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DETERMINANTS OF THE PAYMENT METHOD IN ACQUISITIONS

Ken C. Yook
George M. McCabe

INTRODUCTION

Previous research has shown that the form of payment is important in explaining returns to both bidder and target shareholders. Abnormal returns for bidders in stock acquisitions are significantly negative while abnormal returns in cash acquisitions are zero or positive (for example, see Brown and Ryngaert, 1991; Trifts, 1991; Travlos and Pappioannou, 1991; Travlos, 1987; and Wansley, Lane, and Yang, 1983, 1987). This empirical evidence of larger returns in cash offers when compared to stock exchange offers implies that the choice of exchange medium has economic significance.

Why does such a different wealth effect exist? What characteristics of bidders who prefer cash payment differentiate them from bidders selecting stock payment? The literature suggests several theories to answer these questions. However, many of these theories lack empirical verification, and no attempt has been made to synthesize the models and test their combined implications. This paper proposes an empirical analysis directed at jointly assessing five hypotheses on the choice of payment method in acquisitions.

THEORIES ABOUT THE PAYMENT METHOD AND THEIR PROPOSED VARIABLES

Probably the most prevalent early explanation of the choice of payment method was that it was driven by the tax code: cash-payment acquisitions qualified for a stepped up basis and non-cash-payment acquisitions received the benefits of tax loss and credit carryforwards. However, empirical studies have failed to support this (for a more rigorous discussion, see Yook, McCabe, and Shoemaker, 1992). Although difficulties in accurately measuring the actual tax gains are commonly cited as the reason, Gilson, Scholes, and Wolfson (1988) have shown that there is no direct linkage between tax benefits and payment mode.[1] This paper, therefore, focuses on other theories. Five hypotheses and the variables implied by them are discussed below.

Jensen's Free Cash Flow Theory

Jensen (1986, 1988) predicts that managers of firms with cash flow in excess of profitable investment opportunities will squander it on wasteful perquisites and overinvestment. Managers of these firms are assumed to attach greater value to perquisites and firm size than to the benefits of paying excess cash flow out to shareholders in dividends or stock repurchases. Jensen also argues that it is possible to reduce these wasteful expenditures by binding management to pay out future cash flows. Acquisitions for cash either use up excess funds, divert funds from internal investments, or cause the bidder to incur debt. In any case, they reduce the discretionary cash flow available to management. Thus, Jensen's theory would predict a positive response to cash acquisitions by bidders with cash flow in excess of profitable internal investment opportunities. For these bidders a cash bid should be cheaper than a stock bid so they should be more likely to make cash bids.

Empirical investigation of these theories has been hampered by an inadequate definition of free cash flow. Recently, Lang, Stulz, and Walkling (1991) provided an operational definition of free cash flow. They argue that a firm with Tobin's q less than one does not have profitable internal investment opportunities. Lehn and Poulsen (1989) had previously defined free cash flow as operating income before depreciation less interest expenses, taxes, and preferred and common dividends. This paper follows Lang, Stulz, and Walkling and defines firms with free cash flow as those with positive Lehn and Poulsen free cash flow and also with Tobin's q less than one. The prediction is that firms with positive free cash flow are more likely to use cash payment in acquisitions.

Information Asymmetry Theory

The widely known Myers and Majluf (1984) model hypothesizes that equity securities will be issued only if management has inside knowledge that the firm's shares are overvalued. Thus, a stock issue signals to the market that the firm *is* overvalued and drives down the share price. Hansen (1987) expands this idea to a bilateral asymmetric information world where the bidders do not know the true value of the targets and vice versa. In this world, the target, which knows its true value, accepts cash offers only when its value is less than the offer made. The cash offer bidder bears the cost of overpaying for the target by itself. To protect itself from the target's adverse selection, therefore, the bidder may choose stock instead of cash, since in that case the target shares the decrease in the market value of the bidder when the bidder overpaid for the target.

In light of two-agent bargaining strategies under this double lemon problem, Hansen developed a signalling model in which the target uses both the exchange medium offered and the amount of the offer as signals of the bidder's value. Hansen's model yields several testable implications. First, it shows that the probability of a cash offer decreases as the target increases in size relative to the bidder. Second, it shows that the probability of cash offers increases with the target's debt level and decreases with the bidder's debt level.

Tax Advantaged Dividend Substitutes Theory

The tax advantaged dividend substitutes theory is similar to the Jensen's free cash flow theory in that it also focuses on free cash flow. Instead of focusing on the agency relationship between management and shareholders, it emphasizes the costs (increased taxes) of transferring this excess cash flow to shareholders. Bierman (1985) demonstrates that there are significant tax incentives in the personal income tax as well as the corporate tax for one firm to acquire the shares of other firms rather than pay a cash dividend.[2]

Buying the shares in another firm is not equivalent to buying back their own shares even though both produce similar tax advantages relative to dividends in transferring value to shareholders.[3] However, a bidder's previous stock repurchases may signal the existence of free cash flow and the willingness of management to place shareholders' interests first and avoid the agency and tax costs of free cash flow by using tax advantaged distributions to shareholders through cash acquisitions. Using excess cash flow to fund acquisitions should involve lower transaction costs than buying back stock and reissuing it for the acquisition. But the same incentive would not be present for a firm already issuing new equity. Thus, the probability of using cash as a means of payment is higher for firms that have recently repurchased their own shares and lower for firms that have recently issued new equity.[4]

Optimal Capital Structure Theory

From the acquiring firm's viewpoint, the use of stock as payment for acquisitions can be viewed as a new stock offering, and a cash payment (if financed by debt) can be viewed as a debt offering.[5]

Accordingly, theories of securities offerings and the associated changes in capital structure can be seen to be related to the choice of payment mode.

The optimal capital structure theory says that each firm has a unique optimal capital structure in market equilibrium.[6] It implies that, in order to avoid the transaction costs of post-acquisition financial restructuring, acquirers ought to structure acquisition financing so the capital structure of the post-acquisition firm is optimal. As an empirical approximation, this optimum is taken to be the bidder's preacquisition level.[7]

In this context, we expect that the discrepancy between the *bidder-targets* preacquisition combined leverage and the *bidders* pre-acquisition level of leverage will influence the choice of the payment method. Acquirers who expect their acquisitions to result in higher than optimal debt levels should pay in stock in order to adjust the equity position of the postacquisition firm, while cash should be used in acquisitions where lower than optimal debt levels are expected. Thus, the discrepancy between the two firm's consolidated leverage and the bidder's preacquisition leverage (called here change in leverage) is expected to decrease the likelihood of a cash offer.

Acquisition Strategy Theory

When seeking the reason almost all hostile tender offers are cash payment, Huang and Walkling (1987) suggest that bidding strategy may influence the form of payment. In stock offers, a bidding firm must obtain approval from the SEC before target shareholders begin to tender their shares. This process could take several months, while bidders paying cash could start to acquire target shares within several weeks.

Faster transactions could be crucial for success as extra time allows target management and competing bidders the opportunity to implement their strategies. Interestingly, Jarrell, Brickley, and Poulsen (1988) suggest that the secular decline in the stock returns to bidders reflects the increased competition among bidders and the rise of auction-style contests during the eighties. An increase in multiple bidding tends to reduce bidder returns and increase the target's return. Thus, resistance by target management often benefits owner managers by promoting an entry of competing bids.[8]

Hostile offers and those likely to encounter competing bids may have a higher probability of success if they involve cash. Therefore, acquisitions in which the bidder expects target management resistance and/or competing bids are more likely to be for cash.

Summary of Theories

The above discussion leads to the identification of nine potential determinants of payment method in acquisitions. The five theories and the variables they imply are summarized in Table 1. The hypothesized sign of each variable shows whether the cash payment likelihood is expected to vary directly (+) or inversely (-) with that variable.

SAMPLING

The sample firms were selected by examining the COMPUSTAT Industrial Research File for all delistings caused by acquisition during the period 1980-1988. All delistings were confirmed in the **Wall Street Journal Index**. Other criteria used for selection of data were as follows:

1. Data availability of both bidder and target firms on the COMPUSTAT files.
2. Acquisitions in which the medium of payment was known and took the form of cash or stock exchange.[9]

3. If the bidder's ownership of the target firm exceeded 50% before the takeover announcement, the acquisition was eliminated from the sample.
4. In cases in which several acquisitions were made by the same bidder, the bidder is counted separately for each acquisition made, but the sample includes only cases in which no other acquisition has occurred in the preceding year.
5. Consolidations of corporations, which are a combination of two or more corporations into a new corporation, are excluded from the sample.

TABLE 1
PAYMENT METHOD THEORIES AND THEIR PROPOSED VARIABLES

Theories	Variables[a]	Expected sign[b]
Jensen's free cash flow theory	Free cash flow dummy	+
Information asymmetry theory (Hansen's model)	Target-bidder size ratio	-
	Bidder leverage	-
	Target leverage	+
Tax advantaged dividend substitute theory	Bidder's previous stock repurchases	+
	Bidder's previous stock issues	-
Optimal capital structure theory	Change in leverage	-
Acquisition strategy theory	Competition dummy	+
	Target resistance dummy	+

[a] For a completed description of how these are computed, see the appendix.
[b] A positive (negative) sign implies that the variable increases the likelihood of a cash (stock) offer.

Method of payment was identified from the **Wall Street Journal**. The event date of each acquisition is the date of the offer's initial announcement in the **Wall Street Journal**.[10]

The total number of acquired companies which were delisted from COMPUSTAT during the sampling period is 602. Application of the above data requirements resulted in a final sample of 205 acquisition events. Of the 205 events, 152 acquisitions used cash payments and the remaining 53 acquisitions used stock exchanges. The composition of the estimation sample is summarized in Table 2.

TABLE 2
DISTRIBUTION OF ACQUISITIONS BY YEAR OF ANNOUNCEMENT

Year	Cash Payment	Stock Exchange	Total
1980	7	7	14
1981	20	5	25
1982	11	12	23
1983	16	6	22
1984	22	5	27
1985	24	4	28
1986	30	9	39
1987	15	5	20
1988	7	0	7[a]
Total	152	53	205

[a] Only two months in 1988 are covered.

EMPIRICAL RESULTS

Sample means for each variable and t-statistics, for both the cash payment group and the stock exchange group, are displayed in Table 3.

TABLE 3
VARIABLE MEANS AND UNIVARIATE TEST STATISTICS[a]

Variable[b]	Cash payment	Stock exchange	Difference in means t-statistics
Free cash flow dummy	0.316	0.125	2.447[c]
Target-bidder size	0.467	0.283	1.809[e]
Target leverage	0.306	0.310	-0.112
Bidder leverage	0.318	0.302	0.525
Bidder stock repurchase	0.044	0.016	3.309[c]
Bidder stock issue	0.171	0.038	3.295[c]
Change in leverage	-0.004	0.008	-1.435
Competition dummy	0.355	0.056	5.921[c]
Target resistance dummy	0.145	0.066	2.050[d]

[a] From a sample of 205 acquisitions occurring during 1980-1988. For more details on the sample, see section 3.
[b] For a completed description of how these are computed, see the appendix.
[c] Significant at the 0.01 level
[d] Significant at the 0.05 level
[e] Significant at the 0.10 level

The following logit regression is used to model the selection of cash vs. stock payment as functions of proposed determinants:

$$\text{Log}[P_i/(1-P_i)] = a_0 + a_1(\text{Free cash flow})i + a_2(\text{Target-bidder size})_i + a_3(\text{Bidder leverage})_i + a_4(\text{Target leverage})_i + a_5(\text{Bidder's stock repurchase})_i + a_6(\text{Bidder's stock issue})_i + a_7(\text{Change in leverage})_i + a_8(\text{Competition})_i + a_9(\text{Target Resistance})_i + e_i,$$

where P_i is the probability of a cash offer and $(1-P_i)$ is the probability of a stock offer. Table 4 reports parameter estimates and the associated t-statistics for three different logit models. Model 1 includes all nine explanatory variables. The two other models differ in whether target and bidder debt ratios are included separately or combined into a single variable. The optimal capital structure theory suggests that the choice of payment is affected by the deviation of the combined firms leverage from the optimum, thus, the single variable change in leverage. Hansen's model, on the other hand, argues for the use of each firm's debt ratio separately. High correlations may make interpretations of the three variables in model 1 problematic; hence, they are entered separately in models 2 and 3. Also presented in the table are the pseudo-R^2 for each version of the model which provides an indication of the overall explanatory power of the model and the likelihood ratio statistic that tests its statistical significance.[11,12]

First, Jensen's free cash flow theory is strongly supported by the results of the logit model as well as the univariate analysis. The free cash flow dummy, which is assigned a value of one if the bidder has a below average q ratio and an above average free cash flow and zero otherwise, is significant at the 0.01 level in all versions of the logit analysis. Firms that have unprofitable internal investment opportunities and considerable free cash flow tend to make cash acquisitions.

TABLE 4
ESTIMATES OF LOGIT MODELS[a]

Variables	Model 1	Model 2	Model 3
Free cash flow dummy	1.3374	1.2895	1.2995
	(2.749)[c]	(2.781)[c]	(2.699)[c]
Target-bidder size	-0.1091	-0.0368	0.0632
	(-0.277)	(-0.197)	(0.176)
Target leverage	1.4978		0.4321
	(1.249)		(0.486)
Bidder leverage	-0.9242		0.0636
	(-0.688)		(0.057)
Bidder stock repurchase	11.4577	11.0408	11.1839
	(2.410)[c]	(2.422)[c]	(2.426)[c]
Bidder stock issue	6.4047	5.8447	5.8273
	(1.959)[c]	(1.846)[d]	(1.836)[d]
Change in leverage	-7.3037	-2.8135	
	(-1.462)	(-1.123)	
Competition dummy	2.5551	2.4906	2.4818
	(3.974)[b]	(3.909)[b]	(3.894)[b]
Target resistance dummy	1.3039	1.2295	1.2984
	(1.826)[d]	(1.751)[d]	(1.835)[d]
Constant	-0.4055	-0.2209	-0.4261
	(-0.847)	(-0.787)	(-0.899)
Psuedo-R2	0.210	0.196	0.197
Likelihood ratio	47.676	46.084	45.830

[a] The t-statistic, computed to test the null hypothesis that the estimated coefficient is equal to zero, is shown in parentheses for each coefficient estimates.

[b] Significant at the 0.01 level

[c] Significant at the 0.05 level

[d] Significant at the 0.10 level

The acquisition strategy theory suggests that acquisitions, for which there is competition or which face resistance by target management, are more likely to be for cash. The competition dummy is the single most significant variable in both the univariate analysis and logit analysis. The sample for this study includes 58 contested bids. Fifty-five of these contested bidders used cash payment. Furthermore, almost two-thirds of those 58 contested bids were won by competing bidders, not initial bidders. All those successful competing bidders except one offered cash payment. The one exception was a white knight who was induced to bid by the target's incumbent management. These findings confirm that cash is a more effective bargaining tool for bidders who are facing existing bids or expecting to encounter competing bids.

However, the target management's resistance dummy, while significant at the 0.05 level in the univariate analysis, is only significant at the 0.10 level in the logit models. However, most hostile takeovers in which the target's management initially resists eventually become friendly takeovers. It may be that, at the beginning, the target resists inducing a raised bid but later accepts the raised bid. Our variable "target resistance" measures resistance on the day of the announcement. In our sample, all takeovers in which the target resisted to the end (a total of 3 of the 31 that initially resisted) were cash payments. This fact together with the high significance of the competition dummy variable provide the strongest possible support for the acquisition strategy theory.

The tax advantaged dividend substitute theory has somewhat mixed support. The variable bidder's share repurchase is significant at the 0.05 level in all versions of the logit analysis. In essence, managements willing to seek out tax advantaged means of distributions to shareholders (e.g. by repurchasing their stocks) are, *ceteris paribus*, more likely to engage in cash acquisitions. This close relationship between share repurchases and cash acquisitions is also found by other studies (for example, see Shoven and Simon, 1987; Auerbach and Reishus, 1987). The bidder's stock issue variable is statistically significant but has the opposite sign to that predicted indicating that bidders who have recently issued common stock are more likely to use cash payment. This finding is inconsistent with our presumption that firms that issued stock may not have free cash flow or debt capacity to make cash acquisitions and therefore tend to use stock payments. This sign can be rationalized by arguing that since there are substantial fixed costs in stock issues, firms tend to make large issues that drive their debt ratios below target levels. Thus, they tend to make cash acquisitions which raise their debt levels. Use of an industry debt ratio (instead of the bidders preacquisition ratio) in the debt change variable may provide a better control and could affect the sign of this stock offer variable. In any case the results do not support our theory.

Hansen's model is probably the most elaborate and complete model discussed here, but the data do not support it. The positive sign of the size variable which is significant at the 0.10 level in the univariate analysis (but not in the logit) is not as the model would predict. Hansen's model predicts that the beneficial contingent-pricing effect of stock gets stronger (thus the likelihood of cash falls) as the equity of the target relative to the equity of the acquirer gets larger. We can suggest several explanations for this outcome. One is simply that debt financing offers raiders the chance to bid for much larger targets that could not be purchased from internal equity financing. Another explanation is that managers of smaller firms are more likely to have a larger ownership in their firms so that they are less willing to lose control by issuing stock to outsiders. Therefore, they prefer debt-financed cash payment to stock exchange. Also, managers of smaller firms are more likely to have held the stock for a long time and thus have substantial capital gains. To avoid a high capital gains tax which would result from selling the stock for cash, they may prefer a stock exchange. In addition to its prediction about size, Hansen's model predicts that the probability of a cash offer increases with the targets debt ratio and decreases with the bidder's debt ratio. Again, the signs obtained are not in accordance with this prediction.

The optimal capital structure theory variable has the predicted sign but is not significant at any reasonable level. This may be because our proxy for optimal structure (the pre-merger leverage of the bidder) is not a good measure of the optimal capital structure of the merged firm or because of the lack

of validity of the optimal capital structure theory. For example, when (in results not reported here) we used net debt, following Bruner (1988), instead of total debt to measure the variable change in leverage, the variable turned out to be marginally significant.[13] The results can be interpreted as providing some slight support for the optimal capital structure theory.

Finally, we checked the stability of our results over time. The characteristics of the takeover market have changed over time. The use of cash payment steadily increased in the 1980s along with the rise of junk bond financing and federal and state regulations of takeovers. Therefore, in results not reported here we examined whether our results remain unaltered when the sample period changed including a dummy variable in the logit regression which distinguishes acquisitions consummated in 1980 to 198x and acquisitions consummated after 198x to 1988 with a varying x. The results are not sensitive to the periods chosen.

SUMMARY

This study has sought to investigate determinants of the method of payment in acquisitions. The empirical approach was to test nine financial variables suggested by five hypotheses using a binominal logit model. Our results offer fairly strong support for the acquisition strategy theory. Bidders facing competing bids or resistance by incumbent management are more likely to use cash. The competition dummy is the single most significant variable in this study. There is similar strong support for Jensen's free cash flow theory. Firms with fewer profitable investment opportunities and large free cash flow tend to make cash acquisitions as Jensen (1986,1988) would predict. Problems of agency costs and asymmetric information due to free cash flow may be reduced by cash acquisitions.

The significance of the repurchase variable provides direct evidence for the tax advantaged dividend substitute theory. That is, managements that have a history of seeking out tax advantaged methods of distributing funds (share repurchases) are more likely to use cash. However, the positive sign of the stock issue variable which is opposite to our expectation somewhat mitigates support for the theory.

Finally, in case of the optimal capital structure theory and Hansen model, the suggested variables are not significant and in the case of Hansen's model variables do not carry the predicted signs.

APPENDIX

(1) Free cash flow dummy: This is a 0/1 variable defined on the basis of the two variables Tobin's q ratio and Lehn-Poulsen's free cash flow. The variable is 1 if the bidder has lower q ratio and higher free cash flow than sample averages, and 0 otherwise.

(2) Tobin's q: This is the ratio of market value to replacement costs. The market value of a firm is determined as the sum of common stock, preferred stock, and debt. Common stock is market value, and preferred stocks and debt are book values one year prior to the announcement. Replacement cost data are from 10-K filings. For those firms which do not report replacement cost, we apply an algorithm used by Hasbrouck (1985). **Value Line** is consulted for an estimate of the average age of the plant. In the case of companies, which the average age of the plant is not reported in the **Value Line**, we estimate the age as n = (accumulated depreciation)/(current depreciation expense). The replacement value for net plant is then estimated by restating the reported net plant using the consumer price index: $(\text{net plant, replacement value})_t = (\text{net plant, book value})_t * [CPI_t/CPI_{t-n}]$. The replacement value of inventory is generally taken as the book value if the reported method is FIFO or retail, which is approximately correct provided inventory turnover is not too slow. Firms that used LIFO valuation also reported a LIFO reserve, which is added to the reported inventory to obtain the equivalent FIFO value.

(3) Bidder-target size ratio: The size variable is defined as the ratio of value of the target firm divided by value of the bidder firm.

(4) Bidder (target) leverage: Leverage is measured as the ratio of total debt over total asset.

(5) Bidder stock repurchases: The stock repurchase variable is the bidder's total repurchase in the past two years scaled by equity value. Repurchases are defined as uses of funds which decrease common and/or preferred stock.

(6) Change in leverage: The change in leverage is the bidder and target's consolidated debt ratio [(bidder debt + target debt)/(bidder asset + target asset)] minus the bidder's debt ratio.

(7) Competing bid dummy: The competing bid dummy is 0/1 variable. If there existed multiple offers for a given target, this variable is assigned a one; otherwise, zero. The existence of multiple offers is obtained from the **Wall Street Journal**.

(8) Target resistance dummy: The target resistance dummy is a 0/1 variable. The target management's resistance to the bid is identified from the **Wall Street Journal**. If there is, a one is assigned; otherwise, zero.

ENDNOTES

[1]Gilson et al. (1988) suggest that a rich set of potential transactional substitutes exist that can yield similar productive outcomes and tax results. For example, a step-up in basis might be better achieved by a sale and leaseback or by a sale of less than all of the target's assets. The principle alternative to net operating losses (NOL) transfer is for the firm to change its asset and liability structure to generate current taxable income to reduce the delay in eliminating its NOL. In short, acquisitions must be compared with a broader range of alternatives to demonstrate their dominance as a means of achieving tax gains.

[2]The purchase of real assets or repurchase of its own stock might be alternatives. However, the facts that the firm may not have real investments that are expected to yield a high enough return to justify investment and legal restriction on the repurchase of common stock for tax purposes may favor the route of distributing cash through acquisitions.

[3]Shoven and Simon (1987) argue that both are nearly equivalent in the absence of informational problems, taxes, and transaction costs.

[4]Shoven and Simon find that firms that are more likely to engage in acquisitions or share repurchases are predictable: they have large cash flow and low Tobin's q ratio, which supports Jensen's theory discussed above.

[5]The market reaction to the choice of payment can be viewed as the same as that to a security offering, i.e., significant negative returns for both stock issuing firms and stock offering bidders, and normal returns for both debt issuing firms and cash offering bidders (for a literature survey on new equity issue, see Smith, 1986).

[6]Various analyses focus on different characteristics such as bankruptcy costs, non-debt tax shields, and agency costs to explain the existence of an optimal capital structure.

[7]It may be that due to co-insurance effects the debt capacity of the combined firm is greater than that of the individual firms but that has not been shown conclusively and is not considered here.

[8]Numerous factors behind the high level of competition are also mentioned in Jarrell, Brickley, and Poulsen (1988). Federal (William Act) and state regulations of tender offers which impose disclosure requirements and delay rules have the effect of fostering multiple-bidder, auction contests and preemptive biddings. Litigation and other blocking actions can provide the necessary time for the management of the target firm to "shop" the target and generate competing bids. Other factors include innovations in takeover financing, inventions of defensive strategies, etc.

[9]This study considers a combination of cash and debt securities payment as an all-cash offer, and a combination of common stock and preferred stock as an all-stock offer.

[10]This study takes the announcement date as the date that the **Wall Street Journal** first mentions that particular acquisition. The first announcement of an acquisition bid in the **Wall Street Journal** could be anything from a rumor to the final approval.

[11]The log likelihood ratio index is defined as (1 - log likelihood at convergence/log likelihood at zero). It is similar to the R^2 statistics in the case of a multiple regression model and provides an indication of the logit model's explanatory power.

[12]The likelihood ratio statistic is computed to test the hypothesis that all the parameters in the model are simultaneously equal to zero. Under this null hypothesis, the statistic has an asymptotic distribution which is a chi-square with the degrees of freedom equalling the number of parameters in the model. The statistic is very highly significant for all models.

[13]A direct measure of net debt defined by Bruner (1988) is total debt minus cash and cash equivalents.

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