Shareholder Taxes in Acquisition Premiums: The Effect of Capital Gains Taxation

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ABSTRACT

We exploit cross-temporal differences in capital gains tax rates to test whether shareholder-level capital gains taxes are associated with higher acquisition premiums for taxable acquisitions. We model acquisition premiums as a function of proxies for the capital gains taxes of target shareholders, taxability of the acquisition, and tax status of the price-setting shareholder as represented by the level of target institutional ownership. Consistent with a lock-in effect for acquisition premiums, results suggest a unique positive association between shareholder capital gains taxes for *individual* investors and acquisition premiums for taxable acquisitions, which is mitigated by target institutional ownership.

THIS STUDY INVESTIGATES HOW SHAREHOLDER-LEVEL capital gains taxes affect premiums paid in taxable corporate acquisitions. We base our analysis on the conjecture that shareholder-level capital gains taxes increase the cost of taxable acquisitions to bidding firms via acquisition premiums negotiated by target shareholders. Prior research (Mandelker (1974), Huang and Walkling (1987), Bradley, Desai, and Kim (1988)) has theorized that acquisition premiums increase with shareholder capital gains taxes. Empirical research, however, has been hindered in investigating the role that shareholder taxes play in acquisitions because of the difficulty in separating tax consequences for target shareholders (i.e., taxable or tax-free) from the effects of payment method (i.e., cash or stock). Under the Internal Revenue Code (IRC), shareholders pay capital gains taxes on cash payments, whereas stock payments may qualify gains for indefinite deferral. Hence, it is difficult to attribute to tax considerations the price differentials between taxable cash-for-stock acquisitions and tax-deferred stock-for-stock

acquisitions. Not surprisingly, there is little evidence that links acquisition premiums to shareholder capital gains tax liabilities. The purpose of our study is to provide this link.

We investigate the effects of shareholder capital gains taxes on acquisition premiums by exploiting cross-temporal differences in long-term capital gains rates for a large sample of acquisitions occurring from 1975 to 2000. We model acquisition premiums as a function of proxies for the long-term capital gains taxes generated by the acquisition.[1] In addition, we control for other economic factors commonly believed to influence acquisition price (e.g., characteristics of the target firm and the acquisition). We use three alternative proxies for the capital gains taxes generated by the acquisition. Our first proxy is based on the naïve assumption that the marginal shareholder for the acquisition (i.e., the "price-setter") has a zero (or negligible) basis in the target stock (e.g., a founding investor). Thus, we include the maximum long-term capital gains tax rate for *individual* investors at the acquisition date to proxy for the capital gains taxes realized upon the acquisition. Our second (third) proxy uses the difference in the target's pre-announcement stock price and the target's 5-year (3-year) low stock price, multiplied by the applicable maximum long-term capital gains rate for individual investors at the acquisition date, to estimate the target shareholders' capital gains tax.

To minimize the potential influence of spurious unobservable factors that may have affected acquisition premiums during our sample period, we contrast taxable cash-for-stock acquisitions with tax-free stock-for-stock acquisitions, and test for differences in the association between capital gains taxes and acquisition premiums for taxable versus tax-free acquisitions. We expect a significant positive association between estimated individual shareholder capital gains taxes, and premiums for taxable acquisitions, and either a smaller or no association for tax-free acquisitions.[2] We include target institutional ownership data in our analysis to represent the probability that the price-setting shareholder in an acquisition is *not* an *individual* shareholder. We test whether the association between acquisition premiums and the estimated capital gains taxes for *individual* shareholders decreases in the level of institutional ownership.

Consistent with our expectations, we find a significant positive association between acquisition premiums for taxable acquisitions and shareholder capital

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[1] In a previous version of the text, we modeled acquisition premiums as a function of proxies for both shareholder long-term and short-term capital gains taxes generated by the acquisition. Consistent with the reported results, we found a significant positive association between acquisition premiums and shareholder long-term capital gains taxes, but not between acquisition premiums and short-term capital gains taxes. As might be expected, this evidence suggests that long-term investors, on average, comprise the price-setting shareholders for our sample of taxable cash-for-stock acquisitions.

[2] As discussed in Section II, acquisition premiums in tax-free acquisitions could reflect, in part, premiums associated with shareholder capital gains taxes if some target shareholders intend not to defer the tax on the acquisition. For example, shareholders may view an acquisition as decreasing the advantages of an on-going investment in the firm, and thus, require compensation for the costs of accelerating capital gains taxes that otherwise would have been deferred.

gains taxes for each of our alternative proxies for capital gains taxes, and this association decreases in the level of institutional ownership. In addition, we find that the association between acquisition premiums and estimated shareholder capital gains taxes for taxable acquisitions is significantly larger than the corresponding association for tax-free acquisitions. In sum, our evidence suggests that shareholder capital gains taxes increase the cost of taxable acquisitions.

This study is closely linked to previous research investigating the taxation of security distributions (e.g., ex-day studies). Previous studies (e.g., Elton and Gruber (1970), Kalay (1982), Boyd and Jagannathan (1994), Michaely and Vila (1996), Green and Rydqvist (1999), Bell and Jenkinson (2002)) question whether the marginal investors for security distributions are taxable, and accordingly, if shareholder taxes influence the pricing of such distributions. We investigate the largest cash distribution (i.e., acquisitions) and find that shareholder-level taxes have a significant price effect on these transactions, which varies with the tax status of the acquired firm's shareholders.

This study also expands our understanding of the role that taxes play in determining acquisition premiums. In particular, our evidence confirms the long-standing speculation that capital gains tax liabilities at the shareholder level inflate the cost of taxable acquisitions, that is, that bidding firms compensate target shareholders for the incremental costs associated with accelerating capital gains taxes that otherwise could have been deferred. From a tax policy perspective, our analysis suggests that capital gains tax policy may play an important role in corporate acquisitions. Our results imply that a change in the long-term capital gains tax rate will alter the cost of corporate acquisitions and, thereby, influence the movement of capital via corporate acquisitions.

The remainder of this study is organized as follows. Section I describes prior research and develops our hypotheses. Sections II and III present our research method and related results. Section IV concludes.

I. Prior Research and Theory

Previous research theorizes that shareholder capital gains taxes increase the cost of taxable acquisitions. For example, Mandelker (1974) finds that target shareholders enjoy higher stock returns than bidder shareholders potentially because target shareholders are compensated for the capital gains taxes incurred in an acquisition. Finding that cash offers report higher acquisition premiums than stock offers, Huang and Walkling (1987, p. 348) conjecture that "shareholders demand higher premiums in situations that will force them to pay immediate taxes on their gains." Brown and Ryngaert (1991) posit that bidders use stock instead of cash to avoid having to compensate target shareholders for capital gains taxes. Similarly, Bradley et al. (1988) find that acquisition premiums increase with the percentage of shares exchanged in a tender offer and interpret this finding to be consistent with a tax explanation. That is, as a bidder seeks control of a target (i.e., reaches deeper into the distribution of target

shareholders to acquire target control), the acquisition premium required increases as a function of the price-setting shareholder's capital gains tax.[3]

None of the aforementioned empirical studies, however, is able to link acquisition returns to shareholder capital gains taxes. The purpose of this study is to provide this link. We expect that to complete an acquisition, the bidder must compensate target shareholders for the costs of accelerating (incurring) capital gains taxes realized in the acquisition that otherwise could have been deferred (avoided). In other words, target shareholders will not agree to an acquisition without suitable compensation for the loss of the option to defer or avoid capital gains taxes. Because the costs of accelerating (incurring) capital gains taxes increase with shareholders' capital gains taxes, we expect that acquisition premiums likewise increase with shareholders' capital gains taxes.[4]

Our expectations are fundamentally related to the theory predicting a lock-in effect of capital gains taxes. This theory views capital gains taxes as transaction costs that generate a disincentive to sell appreciated stock because capital gains taxes are imposed once gains are realized in a sale. Recent theoretical studies (e.g., Klein (1999, 2001), Viard (2000)) demonstrate that the disincentive to sell increases with shareholders' capital gains tax exposure. In particular, Klein (1999) and Viard show that equilibrium stock prices (i.e., the market price for a security) reflect, in part, the costs of accelerating capital gains taxes for the *marginal market sellers* in securities. That is, the marginal market sellers are partially compensated for the costs of accelerating capital gains taxes through higher prices. Furthermore, Klein demonstrates that investors with large capital gains in a stock overweight their holding in the stock, and the overweighting increases monotonically in the accrued capital gain. Klein concludes that stocks with larger accrued capital gains tend to be held longer.

These studies have two implications for our analysis. First, the general finding that the disincentive to sell increases with shareholders capital gains tax is consistent with our expectation that acquisition premiums increase with shareholder capital gains taxes. Second, the finding that current stock prices reflect, in part, the costs of accelerating capital gains tax for the *marginal market sellers* in the security is also pertinent to our study. In particular, if the capital gains tax exposure of marginal market sellers in a security is comparable to that of the price-setting shareholders in an acquisition, then the lock-in effect predicts that

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[3] In their study of the RJR Nabisco leveraged buyout, Landsman and Shackelford (1995) find that shareholders with a lower stock basis tendered their shares later and for a higher tender price than high-basis shareholders. Their results are consistent with the upward sloping supply curve posited in Bradley et al. (1988). Landsman and Shackelford, however, were unable to distinguish their results from cross-shareholder differences in risk aversion or the propensity to rebalance portfolios.

[4] Constantinides (1983) demonstrates that the difference in a security's after-tax value assuming immediate liquidation (e.g., corporate acquisition) versus deferral for any investor (with a basis less than current security price) is simply the difference in the present and discounted values of the expected tax liability upon security disposition. As the magnitude of the expected tax liability increases, the difference in the present and discounted values of the expected tax liability increases, which in turn suggests that the cost of immediate liquidation increases.

the tax incurred by the price-setting shareholders would at least partially be reflected in current stock prices. Thus, the lock-in effect would bias our tests against finding that capital gains taxes increase acquisition premiums. On the other hand, heterogeneity of capital gains tax exposure across market sellers for a security, relative to the price-setting shareholders in an acquisition, would be sufficient for our expectations to hold even in the presence of the lock-in effect. Specifically, our expectations should hold if the capital gains tax for price-setting shareholders in an acquisition exceeds the capital gains tax for marginal market sellers manifested in current stock prices.

Heterogeneity in capital gains tax exposure, across market sellers relative to the price-setting shareholders in an acquisition, is not a particularly strong assumption. As explained by Bradley et al. (1988), the existence of acquisition premiums and an upward sloping supply curve for target shares is evidence of heterogeneity in either tax or nontax characteristics across market sellers relative to price-setting shareholders in an acquisition. Likewise, the conclusions in Klein (1999) that (a) shareholders with large capital gains tax exposure in a security tend to overweight their holdings in the stock and (b) stocks with larger capital gains exposure tend to be held longer, imply that those shareholders with larger capital gains tax exposure are less likely to embody the tax characteristics of the marginal sellers in a security.

II. Research Method

We estimate the following cross-temporal regression that relates acquisition premiums to proxies for the level of capital gains taxes for target shareholders and variables that represent the characteristics of the acquired firm and acquisition:

$$PREM_i = \gamma_0 + \gamma_1 CG_i\gamma + \gamma_2 TF_i + \gamma_3 CG*TF_i + \gamma_4 CG*INST_i + \gamma_5 CG*TF_i*INST_i$$
$$+ \gamma_6 INST_i + \gamma_k X_{ki} + \varepsilon_i,$$

(1)

where

$PREM_i$ = the acquisition premium calculated as the acquisition price per share paid to target shareholders less the target's stock price 40 days prior to the acquisition announcement, deflated by the target's stock price 40 days prior to the acquisition announcement,

CG_i = the maximum estimated capital gains tax for target firm i's shareholders,

TF_i = an indicator variable that equals one for tax-free acquisitions and zero otherwise,

$INST_i$ = the square root of the percentage of common stock owned by institutional investors for firm i, and

X_k = a vector of k explanatory variables representing characteristics of the acquired firm and acquisition.

Table I provides a description of the dependent and independent variables.

Table I
Variable Definitions

Variable	Definition
	Dependent Variable
PREM	Acquisition premium represented by acquisition price less the target's market value 40 days prior to the first public announcement of a pending acquisition, deflated by the target's market value 40 days prior to the acquisition announcement.
	Independent Variables
CG	The maximum long-term capital gains tax applicable to individual shareholders as of the effective date of the acquisition. In Model 1, this variable is measured by *LTCG*, which is the long-term capital gains tax rate at the acquisition date. In Model 2 (Model 3), *CG* is represented by *CG-5Y* (*CG-3Y*), which is calculated as the difference in the target's stock price 40 days prior to the acquisition announcement and target's low stock price in the 5 years (3 years) preceding the short-term holding period, multiplied by the applicable maximum long-term capital gains tax rate at the acquisition date, and then deflated by the target's pre-announcement stock price.
TF	One if the acquisition was a tax-free stock-for-stock acquisition and zero otherwise.
INST	The square root of the percentage of common stock owned by institutional investors of the acquired firm prior to the acquisition announcement.
	Control Variables
APPR-5YR (*APPR-3YR*)	The difference in the target's stock price 40 days prior to the acquisition announcement and target's low stock price in the 5 years (3 years) preceding the short-term holding period, deflated by the target's pre-announcement stock price.
NOLTB	The sum of (a) the target's investment tax credit carryover and (b) the product of the target's net operating loss and the maximum corporate tax rate applicable at the acquisition effective date, deflated by the target's market value 40 days prior to the acquisition announcement.
TOE	A continuous variable representing the percentage ownership of the bidder in the target prior to the first public announcement of a pending acquisition.
LEV	Ratio of target long-term debt to target market value 40 days prior to the acquisition announcement.
LIQ	Ratio of target current assets to target market value 40 days prior to the acquisition announcement.
BKMKT	Ratio of target book value of equity to the target's market value 40 days prior to the acquisition announcement.
ROE	Ratio of target net income to the target's market value 40 days prior to the acquisition announcement.
CBID	One if there was a competing bidder for the target, zero otherwise.
HOS	One if the target's management opposed the acquisition, zero otherwise.
TEN	One if the acquisition of the target was initiated with a tender offer, zero otherwise.

Our measure of acquisition premium, *PREM*, is similar to the acquisition premium measures used in Cotter and Zenner (1994) and Cotter, Shivdasani, and Zenner (1997), among others, who employ the percentage of consideration paid above target pre-acquisition market value. We use three alternative estimates of shareholder capital gains taxes in our analyses because actual shareholder capital gains taxes are unobservable. Bradley et al. (1988) contend that, ceteris paribus, if capital gains taxes influence acquisition premiums, those investors with the largest capital gains tax (i.e., shareholders deep within the distribution of target shareholders' capital gains taxes) are most likely the "price-setting" shareholders in an acquisition.[5] Accordingly, each of our measures of shareholder capital gains tax is an alternative proxy for the capital gains tax of those shareholders deep within the distribution of target shareholders' capital gains taxes. To represent the capital gains tax of shareholders deep within the distribution of target shareholders, we use proxies of the *maximum* possible capital gains tax for target shareholders prior to the acquisition announcement.

We base our first estimate, *LTCG*, on the naïve assumption that the "price-setting" shareholders for the acquisition have a zero, or negligible, basis in the target's stock. Thus, we include the top long-term capital gains tax rate at the acquisition date to proxy for the capital gains taxes realized if 100% of the pre-acquisition stock price were subject to capital gains taxation.[6] Our second and third proxies, *CG-5YR* and *CG-3YR*, represent the maximum capital gains tax exposure of price-setting shareholders assuming they acquired the stock during the more recent past (i.e., 5 years and 3 years, respectively). These proxies are calculated as the difference in the target's pre-announcement stock price and its 5-year and 3-year low stock price prior to the short-term holding period, respectively, multiplied by the applicable top long-term capital gains tax rate at the acquisition date, and then deflated by the target's pre-announcement stock price. If target shareholders require compensation for accelerating the capital gains tax realized upon the acquisition, we expect a positive association between acquisition premiums and our three alternative measures for capital gains taxes.

To minimize the potential influence of spurious unobservable factors that may have influenced acquisition premiums during our sample period, we compare taxable acquisitions with tax-free acquisitions and test for differences in the association between capital gains taxes and acquisition premiums. Acquisition premiums in tax-free acquisitions could reflect, in part, premiums associated with shareholder capital gains taxes. That is, if shareholders view the tax-free

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[5] Evidence in the Landsman and Shackelford (1995) study of the RJR Nabisco leveraged buyout also supports our use of low-basis proxies for the price-setting shareholder in an acquisition. As stated in footnote 3, Landsman and Shackelford find that shareholders with a lower stock basis tendered their shares later and for a higher tender price than high-basis shareholders. In addition, they find that the *mean* holding period for individual investors at the time of the acquisition announcement was 9.9 years.

[6] This proxy is equivalent to measuring the long-term capital gains tax as the difference in the target's pre-acquisition stock price less the shareholder's basis of zero, multiplied by the applicable long-term capital gains rate, and then deflated by the target's pre-acquisition stock price.

nature of the acquisition as an *option* to defer the tax, then some shareholders may intend not to exercise such option (e.g., if shareholders view an acquisition as decreasing the advantages of an on-going investment in the firm). In such a case, the association between capital gains taxes and premiums for tax-free acquisitions would be positive, but smaller in magnitude than the association between capital gains taxes and premiums for taxable acquisitions. Accordingly, we include $CG*TF$ to represent the differential effect of estimated shareholder capital gains taxes on premiums for tax-free versus taxable acquisitions. If our theory is descriptive, there should be a smaller association (if any) between shareholder capital gains taxes and acquisition premiums for tax-free acquisitions (i.e., $\gamma_3 < 0$, and at the extreme, $\gamma_1 + \gamma_3 \approx 0$).

We include target institutional ownership data in our analysis to represent the probability that the price-setting shareholder in an acquisition is *not* subject to the *individual* capital gains tax rate.[7] We obtain institutional ownership data from the CDA Spectrum database.[8] Consistent with Stulz, Walkling, and Song (1990) and Billet and Ryngaert (1997), we represent institutional ownership with the square root of the percentage of common stock held by institutional investors prior to the acquisition announcement. Institutional investors may be tax-exempt (e.g., retirement plans), taxable (e.g., corporations), or mutual funds that may or may not make investment decisions consistent with the tax status of their investors (i.e., taxable individuals, corporations, retirement plans, etc.). Although capital gains taxes may be an important consideration for certain types of institutional investors (e.g., corporations subject to a distinct corporate tax rate and mutual funds with corporate and individual investors), we would not necessarily expect an association between acquisition premiums for target firms primarily held by institutional investors and our proxies for the capital gains taxes of a price-setting *individual* shareholder.[9] We test whether the relation between acquisition premiums and our proxies for capital gains taxes declines with the level of institutional ownership. The coefficient for $CG*INST$ represents the effect of increasing institutional ownership on the association between acquisition premiums and individual shareholder capital gains taxes for taxable acquisitions. Hence, we expect $\gamma_4 < 0$. We also include the three-way interaction variable, $CG*TF*INST$, to capture the differential effect of increasing institutional ownership on the association between acquisition premiums and *individual* shareholder capital gains taxes for tax-free versus taxable acquisitions. Because there should be no mitigating effect of institutional ownership for tax-free acquisitions, we expect $\gamma_5 > 0$, and at the extreme, $\gamma_4 + \gamma_5 \approx 0$.

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[7] Recent research (e.g., Ayers, Cloyd, and Robinson (2002, 2003), Dhaliwal, Li, and Trezevant (2002)) has used institutional ownership as a proxy for the likelihood that the marginal investor in a particular firm is *not* an individual taxpayer.

[8] This database compiles common stock ownership by institutions at the end of each calendar quarter based on SEC form 13(f) filings. For firms missing CDA data, we collected institutional ownership from Standard & Poor's *Security Owner's Stock Guide*.

[9] Because the type of institutional ownership is not identified by the CDA Spectrum data, we are precluded from generating separate tax proxies for each institutional ownership type.

We follow Comment and Schwert (1995) and Schwert (2000), among others, in constructing variables to control for other determinants of acquisition premiums. We control for acquisition characteristics through limits on sample selection and use of additional control variables in the acquisition premium model. We restrict our sample to bidding firms not electing to step up the tax basis of the target's assets via IRC Section 338 to eliminate the premium effects of this election as a competing explanation for our results. Prior research (e.g., Ayers, Lefanowicz, and Robinson (2000) and Erickson and Wang (2000)) indicates that acquisition premiums increase with the tax benefits associated with the bidder's step-up in basis in target assets. We identified Section 338 elections by performing a Lexis search of SEC filings for the time period beginning 1 year prior to the acquisition date and ending 1 year after the acquisition.[10]

Circumstances surrounding the acquisition bid are controlled by including indicator variables for management hostility (*HOS*), competing bids (*CBID*), and tender offers (*TEN*). Previous research suggests that management hostility (Jennings and Mazzeo (1993)), competing bids (Bradley et al. (1988) and Jarrell and Poulsen (1989a)), and acquisition method (Schwert (2000) and Huang and Walkling (1987)) increase shareholder gains in an acquisition. To control for the effects that the period of acquisition (i.e., acquisition waves) may have on acquisition premiums, we include 5-year indicator variables (Schwert (2000)). Likewise, we control for industry trends in acquisitions by including indicator variables for the target's one-digit SIC industry. We employ four continuous variables: (1) the target's leverage (*LEV*), (2) liquidity (*LIQ*), (3) book-to-market ratio (*BKMKT*), and (4) return on market value of equity (*ROE*), to represent the efficiency of incumbent managers and the financial position of the acquired firm.

Prior research (e.g., Plummer and Robinson (1990)) reports that acquisition premiums increase with target net operating loss and investment tax credits carryforwards that may be used by the bidder subsequent to the acquisition. To control for this effect, we include the variable *NOLTB* to represent the value of the target's tax carryforwards to the acquiring firm. We identify net operating loss and investment tax credit carryforwards using tax footnote disclosures from the financial statements of the acquired firm. We define *NOLTB* as the sum of (a) the target's net operating loss carryforwards multiplied by the maximum corporate tax rate at the acquisition date and (b) the target's investment tax credit forwards, each deflated by the target's pre-announcement market value.

We use *TOE*, a continuous variable representing the bidder's pre-announcement ownership in the target, to control for the effect of toeholds on the bargaining power of the bidder (Walkling and Edmister (1985)). We identify toehold bidder ownership from disclosures provided in the Securities Data Corporation's M&A database and the Dow Jones News Retrieval database. We include *TF* to capture any difference in acquisition premiums for tax-free stock-for-stock acquisitions that is unrelated to the taxation of shareholder capital gains. Likewise,

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[10] We excluded one acquisition that our Lexis searches identified the bidder as making a 338 election. Not surprisingly, our regression results are robust when this observation is added to the regression sample.

we include *INST* as a separate variable to capture any differential acquisition premiums associated with the target's institutional ownership.

Finally, we control for the effect that target stock appreciation may have on acquisition premiums regardless of the related effect on shareholder capital gains tax liabilities. Jarrell and Poulsen (1989b) report a negative association between the pre-acquisition run-up in target stock price and acquisition premiums. Schwert (1996) suggests, however, that this relation is weak, and the substitution between pre-acquisition run-up and acquisition premium is incomplete. To control for any relationship between the target's price appreciation and acquisition premiums, we include *APPR-5YR* (*APPR-3YR*) in the specifications where we estimate capital gains as the maximum 5-year (3-year) capital gains liabilities. We define *APPR-5YR* (*APPR-3YR*) as the difference in the target's pre-announcement stock price and the target's 5-year (3-year) low stock price prior to the short-term holding period, deflated by the target's pre-announcement stock price. This variable controls for any effects that the target's price appreciation may have on acquisition premiums regardless of the related effects on target shareholders' capital gains tax liabilities.

III. Sample Selection and Descriptive Statistics

We develop our sample from acquisitions of firms listed on the New York and American Stock Exchanges and deleted from the COMPUSTAT and CRSP tapes. We analyze firms deleted between 1975 and 2000 to construct a comprehensive sample of large acquisitions whose terms were finalized during a period of relatively continuous acquisition activity.[11] During this period, there were five different long-term capital gains rate regimes. We exclude acquisitions from our sample if there was insufficient information to ascertain the type of consideration (e.g., cash or stock) given to shareholders or if we could not identify the announcement date of the acquisition. As previously stated, we limit our sample to acquisitions without an IRC Section 338 election. We also exclude acquisitions from the sample if the acquired firm was controlled (by an individual or firm owning more than 50% of the outstanding shares) prior to the initial announcement date.[12] Finally,

[11] Our sample acquisitions include firms listed on the COMPUSTAT Research tape as dropped from COMPUSTAT due to acquisition from 1975 through June 30, 2000.

[12] We exclude 27 acquisitions because the target firm was controlled prior to the acquisition bid either by individuals (11 firms) or corporations (16 firms). Controlling shareholders may not have the same incentives as the price-setting shareholders in a more typical acquisition. For example, an individual controlling shareholder may have incentives to negotiate acquisition-related payments besides stock premiums or bargain for a management position with the acquiring firm (see Cotter and Zenner (1994), Lefanowicz, Robinson, and Smith (2000), and Hartzell, Ofek, and Yermack (2002)). Likewise, our tests are not designed to control for statutory tax changes (other than individual tax rate changes) that could impact the sale of corporate subsidiaries. Among other factors, changes such as the repeal of the General Utilities Doctrine in 1986 and the deduction of goodwill amortization in 1993 likely influence these acquisitions. Although our results are robust when we include acquisitions of controlled firms in our regression samples, the limited number of these acquisitions in our sample does not lend itself to testable predictions.

Table II
Distribution of Sample Acquisitions

Distribution by time period and target industry affiliation of a sample of 935 public firms acquired over the period 1975 to 2000 in 565 taxable and 370 tax-free acquisitions.

Panel A: Distribution of Sample Acquisitions (Percentage) by Time Period						
Acquisition Time Period	Taxable		Tax-free		Total	
1975–1979	87	(15)	42	(11)	129	(14)
1980–1984	148	(26)	40	(11)	188	(20)
1985–1989	170	(30)	34	(9)	204	(22)
1990–1994	32	(6)	52	(14)	84	(9)
1995–2000	128	(22)	202	(55)	330	(35)
Total	565	(100)	370	(100)	935	(100)

Panel B: Distribution of Sample Acquisitions (Percentage) by Target Industry Affiliation				
Industry	Taxable		Tax-free	
SIC 0000 Agriculture, forestry, and fishing	1	(<1)	1	(<1)
SIC 1000 Metal and mining	37	(7)	33	(9)
SIC 2000 Food, textile, and chemicals	125	(22)	48	(13)
SIC 3000 Rubber, metal, and machines	227	(40)	115	(31)
SIC 4000 Transportation and utilities	29	(5)	60	(16)
SIC 5000 Wholesale and retail trade	86	(15)	34	(9)
SIC 6000 Financial services	10	(2)	5	(1)
SIC 7000 Hotel and other services	32	(6)	38	(10)
SIC 8000 Health and engineering services	18	(3)	36	(10)
Total	565	(100)	370	(100)

we exclude acquisitions with missing target financial and ownership data (e.g., leverage, liquidity, institutional ownership, etc.). After these restrictions, our final sample is comprised of 565 taxable cash-for-stock acquisitions and 370 tax-free stock-for-stock acquisitions.

The distribution of our final sample of 935 acquisitions is provided in Table II. Panels A and B of Table II provide the distribution of our sample acquisitions by year and industry, respectively. Panel A indicates that the most recent period, 1995 to 2000, contains the most acquisitions (330 or 35.3% of the sample). In contrast, the preceding period 1990 to 1994 contains the fewest acquisitions (84 or 9.0% of the sample). This pattern of activity is generally consistent with patterns of overall acquisition activity described in prior research (e.g., Nathan and O'Keefe (1989) and Schwert (2000)).

Panel B reports the distribution of sample acquisitions across the target's industry classification. The sample targets represent 9 one-digit (62 two-digit) SIC industries. Only two sample acquisitions are reported in the agriculture, forestry, and fishing industry (SIC 0000), whereas the metal, rubber, and machines industry (SIC 3000) reports the highest number of acquisitions (342 or 36.6% of the sample). This distribution is consistent with the distribution reported

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Table III

Descriptive Statistics for Sample of Taxable and Tax-free Acquisitions

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Descriptive statistics for a sample of 935 public firms acquired over the period 1975 to 2000 in 565 taxable and 370 tax-free acquisitions.

Panel A: Selected Financial Characteristics of Acquired Firms					
Variables	Mean	Std. Dev.	Quartile 1	Median	Quartile 3
PREM	0.554	0.44	0.281	0.510	0.777
LTCG	0.251	0.05	0.200	0.280	0.280
CG-5YR	0.128	0.09	0.085	0.136	0.188
CG-3YR	0.107	0.09	0.064	0.108	0.164
INST	0.471	0.25	0.260	0.480	0.684
APPR-5YR	0.507	0.34	0.345	0.580	0.740
APPR-3YR	0.419	0.34	0.265	0.477	0.647
NOLTB	0.037	1.37	0.000	0.000	0.011
TOE	0.021	0.08	0.000	0.000	0.000
LEV	0.553	1.08	0.102	0.279	0.615
LIQ	1.109	1.65	0.364	0.774	1.307
BKMKT	0.867	0.75	0.508	0.799	1.160
ROE	0.024	0.18	0.027	0.069	0.113
Target market value (in millions)	745.6	3,560.2	40.9	132.1	453.8

Panel B: Frequency of Acquisition Characteristics		
Characteristic	Taxable	Tax-free
Competing bids (*CBID*)	132	25
Management Hostility (*HOS*)	139	29
Tender (*TEN*)	220	13

Note: Target market value is defined 40 days prior to the acquisition announcement. See Table I for further definitions of variables.

in previous research. The small percentage of acquisitions in the financial services industry (SIC 6000) is attributable to a lack of leverage and liquidity data.

Table III provides descriptive statistics for the final sample of acquisitions. Panel A reports the empirical distribution of the dependent and independent variables in the regression, as well as the value of the target firm (prior to the announcement of the acquisition). Several items are worth noting. First, the median acquisition premium for our sample, 51.0%, is similar to premiums in recent studies (Nathan and O'Keefe (1989)). Second, the magnitudes of our proxies for long-term capital gains tax liabilities are significant relative to the target's pre-acquisition price. For example, the average value of *CG-5YR* is 12.8% of the target's pre-announcement stock price. In addition, consistent with our sample target stocks appreciating with time (i.e., basis increasing with time), our proxies for the maximum capital gains tax liabilities increase from our 3-year measure (*CG-3YR*), with a median value of 10.8% of the target's pre-announcement price, to our 5-year measure (*CG-5YR*), with a median value of 13.6% of the target's pre-announcement price. Third, the net operating loss and investment tax credit

benefits (*NOLTB*) of our sample acquisitions are quite small as a percentage of the target's fair market value. Nonetheless, the mean *NOLTB* (3.7%) relative to its median (0.0%) suggests that these benefits are significant in size for some sample acquisitions.[13]

Panel B of Table III provides frequency data for acquisitions with competing bids, management hostility, and the form (tender or merger) of the acquisition. This data indicates that a significant portion of our sample taxable acquisitions experienced competing bids (23%), management hostility (24%), and tender offers (39%). In contrast, our sample of tax-free acquisitions experienced relatively few competing bids (7%), hostile bids (8%), or tender offers (4%).

IV. Results

A. Regression Analyses

Table IV presents the coefficients from estimating three specifications of our regression equation (i.e., one for each alternative proxy for capital gains tax liabilities).[14] Consistent with our expectations, the estimated coefficients for *CG* (*LTCG*, *CG-5YR*, and *CG-3YR* presented in Table IV as Model 1, Model 2, and Model 3, respectively) are all positive and statistically significant. As expected, this evidence suggests that acquisition premiums for taxable acquisitions increase with target shareholders' capital gains tax.

We compare the relation between capital gains taxes and premiums for tax-free and taxable acquisitions to assess whether shareholder capital gain taxes are the appropriate explanation for a positive association between acquisition premiums and *CG*. If our theory is descriptive, there should be a smaller association (if any) between shareholder capital gains taxes and acquisition premiums for tax-free acquisitions (i.e., $\gamma_3 < 0$, and at the extreme, $\gamma_1 + \gamma_3 \approx 0$). Table IV indicates that, as expected, the estimated coefficient for *CG*TF*(γ_3) is negative and statistically significant in all three regression models ($p = 0.05, 0.08$, and 0.10, respectively). Nonetheless, the sum of the estimated coefficients for *CG* and *CG*TF*($\gamma_1 + \gamma_3$) is positive and statistically significant in two of the three models ($p = 0.54, 0.05$, and 0.03, respectively).

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[13] The tax benefits of net operating losses and investment tax credit carryovers were extreme for three acquired firms. For example, Cinerama reported tax carryovers with a tax benefit in excess of twice the pre-acquisition value of the firm. To mitigate the influence of these extreme observations on the regressions, we winsorized observations of *NOLTB* in excess of one before estimating our regressions.

[14] The regression samples vary across the three models because we eliminate potentially influential observations in each regression using Belsley, Kuh, and Welsch (1980) diagnostics. The potentially influential observations identified by the diagnostics all have extreme values of the dependent variable, *PREM* (in the bottom or top 5% of the *PREM* distribution), but the regression results after including these observations in the sample are qualitatively similar to the results presented in Table IV. In lieu of using Belsley et al. diagnostics, we also replicated the regressions after dropping observations in the top and bottom 2% of the *PREM* distribution. The regression results using these alternative subsamples are essentially unchanged from the results presented in the Table IV.

Table IV

Acquisition Premium Regressions Using a Sample of Taxable and Tax-free Acquisitions

Regressions of acquisition premiums (*PREM*) on variables representing capital gains taxes, target and acquisition characteristics, and industry and time period. The estimated regression is

$$PREM_i = \gamma_0 + \gamma_1 CG_i\gamma + \gamma_2 TF_i + \gamma_3 CG * TF_i + \gamma_4 CG * INST_i + \gamma_5 CG * TF_i * INST_i$$
$$+ \gamma_6 INST_i + \gamma_k X_{ki} + \varepsilon_i$$

The dependent variable, *PREM*, represents the acquisition price less the target's market value 40 days prior to the first public announcement of a pending acquisition, deflated by the target's market value 40 days prior to the acquisition announcement. We employ three alternative proxies for the maximum pre-acquisition capital gains tax liability of target shareholders prior to the acquisition announcement (i.e., *CG*). The first estimate used in Model 1 is based on the naïve assumption that the "price-setting" shareholders for the acquisition have a zero or negligible basis in the target's stock (e.g., founding investor). Our second and third proxies (used in Models 2 and 3, respectively) represent the maximum capital gains tax liability as the difference in the target's pre-announcement stock price and the target's 5-year and 3-year low stock price prior to the short-term holding period, respectively, multiplied by the applicable top long-term capital gains tax rate at the acquisition date, and then deflated by the target's pre-announcement stock price. The variable *TF* is an indicator variable for tax-free transactions, and *INST* is the square root of the percentage of shares held by institutions. Table I defines the remaining variables. Our sample consists of 935 public firms acquired over the period 1975 to 2000 in taxable and tax-free acquisitions. Regressions exclude potentially influential observations identified using the procedures in Belsley, Kuh, and Welsch, (1980). Inclusion of these observations produces similar results. The regressions were estimated including indicator variables (coefficient estimates not reported) to control for industry effects and time periods.

Variables	Expected Sign	Coefficient Estimate (Probability Level)		
		Model 1 *LTCG*	Model 2 *CG5Y*	Model 3 *CG3Y*
Intercept	?	0.285	0.657	0.672
		(0.09)	(0.00)	(0.00)
CG	+	1.165	2.422	2.773
		(0.01)	(0.00)	(0.00)
TF	?	− 0.045	− 0.255	− 0.226
		(0.73)	(0.00)	(0.00)
CG*TF	−	− 0.754	− 1.001	− 1.046
		(0.05)	(0.08)	(0.10)
CG*INST	−	− 0.809	− 1.469	− 1.675
		(0.19)	(0.01)	(0.00)
CG*TF*INST	+	1.234	1.735	1.851
		(0.00)	(0.00)	(0.00)
INST	?	0.122	0.123	0.130
		(0.64)	(0.10)	(0.14)
APPR	?		− 0.737	− 0.860
			(0.00)	(0.00)
APPR*TF	?		0.354	0.344
			(0.12)	(0.17)
NOLTB	+	0.436	0.364	0.378
		(0.00)	(0.00)	(0.00)
TOE	−	− 0.134	− 0.160	− 0.173
		(0.09)	(0.05)	(0.04)

Table IV
(continued)

Variables	Expected Sign	Coefficient Estimate (Probability Level)		
		Model 1 LTCG	Model 2 CG5Y	Model 3 CG3Y
LEV	?	0.034	0.025	0.024
		(0.03)	(0.08)	(0.17)
LIQ	?	− 0.003	− 0.006	− 0.009
		(0.74)	(0.57)	(0.39)
BKMKT	+	0.005	0.005	0.005
		(0.07)	(0.10)	(0.12)
ROE	?	0.348	0.368	0.384
		(0.00)	(0.00)	(0.00)
CBID	+	0.134	0.142	0.143
		(0.00)	(0.00)	(0.00)
HOS	+	0.120	0.102	0.102
		(0.00)	(0.00)	(0.00)
TEN	+	0.067	0.040	0.043
		(0.01)	(0.08)	(0.06)
N/(Adjusted R^2)		889/(0.21)	892/(0.23)	890/(0.26)

Notes: We calculate probability levels using the Froot (1989) adjustment that controls for cross-sectional dependence across time periods for sample observations. Probability levels are one-tailed except for those variables without directional hypotheses. The tax variable, *CG*, is defined as *LTCG* in Model 1, *CG-5YR* in Model 2, and *CG-3YR* in Model 3. We define *APPR* as *APPR-5YR* in Model 2 and *APPR-3YR* in Model 3.

The positive association between shareholder capital gains taxes and premiums for tax-free acquisitions has at least two plausible explanations. As previously stated, one explanation is that some target shareholders intend not to exercise the option to defer the tax on the acquisition (e.g., if shareholders view an acquisition as decreasing the advantages of an on-going investment in the firm) and thus, require compensation for the costs of accelerating capital gains taxes that otherwise would have been deferred. A second explanation is that, in addition to tax effects, *CG* captures some common unobservable factor that affects premiums in both taxable and tax-free acquisitions. Unfortunately, we cannot distinguish between these explanations. Nonetheless, because we find a larger association between estimated shareholder capital gains taxes and premiums for taxable acquisitions, on balance, we interpret our evidence to suggest that shareholder capital gains taxes are a significant determinant of premiums for taxable acquisitions.

We examine the coefficient for *CG*INST* (i.e., γ_4) to determine whether the association between acquisition premiums and the estimated capital gains taxes for *individual* shareholders decreases in the level of institutional ownership. The estimated coefficient for *CG* represents the effect of shareholder capital gains taxes on premiums paid in taxable acquisitions with zero institutional ownership and, as previously mentioned, is positive and statistically significant in each of the three regression models. In contrast, the coefficient for *CG*INST* represents

the effect of increasing institutional ownership on the association between acquisition premiums and an *individual* shareholder's capital gains taxes for taxable acquisitions. As expected, the coefficient for *CG*INST* is negative and statistically significant in two of the three models ($p = 0.19, 0.01$, and 0.00 in Models 1, 2, and 3, respectively). In addition, the sum of the estimated coefficients of *CG* and *CG*INST*, which represents the association between premiums and *individual* shareholder capital gain taxes for a firm owned 100% by institutional owners, is not statistically significant (at conventional levels) in any of the three regression models ($p = 0.57, 0.13$, and 0.12 in Models 1, 2, and 3, respectively). In sum, these results indicate that the effect of shareholder capital gains taxes on acquisition premiums for taxable acquisitions varies with the taxability of a firm's shareholders. Unfortunately, because our institutional ownership data does not distinguish between different types of institutions, we cannot test whether a relation exists between premiums and capital gains taxes specific to certain types of institutions (e.g., corporations). Accordingly, we leave this question to future research.

Finally, Table IV reports that the estimated coefficient for *CG*TF*INST*, which represents the differential effect of increasing institutional ownership on the association between acquisition premiums and *individual* shareholder capital gains taxes for tax-free versus taxable acquisitions, is positive and statistically significant in all three models. In addition, the sum of the estimated coefficients for *CG*INST* and *CG*TF*INST* (i.e., $\gamma_4 + \gamma_5$) is not statistically significant in any of the three regression models ($p = 0.66, 0.69$, and 0.79 in Models 1, 2, and 3, respectively). As expected, this evidence suggests that the mitigating effect of institutional ownership on the association between acquisition premiums and individual shareholder capital gains taxes is restricted to taxable acquisitions.

B. Control Variables and Sensitivity Analyses

Table IV also presents the coefficient estimates for our control variables. Estimated coefficients are generally consistent with prior research. The estimated coefficients for *NOLTB*, *CBID*, *HOS*, and *TEN* are each in the predicted direction and statistically significant. This evidence is consistent with the research documenting higher acquisition premiums for targets with pre-acquisition net operating loss carryovers, resisted acquisitions, acquisitions with competing bids, and acquisitions initiated via tender offers. The estimated coefficients for *LEV*, *BKMKT*, and *ROE* are also positive and generally statistically significant. In contrast, the estimated coefficient for *LIQ* is positive but not statistically significant in any of the models. This last result is consistent with Comment and Schwert (1995) and Schwert (2000) who speculate that differences in target liquidity may not be a primary determinant of acquisition premiums.

The estimated coefficient for *TOE* is negative and significant in each model. This evidence is consistent with previous research finding a negative relation between the bargaining power of the bidder and acquisition premiums (Walkling and Edmister (1985)). Finally, the coefficient estimates for *APPR-5YR* and *APPR-3YR* are negative and significant. Combined, this evidence suggests that,

absent tax considerations, a security's pre-acquisition appreciation is negatively associated with acquisition premiums.

Our estimated regressions also include indicator variables for target firm industry (one-digit SIC) and indicator variables for the year of acquisition. We included these variables (coefficient estimates are not reported) to address the possibility that acquisition premiums may vary over time and with industry membership. With the exception of the estimated coefficient for acquisitions occurring between 1990 and 1994, which is negative and statistically significant, the remaining time-period coefficient estimates are not statistically significant. With respect to industry membership, the estimated coefficients for SIC 1000 (metal and mining), SIC 2000 (food, textile, and chemicals), and SIC 4000 (transportation and utilities) are negative and statistically significant. To determine if our results are sensitive to our specification of industry membership or time period, we reestimated the regressions using indicator variables representing two-digit industry membership (for industries with 20 or more observations) and specific acquisition years. We constructed acquisition year indicator variables after combining years with few observations (i.e., less than 20) with adjacent years subject to the same capital gains tax rate. The results (not reported) are similar to those presented in Table IV.

We also examined whether our results are attributable to unobservable time effects that vary specifically by tax regime. In particular, we reestimated each of models, including indicator variables representing each tax regime (less regime one to prevent a singular matrix). This specification essentially focuses our capital gains tax variables on the cross-sectional variation in the size of the capital gains rather than the time-series variation in the capital gains tax rate. Results from this alternative specification (not reported) are consistent with the results presented in Table IV and suggest that our results are not attributable to time effects correlated with tax regime.[15]

V. Conclusion

This study investigates the role of shareholder capital gains taxes in determining acquisition premiums. We exploit cross-temporal differences in the long-term capital gains tax rates across a sample of taxable and tax-free acquisitions from 1975 to 2000, to test the hypothesis that pre-acquisition shareholder-level capital gains taxes increase the cost of taxable acquisitions. In sum, our results corroborate the long-standing speculation that shareholders are compensated for the costs of accelerating capital gains taxes that otherwise could have been deferred. Specifically, we find a unique positive association between acquisition premiums

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[15] We also examined whether the level of acquisition activity over the sample period influences our results. Using the data reported in Schwert (2000) as augmented by COMPUSTAT data since 1995, we created a continuous variable, *ACQ*, defined as the number of NYSE and AMEX firms acquired during the sample year and deflated by the number of NYSE and AMEX firms trading during the same year. Regression results including this control for acquisition activity are consistent with results presented in Table IV.

for taxable acquisitions and shareholder capital gains taxes for individual investors, and this association decreases in the level of institutional ownership.

Our findings make several contributions. First, our evidence suggests that shareholder-level taxes have a significant price effect on taxable acquisitions, which varies with the tax status of the target's shareholders. This finding confirms prior conjecture that target shareholders require compensation for the incremental costs associated with accelerating capital gains taxes. From a broader perspective, this evidence suggests that shareholder-level taxes, at the minimum, affect the pricing of the largest corporate distribution (i.e., acquisitions). In addition, our results suggest that target institutional ownership is a reasonable proxy for the tax status of the price-setting shareholders. Finally, from a tax policy perspective, our results suggest that capital gains tax policy plays an important role in corporate acquisitions. One implication of our results is that changing capital gains tax rates alters the cost of corporate acquisitions and thereby may influence the movement of capital via corporate acquisitions.

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