

Firm Characteristics, Stock Price Reactions, and Debt as a Method of Payment for Corporate Acquisitions

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We examine the use of debt in the payment package employed by bidding firms for corporate acquisitions. While the use of cash and stock has been extensively investigated in the literature, the use of debt has been largely ignored. In addressing this shortcoming, we examine the decision to use debt and other factors that affect the bidding firm's stock price reaction. The evidence indicates that the bidder's stock price reaction is associated with the riskiness of the debt, the ability to benefit from the tax shield afforded by the interest payments, and the amount of stock included in the offer together with the debt. The results are consistent with the explanations offered by Myers and Majluff (1984) and also with the notion of an optimal risk sharing/capital structure realignment by bidding firms.

INTRODUCTION

It is well documented in the literature (Weston, Chung, and Hoag, 1990) that the medium of payment used in corporate acquisitions has an impact on the stock price of acquiring firms. Empirical studies of the method of payment for corporate acquisitions, however, largely have concentrated on the use of stock and/or cash offers by bidding firms. The use of debt to partially pay for target firm shares has not been examined comprehensively. Consequently, this paper focuses on such acquisitions where bidding firms announce that they will use debt securities to pay for target firm shares, as opposed to funding a cash acquisition by issuing debt. The lack of coverage in the literature of debt as a method of payment is surprising, given that its occurrence is not uncommon. In our sample of 339 acquisitions, about 12.1 percent (41 firms) employ some debt in the con-

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sideration paid to target shareholders for their shares.¹ This nontrivial occurrence argues for an in-depth examination and provides the motivation for our paper.

Our results indicate that the average abnormal return surrounding the announcement of offers where debt is used is positive but insignificant. This is surprising because some of these offers involving debt also include stock. From other studies of the method of payment (Peterson and Peterson, 1991), the stock price reaction is significantly negative whenever stock is included in the consideration paid to target shareholders as part of a cash/stock offer. Our evidence indicates that whenever debt is included in the package paid to target shareholders, any deleterious effects of also using stock are mitigated. In investigating this issue further using cross-sectional regressions, we find that the abnormal announcement period returns increase with the proportion of stock used in the offer. In addition, the stock price reaction is negatively associated with the riskiness of the bidder firm's debt, and is positively related to the bidding firm's ability to benefit from the tax deductibility of interest payments on the new debt used in the acquisition.

The evidence we report is consistent with Myers and Majluf (1984), where the use of debt mitigates the adverse selection problem associated with the use of equity for acquisitions. Further evidence from our cross-sectional regressions also provides support for the notion of a realignment of the capital structure/risk sharing arrangements within the merged entity.

RELATED WORK AND HYPOTHESES

Following Myers and Majluf (1984), when managers of an acquiring firm have asymmetric information about their firm's equity value, the decision to use stock in exchange for target shares is interpreted by the market as a signal that the bidder's shares are overvalued. Managers are trying to use the overvalued stock to pay for the target firm's shares. While this may be true for some bidders, there may be others who use stock to pursue an acquisition that is genuinely profitable and not to exploit any unjustified overvaluation of their shares. Because the market is unable to differentiate between the two, firms that offer stock for an acquisition will suffer a stock price decrease at announcement. This is an example of adverse selection at work. Consistent with this explanation, the announcement of an acquisition for stock typically is associated with a drop in stock price for the acquiring firm (Asquith, Bruner, and Mullins, 1987; Travlos, 1987; Brown and Ryngaert, 1990; Peterson and Peterson, 1991; Datta and Datta, 1995). Consequently, some bidders may forego potentially profitable acquisitions to avoid these adverse selection (signaling) costs. Bidders who offer cash, however, may avoid the adverse selection problem that accompanies an exchange of shares.

The preceding explanation implies that bidding firms should prefer cash offers. Theoretical models suggest, however, that certain aspects of an exchange of shares may offset any potential adverse selection costs. For example, when there is asymmetric information about target value (as opposed to bidder value), an offer of securities in the combined firm provides the bidder with contingent pricing benefits because the value of the package given to target shareholders depends on the future profitability of the merged

¹ The sample employed in this paper consists of equity offers, internally generated cash offers, and offers containing debt issues directly to target shareholders.

entity (Hansen, 1987; Fishman, 1989; Eckbo, Giammarino, and Heinkel, 1990; and Berkovitch and Narayanan, 1990). Target shareholders become owners of the combined firm. Shareholders of the bidding firm thus are protected to some extent in the event that target assets are overvalued. This is true for offers involving either equity or debt securities.

In Fishman (1989), as in Myers and Majluf (1984), some bidders offer debt, rather than equity, to avoid the potential adverse selection costs associated with a pure equity offer. In this sense, debt and cash offers provide the same benefits. In addition, Fishman argues that debt also provides contingent pricing benefits because, as in the case of equity, target shareholders are forced to have a claim in the combined firm, albeit a less sensitive one compared to the equity. The final value of the debt claim given to target firm shareholders depends on the future profitability of the acquisition. This is an important distinction between acquisitions for debt and acquisitions for cash. In any cash offer, regardless of how the cash was raised, (equity, debt, or internally), target shareholders have no further claim in the combined firm. Consequently, a cash offer provides no contingent pricing benefits because target shareholders are not forced to share in the risk of the combined entity.

We also can extrapolate the contingent pricing argument further. Contingent pricing is relevant only when the bidder has asymmetric information about the target. The value of the debt that is issued for the acquisition will be less sensitive than equity to the uncertainty surrounding the value of the target. Consequently, by offering debt to target shareholders, bidder firm managers are signaling that there is less uncertainty regarding target value as compared to offers where stock is used. There is less need for contingent pricing because there is less uncertainty.

The use of debt also can be motivated by appealing to agency theory. If the utility of managers increases by maximizing firm size, it is possible that they may agree to pay too high a price to acquire target firms (Niden, 1993). Market participants also may infer this when they learn of the acquisition bid, and, consequently, stock prices may decrease. To avoid this, managers may desire to bond themselves and reassure stock market participants that the offer for the target firm is a bona fide one. Including debt as part of the consideration for acquiring target shares may help managers in this regard. Debt financing entails regular interest payments, and any failure to meet them implies disastrous consequences. Thus, by using debt, managers are signaling that future revenues from the acquisition will be sufficiently high that they will be more than able to meet the interest payments involved, and that they have not paid an excessive price for the target firm.² Thus, due to (a) avoidance of adverse selection costs, (b) less need for contingent pricing, and (c) fewer agency costs, an offer involving some amount of debt dominates an offer of 100 percent equity. Our first hypothesis is that the stock price reaction to an offer involving the exchange of debt for shares should be higher than the market's reaction to an acquisition involving only a share-for-share exchange.

Brown and Ryngaert (1990) contend that an exchange of shares may provide tax advantages over a cash offer because the combined firm may be able to reduce future taxes by incorporating unused operating loss carryforwards and investment credits of the target

² The same is true for a cash offer financed through a debt issue.

firm. Alternatively, firms offering cash may benefit from a step-up in the depreciable basis of the target firm's assets. They suggest that the potential net tax benefits of an exchange of shares are weighed against potential adverse selection costs before managers decide the most appropriate method of payment. If the tax benefits dominate the adverse selection costs, then the bidder will offer stock for the acquisition. In effect, Brown and Ryngaert (1990) argue that taxes should be a relevant factor in determining the method of payment for acquisitions.

Using debt adds another dimension to the tax picture because interest payments on the debt given to target shareholders are tax deductible for the bidding firm. The use of debt may provide not only the benefits discussed earlier, but also tax benefits. Although bidders may offer either cash or debt to avoid the large negative stock price reaction that would ensue from a pure stock offer, a debt offer will be preferred when the bidder has greater need for the interest tax shield on new debt.³ Hence, our second hypothesis predicts that the greater the potential for the bidder to benefit from additional tax shields, the higher will be the bidder's reaction to acquisitions offering debt as a medium of exchange. The tax deductibility of interest payments also argues for a higher stock price reaction to offers involving debt as opposed to pure stock offers.

Myers and Majluf (1984) acknowledge that when cash is unavailable, using debt may mitigate the adverse selection problem associated with equity offers. They recognize, however, that any increased risk associated with higher debt levels is also a concern. (Myers and Majluf, 1984, p. 439). As risk increases with the firm's debt level, the opportunity costs associated with both the potential underinvestment and wealth transfer problems also increase. This leads to our third hypothesis that if debt is to be used in partial payment for the acquisition, the higher the firm's debt level and the greater the riskiness of that debt, the lower will be the announcement period stock price reaction.

It also has been proposed that the method of payment is chosen to optimally influence the post acquisition capital structure of the combined firm (Murphy and Nathan, 1989). They report that announcement period returns are positive (regardless of whether the bidding firm offers cash or stock) as long as the chosen method of payment is consistent with the notion of an optimal capital structure. We reexamine this issue of optimal capital structure adjustments by focusing on the decision to use some combination of stock, cash, and debt for the acquisition. We investigate whether the market reacts positively to the use of stock to negate or counterbalance excessive leverage effects resulting from the acquisition. These counterbalancing effects of combining stock and debt may be more important to the bidding firms than any adverse selection effects associated with an equity issue. Furthermore, the value decrease due to adverse selection may be less severe for an offer including both stock and debt than for a stock-only acquisition. If the market rewards adjustment toward an optimal capital structure, then given a high preexisting amount of leverage, increasing the amount of common equity should lead to a higher stock price reaction.⁴

³ Cash offers funded by debt offer the same ability to reduce taxes; those funded internally or by equity do not.

⁴ For the majority of the firms in the sample that we employ, the leverage of the bidders will increase after the acquisition. This increased leverage may be beneficial from a capital structure viewpoint. If the debt capacity

DATA AND EMPIRICAL METHODS

SAMPLE DATA

The sample for this study consists of participating firms involved in successful mergers or tender offers from 1969 through 1989. Such acquisitions completed prior to 1979 are identified using the Federal Trade Commission's *Mergers and Acquisitions* for July 1981. After 1979 target firms are identified by examining NYSE/AMEX delistings from the CRSP (Center for Research in Security Prices) daily returns file. A search of the *Wall Street Journal Index* identified the acquiring firms. Inclusion in the sample required data for both bidder and target firms to be available on the CRSP database and the Compustat industrial or research tapes. A total of 515 transactions met these initial criteria.

For each acquisition, the first announcement in the *Wall Street Journal* serves as the event date. These dates are obtained from the *Wall Street Journal Index* (WSJI). Other information obtained from *Wall Street Journal* articles and the WSJI includes the initial offer price, the method of payment and other terms of the transaction, and information on possible confounding events for both bidders and targets. We eliminate 176 transactions from the original sample. Our final sample consists of 339 acquisitions: 108 for stock, 152 for internally funded cash offers, 38 stock-cash combinations, and 41 offers that included new debt in the consideration offered to target shareholders.⁵

Table 1 provides information on the different capital components employed by the 41 firms in our sample that include some debt as payment for target shares. Although no firm used debt as the exclusive medium of payment, over one-third of the sample (14 firms) included over 40 percent debt in the total consideration paid to target shareholders. The majority of bidder firms structured their offer as a combination of debt and internally generated cash (25 firms). Only three firms in the sample (see second row of Table 1) structured their offer using a combination of only stock and debt, but debt formed over 40 percent of the total consideration paid. Even though only three firms used stock and debt exclusively (see second row of Table 1), there were seven other bidders that also used stock and debt in conjunction with cash. A total of ten firms used debt and stock in varying amounts.

COMPUTATION OF ABNORMAL RETURNS

We use the event study method as detailed in Mikkelson and Partch (1986) to measure the abnormal stock returns for all 339 firms in our sample. The analysis of abnormal returns is not restricted to the 41 firms that used debt; we also analyze the abnormal returns for firms that used other methods of payment. We need the abnormal returns for these other firms to compare bidder stock returns according to the type of components used in the payment package. The market index is the CRSP equally weighted index of stocks traded on the New York and American Stock Exchanges. Tests also are conducted

of the assets of the combined entity is higher, then the increased leverage may provide more return on equity to the shareholders.

⁵ Firms are eliminated from the sample if the announcement mentioned that cash would be raised through an equity or debt issue or if the firm had announced a debt or equity issue within the past three months. Employing these criteria leads us to believe that the our sample of cash offers may be regarded as being funded from internal sources.

Table 1—Frequency Distributions for Firms Offering Debt as Part of Total Consideration for Acquisition (Sample Size: 41)

Payment Medium	Number of Firms in Each Category of Percentage of Acquisition Financed by Debt			Total
	0-20%	21-40%	> 40%	
Cash & Debt	7	10	8	25
Stock & Debt	-	-	3	3
Cash, Stock, Debt	3	3	1	7
Debt & Other Securities	3	1	2	6
Total (by Amount of Debt)	13	14	14	41

using the value-weighted index which gave equivalent results. The parameters of the single index market model are estimated over a 255 day period ending 46 days prior to the acquisition announcement. The cumulative abnormal return (CAR) for each bidder is computed over the two day interval from day -1 to day 0, where day 0 is the date reported in the *Wall Street Journal Index*. Test statistics (Z-statistics) which are unit normally distributed under the null hypothesis of no abnormal return are computed using standardized abnormal returns (Mikkelsen and Partch, 1986). We also use a nonparametric generalized sign test to determine whether the ratio of positive to negative abnormal returns in the event window differs from that in the estimation period (Cowan, Nayar, and Singh, 1990).

CROSS-SECTIONAL REGRESSIONS

For the 41 bidding firms that included debt securities in the consideration paid to target shareholders, we use ordinary least squares regressions to explain the relation between the bidder's abnormal announcement period return and variables that may affect the size of that return. The dependent variable in the regressions is the two day abnormal return for the bidding firm's shareholders. These abnormal returns are estimated over the event window from day -1 to day 0, where day 0 is the *Wall Street Journal* announcement date.

The independent variables in the regression analysis represent factors hypothesized to influence the size of the market's reaction. First, we control for the proportion of stock, cash, or debt in the bidder's offer. The corresponding variables are PSTOCK, PCASH, and PDEBT, respectively, which are computed as the dollar value of the component divided by the total consideration paid to target shareholders. For some firms in our sample, PSTOCK, PCASH, and PDEBT do not sum to one because other securities such as preferred stock also were offered. Information to compute these variables is obtained from the initial *Wall Street Journal* article announcing the acquisition. Under the adverse selection explanation of Myers and Majluf (1984), bidder firm management will use stock to pay for the acquisition if they believe that their stock is overpriced. Conversely, if management believes that the stock is underpriced, they will employ other methods of payment, such as cash and debt. If this explanation is supported, we would expect the announcement period abnormal returns to be negatively related to the proportion of stock used, PSTOCK, and positively related to the proportions of cash and debt, PCASH, and PDEBT, respectively.

Following the Myers and Majluf pecking order framework, firms will use internal financing before raising funds from external sources. In addition, if external sources are to be used, then firms first will employ securities that are the least sensitive to changes in firm value. Any attempt to use securities that are sensitive to firm value is interpreted by the market as an attempt to exploit overvaluation of those securities. In the context of acquisitions, the adverse selection problem is more pronounced when the buyer has the option to finance the acquisition without issuing securities, but nonetheless uses securities to do so. We use the variable SLACK to control for the bidder's ability to complete the takeover without issuing either debt or equity. SLACK measures the ability of the acquirer to pay for the acquisition from internal capital sources. SLACK is computed as the bidder's cash plus marketable securities (obtained from the financial statements immediately prior to the acquisition announcement) divided by the total offer price. A large value of SLACK indicates that the bidder had sufficient internal resources to acquire the target. A decision to use securities to consummate the acquisition constitutes negative information. We expect large values for SLACK to be associated with more negative stock price reactions.

We use the variable DEBTRATIO as a proxy for the riskiness of any new debt offered to target shareholders. DEBTRATIO is computed as the ratio of current liabilities plus long-term debt to the total assets of the bidder firm as of the fiscal year end immediately prior to the acquisition. Although this variable measures the amount of existing debt on the books of the acquirer, it provides a proxy for risk associated with issuing additional debt. In general, the higher the preacquisition debt level, the riskier the firm's existing debt and the riskier is the debt offered to target shareholders. According to the Myers and Majluf explanation, issuing securities that are more sensitive to firm value leads to greater adverse selection costs. Riskier debt should be associated with greater adverse selection and, in turn, with more negative abnormal returns. Further, according to Myers and Majluf, higher risk increases the opportunity costs associated with the potential for underinvestment and wealth transfer problems. We predict a negative relationship between DEBTRATIO, and the announcement period stock price reaction.⁶

There is also a possibility that firms may use debt, rather than internally generated cash, to obtain additional tax benefits due to the tax deductibility of interest payments. TAXSHIELD proxies for the potential for the bidder to use additional tax shields, thereby increasing cash flow. It is computed as the ratio of taxes to earnings before taxes and measures the average tax rate of the bidder as of the fiscal year-end immediately preceding the acquisition. When tax refunds occur, this measure yields a negative number. In such cases, we constrain TAXSHIELD to a value of zero. This incorporates the possibility that the bidding firm does not need additional tax shields. TAXSHIELD is also constrained to a value of 1 whenever taxes paid are nonnegative and greater than earnings before taxes. This case could arise if the firm has large amounts of expenses that are not tax-

⁶ Other variables, such as coverage ratios and bond ratings, also may be used to proxy a firm's overall financial risk. These variables, as expected, are highly correlated. Following Myer's and Majluf (1984), however, our intention is to use a variable that captures both the firm's overall financial riskiness as well the increased potential for underinvestment/wealth transfer problems as the firm's debt level increases. In this sense, the choice of the debt/asset ratio may provide a better variable for our purpose than other coverage ratios or the bond rating.

deductible.⁷ We expect investors to react more positively to debt offers when the bidder can benefit from additional tax deductible expenses. The use of debt by firms that can benefit from the additional tax deductions is seen as a genuine managerial response and not as an attempt to exploit the use of overvalued securities.

We also control for the effects of firm size and potential agency costs on the bidding firm's stock price. OFFERSIZE is computed as the offer price divided by total asset value of the bidder from the financial statements immediately preceding the acquisition. This variable controls for the relative size of the acquisition. If the relative size of the target is small, little or no effect may be apparent in the bidder firm's announcement period returns because the expected synergistic benefits from an acquisition may not be large. Finally, the variable INSIDERHLDG is our proxy to control for potential agency costs associated with the acquisition. Jensen and Meckling (1976) and other agency theory papers show that higher insider holdings should encourage managers to act in the best interests of stockholders. According to this explanation, the larger the percentage of the bidder's shares held by insiders, the smaller are the agency costs associated with the acquisition and the higher is the abnormal return for the bidder firm.

Financial statement information to compute the variables TAXSHIELD, DEBT RATIO, SLACK, and OFFERSIZE is obtained from the Compustat database and Moody's manuals. The information is obtained for the fiscal year immediately preceding the acquisition announcement. Data on the percentage of shares held by insiders (INSIDERHLDG) for the bidding firms are obtained from *ValueLine* reports for the quarter ending before the acquisition announcement date.

EMPIRICAL RESULTS

DESCRIPTIVE STATISTICS

Descriptive statistics for the sample of 41 firms including debt in the overall medium of exchange are reported in Table 2. The distributions of PCASH, PSTOCK, and PDEBT indicate that the 41 offers in our sample are dominated by the use of debt, relative to stock or cash. The bidder firms have an average debt ratio of approximately 42 percent preceding the takeover announcement. The average percentage of debt in the offer is only slightly higher at 46 percent, which makes it seem that the average debt ratio would rise only slightly subsequent to the acquisition. The fact that most of these firms are using relatively little equity for the acquisition, however, should raise the debt level in a nontrivial fashion. This may indicate that bidders are attempting to move toward a more optimal target capital structure. If these firms also include a percentage of equity in the offer, however, this could imply that the bidder has structured the medium of exchange in keeping with its current capital structure policy. In addition, the mean value of SLACK, indicat-

⁷ We chose this variable as our proxy for the bidder's need for additional tax shields because it is parsimonious and intuitively appealing. Using the actual taxes paid in calculating this ratio incorporates all taxes paid by the firm, including investment tax credits, adjustments for foreign taxes paid, etc. There are other more complex tax variable measures that could be computed, but these additional measures may yield little extra explanatory power at great computational cost. In addition, because we compute the variable in the same manner for each firm in the sample, any noise in the variable would be uniformly distributed across the firms. If this variable is also more noisy, then we would expect the variable to emerge as less significant in the regressions. We also believe that the information required to compute a less parsimonious tax variable would further reduce the size of our sample.

Table 2—Descriptive Statistics for the Sample of Bidder Firms Using Debt in the Payment Package for Corporate Acquisitions

The sample spans the period from 1969 to 1989. Medium of payment information is extracted from the *Wall Street Journal* announcement of the acquisition. Financial statement data are obtained from Compustat and Moody's manuals as of the fiscal year end immediately prior to the announcement date. Insider holdings are obtained from *ValueLine* reports for the quarter preceding the announcement.

Variable*	Number of Observations	Mean	Median
PCASH	41	0.363	0.396
PDEBT	41	0.459	0.484
PSTOCK	41	0.111	0.000
DEBTTRATIO	40	0.417	0.431
SLACK	40	1.717	0.272
OFFERSIZE	40	0.398	0.205
TAXSHIELD	40	0.390	0.400
INSIDERHLDG	40	12.26%	6.0%

*The variables are as follows:

- PCASH, PDEBT and PSTOCK = The proportions of cash, debt, and stock used in the offer by the acquiring bidder
- DEBTTRATIO = The ratio of current liabilities and long-term debt to the total assets of the bidder firm
- SLACK = The ratio of cash and marketable securities for the bidder firm to the offer price for the acquisition
- OFFERSIZE = The ratio of offer price for the acquisition to the total assets of the bidder firm
- TAXSHIELD = The average tax rate of the bidder firm, computed as the ratio of taxes to earnings before taxes
- INSIDERHLDG = The aggregate amount of managerial holdings of the stock of the bidder firm as reported by *ValueLine*

ing the firm's ability to pay for the target with either cash or debt is 1.717. This is consistent with the observation that certain firms (the majority of our sample) include little equity in their offer, ostensibly to avoid the stock price impact of a negative signal that the equity is overvalued. It is possible that the cash implicit in the SLACK variable measured at the fiscal year-end prior to the acquisition is maintained for the acquisition itself.

The mean price paid for the target as a fraction of the total assets of the bidder (OFFERSIZE) is nearly 40 percent, indicating that the acquisitions in our sample are substantial compared to the asset base of the bidder. We can dismiss any impression that these acquisitions are trivial corporate additions. The TAXSHIELD variable, which is a measure of the average tax rate of the sample firms, shows the firms could benefit from additional tax deductions, which may indicate that these 41 firms are including debt in the offer to reduce future taxes through the deductibility of interest payments.

ABNORMAL RETURNS TO BIDDER FIRMS

The mean cumulative average abnormal returns for the bidders classified by method of payment are reported in Table 3. Consistent with other empirical studies, bidders offering an acquisition for stock (first row) or a combination of only cash and stock (second row) experience significant negative abnormal returns. The average two day drop in stock price was 1.95 percent for the sample of stock offers and 2.69 percent for offers comprising both cash and stock. Both of these are statistically significant. At first glance, this result seems inconsistent with previous studies that typically report lower returns for offers con-

Table 3—Event Study Results

The sample spans the period from January 1, 1969 to December 31, 1989. Abnormal returns are computed using the market model with the CRSP value-weighted index as the proxy for the market return. Standardized abnormal returns are computed by weighting individual firm's cumulative abnormal returns in inverse proportion to their standard deviations. The statistic Z_{T_1, T_2} tests the cumulative average abnormal return over days T_1 through T_2 , the event window. Significance levels for the generalized sign test are reported in the last column listing the number of positive to negative abnormal returns

Method of Payment	Sample Size	Cumulative Average Abnormal Return	Z_{T_1, T_2}	Number of Positive to Negative Cumulative Abnormal Returns
Stock	108	-1.95%	-8.99***	31:76 ##
Cash, Stock	38	-2.69%	-7.12***	11:27 #
Cash	152	-0.07%	-0.37	76:76
Debt, Cash, Stock	41	0.10%	0.26	23:18

*** The cumulative average abnormal return is different from zero at the .001 level

The number of positive to negative abnormal returns is less than that in the estimation period at the 0.05 level

The number of positive to negative abnormal returns is less than that in the estimation period at the 0.01 level

taining 100 percent stock than for those containing both stock and cash. The nonparametric test, however, indicates that the percentage of negative returns is more significant for the stock-only sample than for the combination sample. This result is consistent with the empirical evidence reported in prior literature. Also consistent with prior studies, bidders that offered only cash (third row) experience a small and insignificant abnormal return.

Bidders that included debt (fourth row) in their offer to target shareholders earned a two day abnormal return of 0.10 percent. This is the highest return for any group of bidders in the overall sample. The mean cumulative abnormal return (CAR) for the bidders whose offers included either 100 percent cash or some portion of debt was significantly higher (at the 5 percent level) than the CAR for bidders that used 100 percent stock or a combination of stock and cash. This supports the conjecture that bidders may avoid the negative signal associated with an exchange of shares by making either (a) an all cash offer or (b) using debt to pay some portion of the acquisition price to target shareholders. The evidence implies that debt and cash are substitutes with respect to their ability to mitigate the adverse selection problem associated with an exchange of shares. One question remains: What determines the use of debt in the package, and are there any incremental benefits to including debt as opposed to just using cash? We investigate these issues further by considering the results from cross-sectional regressions.

CROSS-SECTIONAL REGRESSIONS

Cumulative average abnormal returns over the event window $[-1, 0]$, where day 0 is the *Wall Street Journal* announcement date, are used as the dependent variable in the cross-sectional regressions. We conduct ordinary least squares regressions using the explanatory variables described previously. The results of our regression analysis are reported in Table 4. The first regression (Row 1) employs all eight explanatory variables. The sample size in this regression (and Row 2) reduces to 38 bidders because of missing insider holding data for some firms. Two variables have significant explanatory power in explaining the size of the announcement period reaction for the bidder firms incorporating debt in their

Table 4—Cross-Sectional Regression Results for Bidder Firms' Abnormal Returns

The dependent variable is the cumulative abnormal return for bidder firms for the period from one day before to the day of the *Wall Street Journal* announcement of the acquisition. The sample used in these regressions consists of 41 acquisitions over the period 1969 to 1989, where acquiring firms paid target firm shareholders partially with debt securities

Row	Sample Size	Coefficient Estimates ^a									Adjusted R ²
		Intercept	PCASH	PDEBT	PSTOCK	DEBT/RTIO	SLACK	OFFERSIZE	TAXSHIELD	INSIDERHLDG	
1	38	-0.0162 (-0.276)	0.0341 (0.556)	0.0089 (0.155)	0.0789 (1.354)	-0.1237** (-2.672)	-0.0004 (-0.346)	-0.0042 (-0.403)	0.1041 ** (2.804)	-0.0000 (-0.086)	0.0999
2	38	-0.0075 (-0.470)			0.0598** (2.163)	-0.1036** (-2.708)			0.1010** (2.921)		0.1974
3	40	-0.0085 (-0.533)			0.0550* (2.018)	-0.0939** (-2.535)			0.0983** (2.873)		0.1733

*The variables are as follows:

- PCASH, PDEBT and PSTOCK = The proportions of cash, debt, and stock used in the offer by the acquiring bidder
- DEBT/RATIO = The ratio of current liabilities and long-term debt to the total assets of the bidder firm
- SLACK = The ratio of cash and marketable securities for the bidder firm to the offer price for the acquisition
- OFFERSIZE = The ratio of offer price for the acquisition to the total assets of the bidder firm
- TAXSHIELD = The average tax rate of the bidder firm, computed as the ratio of taxes to earnings before taxes
- INSIDERHLDG = The aggregate amount of managerial holdings of the stock of the bidder firm as reported by ValueLine

* Significantly different from zero in a two tailed test at the 0.1 level

** Significantly different from zero in a two tailed test at the 0.05 level

method of payment. First, the variable TAXSHIELD has a positive coefficient and is significant at the .05 level. This implies that investors react positively when bidders who potentially could benefit from increased tax shields offer debt in exchange for target shares.

Second, the variable DEBTRATIO has a negative coefficient that is significant at the .05 level, indicating that bidders with riskier debt experience lower abnormal returns when they pay for acquisitions with debt securities. This result is also consistent with the Myers and Majluf prediction that as the firm's risk increases with higher debt levels, the greater is the potential for underinvestment problems and for wealth transfers to new shareholders and the more negative is the effect on current stockholders. This result is also consistent with traditional theories of capital structure that argue that too much debt may lead to increased bankruptcy costs and, therefore, to reduced equity value.

The other variables in the regression equation had statistically insignificant coefficients. To determine whether the payment package used by the bidder is an attempt to move toward an optimal capital structure, however, we analyze the importance of the percentage of equity (PSTOCK) in the absence of the other insignificant explanatory variables. The results are reported in Table 4, Row 2 for the same 38 bidders as in Row 1. In addition, Row 3 present results for the 40 firms with information on all three explanatory variables (TAXSHIELD, DEBTRATIO, and PSTOCK). The results in the second and third rows are the same in significance and sign of the coefficients. The results indicate that the proportion of stock used in the acquisition, given that the firm included debt in the offer, is positively associated with the stock price reaction. After controlling for tax shield implications and the riskiness and size of the firm's existing debt, investors react more favorably to firms using a larger percentage of equity. Table 2 shows that the amount of debt issued would increase, in general, the firm's total leverage. Therefore, including a larger portion of equity (rather than cash) in the offer may be an effort to maintain the postcombination debt level at some optimal value. This suggests some support for optimal capital structure/risk sharing adjustments in addition to the asymmetric information explanation adapted from Myers and Majluf (1984).

SUMMARY

Although theoretical models [Myers and Majluf (1984) and Fishman (1989)] offer predictions about the use of debt securities as a medium of exchange, empirical research to date has focused on the announcement period effects of using cash and/or stock as the medium of exchange; the use of debt has been largely ignored. To address this issue, we compare the announcement period stock price reactions for 41 bidding firms that incorporate some debt in the total consideration paid to target shareholders with reactions for a large sample of bidders that use internally generated cash, all stock, or some combination of cash and stock offers. We report that, overall, the highest point estimate for the average two day announcement period return is for the sample of bidders that includes at least some debt in the payment offered to target shareholders. Furthermore, tests for differences in stock price reaction across payment medium combinations reveal that the stock price reaction for offers involving some amount of debt is statistically significantly higher than the stock price reaction for acquirers that use all stock or cash-and-stock offers. Certain characteristics of debt used as the method of payment may serve to certify the value of the

bidding firm. In this respect, our results are consistent with the prediction of Myers and Majluf (1984) that the use of debt mitigates the adverse selection effects associated with a pure stock offer.

We use a series of cross-sectional regressions to determine the impact of various explanatory variables on the size of the bidder's stock price reaction to the acquisition announcement. We find that the riskier the debt used in the acquisition, the less positive the effects for current shareholders of the bidder firm. This is consistent with the Myers and Majluf prediction regarding the pecking order of financing (where the riskier the financing vehicle used, the more negative is the effect on stock price). Consistent with a tax and signaling explanation is the positive effect of tax shields on the stock price reaction. Managers that anticipate synergies from the acquisition may expect *ex ante* earnings to rise in the future. A debt issue signals to the market that the firm anticipates being able to exploit the tax shield from interest payments associated with the new debt. This tax shield (and hence the signal) is more valuable the higher is the potential tax rate of the firm. Our results support this prediction. We find that for firms incorporating debt securities in their offer, higher tax rates are associated with more positive stock price reactions.

We also find that after controlling for both the tax shield implications and the riskiness of the bidder's current debt, the greater the proportion of stock used in the acquisition offer, the more favorable the announcement period reaction. This may indicate that using new common equity to counterbalance an increased debt level due to the acquisition enhances the value of current stockholders' positions. The increase in common equity when accompanied by an issue of debt is not viewed as an attempt by managers to exploit inside information regarding possible overvaluation of the stock. Instead the market may view the acquisition as one where the payment method embodies optimal capital structure/risk sharing adjustments. Our results provide further insight, and possibly a prescription, into the issue of how firms should pay for acquisitions. If firms want to avoid the adverse selection costs associated with a pure equity offer but desire to obtain contingent pricing and tax benefits, they should use debt as part of the payment medium to target shareholders. They should balance the increased use of debt by also employing some equity if the pre-existing debt levels are high. In general, our paper implies that debt represents an added weapon in the arsenal of acquiring firms that should not be ignored because it can be used to structure more beneficial acquisition bids.

REFERENCES

1. Amihud, Yakov, Baruch Lev, and Nikolaos G. Travlos, "Corporate Control and the Choice of Investment Financing: The Case of Corporate Acquisitions," *Journal of Finance*, 45, no. 2 (1990), pp. 603-616.
2. Asquith, Paul, Robert F. Bruner, and David W. Mullins, Jr., "Merger Returns and the Form of Financing," working paper (1987).
3. Berkovitch, Elazar, and M.P. Narayanan, "Competition and the Medium of Exchange in Takeovers," *Review of Financial Studies*, 3, no. 2 (1990), pp. 153-174.
4. Brown, David T., and Michael D. Ryngaert, "The Mode of Acquisition in Takeovers: Taxes and Asymmetric Information," *Journal of Finance*, 46, no. 2 (1991), pp. 653-670.
5. Cowan, Arnold R., Nandkumar Nayar, and Agai K. Singh, "Stock Returns Before and After Calls of Convertible Bonds," *Journal of Financial and Quantitative Analysis*, 25, no. 4 (1990), pp. 549-554.

6. Datta, Sudip and Mai E. Iskandar Datta, "Corporate Partial Acquisitions, Total Firm Valuation, and the Effect of Financing Method," *Journal of Banking and Finance*, 19, no. 1 (1995), pp. 97-115.
7. Eckbo, B. Espen, Ronald M. Giammarino, and Robert L. Heinkel, "Asymmetric Information and the Medium of Exchange in Takeovers: Theory and Tests," *The Review of Financial Studies*, 3, no. 4 (1990), pp. 651-675.
8. Fishman, Michael J., "Preemptive Bidding and the Role of the Medium of Exchange in Acquisitions," *Journal of Finance*, 44 (1989), pp. 41-57.
9. Hansen, Robert G., "A Theory for the Choice of Exchange Medium in Mergers and Acquisitions," *Journal of Business*, 60 (1987), pp. 75-95.
10. Jensen, Michael C., and William H. Meckling, "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure," *Journal of Financial Economics*, 3, no. 4 (1976), pp. 305-360.
11. Mikkelsen, Wayne H., and M. Megan Partch, "Valuation Effects of Security Offerings and the Issuance Process," *Journal of Financial Economics*, 15, no. 1/2 (1986), pp. 31-60.
12. Murphy, Austin, and Kevin Nathan, "An Analysis of Merger Financing," *Financial Review*, 24, no. 4 (1989), pp. 551-556.
13. Myers, Stewart C., and Nicholas S. Majluf, "Corporate Financing and Investment Decisions When Firms Have Information That Investors do not Have," *Journal of Financial Economics*, 13 (1984), pp. 187-221.
14. Niden, Cathy M., "An Empirical Examination of White Knight Corporate Takeovers: Synergy and Overbidding," *Financial Management*, 22 (NEED YEAR HERE), pp. 28-46.
15. Peterson, David R., and Pamela P. Peterson, "The Medium of Exchange in Mergers and Acquisitions," *Journal of Banking and Finance*, 15 (1991), pp. 383-405.
16. Travlos, Nickolaos G., "Corporate Takeover Bids, Methods of Payment, and Bidding Firms' Stock Returns," *Journal of Finance*, 42, no. 4 (1987), pp. 943-963.
17. Weston, J. Fred, Kwang S. Chung, and Susan E. Hoag, *Mergers, Restructuring, and Corporate Control* (Englewood Cliffs, N.J., Prentice Hall, 1990).