with the percentage of cash missing in SDC. Our sample consists of 815 transactions.

We calculate target leverage with an augmented model of Kayhan and Titman (2007). Market leverage is defined as (Total Assets – Book Equity)/(Total Assets + Market Equity – Book Equity). We estimate target leverage on the entire COMPUSTAT sample for the period 1986-2014. Our leverage determinants (U) include Market-to-book, COGS/Total Assets, ln(Sales), R&D Expenses/Total Assets, a missing R&D-indicator, PPE/Total Assets, EBITDA/Total Assets, 12-Month Return and 3-digit SIC industry indicators. Following Faulkender and Petersen (2006) we also include a credit rating indicator which takes the value of 1 if a firm has a public credit rating and 0 otherwise. In stage one, we run yearly Tobit regressions:

$$Market\ Leverage_{i,t} = \beta' U_{i,t-1} + \varepsilon_{i,t}. \quad (1)$$

[1] Harford et al (2009) report a median target firm leverage deviation close to zero but do not consider the cross-sectional variation or relation of target firm leverage deviation to acquirer's choice of payment method.

As Harford et al. (2009) we subtract the predicted leverage in model (1) from market leverage of firm *i* to obtain deviation from target leverage (*Levdev*). Then we perform two sequential tests of our basic hypothesis.

First we examine if *Levdev*, for both targets and acquirers in isolation, affects the transaction's relative cash percentage (*Cash%*). If the target/acquirer firm's capital structure dislocation impacts the *Cash%,* we expect δ to be negative in the Tobit regression:

$$Cash\%_{i,t} = \delta Levdev_{i,t-1} + \beta' Z_{i,t-1} + \eta_{i,t}, \quad (2)$$

where Z is a matrix with lagged acquirer/target firm controls and deal characteristics including: average last three-year leverage level, credit rating, ln(sales), relative size, M/B, ROA, cash holdings to assets, 12-month stock return, PPE/A, intra-industry acquisition indicator based on 3-digit sic codes, a sales based Herfindahl index, and year indicators. Our controls follow prior studies explaining means of payment (e.g. Harford et al., 2009; Karampatsas et al. 2014).

To test target firm's capital structure dislocation conditional on the acquiring firm's capital structure we retain the predicted values of model (2) with acquirer characteristics to obtain the predicted Cash%, denoted *E(Cash%*). We then subtract *E(Cash%)* from the realized *Cash%* and estimate the OLS regression:

$$Cash\%_{i,t} - E\left(Cash\%_{i,t}\right) = \varphi Levdev_{i,t-1} + \psi E(Cash\%)_{i,t} + \beta' Z_{i,t-1} + \xi_{i,t}, \quad (3)$$

where we include target firm leverage deviation and controls. We expect φ to be negative, indicating acquirers use more cash than expected for underleveraged targets.

For robustness we further estimate models including both acquirer and target characteristics. Due to collinearity issues we use acquiring firm levels and difference between acquirer and target firm variables to capture the target firm's controls. We further employ a model close to Harford et al. (2009) and Uysal (2011) but include target firm capital structure dislocation and leverage levels along with acquiring firm controls.[2] Finally, we rerun our main regression (2) after dividing the data into subgroups: overleveraged acquirers compared to underleveraged acquirers, and overleveraged targets compared to underleveraged targets.

We report target firm characteristics in table 1. We compare 100% cash bids against mixed and 100% equity bids. Target firms acquired with 100% cash are slightly underleveraged, less likely to be credit rated, smaller, have lower market-to-book ratios, are less profitable, have greater cash holdings, have less PPE relative to assets, are smaller relative to the bidder and belong to less concentrated industries.

[2] Since we only study public acquirers and targets, we exclude two target characteristics (private target and subsidiary indicators).

Table 1: Descriptive statistics for target firms

The first column is our target firm variables used in regressions. The second column contains means for all target firms while column three and four show the corresponding means when payment was either all cash or a mix of equity and cash. *Levdev* is the deviation from expected leverage based on market leverage, *3-year leverage* is the three year trailing leverage, *Rating* is an indicator variable taking the value of 1 if the firm has a public credit rating. Size (*ln*(*Sales*)) is measured as the natural logarithm of sales, *M/B* is the market-to-book, *ROA* is the return on assets, *Cash/A* is cash holdings to assets, *PPE/A* is property, plant and equipment to assets. *12-month return* is the aggregate 12-month return on stock before the M&A, *Relative size* is the deal value divided by bidder´s market value, *Same sic* is an indicator variable taking the value of 1 if acquirer and target firms have the same 3-digit sic-codes, *Herfindahl* is the sum of squares of market shares based on sales of all firms with the same three-digit SIC. The significance of the difference between 100% cash deals and mixed and 100% equity deals is denoted by stars, ***, **, * denotes significance on 1%, 5% and 10% level respectively.

Target firm variables	All acquisitions	100% Cash	Mixed and 100% equity
Levdev	-0.003	-0.025	0.014 ***
3-year leverage	0.188	0.149	0.218***
Rating	0.227	0.115	0.314***
ln(Sales)	1.133	0.791	1.398***
M/B	1.889	1.760	1.990***
ROA	0.075	0.059	0.086**
Cash/A	0.201	0.243	0.169***
PPE/A	0.232	0.188	0.265***
12-month return	0.205	0.203	0.206
Relative size	0.453	0.235	0.622***
Same sic	0.528	0.500	0.549
Herfindahl	15.464	14.35	16.32**
N	815	356	459

3. Results

Regression (1) in table 2 reports the impact of the acquiring firm's *Levdev* on the *Cash%* used in the transaction [eq. (2)]. The result confirms prior findings by Harford et al. 2009, we find a negative and statistically significant relationship. In regression (2) we test if the target firm's capital structure dislocation affects the *Cash%* irrespective of the acquirer's financial status. Our results are in line with our hypothesis, the coefficient estimate of *Levdev* (-76.47; $p<0.05$) indicates that if the target firm is underleveraged by 1%, the acquirer will use 0.7647% more cash in the transaction. Hence, underleveraged targets are more likely to be acquired with a greater proportion of cash. Pseudo R-squares between regression (1) and (2) are nearly identical (0.0501 and 0.048) indicating target characteristics are almost of equal importance in determining *Cash%*. These results are confirmed in regression (4) using the specification from Harford et al. (2009) with acquirer controls but substituting with target firm's *Levdev* and *3-year leverage* instead of corresponding acquirer variables. Target firm dislocation has a significant and negative impact on the amount of cash used although we use acquirer specific controls, this supports our hypothesis that acquirers use more cash when buying underleveraged targets.

In regression (3) we estimate eq. (3) to test if acquirers deviate from the expected *Cash%* if targets are under/overleveraged. Our results suggest that acquirers use a larger cash proportion than expected in their offer if the target is underleveraged (-21.64; $p<0.1$). A 1% increase in the capital structure dislocation yields 0.2164% less cash used relative to expectations.

In unreported results we re-estimate regression (2) with logit models including 100% stock and 100% cash offers as dependent variables. The results confirm our prior findings: capital structure dislocation is positively (negatively) related to stock (cash) bids. We further estimate a model with the differences of the control variables between acquirer and target in addition to acquirer controls. Our results are again in line with our prior findings that leverage deviation is negatively related to the cash percentage, i.e. underleveraged targets are acquired with a larger fraction of cash.

To further study the link between target firm capital structure and the means of payment in the transaction, we split the sample between over/underleveraged acquirers/targets and re-estimate our regressions in table 2 reporting the results in table 3.

Our results suggest that acquirers (both under- and overleveraged) payment choice is determined by target credit rating (-), target M/B (-) and relative size of target (-). Target leverage dislocation is a significant factor for underleveraged acquirers but not for overleveraged acquirers, although the coefficient has the expected sign even among overleveraged acquirers.

Table 2: Regression results

The dependent variable *Cash%* denotes the proportion of the transaction that is paid in cash. *Cash-E(Cash)* is the difference between the actual fraction of cash and the expected amount of cash used. Our control variables are defined in table 1. Regression (1) includes only acquirer based independent variables (variable specifications in table 1). Regressions (2) and (3) include target firm controls. Regression (3) also includes expected fraction of cash used. Regression (4) includes independent variables for acquirer but *Levdev* and *3-year leverage* for the target firm. Robust t-stats are reported in parentheses. ***, **, * denotes two-sided significance on 1%, 5% and 10% level respectively.

	(1) Cash%	(2) Cash%	(3) Cash%-E(Cash%)	(4) Cash%
Levdev (acquirer)	-65.5390**			
	(-2.182)			
Levdev (target)		-76.4667**	-21.6441*	-100.174***
		(-2.027)	(-1.698)	(-2.684)
3-year leverage (acquirer)	24.9745			
	(0.744)			
3-year leverage (target)		49.8398	27.8300**	61.5749
		(1.274)	(2.200)	(1.635)
Rating	-5.7019	-41.1794***	-10.3692**	4.7307
	(-0.463)	(-2.919)	(-2.478)	(0.388)
ln(Sales)	7.9868**	-1.7815	-2.8891**	12.7956***
	(2.475)	(-0.506)	(-2.435)	(3.840)
M/B	-19.2086***	-22.0722***	-4.9799***	-22.9336***
	(-5.265)	(-5.635)	(-4.344)	(-4.855)
ROA	205.8699***	30.9548	11.1820	197.9993***
	(3.761)	(1.146)	(1.157)	(3.931)
CASH/A	6.2337	37.8759	14.5737*	15.6369
	(0.186)	(1.328)	(1.719)	(0.462)
PPE/A	-63.8695***	-30.0117	-4.3232	-60.7777**
	(-2.613)	(-1.211)	(-0.528)	(-2.538)
12-month return	-14.1965**	9.0506*	2.0971	-13.8255***
	(-2.425)	(1.720)	(1.581)	(-2.677)
Relative size	-3.0622	-13.7363***	-2.2776	2.2408
	(-0.762)	(-3.601)	(-1.367)	(0.504)
Same sic	4.7211	-0.4559	2.2192	9.9242
	(0.531)	(-0.052)	(0.783)	(1.109)
Herfindahl	0.2399	0.0882	0.0592	0.1553
	(0.704)	(0.254)	(0.546)	(0.520)
rating (target)				-76.6658***
				(-6.628)
relative M/B				9.4126
				(1.563)
E(cash%)			-0.5264***	
			(-7.460)	
Constant	161.9497***	207.4526***	45.3384***	129.3719***
	(4.707)	(6.108)	(4.519)	(4.346)
Observations	815	815	815	815
Pseudo R-Squared	0.0501	0.048		0.0612
R-squared			0.221	
Year fixed-effects	YES	YES	YES	YES
Acquirer independent variables	YES	NO	NO	YES
Target independent variables	NO	YES	YES	NO
Model	TOBIT	TOBIT	OLS	TOBIT

Table 3: Further results with split samples

We expand the results in table 2, column (2) by dividing the sample into two categories, first based on the acquirer over or under leverage (OL acq., UL acq.) and then by the target being over or underleveraged (OL target, UL target). All other variables are the same as in table 2, regression (2).

	(1)	(2)	(3)	(4)
	Cash%	Cash%	Cash%	Cash%
	OL acq	UL Acq	OL target	UL Target
Levdev (Target)	-56.6507	-294.6052***	-40.2241	-151.7970**
	(-1.307)	(-2.609)	(-0.910)	(-2.280)
3-year leverage (target)	54.7694	10.0752	49.5390	100.5708
	(1.454)	(0.120)	(1.128)	(1.470)
Rating	-23.6580*	-51.7944**	-11.2927	-67.0321***
	(-1.678)	(-1.966)	(-0.743)	(-2.664)
ln(Sales)	-4.1122	0.3695	-11.4926***	5.7986
	(-0.989)	(0.061)	(-2.647)	(1.039)
M/B	-8.8682**	-35.7021***	-22.7513***	-23.9081***
	(-2.148)	(-4.714)	(-3.425)	(-4.352)
ROA	-6.5009	36.4735	77.9757**	-11.3620
	(-0.191)	(0.820)	(2.036)	(-0.280)
CASH/A	-11.1451	65.8509	13.2441	59.8364
	(-0.329)	(1.368)	(0.356)	(1.371)
PPE/A	-36.4070	-15.8995	-84.4295***	16.5124
	(-1.361)	(-0.361)	(-2.849)	(0.401)
12-month return	4.6049	19.7424*	-11.9358	24.6917***
	(0.916)	(1.732)	(-1.375)	(2.722)
Relative size	-14.4556***	-14.2676**	-6.3641*	-40.8516***
	(-3.218)	(-2.281)	(-1.896)	(-3.624)
Same sic	12.7908	-16.3946	17.1258	-15.9620
	(1.273)	(-1.096)	(1.566)	(-1.151)
Herfindahl	0.5721	-0.4893	0.4880	-0.4726
	(1.545)	(-0.773)	(1.105)	(-0.865)
Constant	139.4203***	267.9087***	160.7499***	268.8528***
	(4.030)	(4.221)	(4.331)	(4.361)
Observations	310	505	326	489
Pseudo R-Squared	0.0429	0.0671	0.0499	0.0714
Year Fixed Effects	YES	YES	YES	YES
Acquirer independent variables	NO	NO	NO	NO
Target independent variables	YES	YES	YES	YES
Model	TOBIT	TOBIT	TOBIT	TOBIT

When performing the same split according to target firm leverage, we report that the target firm leverage has a negative impact on the cash percentage when targets are underleveraged (column (4)) in line with our expectations. The effect of leverage deviation on cash is not statistically significant among overleveraged targets (t=-0.910).

In all models in table 2 and table 3 the sign of the leverage deviation is negative in line with our hypothesis, suggesting a negative effect of the target firms leverage deviation on the cash percentage chosen to settle the transaction.

4. Conclusions

We document that acquirers not only consider their own financial status when conducting acquisitions but also consider the target firm's capital structure when choosing between cash or equity as the means of payment. Our evidence supports the argumentation of Harford et al. (2009) that firms re-align capital structures to optimal levels through mergers and acquisitions.

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