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# **An Empirical Analysis of the Role of the Medium of Exchange in Mergers**

**WILLARD T. CARLETON, DAVID K. GUILKEY, ROBERT S. HARRIS, and  
JOHN F. STEWART\***

## **ABSTRACT**

In empirical studies of differences between firms which are acquired and those which are not, researchers typically divide firms into two groups—acquired and nonacquired. In this paper, we argue that cash takeovers may be sufficiently different from noncash acquisitions that failure to distinguish between them may lead to inappropriate generalizations. We provide evidence from the mid 1970s that three categories of firms can be distinguished: nonacquired, acquired in a cash takeover, and acquired in an exchange of securities.

THERE IS A SUBSTANTIAL empirical literature exploring the differences between firms which are acquired and those which are not. Typically these studies divide firms into two groups—acquired and nonacquired—and analyze the differences in the characteristics of the two groups using binary dependent variable techniques such as discriminant analysis or probit analysis. A fundamental shortcoming of these studies is that no distinctions are made concerning the nature of the merger or the acquiring firm. That is, it is assumed that acquired firms fall into a single category that is distinguishable from nonacquired firms. In fact, individual acquisitions may be motivated by quite different features suggesting that more than a single category of acquired firms should be analyzed. In this paper, we argue that cash takeovers may be sufficiently different from noncash acquisitions that modeling the events as being the same (i.e., just mergers) may be inappropriate. We then provide evidence using data for the mid 1970s that three types of firms can be distinguished: nonacquired, acquired in a cash takeover, and acquired in an exchange of securities.

The paper is organized as follows. In the next section, we suggest why firms acquired for cash may be quite different from firms acquired by an exchange of securities. Section II describes the empirical techniques which are used and briefly discusses the data set. In Section III, the results are presented and interpreted. Section IV contains our conclusions.

## **I. Cash Takeovers Versus Security Exchanges**

In the literature explaining differences between acquired and nonacquired firms [e.g., 4, 7, 8, 10, 14, 17, 19], no systematic effort is made to explore the role played

\* All of the University of North Carolina at Chapel Hill. We wish to thank the Federal Trade Commission and Small Business Administration for their assistance in developing the data and their consent to its use here. All opinions expressed are those of the authors, and do not necessarily reflect the positions of the FTC or SBA.

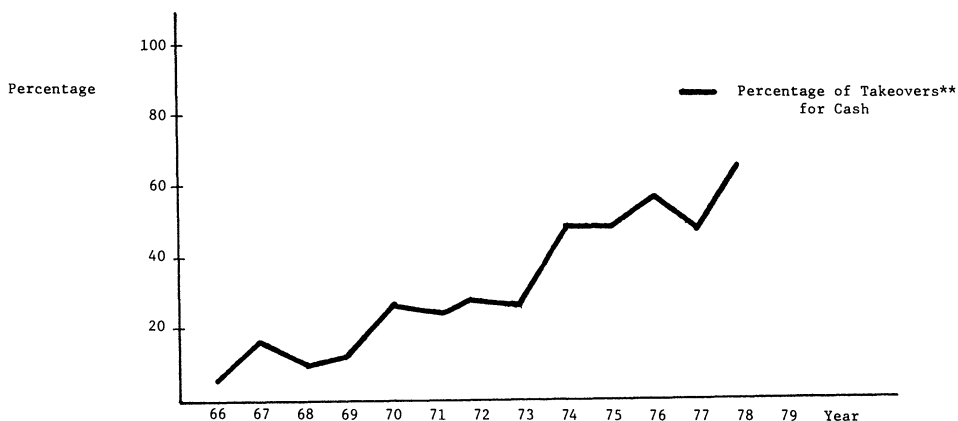
by the medium of exchange used in a merger; however, it is quite possible that mergers consummated by different types of exchanges stem from quite different motives and hence that firms acquired by different forms of payment have quite different financial characteristics.

The increased use of cash as opposed to security exchanges as a means of financing takeovers is clearly shown in Figure 1. A number of reasons have been suggested for the increased use of cash as a means of financing mergers. In the 1960s, many mergers were consummated with convertible bonds. The interest payments on such convertibles were tax deductible. Since 1969, however, interest payments on convertible debt expressly issued for acquisitions have not been allowed as tax deductible expenses,<sup>1</sup> thus reducing their desirability as a means of financing takeovers. Other possible explanations for the increased use of cash rest on market imperfections and/or agency considerations. It is often alleged that in the 1960s acquired firm shareholders did not understand the true worth of convertible securities used as payment in mergers, since there was no requirement that earnings figures be reported to reflect the diluting effect upon conversion. Whether such market inefficiency existed then or not, Accounting Principles Board Opinion Number 15 now requires that earnings per share must be reported on a fully diluted basis adjusting for potential conversion.

Another factor that may contribute to the increased use of cash is the increase in the number of hostile mergers. When equity securities are offered, the ultimate payoff to acquired firm shareholders depends on the value of such securities which in turn depends on perceptions about the success or failure of the merger in terms of postmerger performance. In an efficient market, it can be argued that a "cash" price offers no advantage over such equity securities; nonetheless, some have suggested that cash is a more effective bargaining tool in the face of resistance by incumbent management where there is public controversy about the business merits of the combination. It is also possible that some cash takeovers are a disguised form of share repurchase and in some instances represent an outflow of cash from an acquiring firm that no longer anticipates profitable internal investments. Using the merger channel may allow incumbent management of the acquiring firm to avoid certain negative consequences it associates with share repurchase, such as a negative signal to the market about future growth or a reduction in size with resultant loss in corporate prestige (or management's future compensation).

The increased use of cash may be further understood by looking at current differences in the tax and accounting consequences of cash takeovers and security exchanges. In essence, a merger can be treated as a pooling for accounting purposes and as a tax-deferred transaction if there is a continuity of ownership on the part of the shareholders of the acquired firm. While the details of the laws

<sup>1</sup> Section 279 of the code was enacted in 1969. In brief, it requires that no tax deduction for interest (in excess of \$5 million per year) shall be allowed to a corporation for subordinated debt with equity participation (convertible bond or attached warrants) that is issued to buy another corporation. Additionally, even unsubordinated, straight debt can become subject to Section 279 if the debtor corporation has a "thin" capital structure (as defined by certain debt-equity ratios and times interest earned ratios falling below critical levels). See [2], pp. 4.28-4.29.



**Figure 1.** Relative Importance of Cash Takeovers

**\*\*Source:** Federal Trade Commission Large Merger Series which covers acquisitions of manufacturing and mining firms with assets in excess of \$10 million. The percentage for cash is defined as the (number of cash takeovers) divided by (the number of cash takeovers plus takeovers by security exchange). Takeovers using a combination of cash and securities and takeovers for which the medium of exchange is not reported are not included in the calculations.

and regulations are too lengthy to be discussed here, a brief discussion of their nature is provided.<sup>2</sup>

#### *A. Tax Treatment*

An acquisition of one company by another may be ruled either taxable or tax-free. As discussed below, cash takeovers will be taxable whereas many security exchanges will be treated as tax-free transactions.

In general, an exchange of financial assets (such as occurs in a merger) is recognized by the Internal Revenue Code as the point to recognize gains and to assign new tax bases to assets. Such a taxable event has two major consequences for purposes of the present discussion. First, at the personal level, if the market value of the compensation received by a stockholder in an acquired firm exceeds (is lower than) his tax basis in the stock, a gain (loss) will be recognized and personal taxes paid (reduced). Second, at the corporate level, the acquiring entity will be able to step up the tax bases of some of the acquired assets if the fair market values of such assets exceed their tax bases—as a result obtaining increased depreciation tax shields. These two effects work in offsetting directions, the first effect reducing the benefit of any given dollar amount paid to an acquired firm shareholder and the second effect making an acquiring firm willing to pay more for an acquired entity.

Importantly, however, acquisitions may be ruled as tax-free (or perhaps more

<sup>2</sup> For a useful discussion of tax issues see [2], chapter 14. It should be noted that cash takeovers will be taxable acquisitions accounted for by the purchase method. While security exchanges will typically be tax-free and treated as a pooling of interest, such exchanges need not always fit into both the tax-free and pooling categories as is discussed in the text.

accurately tax-deferred) transactions if certain conditions are met. (Such tax free acquisitions are typically consummated under forms of reorganization outlined in Section 368 of the Internal Revenue Code). In a tax-free acquisition, no gain or loss is recognized for personal tax purposes at the time of the merger, and the tax bases of acquired assets cannot be changed by the acquiring entity.

The importance of this issue for the present research is that the medium of exchange used in a merger is directly related to whether an acquisition is ruled as taxable or tax-free. Generally speaking, a tax-free merger can result only if the owners of the acquired firm maintain a continuity of ownership after the merger. As a result, mergers consummated by an exchange of cash would necessarily be taxable. An exchange of voting stock on the other hand would result in a tax-free merger. Certain other security exchanges (e.g. convertible preferred) could be ruled as either tax-free or taxable, depending upon the specifics of the case (see [2]).

In an individual acquisition, planning the choice of tax-free or taxable status will depend upon the tax situations and tax bases of both the acquiring entity and the shareholders of the acquired firm. For example, a wealthy individual selling his company would typically prefer a tax-free acquisition and his tax savings from this would outweigh any corporate tax benefits to an acquiring entity that might result from writing up assets to higher bases.

### *B. Accounting Treatment*

There are two methods for accounting for an acquisition—purchase and pooling. In a purchase, certain excesses of purchase price over book value must be reported as goodwill on financial statements. While such goodwill must be amortized for accounting purposes, such amortization is not deductible for corporate tax purposes. A pooling of interest, on the other hand, does not lead to the creation of any goodwill account to be amortized; rather, it simply pools the assets of the two premerger entities.

To qualify as a pooling, a business combination must meet twelve specific conditions set forth in Accounting Principles Board Opinion Number 16. The thrust of these twelve conditions is that the acquired firm shareholders must continue to be voting common stockholders of the combined company. As a result, a merger consummated by cash would necessarily be accounted for by the purchase method. Typically, an exchange of voting common stock would be accounted for via a pooling of interest. It should be noted, however, that even an exchange of stock would be classified as a purchase if one of the twelve conditions set forth in APB Opinion Number 16 is not met by the merger.

The effect of these accounting differences on the valuation of the postmerger firm is a subject of controversy.<sup>3</sup> While purchase accounting may depress earnings per share, it could actually lead to higher cash flow as a result of larger tax-

<sup>3</sup> Using residual analysis, Hong, Kaplan, and Mandelker [9] studied empirically a sample of acquiring firms some of which used pooling accounting and some of which used purchase accounting. They found no evidence that pooling raises stock prices of acquiring firms or that purchase leads to a lowering of stock prices of acquiring firms.

deductible depreciation shields which often can be created in a purchase when it is a taxable merger. The effect of the accounting choice might be particularly important for managers whose compensation is based on some calculation of an earnings figure.

In summary, cash takeovers and security exchanges have very different tax and accounting implications. Cash takeovers will be taxable mergers accounted for as purchases. Security exchanges, on the other hand, will frequently be tax-free acquisitions which can be treated for accounting purposes as poolings of interest. Given these considerations, it is instructive to see if we can identify certain measurable financial characteristics of firms which are empirically useful in explaining the medium of exchange used in a merger. Ideally, such characteristics might include financial statement and capital market data, information on the personal tax status and holdings of individual owners of corporations, statistics on the compensation packages available to managers, expected future growth of companies, and so forth. Given the large sample of companies (over 1400) we study, however, we limit our analysis to financial statement and stock market data. The following section discusses these variables as well as the methods of sample selection and empirical analysis.

## II. The Empirical Model

### A. The Conditional Logit Model

As outlined above, there are good reasons to expect differences in the motivations for a merger to be reflected in the medium of exchange used in the acquisition. To model this empirically, we assume that over a given period of time (in the present case 1976–77) any firm can be assigned to one, and only one, of three categories:

$A_1$  = the firm was not acquired;

$A_2$  = the firm was acquired in a cash takeover; and

$A_3$  = the firm was acquired in a security exchange

Use of three categories of firms allows us to analyze simultaneously differences between acquired firms by medium of exchange ( $A_2$  versus  $A_3$ ) and differences between two types of acquired firms and nonacquired firms ( $A_2$  versus  $A_1$  and  $A_3$  versus  $A_1$ ). To examine the probability that any firm will be assigned to one of the three categories, we use a conditional logit model which considers the odds ratio for any bivariate choice:

$$\log \frac{P(A_2)_t}{P(A_1)_t} = X_t \beta_2$$

$$\log \frac{P(A_3)_t}{P(A_1)_t} = X_t \beta_3$$

$$\log \frac{P(A_2)_t}{P(A_3)_t} = X_t \beta_4 \quad t = 1, 2, \dots, T$$

where

$P(A_i)_t$  = the probability of the  $i$ th outcome for firm  $t$ ;

$X_t$  = a  $1 \times k$  vector of exogenous variables for firm  $t$ ; and

$\beta_i (i = 2, 3, 4)$  = a  $k \times 1$  vector of unknown coefficients.

We can use the first equation as an example. The left-hand side is simply the log of the ratio of two probabilities. The interpretation of a positive coefficient is that an increase in  $X_t$  causes  $A_2$  (being acquired in a cash takeover) to be more probable *relative* to  $A_1$  (not being acquired).

Estimation of this model can be accomplished by noting that the three probabilities must sum to one. Hence, one of the three equations is redundant. If we solve the first two equations plus the identity for the probabilities, we can write down the likelihood function for the observed random sample:

$$L = \prod_{A_1 \text{ Observed}} P(A_1)_t \cdot \prod_{A_2 \text{ Observed}} P(A_2)_t \cdot \prod_{A_3 \text{ Observed}} P(A_3)_t$$

The likelihood function can then be maximized with respect to  $\beta_2$  and  $\beta_3$ .  $\beta_4$  can then be calculated. An approximation to the asymptotic covariance matrix of the estimators can be obtained from the second derivatives of the likelihood function (see [16]). This allows us to perform tests of hypotheses, using the normal distribution, which are asymptotically valid.

## B. The Data

The sample firms used for the study were selected from manufacturing and mining firms covered by COMPUSTAT (Annual Industrial-Primary; Secondary and Tertiary Files). The 61 acquired firms (30 cash takeovers, 31 security exchanges) were listed on the COMPUSTAT Research Tape as firms acquired during the years 1976 and 1977. The 61 firms were crossed with the Federal Trade Commission's Merger Series and Moody's Industrial Manuals to ensure reliable information on the merger. The FTC series was used to classify firms as being acquired in cash takeovers or by securities exchanges. When necessary, FTC data were supplemented by checking the Commerce Clearing House's *Capital Changes Reporter*. The identity of the acquiring firm was known in all cases, but COMPUSTAT data were available on only 45 of the 61 acquiring firms.

The 1352 nonacquired firms were all those manufacturing and mining firms which were on COMPUSTAT's Annual Industrial tape as of May 1979 and for which complete data were available; thus, these firms had not disappeared via merger as of some eighteen months after the year-end 1977 date for selection of the acquired firms in the sample. The proportion of firms in each category in our sample is roughly representative of the population of large corporations in the United States. All data items are two-year averages for 1974-75.

Table I reports the specific variable names and definitions used in the empirical work. As can be seen, the variables are designed to measure specific characteristics (primarily financial) of each corporation. It should be noted that variables

**Table I**  
**Variable Definitions**

| Characteristic       | Variable Name <sup>a</sup> | Definition                                                               |
|----------------------|----------------------------|--------------------------------------------------------------------------|
| Liquidity            | CL1                        | Net Working Capital $\div$ Total Assets                                  |
| Leverage             | NID2                       | Total Liabilities $\div$ Total Assets                                    |
| Price Earnings Ratio | CPE1 <sup>b</sup>          | Market Value of Equity $\div$ Total Earnings                             |
| Size                 | CLGA                       | Log of Total Assets                                                      |
| Profitability        | CP1                        | Operating Income after Depreciation $\div$ Assets (pre-interest, pretax) |
| Dividend Policy      | CP1                        | Dividend Per Share $\div$ Earnings Per Share                             |
| Valuation Ratio      | NB1                        | Book Value Per Share $\div$ Market Value Per Share                       |

<sup>a</sup> The general notation for variables is as follows: (1) a first letter C denotes a variable calculated solely on individual company data and (2) a first letter N denotes a variable *normalized* by the industry average.

For example,  $NID2 = CID2 \div ID2$

where ID2 is the industry average for CID2.

<sup>b</sup> The sample was constructed excluding firms with negative price earnings ratios or price earnings ratios in excess of 100.

(beginning with *N*) to measure financial leverage and corporate book-to-market ratios have been normalized by an industry average.<sup>4</sup>

### III. Results

#### A. Univariate

Table II presents statistics on the characteristics of the firms in the sample. While acquiring firms will not be used in the conditional logit model to be presented shortly, and full data coverage of acquiring firms is not available, statistics for acquiring firms are also reported in Table II. It is clear that acquired firms are on average smaller than nonacquired firms, which are in turn smaller than acquiring firms. Additionally, price earnings ratios of acquired firms are lower than those for other firms, and firms acquired in cash takeovers have markedly lower dividend payout ratios. There is also evidence that acquired firms use less debt (relative to the industry average) than other firms and are more profitable than nonacquired firms. It is also interesting to note that there are no significantly different financial characteristics (better than .20 level) between acquiring firms using cash or securities in merger. The lack of such significant differences between these two groups of acquiring firms makes the split of

<sup>4</sup> It could be argued that industry normalization is appropriate for other variables, and standard use of financial ratios by financial analysts compares a firm's financial position to some norm for the firm's industry. We recognize this point and in other work [3] analyzing differences between acquired and nonacquired firms we report alternate specifications with variables both normalized and unnormalized. In that work we argue theoretically that normalized debt ratios are more appropriate measures of an acquired firm's potential debt capacity for an acquiror. Additionally, we find that normalized and unnormalized ratios on most dimensions perform about as well in attempting to explain whether a firm is or is not acquired.

**Table II**  
**Characteristics of Sample Firms**  
**Mean (Standard Deviation)**

|                 | Firms<br>Not Acquired | Acquired Firms     |                    | Acquiring Firms |            |
|-----------------|-----------------------|--------------------|--------------------|-----------------|------------|
|                 |                       | Cash               | Securities         | Cash            | Securities |
| Liquidity       | .3279                 | .3282              | .3295              | .3085           | .2678      |
| CL1             | (.166)                | (.144)             | (.1757)            | (.1432)         | (.1512)    |
| Leverage        | .9906 <sup>a</sup>    | .9461              | .8577              | .9647           | 1.0385     |
| NID2            | (.3662)               | (.3071)            | (.2729)            | (.1781)         | (.1922)    |
| P/E             | 8.779 <sup>a</sup>    | 5.39               | 5.78               | 7.9430          | 7.041      |
| CPE1            | (5.59)                | (3.47)             | (3.24)             | (6.7907)        | (4.305)    |
| Size            | 4.7308 <sup>a</sup>   | 4.0746             | 4.052              | 6.1932          | 6.7504     |
| CLGA            | (1.681)               | (1.24)             | (1.21)             | (1.3426)        | (1.6809)   |
| Profitability   | .1274 <sup>a</sup>    | .1306 <sup>b</sup> | .1683 <sup>b</sup> | .1455           | .1321      |
| CP1             | (.116)                | (.063)             | (.085)             | (.0705)         | (.062)     |
| Dividend Payout | .2969 <sup>a</sup>    | .1283 <sup>b</sup> | .2346 <sup>b</sup> | .3251           | .3338      |
| CD1             | (.5256)               | (.2006)            | (.2197)            | (.3170)         | (.1923)    |
| Valuation       | 1.94                  | 2.418 <sup>b</sup> | 1.807 <sup>b</sup> | 1.8421          | 1.6725     |
| Book/Market CB1 | (1.39)                | (1.032)            | (.969)             | (1.0845)        | (.9814)    |
| Inverse         | .515                  | .4136              | .5534              | .5429           | .5979      |

<sup>a</sup> Mean values for nonacquired and acquired (all 61 firms pooled) are significantly different at the .05 level based on *t*-test.

<sup>b</sup> Mean values for 30 firms acquired by cash are significantly different from values for 31 firms acquired by securities at the .05 level based on *t*-test.

acquired firms more likely to be representative of splits based solely on the medium of exchange, rather than the characteristics of the acquiring firms.

### *B. Logit Results*

The logit results are reported in Tables III and IV. We shall first discuss the dichotomous logit results (Table III) for which the dependent variable takes on a value of 1 if the firm is not acquired and a value of 2 if the firm was acquired. The estimated coefficients on CL1 (liquidity), NID2 (leverage), CPE1 (*P/E* ratio), and CLGA (log assets) are negative and statistically significant; the estimated coefficient on CP1 (profitability) is positive and statistically significant; and the estimated coefficients on CD1 (dividend payout) and NB1 (book-to-market ratio) are not significantly different from zero. Thus the probability of a given firm being acquired increases as its liquidity, leverage, price earnings ratio, and size decline and as its profitability increases. Note that neither dividend payout ratio nor ratio of book-to-market value appears to have any statistically significant impact on the probability of being acquired.

The results change substantially when we allow the dependent variable to fall into three categories (Table IV). Let us first discuss the results for the first two rows. Note that the dependent variables are  $\log(P_2/P_1)$ , the logarithm of the probability of being acquired in a cash takeover to not being acquired, and  $\log(P_3/P_1)$ , the logarithm of the probability of being acquired in a securities exchange to not being acquired. In Table IV significant negative coefficients on NID2 (leverage) and CPE1 (*P/E* ratio) appear for both firms acquired with cash and firms acquired with securities. Larger size and higher levels of liquidity (CL1)

Table III  
Dichotomous Logit Results

| Dependent Variable | Independent Variables |                     |                    |                    |                     |                   |                  |                  |
|--------------------|-----------------------|---------------------|--------------------|--------------------|---------------------|-------------------|------------------|------------------|
|                    | Constant              | CL1                 | NID2               | CPE1               | CLGA                | CP1               | CD1              | NB1              |
| $\log(P_2/P_1)$    | .661<br>(.811)        | -2.003*<br>(-2.130) | -.948*<br>(-2.156) | -.139*<br>(-3.099) | -.3417*<br>(-3.141) | 3.134*<br>(2.723) | -.469<br>(-.711) | -.093<br>(-.516) |

Table IV  
Polytomous Logit Results  
Event 1: firm not acquired (*n* = 1352)  
Event 2: firm acquired in cash takeover (*n* = 30)  
Event 3: firm acquired in security exchange (*n* = 31)

| Dependent Variable | Independent Variables |                     |                     |                    |                    |                   |                     |                     |
|--------------------|-----------------------|---------------------|---------------------|--------------------|--------------------|-------------------|---------------------|---------------------|
|                    | Constant              | CL1                 | NID2                | CPE1               | CLGA               | CP1               | CD1                 | NB1                 |
| $\log(P_2/P_1)$    | .033<br>(.026)        | -1.618<br>(-1.127)  | -1.293*<br>(-1.921) | -.199*<br>(-2.418) | -.203<br>(-1.234)  | 2.021<br>(1.069)  | -2.735*<br>(-2.674) | .021<br>(.176)      |
| $\log(P_3/P_1)$    | 1.624<br>(1.320)      | -3.105*<br>(-2.281) | -1.266*<br>(-1.958) | -.184*<br>(-2.576) | -.496*<br>(-3.122) | 4.069*<br>(2.755) | 2.017<br>(.3401)    | -.4053*<br>(-1.919) |
| $\log(P_3/P_2)$    | 1.590<br>(.924)       | -1.486<br>(-.769)   | .027<br>(.029)      | .015<br>(.135)     | -.029<br>(-1.310)  | 2.048<br>(.906)   | 2.936*<br>(2.506)   | -.427*<br>(-1.759)  |

The entries in the tables are maximum likelihood estimates. The numbers in parentheses are asymptotic *t*-statistics.  
\* indicates significance at the 10% level.

also reduce the probability of acquisition, though these effects are statistically significant only for firms acquired in securities transactions. Finally, a higher level of profitability (CP1) is associated with a higher probability of acquisition, but this coefficient is only statistically significant for firms acquired in securities transaction.

The major results of this paper are found in the last row of Table IV, where we make a direct comparison of the two methods of acquisition. Here the dependent variable is  $\log(P_3/P_2)$ , the logarithm of the probability of being acquired in a security exchange divided by the probability of being acquired in a cash takeover. The key variables which have statistically significant effects measure dividend payout (CD1) and book values relative to stock market valuation (NB1). Neither one of these variables is even close to being significant in the dichotomous logit results reported in Table III. Thus, if the analysis were done simply using an acquired versus not acquired dependent variable, the conclusion would be that CD1 and NB1 are not important explanatory factors. However, our results indicate that firms with higher dividend payouts appear more likely to be acquired with a security exchange than with cash. This role for dividend policy is not surprising given the univariate results in Table II showing the average dividend payout ratio for firms acquired by cash (CD1 = .1283) to be much lower than that of firms acquired by securities (CD1 = .2346) or nonacquired firms (CD1 = .2969).<sup>5</sup>

The effect of book-to-market ratios is of the opposite sign. Higher values of NB1 (and thus *lower* market to book ratios) decrease the probability of being acquired in a securities exchange relative to being acquired in a cash takeover (last row of Table IV). Restated, the lower the market-to-book ratio, the higher the probability of being acquired in a cash takeover relative to being acquired in a security exchange. Similar results were obtained using book-to-market ratios not normalized by the industry average.

### C. Possible Interpretations

The finding of a positive relationship between higher market to book ratios<sup>6</sup> and the probability of a security exchange is consistent with the differential tax treatment for the two media of exchange. If market-to-book, as measured here, is positively correlated with the potential capital gains tax liability of acquired firm shareholders, then one would expect cash takeovers to be used more often when the market-to-book value of the acquired company is low. Furthermore, if market-to-book ratios are positively correlated with the amount of goodwill created in a cash takeover, the results are consistent with an attempt to avoid the creation of goodwill and its resultant depressing effect on earnings per share.

The findings for the market-to-book ratio are also consistent with other

<sup>5</sup> The difference between CD1 for firms acquired by cash and those acquired in a securities exchange is significantly different at the .0535 level based on *t*-test to compare means.

<sup>6</sup> The market-to-book ratio will give some indications of both the magnitude of goodwill that will likely be created and the tax liability of acquired company shareholders. Note, however, that goodwill depends upon the purchase price which is typically a large premium over market and the tax liability depends upon the purchase price, tax basis, and tax status of the individual shareholder.

arguments. The market for corporate control literature [10, 12, 17, 18] has suggested that takeovers may be a means of disciplining managers. Such acquisitions, while not necessarily overtly hostile, are likely to be resisted by the incumbent management in some fashion. In the face of such resistance, a cash takeover may offer substantial advantages to the acquiring party relative to a security exchange.<sup>7</sup> In the polar case of a hostile raid, a cash tender offer made directly to shareholders could go over the heads of incumbent management. As a result, the market for corporate control hypotheses would suggest that low market-to-book ratios (as a result of inefficiencies of incumbent management) would increase the probability of being acquired in a cash acquisition (both relative to not being acquired and to being acquired in a securities exchange). The results in Table IV are consistent with this line of reasoning (NB1 is an inverse measure of market-to-book).

While consistent with the "market for corporate control" hypothesis, the empirical evidence on market-to-book ratios must be viewed carefully. First, the market-to-book ratio is a very crude empirical proxy for a measurement of the ratio of market valuation to potential value if properly managed. Our normalization of this ratio by industry average may help to some degree on this score. Second, the relationship between managers and shareholders is a complicated one.<sup>8</sup> Unfortunately, our data do not allow us to determine which of these or other interpretations to put on the link between market-to-book ratios and cash takeovers.

Interpretation of the role of dividend payout ratios is also difficult. All other things constant, the dividend clientele effect<sup>9</sup> would suggest that low dividend paying companies are owned by people in high tax brackets, who would tend to prefer security exchanges to cash takeovers which require immediate recognition of capital gains. However, our results do not support this hypothesis, since lower dividend payout ratios are associated with a higher probability of being acquired in a cash takeover relative to both being acquired via an exchange of securities and not being acquired. Perhaps part of our result can be rationalized by noting that taxable cash takeovers may provide a corporate tax advantage due to higher depreciation tax shields. Due to this corporate tax advantage, a buyer may be able to pay a higher premium in a taxable merger. This higher taxable premium would then be compared to a lower but tax deferred premium associated with a nontaxable merger. At present, our understanding of this result is incomplete.

<sup>7</sup> The empirical work in the market for corporate control area suggests that inefficient firms (usually characterized as relatively unprofitable, overly liquid, with low valuation ratios and slow growth) are more likely to be acquired. Importantly, a number of these works focus on cash takeovers [10, 17] or bids opposed by incumbent management [8], and thus examine only those mergers in which the corporate control hypothesis is most likely to apply.

<sup>8</sup> For discussions of and references on the general agency problem see [1]. In its most general form, the realization that managers are not simply those who rubberstamp shareholder desires requires a treatment of a multitude of issues, including the effects of asymmetric information on decisions of managers.

<sup>9</sup> There is substantial controversy over whether dividend tax clienteles actually exist (see [5, 11, 13, 15]).

#### IV. Conclusions

In an earlier work [3], we suggested that megers are appropriately viewed as a "pairings" or "marriages" of acquired and acquiring firms. Such complex phenomena ultimately depend on characteristics of both acquiring and acquired firms. As a result, traditional empirical work that simply categorizes firms as acquired or nonacquired may not detect the nature of merger pairings since such categorization is only capable of determining the average effect that an acquired firm characteristic has on the likelihood of acquisition. This paper lends support to that hypothesis. Here it is argued that cash takeovers and security exchange mergers may well be motivated by different considerations. When cash takeovers and security exchange mergers are empirically modelled as qualitatively different events, this expectation is statistically confirmed. Lower dividend payout ratios and lower market-to-book ratios increase the probability of being acquired in a cash takeover relative to being acquired via an exchange of securities, even though neither variable can be shown to be an important explanatory factor for the simple categorization of firms into those that have been acquired and those that have not been acquired.

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