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THE EFFECT OF TAXES
ON THE STRUCTURE OF CORPORATE ACQUISITIONS

by

Merle Matthew Erickson

A Dissertation submitted to the Faculty of the
COMMITTEE ON BUSINESS ADMINISTRATION

In Partial Fulfillment of the Requirements
For the Degree of

DOCTOR OF PHILOSOPHY
WITH A MAJOR IN MANAGEMENT

In the Graduate College

THE UNIVERSITY OF ARIZONA

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ABSTRACT

This study investigates tax and non-tax determinants of corporate acquisition structure. In contrast to previous research, this study analyzes acquisitions from an investment financing perspective and investigates the tax implications of transaction structure for all three contracting parties - acquiring firm, target firm and target firm shareholders. Results indicate that the probability of an equity-financed tax-free transaction structure is an increasing function of the acquiring firm's likelihood of tax exhaustion. The probability of a debt-financed taxable transaction is a decreasing function of the percentage of the acquiring firm's value represented by growth opportunities (market to book ratio), and an increasing function of acquiring firm leverage and size. The results provide mixed support for the notion that target firm tax attributes and potential target firm shareholder capital gains tax liabilities influence acquisition structure.

The Tax Reform Act of 1986 was expected to increase the likelihood that corporate acquisitions would be completed as tax-free transactions. Evidence in this study fails to support the conclusion that TRA86 impacted the way in which corporate acquisitions are consummated in the aggregate. Furthermore, results indicate that TRA86 did not modify the impact, on acquisition structure, of target firm tax attributes or shareholder capital gains tax liabilities.

Overall, this study provides new evidence that tax and non-tax characteristics of acquiring firms are important determinants of the structure of corporate acquisitions.

CHAPTER 1 - TAXATION OF CORPORATE ACQUISITIONS

1.1 Introduction

Acquiring another corporation may be the single largest economic event in a firm's life, but we know little about what determines the structure of these transactions (i.e. whether the acquirer uses stock or cash to purchase target shares). In spite of the significance of these transactions, prior research has provided sparse evidence on the determinants of acquisition structure. Although conventional wisdom suggests that taxes are an important determinant of corporate acquisition structure, prior academic research that focuses on the impact of target firm tax attributes and target firm shareholder capital gains tax liabilities on transaction structure provides conflicting results.¹ For example, Auerbach and Reishus (1988), Franks, Harris and Mayer (1988), and Niden (1988) conclude that tax factors are not a significant determinant of the method of payment in acquisitions. On the other hand, Carleton *et al.* (1983) and Hayn (1989) provide evidence that taxes influence acquisition structure.

The purpose of this paper is to analyze tax and non-tax determinants of corporate acquisition structure. This research makes several contributions. First, this dissertation extends the literature on the influence of taxes on acquisitions by analyzing the tax implications of transaction structure to all contracting parties - acquiring firm, target firm and target firm shareholders. Because prior empirical research has not specifically analyzed the acquiring firm's impact on transaction form, a primary contribution of this study is the examination of the influence of the acquiring firm's tax and non-tax characteristics on the structure decision. Adding the acquiring firm's

¹ Poterba (1988) notes that roughly 20% of articles in takeover related publications, such as *Mergers and Acquisitions*, are tax-related. Reed *et al.* (1992) state that: "in most cases where the parties have a choice about the structure, tax considerations will be paramount" (pg. 210).

characteristics to the analysis makes sense because the effect of the deal's structure on the after-tax value of the acquisition to *both* the buyer and seller is important (see Scholes and Wolfson [1992]). When analyzing the acquiring firm's role in the structure decision, I am able to determine the source of acquisition financing (stock, internal funds or debt). Therefore, an additional contribution of this study is the analysis of the source and determinants of acquisition financing. Finally, this research analyzes the impact of the Tax Reform Act of 1986 (TRA86) on the structure of corporate acquisitions. TRA86 made major changes in the tax regime providing a unique opportunity to study the tax determinants of acquisition structure across a major tax shock. Academics and practitioners alike believed that the tax reform would influence how corporate acquisitions are consummated. To my knowledge, this is the first research that analyzes the influence of taxes on post-TRA86 mergers and acquisitions.

For purposes of this study, transaction structure is defined as tax-status (taxable or tax-free) or consideration offered (100% cash and therefore taxable versus 100% stock and tax-free). The latter categorization has been designated "method of payment" in some prior research. For the sample of transactions analyzed in this study, it is almost always the case that (i) taxable transactions are debt-financed cash transactions, and (ii) in tax-free transactions, stock of the acquiring firm is used as consideration (i.e. the deal is equity-financed). Consequently, debt related tax shields generally arise only in taxable transactions. Notice that tax status, consideration offered and financing method are virtually perfectly correlated.

Corporate acquisitions are either taxable or tax-free. In the former case, target shareholders recognize gains and losses on the exchange of shares and the basis of the target's assets may be stepped-up to fair market value by the acquirer, while in the latter case, target shareholders defer gains and losses and a basis step-up in the target's assets

is not possible. Tax attributes of the target, such as net operating losses (NOLs), are available to the acquirer in tax-free transactions but are generally eliminated in taxable transactions. Consistent with prior research, I predict that the probability of a taxable transaction is a decreasing function of potential target firm shareholder capital gains tax liabilities. The probability of a taxable transaction is predicted to be a decreasing function of target firm net operating loss carryforwards and an increasing function of tax benefits available from stepping up the basis of the target firm's assets.

This study provides some evidence which suggests that potential target firm shareholder capital gains tax liabilities are negatively related to the probability of a taxable transaction. My results provide mixed evidence that target firm net operating losses are negatively related to the probability of a taxable transaction structure, but the evidence provides no support for the notion that tax benefits from a step-up in the basis of the target's assets are positively related to the probability of a taxable transaction. Overall, I interpret this evidence as weak support for the view that a target's tax attributes and target shareholder capital gains tax liabilities influence transaction structure.

From an acquiring firm's perspective, a corporate acquisition is fundamentally a large capital investment. By examining acquiring firms, I am able to provide evidence that the acquiring firm's tax status influences how these investments are financed. Most taxable transactions analyzed in this study are debt-financed while tax-free transactions are always at least 50% equity-financed and most commonly 100% equity-financed.² I find that the probability of a debt-financed taxable (equity-financed tax-free) transaction is an increasing (decreasing) function of acquiring firm tax rates, with a one standard

² Throughout the paper, when using the term equity-financed, I mean that the acquirer finances the transaction with its stock.

deviation increase (an increase of approximately 15%) in the effective tax rate of an acquiring firm increasing the likelihood of a debt-financed taxable transaction by approximately 8%. This result is consistent with the notion that low tax firms find debt related tax shields less valuable, thereby making stock financing more preferable, other things equal.

Because taxes are not the only factor that influence investment financing decisions and therefore the structure of corporate acquisitions, this paper also analyzes the impact of several non-tax attributes of acquiring firms on corporate acquisition structure. Consistent with Myers' (1977) argument that high growth firms cannot support heavy debt financing, results indicate that the probability of an equity-financed tax-free transaction is an increasing function of acquiring firm market to book ratio, with a one standard deviation increase in acquirer market to book ratio increasing the probability of an equity-financed tax-free transaction by approximately 15%. Alternatively, the impact of acquiring firm market to book ratio on transaction structure may be consistent with the argument of Brown and Ryngaert (1991) that overvalued (high market to book) firms use equity to finance corporate acquisitions.

Results indicate that the probability of a debt-financed (taxable) transaction is an increasing function of acquiring firm debt to equity ratio with a one standard deviation increase in acquiring firm debt to equity ratio increasing the probability of a debt-financed (taxable) transaction by about 12%. This result is contrary to predictions based on financial distress cost theories, but is consistent with some prior research (See for example Weston and Mansinghka [1971]). Finally, I find that the probability of a debt-financed (taxable) transaction is an increasing function of acquiring firm size consistent with arguments that: 1) size is inversely related to default risk, and 2) size proxies for access to debt markets (Rajan and Zingales [1995]).

1.2 Taxes and Corporate Acquisitions

1.2.1 Taxation of Acquisitions

In this section, I describe the taxation of corporate acquisitions and specifically discuss the tax impact of alternate transaction structures on the target firm, target firm shareholders and the acquiring firm. Included in this discussion is a description of the two acquisition types - from a tax perspective. An analysis of the changes in the taxation of corporate acquisitions resulting from the Tax Reform Act of 1986 is deferred until Chapter 3. Figure 1 contains a summary of the tax implications of taxable and tax-free transaction structures.³

Corporate acquisitions are either taxable or tax-free with the transaction's tax status determined at the target firm level. In a taxable acquisition, target shareholders recognize taxable gains and losses on the exchange of target shares for cash or other consideration. On the other hand, in a tax-free acquisition, target shareholders defer realized gains and losses if they receive solely stock of the acquiring firm in exchange for target shares. Thus, the tax status of the transaction is largely determined by the consideration received by target shareholders. If the acquirer buys the target for cash, the transaction will be taxable. On the other hand, if the acquirer pays for target shares with its stock, the transaction will likely qualify for tax-free treatment.

³ For a more comprehensive discussion of tax and non-tax implications of alternative transaction structures see Karls (1989), Reed *et al.* (1992), and Ginsburg and Levin (1994).

The tax status of the acquisition also impacts the acquiring and target firms. In tax-free transactions, the basis of the target's assets carryover to the acquirer and no gain is recognized at the target firm level. The tax attributes of the target, such as NOLs, are also available to the acquirer subject to limitations post-acquisition in tax-free transactions. On the other hand, in a taxable transaction, target tax attributes are eliminated or severely limited and therefore are not available to the acquirer post-acquisition. In a taxable transaction, it is possible for the acquirer to obtain a stepped-up tax basis in the target's assets, however this step-up election is not frequently made in the sample of transactions analyzed in this study.⁴

1.2.2 Tax-Free Transactions

In order for the acquisition of the target firm to qualify for tax-free status under IRC Section 355 or 368, the transaction must meet several pre-specified requirements. As a general rule, the consideration received by target shareholders must, in total, be at least 50% stock of the acquiring firm. As an empirical fact, in most tax-free transactions, the acquirer pays for the target with only acquiring firm stock. There are four general requirements for a transaction to qualify for tax-free treatment. These four requirements are: 1) continuity of interest and continuity of business enterprise, 2)

⁴ See Kaplan (1989), Schipper and Smith (1991), and "The Threat of a Merger Tax" (Mergers and Acquisitions, 1986) regarding the frequency of step-up transactions.

business purpose, 3) a plan of reorganization must exist and 4) the acquisition must follow a pre-specified form (Pratt and Kulsrud [1995]).

The continuity of interest principle requires that target shareholders maintain an ownership interest in the combined concern. That is, target shareholders must maintain equity ownership in the combined entity. From the continuity of interest doctrine comes the statutory requirement that the acquirer must primarily use its stock as consideration when purchasing target shares. Similarly, the continuity of business doctrine requires that the acquiring firm continue to operate the target firm's business post-acquisition. As a result, the acquirer cannot liquidate the target firm's assets shortly after the acquisition without disqualifying the transaction's tax-free status. The acquisition must have a business purpose meaning that the goal or primary objective of the reorganization cannot be tax avoidance. Finally, the acquisition must follow a pre-specified form as detailed in IRC Section 368 or 355.⁵

If the transaction qualifies for tax-free status, target shareholders defer gains on their exchange of target stock for acquirer stock. In conjunction with the deferral, target shareholders take a substituted basis in the acquirer stock received. That is, target shareholders take a basis in the acquirer stock that is equivalent to their basis in the target stock pre-acquisition. Realized gains on the acquisition are recognized when target shareholders subsequently sell acquirer stock. Although the transaction qualifies

⁵ See Niden (1988) and Hayn (1989) for a thorough discussion of the different forms of tax-free reorganizations.

for tax-free status, target shareholders only defer gains on the exchange of shares for acquirer stock. If they receive boot, such as cash or debt securities, as consideration for target shares, a taxable gain is recognized. The gain recognized by target shareholders is the lesser of the boot received or the gain realized.

In a tax-free reorganization, the target firm recognizes neither gain nor loss. Unlike some taxable transactions, in a tax-free reorganization, the tax basis of the target's assets cannot be stepped-up to fair market value.

1.2.3 Taxable Transactions

All corporate acquisitions are assumed to be taxable unless they meet the requirements for tax-free treatment. As an empirical fact, during the period of study, target shareholders receive nothing but cash in return for shares in the target in most taxable transactions. As a result, target shareholders recognize gains or losses on the exchange of shares for cash or other boot as the difference between the consideration received and the basis in the shares surrendered. Only those transactions that are taxable give the acquirer the option to step-up the basis of the target's assets. If the transaction is structured as an asset sale or a stock acquisition followed by an IRC Section 338 election, the basis of the target's assets are stepped-up to fair market value.⁶ As a result of the step-up, the target recognizes a taxable gain on the difference between

⁶ Section 338 transactions are taxable stock purchases that are treated as asset sales for tax purposes. As a result, the acquirer obtains a stepped-up tax basis in the target's assets.

the tax basis of the target's assets and the fair market value of the assets.⁷ In step-up transactions, the tax attributes of the target are not available to the acquirer after the acquisition.

If the basis of the target's assets are not stepped up, the acquirer takes a carryover basis in those assets, and the tax attributes of the target firm survive subject to limitation.

1.3 Literature Review

Although the research question deals with the impact of taxes on corporate acquisitions, hypotheses developed below relate to the taxes and capital structure literature. Therefore, a discussion of prior research in the area of taxes and capital structure is provided before addressing prior research on the determinants of acquisition structure.

1.3.1 Taxes and Capital Structure

Modigliani and Miller (1958) demonstrate that with perfect markets and no taxes, capital structure is value irrelevant. Using an arbitrage argument, they show that the total value of claims on a firm's cash flows are constant regardless of how these claims are divided between debt and equity. When including taxes, Miller and Modigliani (1963) conclude that an all debt capital structure is value maximizing. Because interest payments are tax deductible at the corporate level, debt claims shield firm cash flows from taxation increasing the amount of after tax cash available to

⁷ TRA86 modified the way in which step-up transactions are taxed. A discussion of the different tax treatments accorded to step-up transactions before and after TRA86 is deferred until Chapter 3.

claimholders. That is, the total value of claims on the firm's cash flows is an increasing function of debt because as debt increases less cash is paid in taxes leaving more cash for claimholders. Miller (1977) expanded the analysis by recognizing that debt and equity returns are differentially taxed at the individual investor level. More specifically, because interest payments are tax disfavored to investors, relative to equity returns, investors will require a greater return (i.e. buy debt at a lower price) to compensate for the tax disadvantage of debt investments. Miller concludes that this tax cost at the investor level offsets any corporate tax advantage of debt leading to the conclusion that financing means are irrelevant to firm value. DeAngelo and Masulis (1980) further advanced the literature by demonstrating that the value of debt related tax shields is a function of firm specific tax attributes such as non-debt tax shields, tax losses and credits, and profitability. More precisely, additional interest deductions are least valuable for firms: (i) facing a high probability of having non-positive taxable income (tax exhaustion hypothesis) or, (ii) that have large amounts of non-debt tax shields (substitution hypothesis).

DeAngelo and Masulis also point out that there are stakeholder clienteles for different corporate securities which impact the price and hence value of debt. Notably, investors in low tax brackets prefer debt while investors in higher tax brackets prefer tax favored equity returns. This is so because interest income on debt (bonds to investors) is tax disfavored at the investor level while equity returns, especially in the form of capital gains, are tax favored at the investor level.

Empirical evidence supporting the importance of taxes in financing decisions was limited until Mackie-Mason (1990). Prior to Mackie-Mason's study, most empirical research analyzed debt levels which are the culmination of numerous capital structure decisions. In a methodological improvement, Mackie-Mason analyzed

incremental financing decisions of firms (debt or equity). Using this approach, he provided support for the tax exhaustion hypothesis of DeAngelo and Masulis. That is, he showed that firms facing a high likelihood of zero taxable income are less likely to finance investments with debt.

In addition to providing evidence supporting the substitution effect, Dhaliwal, Trezevant and Wang (1992) and Trezevant (1992) provide support for the tax exhaustion hypothesis. Dhaliwal *et al.* (1992) analyzed the leverage of 1,045 firms over the period 1972-1986. After controlling for the likelihood of tax exhaustion, they provide evidence that non-debt tax shields are negatively related to debt usage. Trezevant (1992) analyzed changes in interest expense as a percentage of earnings before interest, taxes and depreciation for a set of firms across the Economic Recovery Tax Act (ERTA) of 1981. ERTA increased non-debt tax shields (e.g. accelerated depreciation, investment tax credits), thereby potentially crowding out debt related tax shields after the legislative change. Trezevant finds that ERTA induced increases in non-debt tax shields are negatively related to changes in debt usage, after controlling for the tax exhaustion effect.

Givoly *et al.* (1992) analyze changes in leverage for a group of firms across TRA86. TRA86 reduced the statutory corporate tax rate, reduced non-debt tax shields, and increased taxes on equity returns. The authors find that firms with high pre-TRA86 tax rates reduce leverage more as a result of TRA86 and that firm's with high dividend yields increase leverage less post-TRA86. The latter result is attributed to the decrease in the tax advantage of equity income post-TRA86. They also find that the loss of non-debt tax shields is positively related to leverage changes post-TRA86 consistent with the substitution hypothesis and the results of Trezevant (1992). In summary, Givoly *et al.* (1992) provide evidence that corporate and personal tax rates (of shareholders)

influence financing decisions. Graham (1996a) studies the relation between corporate marginal tax rates and changes in firm leverage. He uses a complex measure of a corporation's marginal tax rate and finds that marginal tax rates are positively related to changes in leverage. His results provide further evidence that taxes impact financing decisions.

Kaplan (1989) and Schipper and Smith (1991) analyze the relationship between debt related tax shields and premiums in highly leveraged going private transactions. Both studies conclude that tax benefits from interest deductions on the debt incurred to take the sample companies private are a significant component of the premium paid to target shareholders.

1.3.2 Determinants of Acquisition Structure

A number of studies have analyzed the determinants of acquisition structure. Most prior research in this area has focused on tax factors as determinants of corporate acquisition structure. In general, this literature has provided little evidence supporting the notion that taxes influence the structure of corporate acquisitions. Below follows a brief review of this research.

Carleton *et al.* (1983) analyzed the consideration offered in 61 corporate acquisitions during the period 1976-77 and found that target firms with high market to book ratios are more likely to be acquired for stock (generally tax-free deals). They attribute this result to a shareholder capital gains tax effect and/or the desire to avoid the creation of earnings reducing goodwill. They also find that dividend payout is negatively related to the likelihood of a cash transaction (taxable), but offer no definitive interpretation of this result.

Crawford (1987) analyzes tax and non-tax determinants of the structure of 322 corporate acquisitions completed during the period 1971 to 1982. He provides mixed support for the conclusion that target firm shareholder capital gains taxes and tax benefits from a basis step-up of the target's assets influence acquisition structure. Auerbach and Reishus (1988) analyzed the consideration offered in 318 completed corporate acquisitions during the period 1968-1983. Although they include a number of tax related factors in their model of the determinants of the consideration offered, they conclude that "none of these (measures of tax benefits from a basis step-up in the target's assets) were statistically significant or important in explaining the form of payment. Likewise, the results for the tax saving due to losses and credits (of the target) are not significant in explaining the form of payment" (pg. 93-94). Franks *et al.* (1988) analyzed the determinants of consideration offered in approximately 2,000 corporate acquisitions in the U.S. and the U.K. during the period 1955-1985. There were a variety of tax regime changes in the U.K. during the period of study, however, the authors conclude that tax effects had little impact on the consideration offered in these acquisitions.

Niden (1988) focuses on the tax status of target firm shareholders as a primary determinant of acquisition structure in approximately 700 transactions during the period 1963-1984. She concludes that the tax status of target shareholders does not influence the consideration offered in the acquisition, however Hayn (1989) provides descriptive evidence suggesting that target firm tax attributes and shareholder capital gains taxes influence the structure of corporate acquisitions. Hayn (1989) analyzed the determinants of target firm abnormal returns around acquisition announcements. Using a set of taxable and tax-free transactions, she concludes that: (i) target shareholder capital gains taxes affect abnormal returns around takeover announcements in taxable

deals, (ii) tax benefits from a basis step-up in taxable transactions is positively related to abnormal returns around acquisitions, and (iii) in tax-free transactions, returns to target shareholders are positively related to expiring target firm tax attributes. Plummer and Robinson (1992) conclude that target firm net operating losses do not affect acquisition premiums.

Ahmihud, Lev and Travlos (1992) analyzed the influence of acquiring firm management ownership levels on the choice of consideration offered in corporate acquisitions. They find that acquiring firms with high levels of management ownership were less likely to use stock (tax-free exchange) to finance an acquisition. This result is consistent with management valuing control and choosing an acquisition financing method that will not dilute control. Lehn, Netter and Poulsen (1990) study two alternate methods of consolidating corporate control - leveraged buyouts (LBO) and dual class recapitalizations. In a dual class recapitalization, the voting shares not held by insiders are exchanged for non-voting shares, while in an LBO; outstanding stock is repurchased with debt-financed cash. Lehn *et al.* (1990) find that firms choosing dual class recapitalizations have lower tax liabilities and higher growth prospects than firms that consolidate control through an LBO.

In summary, recent empirical evidence provides support for the notion that taxes influence financing decisions. On the other hand, research on the impact of taxes on the structure of corporate acquisitions has provided limited evidence that taxes affect these transactions. Thus, an improvement over prior corporate acquisition structure research may be achieved by incorporating the results of recent research on the impact of taxes on capital structure. Specifically, from the acquiring firm's perspective, corporate acquisitions are large capital investments that require financing. Therefore, the

determinants of financing decisions, including taxes, may also be important determinants of corporate acquisition structure.

How a corporate acquisition is structured has immediate economic (tax) implications for all contracting parties. In addition, the transaction structure selected impacts the future after-tax cash flows of the combined enterprise. This variation in immediate taxes incurred and future after-tax cash flows as a function of deal structure, in conjunction with acquirer and target firm specific tax and non-tax characteristics, lead to a number of testable predictions which are developed in the next section.

1.4 Testable Implications

1.4.1 Tax-Related Hypotheses

Acquiring Firm Tax Status: As demonstrated by DeAngelo and Masulis (1980), and supported empirically by Mackie-Mason (1990), Dhaliwal *et al.* (1992), Trezevant (1992) and Graham (1996a), the likelihood of tax exhaustion (i.e. the point at which an additional dollar of tax deductions does not reduce tax payments) influences the method by which an investment is financed. The results of these studies are consistent with the conclusion that firms facing a higher likelihood of being tax exhausted are more likely to finance investments with stock. A corporate acquisition is fundamentally a large capital investment. Based on the above cited research, the acquirer's choice of financing this investment should be a function of its likelihood of tax exhaustion. Acquirers facing a low probability of tax exhaustion should find interest deductions relatively more valuable, making a debt-financed transaction more appealing.⁸ Recall

⁸ Reed *et al.* (1992) state: "When an issuer (acquirer) is not in need of additional interest deductions (for example when it expects to generate or otherwise have net operating losses) there may be no tax imperative to use debt ..." (pg. 328).

that most taxable deals consummated during the time period considered in this study are debt-financed while tax-free transactions must always be stock-financed. The acquiring firm tax exhaustion hypothesis stated in alternative form is:

H_{1a}: *Ceteris paribus*, the probability of a *stock-financed* (tax-free) transaction is an increasing function of the likelihood that the acquiring firm will be tax exhausted. Alternatively, the probability of a *debt-financed* (taxable) transaction is a decreasing function of the likelihood that the acquiring firm will be tax exhausted.

Target Shareholder Capital Gains Tax Liabilities: Target shareholders recognize gains or losses on the exchange of target stock for cash or other boot (e.g. debt securities) in taxable deals. In tax-free transactions, realized gains on the exchange of target stock for acquiring firm stock are deferred. The larger the potential shareholder capital gains tax liability, the more costly (in the form of a higher premium demanded) it is for the acquirer to consummate a taxable transaction. Therefore, larger shareholder capital gains taxes are expected to increase the likelihood of a tax-free transaction.⁹ The shareholder capital gains tax hypothesis, stated in alternative form is:

H_{2a}: *Ceteris paribus*, the probability of a taxable transaction is a decreasing function of potential target firm shareholder capital gains taxes.

⁹ It is often argued that acquisitions of privately held companies are structured as tax-free transactions in order to defer large capital gains. Also, prior research provides some support for the notion that shareholder capital gains taxes influence corporate acquisitions. For example, Hayn (1989) and Landsman and Shackelford (1995) find evidence that shareholder capital gains taxes are positively related to acquisition premiums in taxable transactions. Stulz *et al.* (1992) also conclude that shareholder capital gains factors affect acquisition premiums. Similarly, Brown and Ryngaert (1992) conclude that capital gains taxes influence tendering rates.

Regarding previous research testing H_{2a}, Carleton *et al.* (1983) find that target firm market to book ratio is positively related to the likelihood of a tax-free transaction. If high *target* market to book ratio is a proxy for potential target shareholder capital gains tax liabilities, their finding is consistent with shareholder capital gains tax liabilities influencing transaction structure. On the other hand, Franks *et al.* (1988) and Niden (1988) conclude that shareholder capital gains taxes do not influence the method of payment in corporate acquisitions, and thus the tax treatment of a transaction.

Target Firm Tax Attributes: Target firm tax attributes (e.g. net operating loss carryforwards) have cash flow implications and therefore are value-relevant in an acquisition. Because the use of target NOLs and tax credits by the acquiring firm are severely limited or eliminated in taxable acquisitions, higher levels of these attributes are expected to increase the likelihood of a tax-free transaction. The hypothesis stated in alternative form is:

H_{3a}: *Ceteris paribus*, the probability of a taxable acquisition is a decreasing function of tax benefits from target firm net operating losses.

Step-Up of the Target's Assets: As noted previously, the option to increase the basis of the target firm's assets is a primary tax advantage available in a taxable acquisition. Tax benefits from a basis step-up are expected to be positively related to the probability of a taxable transaction.¹⁰ The hypothesis stated in alternative form is:

¹⁰ As a result of a basis step-up transaction, the target firm incurs recapture taxes, and capital gains taxes if the transaction is completed after the Tax Reform Act of 1986. Depreciation recapture on *Section 1245* property (machine, equipment) is total accumulated depreciation to the extent of the fair market value assigned to the subject property while *Section 1250* property (buildings) depreciation recapture is only the excess of accelerated depreciation over straight line. Recaptured depreciation is treated as ordinary income.

H_{4a}: *Ceteris paribus*, the probability of a taxable acquisition is an increasing function of tax benefits available from stepping up the target's assets.

Prior research related to H_{3a} and H_{4a} can be summarized as follows. Auerbach and Reishus (1988) conclude that "none of these (measures of basis step-up) were statistically significant or important in explaining the form of payment. Likewise, the results for the tax savings due to losses and credits (of the target) are not significant in explaining the form of payment" (pg. 93-94). On the other hand, Hayn (1989) provides evidence that target firm NOLs and tax benefits from stepping up the basis of the target's assets are related to acquisition premiums.

1.4.2 Non-Tax Factors

Taxes are not the only factors that could impact acquisition structure and investment financing decisions, and the interaction of the two. When analyzing corporate acquisition structure as a financing decision, it is necessary to account for non-tax determinants of financing choice.¹¹ Myers (1977) argues that due to moral hazard costs, tangible assets "should be financed with more debt than growth opportunities" (pg. 170). Scott's (1977) theory leads to the similar conclusion that a firm can issue relatively more debt if the debt can be collateralized by fixed assets. Smith and Watts (1992) provide evidence that leverage is negatively related to the percentage of firm value represented by growth opportunities. Consistent with the

¹¹ Harris and Raviv (1991) provide an exhaustive list of non-tax factors considered in prior capital structure research. I analyze a subset of these factors.

arguments of Myers and Scott and the empirical results of Smith and Watts, Lehn *et al.* (1992) provide evidence that growth is positively (negatively) related to the likelihood corporate control is consolidated through a stock exchange (leveraged buyout). Results from prior research suggest that the probability of an equity-financed and therefore tax-free (debt-financed and therefore taxable) transaction is an increasing (decreasing) function of the percentage of the acquiring firm's value represented by growth opportunities.

Financial distress costs reduce shareholder wealth and therefore when debt increases the likelihood of distress, a firm may be more reluctant to issue debt. The likelihood of distress may be a positive function of firm leverage implying that the probability of a debt-financed (taxable) transaction is a decreasing function of the acquiring firm's leverage.

Ahmiud *et al.* (1992) provide evidence that management ownership influences the choice of transaction structure. Because a stock for stock acquisition dilutes acquiring firm management control, they argue and provide evidence that the probability of an equity-financed tax-free transaction is a decreasing function of the acquiring firm's management ownership percentage.

CHAPTER 2 - SAMPLE SELECTION, EMPIRICAL METHOD AND RESULTS

2.1 Introduction

In this chapter, I discuss the sample of transactions analyzed as well as the sources used to identify these corporate acquisitions. After discussing sample selection criteria and procedures, the empirical method and proxies for the tax constructs discussed in the hypotheses development section of Chapter 1 are specified. In the latter portion of this chapter, I present empirical results beginning with descriptive statistics on the set of corporate acquisitions studied. These descriptive statistics include transaction tax status, consideration offered and other transaction characteristics such as the presence of multiple bidders. In addition, descriptive financial statistics are provided for both acquiring firms and target firms in the aggregate and partitioned by the tax status of the transaction. The empirical results then turn to univariate comparisons of tax factor proxies across transaction structure. Finally, multivariate results are reported including several sensitivity analyses.

2.2 Sample Selection

I gathered a sample of corporate acquisitions completed during the period 1985-1988 from several sources. In order to be included in the final sample, the transaction had to meet the following criteria:

1. Both the acquirer and the target were publicly traded U.S. corporations prior to the transaction.
2. Both the acquirer and the target are on COMPUSTAT.
3. The acquirer and target were not in the financial services industry prior to the transaction.

4. The acquirer did not have a controlling interest in the target prior to the acquisition.
5. Information on the announcement and completion date and the terms of the transaction is publicly disclosed.

The first and second criteria assure that information about both transacting parties is publicly and readily available. Criteria 3 alleviates any potential bias resulting from regulatory capital requirements in the financial services industry and criteria 4 assures that corporate level tax attributes, such as target NOLs, were impacted by the transaction.¹² Criteria 5 assures the availability of (i) control variables, such as the presence of multiple bidders, and (ii) the dependent variable - transaction structure.

I obtained an initial sample of firms meeting criteria 1 through 4 from Securities Data Company, *Mergerstat Review* and *Mergers and Acquisitions*. Using these three sources an initial sample of 354 transactions was identified. Complete data necessary to estimate the binomial logit model discussed below was unavailable for ten transactions leaving a final sample of 344 transactions.¹³

2.3 Empirical Method

For purposes of this study, corporate acquisitions are categorized as taxable or tax-free. A discrete choice model is appropriate when the dependent variable is

¹² With respect to criteria 4, a basis step-up in the target's assets is only possible if the acquirer purchases more than 80% of the target's stock during a twelve month period prior to completion of the transaction. Similarly, if the acquirer owns a substantial portion of the target prior to the transaction, the target can be merged into the acquirer without affecting the target's tax attributes.

¹³ Of the ten transactions missing data, in most cases the data missing are target firm institutional ownership. In the other cases, information on the consideration offered was unavailable.

dichotomous, and I use a binomial logit model to analyze the determinants of transaction structure, with structure specified as either taxable or tax-free.

I also perform two sensitivity analyses. These sensitivity analyses categorize transactions by consideration offered and further by source of acquisition financing (stock or debt). In the consideration offered tests, only 100% cash (taxable) deals are analyzed relative to 100% stock transactions (tax-free). In the source of acquisition financing tests, a set of primarily debt-financed 100% cash (taxable) deals is analyzed relative to a group of 100% stock-financed (tax-free) deals. Notice that in both sensitivity analyses, the dependent variable remains a taxable/tax-free dichotomy. The consideration offered largely determines a transaction's tax status, and the consideration offered is a function of how the acquirer chooses to finance the acquisition. The motivation for and description of these sensitivity analyses follow in more detail below.

2.4 Model, Empirical Proxies and Variable Definitions

2.4.1 Multivariate Model and Dependent Variable Specification

I test the impact of tax and non-tax factors on the structure of corporate acquisitions using the following binomial logit model.

$$\text{pr}(y=1|x)$$

where: $y = 1$ if a taxable transaction;

$y = 0$ if a tax-free transaction;

x = vector of acquirer, target and target shareholder characteristics;

In regression form, the model can be described as below with coefficient predicted signs in parentheses:¹⁴

¹⁴ Variables are defined below and in Figure 2. AcqNOL replaces AcqETR as a proxy for the likelihood of acquirer tax exhaustion, and DIVYLD replaces TarINST% as a

$$\begin{aligned}
\text{pr(Taxable}_i) = & \alpha_0 + \beta_1 \text{AcqETR}_i + \beta_2 \text{TarINST}\%_i + \beta_3 \text{TarNOL}_i + \beta_4 \text{STEP-UP}_i \\
& \quad (+) \quad \quad (+) \quad \quad (-) \quad \quad (+) \\
& + \beta_5 \text{RECAPTURE}_i + \gamma_1 \text{AcqMTB}_i + \gamma_2 \text{AcqD/E}_i + \gamma_3 \text{MANAGE}\%_i + \gamma_4 \text{AcqMVE}_i + \\
& \quad (-) \quad \quad (-) \quad \quad (-) \quad \quad (+) \quad \quad (?) \\
& \quad \gamma_5 \text{MULTI}_i + \gamma_6 \text{HOSTILE}_i + \varepsilon_i \quad (1) \\
& \quad \quad (+) \quad \quad (+)
\end{aligned}$$

where for each transaction i:

AcqETR = The acquiring firm's effective tax rate measured as the sum of taxes paid (federal and state) for the three years prior to the acquisition, divided by the sum of the prior three years earnings before taxes. This measure was truncated as zero and the top statutory tax rate. AcqETR is predicted to be positively related to the probability of a taxable transaction.

TarINST% = Percentage of the target firm's common stock owned by institutional investors. Measured as shares held by institutions for the month prior to the acquisition, as reported by the *Standard and Poors Stock Guide*, divided by total shares outstanding. Predicted to be positively related to the likelihood of a taxable transaction.

TarNOL = Estimate of the amount of the tax benefits available to the acquirer from the target firm's NOLs. Measured as the target firm's tax basis net operating losses as reported in the tax footnotes to the financial statements multiplied by the top statutory tax rate in effect at the time, divided by target market value of equity. Predicted to be positively related to the probability of a tax-free transaction.

STEP-UP = Potential tax benefits resulting from an increase in the tax basis of the target firm's assets. Measured as the difference between target firm market value of equity and book value of equity for the year prior to the acquisition, multiplied by the top statutory tax rate in effect for the year the deal was completed, all divided by target firm market value of

proxy for the tax clientele of the target firm's shareholders in sensitivity analyses discussed below.

equity. Predicted to be positively related to the likelihood of a taxable transaction.

RECAPTURE = Estimate of recapture taxes associated with a step-up in the basis of the target firm's assets. Measured as the sum of accumulated depreciation plus grossed up deferred taxes all multiplied by the top statutory tax rate. Predicted to be negatively related to the probability of a taxable transaction.

AcqMTB = Market to book ratio of the acquiring firm for the year prior to the acquisition. Predicted to be negatively (positively) related to the probability that a taxable (tax-free) transaction is selected.

AcqD/E = Acquiring firm debt to equity ratio which is defined as long term debt divided by book value of equity, both measured for the year prior to the acquisition. Predicted to be negatively related to the probability that a taxable transaction structure is selected.

MANAGE% = The percentage of acquiring firm stock owned by officers and directors. Defined as the total shares held by officers and directors divided by total shares outstanding, both measured at the year prior to the acquisition. Source of management ownership is *Spectrum 6* and firm proxy statements. Predicted to be positively related to the probability that a taxable transaction is selected.

AcqMVE = Market value of equity of the acquiring firm for the year prior to the acquisition. I make no prediction about the impact of this variable on acquisition structure.

MULTI = Indicator variable taking the value one if more than one firm sought to purchase the target, zero otherwise. Source of this information is *The Wall Street Journal*, and the predicted sign of the coefficient on MULTI is positive.

HOSTILE = Indicator variable taking the value of one if the transaction was hostile, zero otherwise. Source of this information is *The Wall Street Journal*, and the predicted sign of the coefficient on HOSTILE is positive.

AcqNOL = Indicator variable taking the value of one if the acquiring firm had net operating losses, zero otherwise. Information obtained from the tax footnotes of the acquiring firm's financial statements for the year prior to the acquisition. This variable is designed to proxy for the likelihood of

tax exhaustion and is used in lieu of AcqETR in equation (1) in sensitivity tests. Predicted to be negatively (positively) related to the probability of a taxable (tax-free) transaction.

DIVYLD = Target firm dividend yield which is measured as the average annual target firm dividend yield for the three years prior to the acquisition. This variable is used in lieu of TarINST% when estimating equation (1) in sensitivity analyses. Predicted to be positively related to the probability of a taxable transaction.

I define transaction structure two different ways - by tax status or by the consideration offered. Equation (1) is estimated separately for each structure specification. Recall that consideration offered and tax status are nearly perfectly correlated. Separate logit models were estimated for each structure specification. The tax status of the transaction, taxable or tax-free, was gathered from *Capital Adjustments*, *Capital Changes Reporter*, *Mergers and Acquisitions*, and *The Wall Street Journal*. For each transaction, the consideration offered was also collected. The four possible consideration classifications are: 100% cash, 100% stock, $\geq 50\%$ stock but $< 100\%$ stock, and other mixed (combination of cash and securities). I obtained information on the consideration offered from *Mergerstat Review*, *Mergers and Acquisitions* and *The Wall Street Journal*.

When analyzing consideration offered, only 100% cash (always taxable) or 100% stock (generally tax-free) transactions are retained. I exclude mixed consideration transactions because in these transactions the cash portion of the consideration received by target shareholders triggers immediate capital gains recognition while the equity portion of the consideration received may not.¹⁵ In

¹⁵ In so-called tax-free transactions, any cash received is taxable to target shareholders. Any type of consideration received (i.e. stock) by target shareholders results in immediate recognition of gains or losses in taxable transactions.

addition, the source of acquirer financing in mixed consideration transactions may be debt, stock and internally generated funds. As a result, these multi-consideration transactions may have tax consequences of both taxable and tax-free deals and may be financed with a combination of debt, stock and internally generated funds. Both factors potentially add noise to the analysis. Therefore, I include only 100% cash or 100% stock deals when specifying transaction structure as consideration offered.¹⁶

2.4.2 Tax Variables

The probability of a *stock-financed* tax-free transaction is predicted to be an increasing function of the likelihood that the acquirer is tax exhausted. Acquiring firm effective tax rates are used as a proxy for the likelihood of tax exhaustion (a high effective tax rate corresponds to a low probability of tax exhaustion). Following Omer *et al.* (1991) Schipper and Smith (1991), and Givoly *et al.* (1992), I define acquiring firm effective tax rates (AcqETR) as the sum of taxes paid divided by the sum of earnings before taxes for the three years prior to the transaction. AcqETR is truncated at zero and the maximum statutory rate and the predicted sign on AcqETR is positive.

The presence of acquiring firm tax loss carryforwards (NOLs) is used as an alternate proxy for the likelihood of acquiring firm tax exhaustion. This dummy variable (AcqNOL) takes the value one if the acquiring firm has an NOL carryforward in the year prior to the acquisition and zero otherwise. The tax exhaustion hypothesis suggests that acquiring firms with NOLs are more likely to opt for equity-financed tax-free transactions and the predicted sign on AcqNOL is therefore negative.

¹⁶ Some prior research (e.g. Carleton, *et al.* [1983], Auerbach and Reishus [1988], Franks *et al.* [1988], and Niden [1988]) analyzed the determinants of method of payment in corporate acquisitions. Therefore, specifying transaction structure as consideration offered (method of payment) provides comparability to prior research.

Shareholder capital gains tax liabilities, which are a function of both basis and tax rate, act as an implicit tax to the acquirer and potentially affect the choice of transaction structure. Estimating the basis of target shares in the hands of target shareholders is difficult if not impossible absent confidential information. On the other hand, two common proxies for the tax clientele of target shareholders are readily available - institutional ownership and dividend yield. The capital gains tax burden associated with a taxable transaction is measured as a function of the shareholder tax clientele of the target firm.

Target firm institutional ownership is used as a proxy for the tax clientele of the target firm with institutional ownership percentage inversely related to target shareholder's tax rates.¹⁷ Low tax rate shareholders decrease the cost, and thus increase the likelihood of a taxable acquisition. The source of target firm institutional ownership data is the *Standard & Poors Stock Guide*, and the variable TarINST% is defined as the percentage of target firm common stock outstanding owned by institutional investors for the month prior to the acquisition announcement. Brown and Ryngaert (1992) find that tendering rates are positively related to institutional ownership. Likewise, Stulz *et al.* (1992) find that target institutional ownership is negatively related to acquisition premiums. Both sets of authors attribute their results to low tax rates of institutional investors.¹⁸ The probability of a taxable acquisition is predicted to be an increasing

¹⁷ Many of the institutions included in the *Standard & Poors Stock Guide* face lower capital gains tax rates than do individual investors. Specifically, many of the institutions tracked are pension funds and college endowment funds which have a zero tax rate at the entity level. A cleaner measure of institutional ownership would therefore be the percentage of the target owned by pension and college endowment funds.

¹⁸ Both studies use the *Standard & Poors Stock Guide* as their source of institutional ownership.

function of target firm institutional ownership and the predicted sign on TarINST% is positive.

Bajaj and Vinj (1990), Givoly *et al.* (1992) and Dhaliwal *et al.* (1995) provide evidence that dividend clienteles exist, although others fail to find evidence consistent with the dividend clientele hypothesis. Dividend yield, designated DIVYLD, is measured as the average annual target firm dividend yield for the three years prior to the acquisition. According to dividend clientele theories, high dividend yield stocks are held by low tax rate investors. Consequently, the probability of a taxable transaction is predicted to be an increasing function of dividend yield and the predicted sign on DIVYLD is positive.

Tax benefits from target NOLs (TarNOL) are defined as NOLs multiplied by the top statutory tax rate and divided by target market value of equity. I gathered target net operating losses from target firm tax footnotes for the year prior to the transaction. Because target firm NOLs are generally eliminated in taxable transactions, the probability of a taxable transaction is predicted to be a decreasing function of TarNOL, and the predicted sign on TarNOL is therefore negative.

As discussed above, the probability of a taxable transaction is expected to be an increasing function of the magnitude of tax benefits arising from a basis step-up. The *maximum* amount of the increase in the basis of the target firm's tangible assets is essentially the difference between the price paid for the target's equity less the book value of this equity.¹⁹ As a result, the potential tax savings from a basis step up are measured two different ways with the difference between target firm market and book

¹⁹ Any taxes incurred as a result of the basis step-up are part of the total value allocated to the assets of the target.

value of equity for the year prior to the acquisition providing a foundation for each.²⁰ First, the difference between target market and book value one year prior to the transaction is multiplied by the top statutory tax rate and then divided by target market value of equity. This method is similar to that employed by Kaplan (1989) and implicitly assumes that the entire basis step-up is applied to tangible assets.²¹ Second, the difference between market and book value is multiplied by the target's fixed asset ratio (net property plant and equipment divided by total assets) and the top statutory tax rate, then divided by target market value of equity. The resulting estimates are designated STEP-UP. The probability of a taxable transaction is predicted to be a positive function of STEP-UP and the predicted sign on STEP-UP is positive.

Similar to any asset sale, when a basis step-up transaction occurs, corporate level taxes are due immediately.²² Following Kaplan (1989), recapture taxes, designated RECAPTURE, are measured as the sum of accumulated depreciation and grossed up deferred taxes multiplied by the top statutory tax rate, all divided by target firm market value of equity.²³ This method overstates recapture taxes on *Section 1250* property, but understates recapture taxes associated with investment tax credits taken. In spite of these shortcomings, RECAPTURE is a reasonable proxy for recapture taxes

²⁰ Using actual purchase price as a measure of basis step-up results in an endogenously determined independent variable.

²¹ A 1991 GAO report indicates that on average 30% of the purchase price in a sample of acquisitions was allocated to intangible assets.

²² These corporate level taxes appear on the target's tax return and are technically the responsibility of (i) the target in an asset sale, and (ii) the acquirer in a stock sale followed by a 338 election. However, in either case, the economic burden of these taxes are shared by the buyer and the seller.

²³ In addition, if the target had NOLs, the recapture tax estimate was reduced by the NOL as the taxes incurred upon a basis step-up can be offset by target firm NOLs, but not acquiring firm NOLs.

incurred upon a basis step-up.²⁴ The probability of a taxable transaction is predicted to be a negative function of recapture taxes and the predicted sign on RECAPTURE is negative.

2.4.3 Non-Tax Variables

I employ acquiring firm market to book ratio (AcqMTB), defined as acquiring firm market value of equity divided by book value of equity for the year prior to the transaction, as a proxy for the percentage of the acquiring firm's value represented by growth opportunities. Market to book ratio is positively related to growth opportunities and negatively related to collateralizable assets, and therefore consistent with the agency cost arguments of Myers (1977) and the debt securability theory of Scott (1977), the probability of a debt-financed (taxable) transaction is predicted to be a decreasing function of acquirer market to book ratio. Acquirer debt to equity ratio (AcqD/E) is included as an independent variable to control for the amount of leverage in the acquiring firm's capital structure. AcqD/E is measured as acquirer long term debt divided by book value of equity for the year prior to the acquisition. Financial distress cost theories suggest that the probability of a debt-financed (taxable) transaction is a decreasing function of the acquirer's debt to equity ratio. As a result, the predicted sign of AcqD/E is negative.

In order to account for the control dilution effect [Ahmihud *et al.* (1992)], the percentage of acquirer firm stock owned by members of the board of directors and

²⁴ After the Tax Reform Act of 1986, a basis step-up results in a capital gains tax on the fair market value of assets in excess of historical cost. The total tax on a basis step-up after 1986 therefore is equivalent to the amount of the basis step-up, before taxes resulting from the step-up, multiplied by the appropriate tax rate (capital or ordinary).

management is included as an independent variable designated *MANAGE%*. The source of management ownership data is *Spectrum 6* and firm proxy statements. The probability of an equity-financed tax-free transaction is predicted to be a decreasing function of acquiring firm management ownership percentage.

2.4.4 Control Variables

Size has been found to be a significant explanatory variable in many accounting and finance studies. In this study, acquirer market value of equity (*AcqMVE*) is included to control for size. No prediction is made with respect to *AcqMVE*.

Competition for a target firm may affect the consideration offered by an acquiring firm. Similarly, the receptiveness of the target to the transaction may impact the consideration offered by the acquirer. In a transaction where multiple bidders may (have) emerge(d), using cash may facilitate completion of the deal for two reasons. First, a block of target shares may be acquired in the open market by the acquirer for cash which increases the probability of successfully completing the transaction; in part because such a purchase increases the cost of a successful transaction for rival bidders.²⁵ Second, cash may expedite completion of the deal, while a stock exchange generally requires lengthy registration with and review by the SEC. The additional time required to register securities in a stock for stock acquisition may permit rival bidders to either outbid the initial bidder or increase the cost of successfully completing the transaction. Crawford (1987) provides evidence that competition for the target increases the likelihood that the acquirer will use cash to purchase target shares. In a hostile transaction, purchasing target shares for cash may allow the acquirer to gain sufficient

²⁵ This use of cash to acquire a block of shares may prohibit a transaction from qualifying for tax-free treatment.

control of the target to execute a merger, while a stock exchange may give the target time to mount a costly takeover defense or find a “white knight.”

To control for the presence of multiple bidders, a dummy variable (MULTI) takes the value one if there is more than one bidder, zero otherwise. If a transaction is hostile, a dummy variable (HOSTILE) takes the value one, zero otherwise. Hostile transactions were defined as those in which the target firm’s management or shareholders took actions in order to thwart the transaction (i.e. poison pill, lawsuit, etc.).²⁶ The probability of a taxable cash transaction is predicted to be a positive function of MULTI and HOSTILE.

2.5 Results

2.5.1 Descriptive Statistics

Table 1 provides descriptive statistics on the sample of transactions analyzed. Panel A details the number of taxable and tax-free transactions for each year 1985 through 1988. For the four year period, approximately 28.8% of transactions are tax-free and 71.2% are taxable. These figures are similar to aggregate statistics for all completed transactions as reported by *Mergerstat Review* for the same period. Panel B reports the number of transactions by tax status that were: (i) tender offers, (ii) mergers,

²⁶ Some prior research has included an indicator variable for tender offers when analyzing acquisition premiums and consideration offered. While in some settings, such an indicator variable may be necessary, I chose not to use a dummy variable for tender offers in equation (1). As Table 1 indicates all but two of the 136 tender offers were taxable transactions. Those two transaction that were tax-free were 20% cash tender offers followed by a 80% stock for stock merger. Because over 98% of all tender offers are taxable deals, this variable was omitted from equation (1). In addition, the decision to make a tender offer is not independent of the choice of consideration offered. That is, the acquirer may decide to use cash (not use stock), then make the tender/merger decision, not vice versa.

(iii) hostile and (iv) involved multiple bidders. Panel C provides information on the consideration offered in the 344 transactions studied. The “100% cash” and “other mixed” consideration categories are taxable transactions. For the 245 taxable transactions, the mean (median) percentage of the acquisition financed with debt was 73% (100%), and 73% of all of the taxable transactions were more than 50% debt-financed (the former data are not reported in Table 1).

Table 2 provides descriptive financial information on the acquiring and target firms involved in the 344 transactions studied. The average acquisition premium for all transactions, measured as the final deal price per share less the market price per share 20 trading days prior to the first announcement of the transaction, is 42.3%.²⁷ The average market value of equity of acquiring firms is \$2.253 billion while the average market value of equity of target firms is approximately \$250 million.

The information in Table 3 provides the same descriptive information as Table 2, but partitions taxable and tax-free transactions. As Table 3 indicates, the average market value of equity for acquiring firms is larger in taxable transactions than in tax-free transactions (\$2.601 billion vs. \$1.392 billion, two tail p-value ~ .03). Target market value of equity is however quite similar across Panels A and B. The mean (median) acquisition premium in taxable transactions is 44.6% versus 36.7% (38.6% versus 34.6%) in tax-free deals. The average acquisition premium is different across transaction tax status at the .05 level (two tail p-value), and the larger premium in taxable deals is often attributed to shareholder level capital gains taxes incurred in taxable transactions. In tax-free transactions the average acquiring firm market to book

²⁷ For all completed transactions during 1985-1988, *Mergerstat Review* - 1989 reports an average premium over market price of 38.8%. *Mergerstat Review* computes the premium based on the target's market price five days prior to the announcement of the transaction.

ratio is larger (2.72 versus 1.97, one tail p-value < .01) than in taxable transactions. The fact that *acquirer* market to book ratio is higher in equity-financed tax-free deals is consistent with the conclusion that overvalued firms (Fama and French [1992]) use stock to finance acquisitions. Table 3 also reports the percentage of the acquiring firm's common stock owned by management. In contrast to the results of Ahmihud *et al.* (1992), management ownership is lower in taxable transactions (13.7% versus 18.7%) than in tax-free transactions.

2.5.2 Univariate Results - Tax Factors

Table 4 provides detailed information on eight tax related variables for both taxable and tax-free transactions. As Panel A of Table 4 indicates, the average (median) effective tax rate for acquirers (AcqETR) in taxable transactions is 22.4% (22.2%). In tax-free transactions, the average (median) acquirer effective tax rate is 17.2% (12.3%).²⁸ The mean (median) acquirer effective tax rate is greater in taxable deals at the 1% (5%) level. These results are consistent with the conclusion that acquirers electing to use stock to finance corporate acquisitions have lower tax rates. In 7.3% of taxable transactions and in 22.2% of tax-free transactions, the acquirer's effective tax rate was less than or equal to zero.²⁹ A chi-square test rejects the null hypothesis that the proportion of zero tax rate firms in the two groups is equal at less than the 1% level providing support for the conclusion that acquirers choosing to finance corporate acquisitions with stock are more likely to be tax-exhausted.

²⁸ These tax rates are comparable to those reported in Dhaliwal *et al.* (1992), and Graham (1996b).

²⁹ These firms either received refunds in excess of taxes paid or paid no taxes during the three years prior to the acquisition.

Mackie-Mason (1990) finds that the relative size of net operating losses are positively related to the likelihood that firms issue equity relative to debt. Panel B of Table 4 indicates that the average acquiring firm NOL was insignificantly larger in equity-financed tax-free transactions than in taxable transactions. However, in 26.3% (13.5%) of the tax-free (taxable) transactions, the acquiring firm had NOLs. The difference in the proportion of acquirers with NOLs is significant across transaction tax status at less than the 1% level consistent with the conclusion that the probability of a *stock-financed* tax-free structure is an increasing function of the likelihood of acquiring firm tax exhaustion.

Panel C of Table 4 provides a comparison of institutional ownership in taxable and tax-free transactions. On average, in taxable transactions, institutional investors own 29.5% of the common stock of target firms. In tax-free transactions, 21.9% of the common stock of target firms is held by institutional investors. The difference in institutional ownership percentage is significant at the 1% level consistent with the hypothesis that target shareholder capital gains tax liabilities influence acquisition structure.

Many argue that low tax rate investors are the most likely owners of dividend paying firms. If dividend yield is a proxy for investor tax rates, and *if* capital gains taxes impact transaction structure, then target firm dividend yield in taxable transactions should be higher (implying a lower target shareholder tax rate) than in tax-free transactions. On average, dividend yield of target firms is 0.7% ($p \leq .05$) greater in taxable transactions. 51.2% of target firms acquired in taxable transactions paid dividends while in tax-free deals, 37.4% paid dividends. The difference in the proportion of target firms paying dividends is significant at the 5% level in the

predicted direction consistent with the conclusion that target firm shareholder capital gains tax liabilities influence acquisition structure.

Consistent with Hayn (1989), as Panel B of Table 4 indicates, target NOLs are on average nearly twice as large (one tail $p < .05$) in tax-free transactions as in taxable transactions. In addition, the relative frequency in which the target has NOLs in tax-free and taxable transactions (37.4% vs. 27.3%, respectively) is significantly different at the 5% level. Both results are consistent with the hypothesis that the probability of a tax-free transaction is an increasing function of target firm NOLs.

Panel D of Table 4 provides evidence on (i) potential tax benefits from a basis step-up and (ii) recapture taxes. Neither variable's mean value is significantly different between the two types of transactions. These results are inconsistent with the conclusion that the probability of a taxable transaction is an increasing function of tax benefits from stepping up the assets of the target, but are consistent with the findings of Auerbach and Reishus (1988).³⁰ Notice that on average, RECAPTURE is greater than STEP-UP. As a practical matter, this statistical relationship cannot occur because recapture taxes are incurred only up to the FMV of the target's assets. In spite of this fact, Panel B indicates that on average tax benefits from stepping-up the basis of the target's assets are small or negligible because tax benefits generally accrue to the acquirer in a step-up only when the fair market value of the target's assets are greater than historical cost.

In summary, univariate results in Table 4 provide evidence that taxes impact the structure of corporate acquisitions. Specifically, acquiring firm tax rates are lower in stock-financed tax-free transactions consistent with the conclusion that the probability

³⁰ Using the alternate proxy for STEP-UP does not significantly modify results reported in Table 4 or elsewhere.

of a stock-financed tax-free transaction is an increasing function of the likelihood of acquiring firm tax exhaustion. Consistent with the conclusion that shareholder capital gains taxes influence transaction structure, target firm institutional ownership is higher in taxable transactions than in tax-free transactions and dividend yield of target firms is higher in taxable transactions than in tax-free transactions. Target firms acquired in tax-free transactions have larger NOLs and are more likely to have NOLs than targets acquired in taxable transactions consistent with the conclusion that the probability of a taxable transaction is a decreasing function of target firm NOLs.

In approximately ten percent of the 344 transactions analyzed, the consideration offered was a combination of stock, debt and cash. As noted previously, these multi-consideration deals potentially have different implications on the predictions stated previously. Therefore, as a sensitivity analysis, Table 5 presents univariate statistics similar to those reported in Table 4, but only includes transactions in which the consideration offered to target shareholders was either 100% cash or 100% acquiring firm stock.

Briefly, the results reported in Table 5 are consistent with those in Table 4. However for many of the variables, the results are more pronounced in the predicted direction, than those reported in Table 4. In contrast to Table 4, in Table 5 STEP-UP and RECAPTURE are significantly different between transactions in which the consideration offered was 100% cash (taxable) and 100% stock (tax-free), but not in the predicted direction. Because STEP-UP is similar to target market to book ratio, the fact that STEP-UP is larger in tax-free transactions is somewhat consistent with the results of Carleton *et al.* (1983).

2.5.3 Multivariate Results

The binomial logit model specified in equation (1) is used to test the impact of tax and non-tax variables on the structure of corporate acquisitions. Equation (1) was estimated using two specifications of the dependent variable - tax status or consideration offered. Panel A of Table 7 presents the coefficient estimates when the dependent variable takes the value one in taxable transactions and zero in tax-free transactions.³¹ A positive coefficient indicates that an increase in the corresponding variable increases the probability of a taxable transaction. Likewise a negative coefficient indicates that an increase in the corresponding variable increases the probability of a tax-free transaction.

Panel B of Table 7 presents equation (1) results when the dependent variable takes the value one when the consideration offered is 100% cash (taxable) and zero if it is a 100% stock (tax-free). In Panel B, all transactions in which the consideration offered was not 100% cash or 100% stock are deleted from the sample. Panel C is similar to Panel B, except that I omit those 100% cash transactions that were less than 50% debt-financed. Panel C provides an imperfect but more direct comparison of stock-financed and debt-financed acquisitions. Discussion of the results in Panel A of Table 7 follows below, but first note that Table 6 presents a correlation matrix of equation (1) independent variables.

2.5.3.1 Tax Status of the Transaction

In Panel A of Table 7, consistent with the hypothesis that acquirer tax status is a determinant of acquisition structure and the results of prior investment financing research, the effective tax rate of the acquiring firm (AcqETR) is positively ($p < .01$)

³¹ Only 339 transactions are included because for five transactions, I was unable to obtain acquiring firm management ownership percentage data.

related to the likelihood of a taxable transaction. That is, the probability of a *debt-financed* taxable transaction is an increasing function of acquirer effective tax rates consistent with the conclusion that the probability of a debt-financed and therefore taxable transaction is a decreasing function of the likelihood of acquiring firm tax exhaustion. To provide some measure of the importance of acquiring firm tax rates in the structure decision, I note that a one standard deviation increase in AcqETR (about 15%), holding all other independent variables constant at their mean values, increases the likelihood of a taxable transaction by approximately 8%. Similarly, an increase in AcqETR from the 1st quartile to the 3rd quartile increases the likelihood of a taxable transaction by about 16%.

Target firm institutional ownership (TarINST%) is positively related to the likelihood of a taxable transaction consistent with the conclusion that shareholder capital gains tax liabilities affect transaction structure. A one standard deviation increase in institutional ownership (about 20%) increases the likelihood of a taxable transaction by 4.5%, holding other independent variables constant at their mean. Consistent with univariate results, STEP-UP and RECAPTURE do not significantly influence the tax status of an acquisition.³² TarNOL is negatively related to the probability of a taxable transaction as predicted, but is only significant at the .13 level (one tail). These latter two results suggest that target firm tax attributes and potential tax benefits from stepping-up the target's assets have little or no impact on the structure of corporate acquisitions.

³² This result may be due to the inclusion of post-TRA86 deals in the estimation of equation (1) because the cost of step-up transactions was believed to be prohibitive post-TRA86. In addition, because many taxable deals do not result in a step-up in the basis of target firm assets, insignificant results on STEP-UP are not totally unexpected (See footnote #6).

Acquiring firm market to book ratio is negatively ($p < .01$) related to the likelihood of a debt-financed and therefore taxable transaction as predicted, and I note that a one standard deviation increase in AcqMTB increases the likelihood of a stock-financed tax-free transaction by 14.2%, holding all other independent variables constant at their mean. This result is consistent with the arguments of Myers (1977) that high growth firms can not support heavy debt financing and the conclusion that a firm is able to issue more debt if the debt can be collateralized by fixed assets. The significant negative coefficient on AcqMTB is also consistent with the results of both Smith and Watts (1992) and Lehn *et al.* (1990). The finding that acquiring firm market to book ratio is positively related to the likelihood of a stock-financed (tax-free) transaction may also be consistent with the conclusion that overvalued firms use stock to finance acquisitions.

AcqD/E is significantly positively related to the likelihood of a *debt-financed* taxable transaction contrary to financial distress cost based predictions, although debt ratios are not particularly high for acquiring firms in this sample as Tables 2 and 3 indicate.³³ MANAGE% is not significant in Panel A of Table 7. A potential explanation for the difference in results reported here and those of Ahmihud *et al.* (1992) is provided by contrasting sample selection criteria. Ahmihud *et al.* (1992) analyze only Fortune 500 acquirers while this study imposes no such restriction. Acquirer market value of equity is positively related to the probability of a debt-financed taxable transaction. A possible interpretation of the impact of acquiring firm

³³ An interactive variable defined as acquirer market to book ratio multiplied by acquirer debt to equity ratio was also included when estimating equation (1). I included this variable to determine if the interaction of these two characteristics was influencing the results reported in Tables 7 and 8. This interaction variable was insignificant across dependent variable specifications, while AcqMTB remained of the same sign and significance.

size is that: 1) size proxies for access to debt markets, or 2) size is inversely related to default risk. MULTI and HOSTILE are positive as predicted, but are only significant at approximately the .13 level (one tail).

Overall, the model in Panel A is highly significant with a chi-square of 57.82 ($p < .01$). The model correctly predicts the tax status of the transaction approximately 75.8% of the time, while a naive model (all deals are taxable) correctly predicts the tax status of the transaction 71.1% of the time. The model produces a modest absolute improvement of 4.7% beyond a naive model.

2.5.3.2 Consideration Offered in the Transaction

Because mixed consideration transactions have confounding tax implications and as a sensitivity analysis, I re-estimate equation (1) using only transactions in which the consideration received by target shareholders was either 100% cash or 100% stock. The specification of the logit equation is as follows.

$$\text{pr}(y=1|x)$$

where: $y = 1$ if the consideration received by target shareholders was 100% cash (therefore a taxable transaction);

$y = 0$ if the consideration received by target shareholders was 100% acquiring firm stock (and a tax-free transaction);

x = vector of acquirer, target and target shareholder characteristics;

In the estimation, the dependent variable is unity for 100% cash transactions (taxable), and zero otherwise. Notice that the dependent variable remains a taxable/tax-free dichotomy. Eliminating any transaction that was not all cash or all stock reduced

the sample to 303 transactions.³⁴ Panel B of Table 7 reports the results of estimating equation (1) with this alternate dependent variable specification. The predicted relationship of the independent variables to the dependent variable remains unchanged in this specification.

Generally, the alternate specification produces similar results to those reported in Panel A. Two differences in the results presented in Panel B are noteworthy however. First, the coefficient on TarNOL is significant in Panel B in the predicted direction consistent with the conclusion that the probability of a 100% cash (taxable) transaction is a decreasing function of target NOLs. Because more restrictive limitations on target NOLs are generally triggered in tax-free transactions in which the consideration offered is less than 100% stock, acquiring firms may opt for all stock deals when target NOLs are large. TarINST% is positive but insignificant in Panel B providing no support for the notion that target shareholder capital gains taxes influence acquisition structure.

Overall, the model in Panel B of Table 7 is significant at less than the 1% level (pseudo $R^2 = .192$) and successfully predicts the consideration offered in 76.6% of the transactions. A naive model correctly predicts the consideration offered 71.7% of the time.

In an attempt to more directly analyze the debt/stock financing decision in corporate acquisitions, from the 303 transactions analyzed in Panel B of Table 7, I omit 100% cash transactions in which less than 50% of the total deal value is provided by long term debt-financing. For the year of the acquisition, I gathered the long term debt issuance amount from the statement of cash flows for each acquirer. It is possible that some transactions were financed with short term debt (bridge financing) and later

³⁴ Ahmihud *et al.* (1992) use a similar approach in arriving at their final sample.

refinanced with long term debt. It is also possible that some firms used cash on hand and issued debt at a later date. The method employed here potentially eliminates transactions following these financing patterns.

After eliminating those 100% cash transactions that are financed with less than 50% long term debt, the sample consists of 87 all stock transactions and 163 100% cash transactions that are financed with more than 50% long term debt for a total of 250 deals.³⁵ When re-estimating equation (1) the dependent variable equals one for 100% cash deals that are more than 50% debt-financed, and zero for 100% stock transactions as indicated in the alternative specification of equation (1) below.

$$\text{pr}(y=1|x)$$

where: $y = 1$ if the transaction was more than 50% debt-financed and the consideration received by target shareholders was 100% cash (therefore a taxable transaction);

$y = 0$ if the consideration received by target shareholders was 100% acquiring firm stock (and a tax-free transaction);

x = vector of acquirer, target and target shareholder characteristics;

Notice that in this re-estimation of equation (1), the dependent variable continues to equal one in taxable transactions and zero in tax-free transactions, and the independent variable matrix (x) is unchanged from prior specifications. Panel C of Table 7 presents the results of this analysis.

The results in Panel C are generally consistent with those reported in Panels A and B. The coefficient on AcqETR is positive and significant as predicted indicating

³⁵ The mean (median) percent of the transaction's value financed with debt is 94% (100%) for this set of 163 taxable transactions.

that an increase in the acquirer's tax rate increases the likelihood that a debt-financed taxable transaction form is selected. The percentage of target firm stock owned by institutional investors (TarINST%) is not a significant determinant of acquisition structure. Target firm NOLs (TarNOL) are positively related to the likelihood of a 100% stock-financed tax-free transaction consistent with the conclusion that target firm tax attributes influence the structure of corporate acquisitions. STEP-UP and RECAPTURE are insignificant determinants of transaction structure in Panel C of Table 7. Consistent with results in Panels A and B of Table 7, the coefficient on acquiring firm market to book ratio is negative and significant providing support for the notion that high growth firms cannot support heavy debt financing and thereby choose to finance corporate acquisitions with stock. I note that a one standard deviation increase in acquirer market to book ratio increases the likelihood of a stock-financed tax free transaction structure by nearly 24%. AcqD/E is positively related to the probability that the acquisition is debt-financed and therefore taxable. Acquiring firm size is positively related to the likelihood of a debt-financed taxable transaction consistent with arguments that large firms have greater access to debt markets or that size is inversely related to default risk. The coefficient on MULTI is positive indicating that the likelihood of a debt-financed taxable transaction increases when there are multiple bidders for the target.

Overall, the results in Panel C provide support for the conclusion that acquirer firm tax status and target firm net operating losses influence the financing method chosen and therefore the structure of corporate acquisitions. The evidence presented in Panel C of Table 7 also supports the conclusion that acquiring firm market to book ratio, leverage and size influence the way in which corporate acquisitions are financed and thus the way they are structured. The model's chi-square is 72.42 ($p < .01$) and it

correctly predicts the consideration offered in 79.2% (pseudo $R^2 = .225$) of the 250 transactions, whereas a naive model correctly predicts the consideration offered 65.6% of the time. The model leads to over a 20% relative improvement beyond the naive model.

2.5.3.3 Sensitivity Analysis - Tax Variables

Table 8 replicates the analyses of Table 7, but I replace the acquirer tax rate variable (AcqETR) with an NOL dummy variable (AcqNOL), taking the value one if the acquirer has NOLs and zero otherwise, as a proxy for acquiring firm tax status. Acquirers with NOLs are tax exhausted. In addition, dividend yield (DIVYLD) replaces target firm institutional ownership percentage (TarINST%) as a proxy for target shareholder tax clientele and therefore target shareholder capital gains taxes. As Table 6 indicates, AcqNOL and AcqETR are significantly negatively correlated while TarINST% and DIVYLD are significantly positively correlated.

Results in Table 8 are generally consistent with those in Table 7. The coefficient on AcqNOL is significantly negative at less than the 5% level in all three panels consistent with the conclusion that tax exhausted acquiring firms are more likely to finance corporate acquisitions with stock. I note that the presence of acquiring firm NOLs increases the likelihood of a stock-financed and therefore tax-free transaction by 13.9% (Panel A). Although not reported, a continuous variable for acquiring firm NOLs was also utilized as a proxy for acquiring firm tax exhaustion when estimating equation (1). The continuous NOL variable is insignificant across dependent variable specifications. A potential explanation for this result relates to IRC Section 382 limitations on net operating losses that are triggered by ownership changes. Acquiring firms with large NOLs, while tax exhausted, may prefer not to issue equity in order to

avoid triggering Section 382 limitations on their NOLs.³⁶ Niden (1988) predicts that NOL carryforward acquirers will choose *not* to use stock in order to avoid these limitations. I also use two other proxies for the acquirer's tax status when estimating equation (1) and both produce similar results to those reported in Tables 7 and 8.³⁷

DIVYLD is insignificant across the three panels of Table 8. There are at least three interpretations of these insignificant results. Either dividend clienteles do not exist, shareholder capital gains taxes do not influence the structure of corporate acquisitions or finally, dividend yield is a poor proxy for investor tax rates and capital

³⁶ Sec. 382 limitations reduced the *amount* of NOLs pre-TRA86 (e.g. \$100 million to \$75 million) and limit the *annual amount of the NOL available* to offset taxable income post-TRA86 (e.g. \$100 million multiplied by 7% = \$7 million per year usable NOL). Several of the NOL acquiring firm's opting for taxable transactions in the sample mentioned the potential for Section 382 limitations on NOLs in their tax footnotes. For example, Intel's December 31, 1986 financial statements note that:

"At December 31, 1986, the Company had a cumulative net operating loss carryforward for federal income tax purposes of approximately \$325 million. The future benefit of these carryforwards is subject to various Internal Revenue Code provisions which may restrict or eliminate their use in the event of certain changes in the ownership of Intel's stock, including participation by Intel in certain tax free reorganizations."

³⁷ The first additional tax status proxy is a trichotomous variable that takes the value of zero if an acquiring firm has NOLs *and* negative taxable income in the year prior to the acquisition, 1/2 the statutory tax rate if the firm has either NOLs or negative taxable income in the year prior to the acquisition, and the statutory tax rate if the firm has positive taxable income and no NOLs in the year prior to the acquisition. See Graham (1996b) for a discussion of this variable. The second proxy is Graham's (1996a) marginal tax rate. I am grateful to John Graham for providing me with his marginal tax rate data. The marginal tax rate variable was only available for approximately 90% of the acquiring firms. The trichotomous variable is significant in the predicted direction across the three specifications of equation (1) at less than the 1% level while Graham's marginal tax rate variable is significant in the predicted direction across specifications at the 3-5% level.

gains tax liabilities.³⁸ Results on other tax and non-tax variables in Table 8 are consistent with those reported in Table 7.

2.5.3.4 Sensitivity Analysis - Outliers

In order to provide some assurance that the results reported above were not driven by outlying observations, I utilize the logistic regression diagnostic procedures of Pregibon (1981) to identify outlying observations. Table 9 reports the results of estimating equation (1) after removing outlying observations.³⁹ I re-estimate equation (1) using only 100% cash deals that are more than 50% debt-financed and 100% stock transactions.⁴⁰ The dependent variable equals one if the transaction is a 100% cash deal that is more than 50% debt-financed and zero if the transaction is a 100% stock deal. AcqETR, AcqNOL and Graham's (1996a) marginal tax rate (MTR) proxy for the acquiring firm's likelihood of tax exhaustion in Panel A, B and C, respectively.

After removing outlying observations, the significance of the acquiring firm tax status proxies remain significant in the predicted direction across all three panels of Table 9 consistent with the conclusion that acquirer tax status influences acquisition structure. Target firm institutional ownership is not significant providing no support for the conclusion that target firm shareholder capital gains tax liabilities influence

³⁸ I also estimated a proxy for potential shareholder capital gains tax liabilities similar to that employed by Richardson *et al.* (1986). This capital gains variable was measured as the change in the stock price of the target firm from three years prior to the first announcement of the acquisition to 20 days prior to the announcement of the acquisition. This variable replaced TarINST% in equation (1) and was insignificantly different from zero across dependent variable specifications.

³⁹ Outliers were identified using the DIFDEV measure computed by SAS. Using the diagnostic measure DIFCHISQ and varying the outlier cutoff point does not modify inferences.

⁴⁰ This analysis corresponds to that reported in Panel C of Tables 7 and 8. Similar inferences result when performing the same outlier analysis using dependent variable specifications employed in Panels A and B of Tables 7 and 8.

acquisition structure. The probability of an equity-financed tax-free transaction is an increasing function of target firm NOLs across all three panels of Table 9 providing support for the conclusion that target firm NOLs influence acquisition structure. STEP-UP is significantly negative in Table 9 contrary to the prediction that the probability of a taxable transaction is an increasing function of tax benefits from a basis step-up, but this result is somewhat consistent with the results of Carleton *et al.* (1983). Results in Table 9 support the conclusion that acquiring firm market to book ratio, leverage and size influence the way in which acquisitions are financed. Overall, the results in Table 9 indicate that outlying observations were not driving results reported previously.

2.5.3.5 Interaction Effects: Tax Variables

One of the improvements of this study over prior work is the inclusion of the acquiring firm's tax preferences in the model of transaction structure choice. Including the acquiring firm in the analysis provides an opportunity to study the interaction between acquirer and target structure preferences. In many cases, the buyer's preference with respect to transaction structure is incongruent with the preferences of the seller. For example, the acquirer may desire a stepped-up basis in the target's assets, while the target's shareholders prefer to receive acquiring firm stock in exchange for target shares in order to defer large capital gains tax liabilities. Because a basis step-up is not possible in tax-free transactions, the transaction structure employed under such a scenario will diverge from the preferred structure for one of the parties.

On the other hand, it is possible that in some instances, the acquirer would like to finance the acquisition with debt to exploit tax benefits from interest deductions while at the same time target shareholders may prefer to receive cash in exchange for shares because gain recognition and the associated tax liabilities are dominated by non-

tax benefits of receiving cash. Therefore, when analyzing the determinants of acquisition structure, I attempt to identify those transactions in which, from a tax perspective, the acquirer and the target prefer the same structure.

An alternate specification of equation (1) as detailed below is employed to test the impact of the interaction of buyer and seller tax characteristics on the structure of corporate acquisitions.

$$\begin{aligned}
 \text{pr}(\text{Taxable}_i) = & \alpha_0 + \beta_1 \text{AcqHIGHTAX}_i * \text{TarLOWTAX}_i + \beta_2 \text{AcqLOWTAX}_i * \text{TarHIGHTAX}_i \\
 & \quad (+) \quad \quad \quad (-) \\
 & + \beta_3 \text{TarNOL}_i + \beta_4 \text{STEP-UP}_i + \beta_5 \text{RECAPTURE}_i \\
 & \quad (-) \quad \quad (+) \quad \quad (-) \\
 & + \gamma_1 \text{AcqMTB}_i + \gamma_2 \text{AcqD/E}_i + \gamma_3 \text{MANAGE\%}_i + \gamma_4 \text{AcqMVE}_i + \\
 & \quad (-) \quad \quad (-) \quad \quad (+) \quad \quad (?) \\
 & \gamma_5 \text{MULTI}_i + \gamma_6 \text{HOSTILE}_i + \varepsilon_i \quad (2) \\
 & \quad (+) \quad \quad (+)
 \end{aligned}$$

AcqHIGHTAX is an indicator variable taking the value one when the acquiring firm's effective tax rate (AcqETR) is in the highest quartile of all acquiring firms and zero otherwise, while AcqLOWTAX is an indicator variable equal to unity if the acquiring firm's effective tax rate is in the lowest quartile of all acquiring firms, zero otherwise. TarLOWTAX takes the value one when the institutional ownership percentage of the target firm is in the highest quartile of all target firms, zero otherwise. TarHIGHTAX is equal to unity when the institutional ownership of the target firm is in the lowest quartile of all target firms, zero otherwise. High target firm institutional ownership increases the probability that the marginal shareholder in the target is a low tax rate investor.

For transactions in which the interaction term $\text{AcqHIGHTAX} * \text{TarLOWTAX}$ equals one, I expect a greater likelihood of a debt-financed taxable transaction structure because the acquiring firm should find debt related tax shields most valuable while the capital gains tax liabilities facing target shareholders are lowest. That is, the buyer prefers to finance the deal with debt and pay target shareholders with taxable consideration while target shareholders are relatively less resistant to the tax costs of immediate gain recognition in a taxable deal. Therefore, the predicted sign on β_1 is positive. In those transactions in which the interaction term $\text{AcqLOWTAX} * \text{TarHIGHTAX}$ equals one, the likelihood of a stock-financed tax-free transaction structure is expected to be highest, therefore, the predicted sign on β_2 is negative. When the acquirer is most likely to be tax exhausted, the tax benefits of interest deductions are the smallest making a debt-financed transaction less appealing to the acquiring firm. Similarly, when target shareholders faces high capital gains tax liabilities, a tax-free structure is less costly and therefore more preferable.

Table 10 reports the results of estimating equation (2) across the three different specifications of the dependent variable discussed previously. As Table 10 indicates, the coefficient on $\text{AcqHIGHTAX} * \text{TarLOWTAX}$ is insignificantly different from zero across all three panels of Table 10. On the other hand, the coefficient on $\text{AcqLOWTAX} * \text{TarHIGHTAX}$ is significantly negative as predicted across all three panels of Table 10. In Panel A, when $\text{AcqLOWTAX} * \text{TarHIGHTAX}$ equals one the probability of a stock financed tax-free transaction structure increases by approximately 32%. Other tax variables remain of the same sign and significance as in prior specifications. Non-tax variables also remain of the same sign and approximately the same significance across all three panels of Table 10.

A comparison of model chi-square statistics and pseudo R^2 s in Table 7 and Table 10 provides insight into the additional contribution of the interaction terms to the model. Across all three panels, the models' chi-square in Table 10 is not noticeably higher than those reported in Table 7. Similarly, the pseudo R^2 s are approximately the same across panels of Table 7 and 10. Based on this comparison, it appears that this specification does not noticeably increase the predictive power of the model.

I also estimated alternate versions of equation (2), but used AcqNOL as a proxy for low tax rate acquires (AcqHIGHTAX = 1 for any firm without NOLs). In addition, I re-estimated the indicator variables TarHIGHTAX and TarLOWTAX based on target firm dividend yield. When using these alternate specifications, the coefficients on AcqHIGHTAX*TarLOWTAX and AcqLOWTAX*TarHIGHTAX were generally not significantly different from zero.

CHAPTER 3 - THE IMPACT OF THE TAX REFORM ACT OF 1986 ON THE STRUCTURE OF CORPORATE ACQUISITIONS

3.1 Introduction

In this chapter, I analyze the impact of the Tax Reform Act of 1986 (TRA86) on the structure of corporate acquisitions. Because TRA86 resulted in numerous changes in the tax regime, especially with respect to the taxation of corporate acquisitions; this regulatory shock provides a unique opportunity to test many of the tax hypotheses discussed in Chapter 2. If tax factors such as target firm NOLs and tax benefits from stepping-up the tax basis of the target's assets impact transaction structure before TRA86, these tax factors should be much less significant determinants after the tax reform. Therefore, a comparison of the determinants of transaction structure before and after TRA86 is a strong test of the importance of these tax factors in corporate acquisitions. The purpose of this chapter is to evaluate the impact of TRA86 on the structure of corporate acquisitions, both in the aggregate and along specific tax dimensions.

It is well known that TRA86 resulted in numerous changes in the tax code and changes were especially prevalent in the taxation of corporate acquisitions. Four major changes in tax regime induced by the Tax Reform Act of 1986 are considered in this study and each is discussed at length below before developing hypotheses and presenting the results of empirical tests.

3.2 Significant Tax Changes included in the Tax Reform Act of 1986

The TRA86 included at least four major changes in the tax regime that impact the tax costs and benefits of alternate corporate acquisition structures. The top corporate statutory tax rate was reduced as the individual capital gains tax rate was

increased. TRA86 also reduced tax benefits in corporate acquisitions derived from 1) stepping-up the basis of the target's assets and, 2) the use of the target firm's NOLs by the acquirer.

TRA86 reduced the maximum corporate statutory tax rate from 46% to 34%, a relative decrease of over 25%.⁴¹ However, TRA86 also increased the taxable income base (e.g. lengthened asset lives for tax purposes thereby reducing annual depreciation expense, eliminated the investment tax credit) of corporations. The reduction in the corporate tax rate decreases the value of each additional dollar of debt related tax shields, because pre-TRA86 an additional dollar of interest deductions reduced taxes by \$.46 while post-TRA86, this same \$1 of interest deductions reduces taxes payable by \$.34. On the other hand, because TRA86 broadened the taxable income base (reduced non-debt tax shields), it is not clear that the value of debt declined due to TRA86.

At the individual investor level, the maximum capital gains tax rate increased from 20% to 28%, a relative increase of 40%. In taxable corporate acquisitions, target firm shareholders therefore pay capital gains taxes at substantially higher rates in deals completed after December 31, 1986. The implications of the higher shareholder capital gains taxes are two-fold. First, premiums in taxable deals should be higher post-TRA86 *if* target shareholders demand higher premiums to compensate for the immediate (and larger in present value terms) tax burden in taxable deals.⁴² That is, in order for target shareholder after tax proceeds in taxable deals to be equivalent before and after TRA86, pre-tax acquisition proceeds must be higher post-TRA86. Higher pre-tax acquisition proceeds demanded by target shareholders in taxable deals implies a higher cost of a taxable acquisition from the acquirer's perspective post-TRA86. The increased

⁴¹ This change in rates was phased in over two years.

⁴² Prior research examining this notion includes (Wansley, et al. (1983) and Huang and Walkling (1987)).

premium demanded by target shareholders in taxable transactions post-TRA86 implies that the likelihood of taxable transactions should decrease post-TRA86, holding other factors constant.

TRA86 contained two major modifications in the way corporate acquisitions and reorganizations are taxed. The first is the repeal of the *General Utilities* doctrine. Prior to TRA86, in a basis step-up transaction, the seller paid tax only on the portion of the step-up of the target's assets that was recaptured depreciation. For example, assume that the target firm has one asset, a machine with a historical cost of \$100 and accumulated depreciation of \$75 (adjusted tax basis = \$25). Further assume that the acquiring firm buys this asset from the target for \$200. The *realized* gain at the target firm level in this transaction is \$175 (\$200 fair market value less \$25 adjusted tax basis). The *recognized* gain prior to TRA86 is \$75 - only the amount of depreciation recaptured. The \$100 capital gain portion of the *realized* gain (\$200 fair market value less \$100 historical cost) escaped tax prior to TRA86. As a result, pre-TRA86 step-ups may result in tax benefits to the extent of the capital gain portion of the realized gain. After TRA86, the recognized gain on the transaction at the target firm level is the full \$175 realized gain (\$75 ordinary gain and \$100 capital gain). Hence, post-TRA86, the tax cost of a step-up generally exceeds the present value of future tax benefits assuming constant or decreasing corporate tax rates.

As this example illustrates, the repeal of the *General Utilities* doctrine increases the cost of an asset acquisition or an IRC Section 338 stock transaction (both step-up type transactions) because capital gains realized on the basis increase in the target's assets will be taxed post-TRA86. While pre-TRA86, the step-up decision was a "close call," most experts believe that any tax benefits available from an asset step-up were

eliminated by TRA86.⁴³ Scholes and Wolfson (1990) state that: “The Tax Reform (TRA) of 1986 put nails in the tax-induced asset-sales-and-mergers coffin along *all* of the tax dimensions that are important in motivating mergers and acquisitions involving domestic buyers” (pg. S142-S143).

In addition to the *General Utilities* repeal, TRA86 increased the limitation on the carryover of target firm tax attributes in transactions qualifying for tax-free status.⁴⁴ Prior to TRA86, target firm NOLs (and other tax attributes) were limited if target shareholders did not maintain at least 20% ownership of the combined entity. The pre-TRA86 limitation reduced the total amount of target firm NOLs available to the acquirer based on the difference in target shareholder ownership in the combined concern and the 20% threshold.⁴⁵ For example, assume the target firm has \$100 of NOLs before a \$200 tax-free combination with the acquirer. After the transaction, target shareholders own 15% of the stock of the combined entity. The amount of target firm NOLs available to the acquiring firm is computed by subtracting 15% from 20% and then dividing that difference by 20%. In this example, the result is a 25% limitation (5%/20%) on the acquirer’s use of the target’s NOLs. If target shareholders own 20% or more of the combined entity, the limitation does not apply. Therefore, in the scenario described previously, target NOLs available to the acquirer are \$75 ([100% - 25% limitation] multiplied by \$100 NOL), with no annual limitation on the amount available to the acquirer. Scholes and Wolfson (1992) and Gilson, Scholes and

⁴³ See: Brown, Berkowitz and Lynch (1986) pg. 39.

⁴⁴ IRC Section 381 and 382 govern these limitations. The discussion here specifically relates to Section 382.

⁴⁵ As a result of this limitation, in most pre-TRA86 *taxable* transactions the target firms NOLs were eliminated because little or no stock of the acquirer was used as consideration. In 100% cash deals, target shareholders maintain no ownership in the combined entity and hence the target’s tax attributes are eliminated.

Wolfson (1990) note that it is possible to avoid this limitation by merging the acquiring firm (or a subsidiary of the acquiring firm) into the target.

After TRA86, any ownership change in the target firm of greater than 50% results in limitation of the target's NOLs. As a general rule, all corporate acquisitions post-TRA86 trigger this 50% ownership change and therefore the limitation on target firm NOLs. The limitation post-TRA86 does not reduce the total amount of the target's NOLs that may be used by the acquirer as it did pre-TRA86, but instead limits the NOL that can be used each year to offset taxable income of the combined entity. Given that an ownership change has occurred, the annual limitation on the target's NOLs post-TRA86 is computed by multiplying the market value of the target at the date of acquisition by the rate on tax-free government bonds. Returning to the prior example, assume that a target firm with NOLs of \$100 is acquired in a tax-free transaction for \$200 and the rate on tax free government bonds is 5%. After the transaction, target shareholders own 15% of the combined entity. Each year, the acquiring firm may only use \$10 ($5\% * \200) of the target firm's \$100 of NOLs. If this transaction was consummated pre-TRA86, \$75 of target firm NOLs would be available immediately to offset taxable income of the combined entity.⁴⁶

3.3 TRA86 Related Literature

Scholes and Wolfson (1990, 1992) provide evidence on the impact of TRA86 on corporate acquisitions. In the fourth quarter of 1986, a statistically and economically significant increase in acquisition activity occurred. That is, they document the fact that

⁴⁶ This discussion does not consider the consolidated return rules (so-called SRLY rules). The consolidated return rules impact the use of the target's NOLs to offset the acquirer's taxable income. In some cases, the SRLY rules constrain application of target NOLs to only post-acquisition target net income.

more transactions, in absolute numbers and in dollar value, were completed in the quarter prior to the date TRA86 became effective (12/31/86) than in the quarters prior to or subsequent to the fourth quarter of 1986. The authors attribute this increase in activity to changes in TRA86 that reduced tax benefits available to acquirers, namely increased depreciation related tax shields from asset step-ups in taxable deals and target net operating losses in tax-free deals. In addition, anecdotal evidence indicates that acquirers sought completion of pending taxable deals prior to January 1, 1987 in order to minimize target shareholder taxes and ultimately acquisition costs.⁴⁷

Gordon and Mackie-Mason (1992) estimate the impact of TRA86 on financing decisions and conclude that TRA86 should increase debt financing, and they report an increase in debt ratios across the 1985-1988 time period. Scholes and Wolfson (1992) predict an increase in debt financing post-TRA86 and note that LBOs increased post-TRA86.

3.4 Hypotheses Development

Some of the tax changes brought about by TRA86 result in obvious empirical predictions while others do not. In this section, I outline hypotheses relating to the impact of TRA86 on transaction structure in the aggregate and along specific tax dimensions starting with the latter and progressing to the former.

The increase in the shareholder level capital gains tax rate included in TRA86 makes a taxable transaction more costly to the acquiring firm, other things equal. The prediction is that after TRA86, shareholder capital gains taxes are a more significant

⁴⁷ Several reports in *The Wall Street Journal* indicate that some taxable acquisitions were completed prior to January 1, 1987 in order to avoid higher shareholder capital gains tax rates. This evidence suggests that shareholder capital gains taxes are a significant determinant of transaction structure.

determinant of transaction structure than before TRA86. Specifically shareholder capital gains tax proxies (i.e. TarINST%) are predicted to be more important determinants of transaction structure in the post-TRA86 period.

The repeal of the *General Utilities* doctrine makes step-up transaction less desirable, other things equal, post-TRA86. Recall that a step-up in the basis of the target's assets is only possible in taxable transactions. As a result of TRA86 and specifically the repeal of *General Utilities*, post-TRA86 the importance of tax benefits available from stepping up the target's assets are predicted to be less important in the structure decision than before TRA86. Specifically, I expect that the proxies for tax benefits available from stepping-up the tax basis of the target's assets are more important in the structure decision pre-TRA86 than post-TRA86.

More restrictive limitations on target firm NOLs after TRA86 reduce the value of this tax attribute to acquiring firms. As a result, target firm NOLs are expected to have less impact on transaction structure after TRA86. Specifically, target firm NOLs are predicted to be less significant determinants of transaction structure after TRA86 than before.

The reduction in the corporate tax rate included in TRA86 in conjunction with an increase in the shareholder capital gains tax rate leads to ambiguous predictions about the effect of TRA86 on the preferability of debt-financed corporate acquisitions. While a lower corporate tax rate after December 31, 1986 reduces the tax benefits of debt related tax shields dollar for dollar, the increase in the shareholder capital gains tax rate may reduce investors tax preferences for equity. As a result, demand for equity may decline post-TRA86 making debt less costly thereby leaving the value of debt unchanged (or increased) from the acquiring corporation's perspective. Therefore, I

make no predictions regarding the impact of the reduction in corporate tax rates incorporated in TRA86 on the financing of corporate acquisitions.

Figure 3 details the major TRA86 induced changes in tax factors affecting corporate acquisitions, and the anticipated effect of each modification on acquisition structure. In summary, the aggregate effect of TRA86 on transaction structure is not clear. What impact this major tax reform had is therefore an empirical question.

3.5 Results

Below follow the results of empirical tests of the impact of TRA86 on the tax determinants of acquisition structure. The results begin with a comparison of the percentage of deals structured as taxable and tax-free before and after TRA86. Next, univariate results with respect to several tax variables are provided for pre and post-TRA86 deals. The results of multivariate analysis of the determinants of acquisition structure are provided for pre and post-TRA86 deals separately. Finally, I report the results of estimating a multivariate model, across the TRA86, that controls for changes in the tax regime.

3.5.1 Overall Trends in Transaction Structure: Pre-TRA86 and Post-TRA86

Although predictions relating to the effect of TRA86 on transaction structure vary across different tax factors, it was expected that TRA86 would alter the way corporate acquisitions are consummated in the aggregate. In general, practitioners and academics expected more deals to be structured as tax-free post-TRA86. This expectation was based primarily on the repeal of the *General Utilities* doctrine and the increase in target shareholder capital gains tax rates. The first change reduced the tax benefits available to acquiring firms in taxable transactions, while the second

modification in the tax regime increased the cost of taxable transactions to the acquirer. Both the repeal of *General Utilities* and the increase in shareholder capital gains tax rates reduce the appeal of taxable transactions post-TRA86.

Examination of Table 11 provides summary evidence on the impact of TRA86 on the transactions consummated during the period 1985-1988. Panel A compares the percentage of all transactions pre-TRA86 that were taxable to the percentage of all transactions that were taxable post-TRA86. In the sample of 344 transactions analyzed in this study, 70.4% of all deals completed during 1985-86 were structured as taxable, while during the period 1987-88, 72.2% of all completed deals were structured as taxable (Panel A). Brown and Ryngaert (1991) among others predict that after 1986, more deals would be structured as tax-free. In my sample of transactions, more deals are structured as taxable post-TRA86 than pre-TRA86 contrary to predictions, although the difference in the proportion of deals structured as taxable is not significantly different across the change in tax regime. Panel B compares the relative percentage of transactions, analyzed in this study, in which the consideration offered to target firm shareholders was 100% cash or 100% acquiring firm stock across TRA86. Contrary to predictions, less deals were 100% stock deals post-TRA86 than before TRA86, although the difference in the percentage of deals that were 100% stock is not significantly different across the change in tax regime. Overall, the results in Table 11 do not support the contention that TRA86 had a significant impact on corporate acquisition structure in the aggregate.

In order to obtain some assurance that the results presented in Table 11 are not due to sample selection procedures used in this study, I gathered the percentage of transactions that were 100% stock and 100% cash for several different categorizations from *Mergerstat Review* for the period 1985-1988. Table 12 provides the results of this

analysis. I collected information on method of payment for seven different categories of acquisitions as reported by *Mergerstat Review*. The classifications are: 1) acquisitions of all publicly held companies, 2) all transactions disclosing medium of payment (including private companies), 3) all deals with a value less than \$25 million, 4) all deals with a value greater than \$25 million but less than \$50 million, 5) all deals with a value greater than \$50 million but less than \$100 million, 6) all deals with value between \$100 million and \$999 million, and 7) all deals with values over \$999 million. In these seven categories, the only difference in the proportion of all cash deals across the change in tax regime is in the acquisition of all publicly held companies. During 1985 and 1986, 69.4% of all acquisitions of publicly held companies were 100% cash deals while during 1987 and 1988, 77.1% of all public companies that were acquired were purchased with 100% cash. Although a chi-square (degrees of freedom = 1) test rejects the null hypothesis that the proportion of deals structured as all cash versus all stock is equal across the change in tax regime, the direction of the difference is opposite of that predicted by practitioners and academic researchers alike. *Mergerstat Review* indicates that the large percentage of cash (taxable) deals post-TRA86 is due mainly to the record number of LBOs in 1988. LBOs are generally structured as cash deals. In summary, results in Tables 11 and 12 do not support the hypothesis that TRA86 impacted the way in which corporate acquisitions are structured. There is at least one explanation for the observed results. Although TRA86 made taxable deals less appealing due to the repeal of the *General Utilities* doctrine and the increase in shareholder capital gains tax rates, some (e.g. Gordon and Mackie-Mason (1990) and Scholes and Wolfson (1992)) predicted that debt financing would increase post-TRA86. Acquiring firms increased preference for debt financing post-TRA86 may have offset their aversion to taxable transaction structures.

Although simple tests suggest that TRA86 had no impact on the structure of corporate acquisitions in the aggregate, it is possible that multivariate tests may be able to untangle the impact of TRA86 on various deal specific tax factors. This analysis follows below.

3.5.2 Univariate Comparison: Pre-TRA86 and Post-TRA86

Tables 13 and 14 provide univariate statistics for tax related variables in taxable and tax-free transactions completed pre-TRA86 and post-TRA86, respectively. Results in these tables provide evidence on the tax variables relating to H_1 through H_4 across the change in tax regime. As Table 13 indicates, the difference in acquiring firm tax rates is significant in the predicted direction in pre-TRA86 deals. The percentage of acquiring firms with NOLs in tax-free transactions is greater than in taxable transactions at the 5% level during 1985 and 1986. Both results provide support for the notion that acquirer tax status influences the structure of corporate acquisitions in pre-TRA86 transactions. As Panel A of Table 14 indicates, acquirer tax rates are not significantly different across transaction tax status post-TRA86. However, acquirers are more likely to have NOLs in tax-free deals than in taxable deals (Panel B), but the magnitude of acquirer NOLs is not significantly different across transaction tax status post-TRA86. Overall, the results in Table 14 provide mixed support for the notion that acquirer tax status influences the structure of corporate acquisitions in post-TRA86 deals.

In pre-TRA86 transactions, target firms involved in tax-free transactions are more likely to have net operating losses than targets acquired in taxable deals (Table 13, Panel B), however the magnitude of target NOLs pre-TRA86 is not significantly different across transaction tax status as measured by mean and median differences.

These results provide mixed support for the conclusion that target firm tax attributes influence acquisition structure. After TRA86, the average target firm NOL in tax-free deals is significantly greater than in taxable deals, but target firms are no more likely to have NOLs in tax-free deals than in taxable deals (Table 14). The results in Panel B of Table 14 provide weak support for the notion that target firm tax attributes influence the structure of corporate acquisitions in post-TRA86 transactions.

As Panel C of Table 13 indicates, average target firm institutional ownership is higher in taxable deals than in tax-free deals pre-TRA86 at less than the 1% level. However, in post-TRA86 transactions the difference in target firm institutional ownership percentage across transaction tax status is only significant at the 10% level (Table 14, Panel C). In pre-TRA86 transactions (Table 13, Panel C), average target firm dividend yield is significantly higher in taxable deals than in tax-free deals consistent with the notion that the target firm's shareholder tax clientele impacts the structure of corporate acquisitions. Post-TRA86, target firm dividend yield is not significantly different across transaction tax status. Based on the increase in shareholder capital gains tax rates post-TRA86, I expected that the differences in target firm institutional ownership and dividend yield across transaction structure would be more significant post-TRA86 (Table 14). Contrary to my expectations, differences in target shareholder tax clientele proxies are more pronounced pre-TRA86.

Because the *General Utilities* repeal significantly modified the tax benefits of a basis step-up, I expected to observe that STEP-UP was significantly greater in pre-TRA86 taxable deals, but not significantly different across transaction tax status in post-TRA86 deals. STEP-UP is insignificantly different across transaction form in both Tables 13 and 14, while RECAPTURE is different across transaction form post-TRA86, but not in the predicted direction. A potential explanation for the significance

of RECAPTURE is that recapture taxes could be a proxy for low non-debt tax shields. That is, firms with high amounts of accumulated depreciation may be better candidates for debt-financed taxable transactions as suggested by the substitution effect (DeAngelo and Masulis [1980]) because they have low levels of non-debt tax shields.

In summary, the univariate results in Tables 13 and 14 do not provide evidence consistent with the predictions that TRA86 impacted the structure of corporate acquisitions along: 1) the shareholder capital gains tax dimension, or 2) target firm tax attribute dimensions (tax benefits from a basis step-up and tax benefits from target firm NOLs).

3.5.3 Multivariate Results - Impact of TRA86

The logit model detailed in equation (1) is re-estimated using only pre-TRA86 transactions and only post-TRA86 transactions. Table 15 reports the results of the pre-TRA86 estimation while Table 16 reports the results of post-TRA86 estimation. Estimation of equation (1) separately for pre and post 1986 deals provides evidence on the influence of tax determinants of transaction structure before and after the tax law change. A discussion of results of estimating equation (1) for only those deals completed after December 31, 1986 follows an analysis of equation (1) results using only pre-TRA86 deals.

Panel A of Table 15 reports multivariate results of estimating equation (1) when all 184 pre-TRA86 transactions are utilized and the dependent variable takes the value one if a taxable transaction was employed, and zero if a tax-free transaction was completed. In pre-TRA86 deals, acquirer effective tax rate is positively related (one tail $p = .004$) to the likelihood a taxable transaction is employed. A one standard deviation decrease in acquirer effective tax rates increases the likelihood of a tax-free structure by

9.8%. Institutional ownership is also positively related (one tail $p = .026$) to the likelihood that a taxable transaction is employed. The evidence in Table 15 suggests that the structure of the transaction is influenced by the tax status of the buyer (acquirer) and seller (target shareholders) in pre-TRA86 deals.

The coefficient on STEP-UP is positive as predicted and approaching statistical significance (one tail $p = .125$) in Panel A of Table 15. As noted above, post-TRA86, asset step-ups were expected to be prohibitively costly and therefore I predicted that STEP-UP would be positive only in pre-TRA86 deals. RECAPTURE is not significant, but of the correct sign, while target net operating losses are not significant in pre-TRA86 transactions. AcqMTB is negatively (positively) related to the probability that a taxable (tax-free) transaction is employed, and acquiring firm debt ratio is positively related to the probability that a taxable transaction is selected in pre-TRA86 transactions. AcqMVE is positively related to the likelihood of a taxable transaction, but not significantly so. MULTI is insignificant (significant) in Panel A (Panel B and C), while HOSTILE is insignificant across panels of Table 15.

Overall, the model in Panel A of Table 15 is significant (chi-square p value $< .001$) and correctly predicts the tax status of the transaction in 76.1% of the acquisitions. A naive model (all deals are taxable) would be correct 70.7% of the time. Results in Panel B and C of Table 15 are generally consistent with those reported in Panel A. That is, acquirer tax status is a significant determinant of the structure of corporate acquisitions as is target firm shareholder tax clientele. Acquirer market to book ratio is positively related to the likelihood of a stock deal in both Panel B and C, while acquiring firm leverage is positively related to the likelihood of a 100% cash (Panel B) and a more than 50% debt-financed all cash deal (Panel C).

Results in Table 16 relate to the 155 acquisitions consummated during 1987-88. The coefficient on AcqETR is significantly positive at approximately the 10% level in Panel A of Table 16. In conjunction with results in Panel A of Table 15, this result is consistent with a reduction in high tax rate acquirer's preference for debt financed acquisitions after the reduction in statutory tax rates induced by TRA86 (similar to findings reported by Givoly *et al.* [1992]). The increase in the capital gains tax rate included in TRA86 should have increased the effect of institutional ownership on transaction structure. That is, when estimating equation (1) using only post-TRA86 transactions, I expect the coefficient on TarINST% to be larger and more significant than the coefficient on that variable in the estimation of equation (1) on only pre-TRA86 transactions. However, institutional ownership is insignificant across panels in Table 16 but significant in Table 15 contrary to predictions.

TarNOL is positively related to the likelihood of a stock acquisition in Panels B and C of Table 16 indicating that target NOLs were a moderately important determinant of acquisition structure post-TRA86 in spite of the increased limitations on these attributes induced by TRA86. Surprisingly, TarNOL is insignificant for pre-TRA86 acquisitions, but marginally significant for post-TRA86 deals. The combination of results in Tables 15 and 16 suggests that TarNOL may be proxying for another important tax or non-tax target firm characteristic. Non-tax variables have similar effects to those reported in previous tables, and all models in Tables 15 and 16 are highly significant and outperform naive models.⁴⁸

⁴⁸ I also estimate equation (1) separately for all pre and post-TRA86 deals using AcqNOL to proxy for the acquirer's tax status in lieu of AcqETR. In addition, I use DIVYLD in place of TarINST% to proxy for the tax clientele of the target firm. Results for these estimations are qualitatively similar to those reported in this section.

A better test for the impact of TRA86 on acquisition structure involves the dummy variable approach discussed in Kennedy (1992, pg. 180-188) and employed by Givoly *et al.* (1992). Specifically, I estimate the following general equation:

$$\text{pr}(y = 1) = \sum_i^n (\beta_i x_i + \lambda_i D x_i) + e_i \quad (3)$$

where x_i ($i = 1, \dots, n$) are the independent tax variables and D is a dummy variable taking the value of 1 for post-TRA86 acquisitions, zero otherwise. Equation (1) was re-estimated in the form of equation (3) using all completed transactions during the period 1985-1988. The TRA86 dummy variable (D) was interacted with all tax variables (β coefficients) in equation (1) as follows.

$$\begin{aligned} \text{pr}(\text{Taxable}_i) = & \alpha_0 + \beta_1 \text{AcqETR}_i + \lambda_1 D \text{AcqETR}_i + \beta_2 \text{TarINST}\%_i + \lambda_2 D \text{TarINST}\%_i \\ & \quad (+) \quad \quad (?) \quad \quad (+) \quad \quad (+) \\ & + \beta_3 \text{TarNOL}_i + \lambda_3 D \text{TarNOL}_i + \beta_4 \text{STEP-UP}_i + \lambda_4 D \text{STEP-UP}_i \\ & \quad (-) \quad \quad (+) \quad \quad (+) \quad \quad (-) \\ & + \beta_5 \text{RECAPTURE}_i + \lambda_5 D \text{RECAPTURE}_i + \\ & \quad \quad (-) \quad \quad (+) \\ & \gamma_1 \text{AcqMTB}_i + \gamma_2 \text{AcqD/E}_i + \gamma_3 \text{MANAGE}\%_i + \gamma_4 \text{AcqMVE}_i + \\ & \quad (-) \quad \quad (-) \quad \quad (+) \quad \quad (?) \\ & \gamma_5 \text{MULTI}_i + \gamma_6 \text{HOSTILE}_i + \varepsilon_i \quad (3) \\ & \quad (+) \quad \quad (+) \end{aligned}$$

A test of the equality of coefficients on the tax variables, across the Tax Reform Act of 1986, is provided by the t-statistics on the λ coefficients. The predicted signs on

the various λ coefficients are as follows. Although TRA86 reduced the top statutory corporate tax rate, due to other tax changes that impacted the value and price of debt, I make no prediction on the sign of λ_1 . Because shareholder capital gains tax rates increased 40% as a result of TRA86, the predicted sign on λ_2 is positive. That is, after TRA86, target shareholder capital gains tax liabilities are predicted to be more influential in the structure decision. Therefore, after TRA86, the impact of target firm institutional ownership levels should be more dramatic than pre-TRA86. Because target firm NOLs are more restricted post-TRA86, the impact of TarNOL is expected to be reduced after 1986. Therefore, the predicted sign for λ_3 is positive. Recall that the predicted sign on TarNOL in equation (1) is negative so a reduction in the impact of target firm NOLs due to TRA86 implies a positive sign (movement toward zero) on λ_3 . TRA86 essentially eliminated tax benefits available from stepping up the basis of the target's assets. Therefore, post-TRA86 STEP-UP is predicted to be less important in the structure decision. The predicted sign on λ_4 is thus negative. Similar logic implies that the predicted sign on λ_5 is positive.

Table 17 reports the results of estimating equation (3). In Table 17, I employ AcqETR as the proxy for the acquiring firm's tax status and TarINST% as the proxy for potential target shareholder capital gains tax liabilities. In panel A of Table 17, I estimate equation (3) on all 339 transactions with complete data. In this specification of equation (3) the dependent variable takes the value one if the transaction was taxable, zero if tax-free. Panel B reports the result of estimating equation (3) on only those transactions in which the consideration received by target shareholders was either 100% cash or 100% equity. Panel C analyzes only those 100% cash deals that were more than 50% debt-financed relative to 100% stock-financed tax-free transactions.

Before discussing the coefficient by coefficient results of equation (3) estimation, examining the overall impact of including the interactive terms to control for the Tax Reform Act of 1986 is worthwhile. When adding the five interactive terms to equation (1), the model's chi-square increases from 57.82 (Table 7) to 60.27 (Table 17). A likelihood ratio statistic can be constructed based on the restricted and full models that tests the hypothesis that the β coefficients during the post-TRA86 period are different during the pre-TRA86 period. The formal test is a test of the hypothesis that all of the λ coefficients equal zero. The likelihood ratio statistic is detailed in Greene (1993, pg. 647) and has a chi-square distribution with the degrees of freedom equal to the number of restrictions - in this case one for each of the λ coefficients in equation (3) for a total of five. In two of the three panels of Table 17, the chi-squared statistic is insignificantly different from zero indicating that the coefficients on the tax variables are not significantly different before and after TRA86. In Panel B, the chi-square statistic is significant at the .044 level and provides some evidence that the tax determinants of structure are different across the tax regime shift. Overall, the evidence in Table 17 indicates that equation (1) does not suffer from an omitted variable problem with respect to TRA86. Next I turn to a discussion of the impact of TRA86 on each of the tax variables of interest as evidenced by the sign and significance of the λ coefficients in equation (3).

The coefficient on λ_1 is positive, but insignificantly different from zero across all three panels of Table 17. An insignificant λ_1 coefficient implies that the TRA86 induced cut in the corporate tax rate did not impact the effect of acquiring firm tax status on the structure of corporate acquisitions. Similarly, the λ_2 coefficient is negative, but insignificantly different from zero in all three panels of Table 17, providing no support for the notion that the increase in capital gains taxes arising from

TRA86 influenced the structure of corporate acquisitions. The coefficient on λ_3 is negative contrary to predictions, but is insignificantly different from zero across all three panels of Table 17. The insignificant λ_3 coefficient does not support the notion that the increased limitations on NOLs included in TRA86 impacted the structure of corporate acquisitions.

λ_4 is negative as predicted, but insignificantly different from zero in Panels A and C of Table 17. In Panel B, λ_4 is significantly negative at the 5% level providing some support for the conclusion that the *General Utilities* repeal modified the influence, on the structure decision, of tax benefits from a basis step-up in the target's assets. The insignificant coefficient λ_4 in Panels A and C does not support the contention that the repeal of the *General Utilities* doctrine reduced the importance of tax benefits from stepping up the basis of target firms' assets. Results in Panels A and C support the conclusions of prior research such as Auerbach and Reishus (1988) that tax benefits from a basis step-up were not important determinants of corporate acquisition structure pre-TRA86. I obtained additional evidence on the importance of a basis step-up in the target's assets by reviewing the tax footnotes of all acquiring firms consummating taxable transactions throughout the test period in search of information on the election to step-up the basis of the acquired target's assets. I was able to locate only 6 firms that chose to step-up the basis of the target's assets over the four year period of study.⁴⁹ Consistent with the contention of Scholes and Wolfson (1990), all of the step-up elections occurred in transactions completed prior to the repeal of the *General Utilities* doctrine. However, given the low frequency with which step-ups occurred in my

⁴⁹ It is possible that some transactions were structured as step-ups, but acquirers chose not to disclose that information.

sample pre-TRA86, the general lack of significance of λ_4 is not surprising. The coefficient on λ_5 is positive, but insignificantly different from zero.

I re-estimated equation (3) but replaced AcqETR with AcqNOL and TarINST% with DIVYLD. Results (not reported) were qualitatively similar to those reported in this section and Table 17.

In summary, results from equation (3) estimation indicate that TRA86 did not significantly modify the impact, on the structure of corporate acquisitions, of 1) target shareholder capital gains factors, 2) acquiring firm tax status or, 3) tax benefits arising from target firm tax attributes.

3.6 Summary: Impact of TRA86 on Transaction Structure

While the effect of TRA86 on corporate acquisitions was considered significant, it appears that in the aggregate, TRA86 had little effect on deal structure.⁵⁰ In addition, the importance of target firm tax related determinants, such as NOLs, were not significantly dampened by TRA86. Indirectly, this result is consistent with most prior research that concludes that target firm tax attributes and target firm shareholder capital gains taxes did not influence the structure of corporate acquisitions prior to TRA86. Interestingly, TRA86 increased shareholder capital gains taxes by 40%, but the effect of institutional ownership was more pronounced pre-TRA86 than post-TRA86. While prior research (e.g. Stulz *et al.* [1992] and Brown and Ryngaert [1992]) finds evidence that institutional ownership of target firms influences premiums and tendering rates, evidence from TRA86 suggests that institutional ownership has relatively little *tax* effect on transaction structure. TRA86 does seem to have impacted the frequency of

⁵⁰ See for example: Brown *et al.* (1987), Curtis, (1987), Wood, (1987), "Adjusting to Tax Reform" *Mergers and Acquisitions*, (1986) and Scholes and Wolfson (1990) for a discussion of the expected ramifications of TRA86.

basis step-ups as no taxable transactions analyzed in this study resulted in a basis step-up of the target's assets post-TRA86. In spite of this fact, multivariate results did not detect a significant shift in the importance of tax benefits derived from stepping up the basis of the target's assets due to TRA86. The statistical insignificance of basis step-up pre-TRA86 casts doubt on the overall importance of this tax factor. Contrary to predictions, target net operating losses were more significant post-TRA86; a result that suggests that target firm NOLs may proxy for other tax and non-tax characteristics of target firms.

An implication of these results is that changes in the taxation of corporate acquisitions included in TRA86 were unnecessary to prevent tax-motivated acquisitions. Of course, it is possible that the empirical proxies for some of the tax constructs are too noisy to capture any significant shift in acquisition structure determinants. Similarly, the empirical methods employed in this study may be too crude to detect real economic changes induced by TRA86.

CHAPTER 4 - SUMMARY AND CONCLUSION

In this study, I provide new evidence that tax and non-tax characteristics of acquiring firms influence the structure of corporate acquisitions. This paper approaches the corporate acquisition structure question from an investment financing perspective, and provides evidence consistent with the conclusion that acquiring firm tax status impacts how these transactions are consummated. Specifically, I find that the probability of a debt-financed and therefore taxable transaction is a decreasing function of the likelihood that the acquiring firm will be tax exhausted. Inferences are robust to several tax status proxies.

In the sample of transactions analyzed, I find that the probability of a stock-financed tax-free structure is an increasing function of acquiring firm market to book ratio. The impact of acquirer market to book ratio on transaction structure is consistent with the argument that high growth firms cannot support heavy debt financing. It is also consistent with the conclusion that overvalued acquiring firms choose to finance corporate acquisitions with stock. Acquiring firm debt to equity ratio is positively related to the probability of a debt-financed taxable transaction contrary to predictions, but consistent with the results of some prior research. Acquiring firm size is positively related to the probability of a debt-financed and therefore taxable transaction suggesting that acquiring firm size may be a proxy for either access to debt markets or default risk.

The period of study crosses the Tax Reform Act of 1986. In spite of the commonly held belief that TRA86 would modify how corporate acquisitions are structured, my results indicate that the proportion of deals structure as taxable (all cash) did not decline post-TRA86. In addition, multivariate results indicate that TRA86 did not impact the effect, on acquisition structure, of: 1) target NOLs, 2) tax benefits from

a basis step-up of the target's assets or, 3) target firm shareholder capital gains tax liabilities. An implication of these results is that TRA86 induced changes in the taxation of corporate acquisitions were unnecessary to impede tax-motivated transactions because these factors were relatively unimportant prior to the tax reform.

Several limitations on the results of this study are important to note. First, the period of study is limited to a four year time frame in the mid-1980s, and thus the generalizability of these results to other time periods, such as the 1990s, may not be appropriate. Second, I only analyzed the acquisition of publicly held U.S. corporations by publicly held U.S. corporations, and hence the results of this study may not be generalizable to: 1) acquisitions of privately held companies, 2) acquisitions of public companies by private companies or, 3) acquisitions across international jurisdictions.

In providing further evidence that taxes influence investment decisions, this work contributes most generally to our understanding of corporate reorganizations and more specifically to our understanding of the factors that influence mergers and acquisitions. While this study provides evidence that non-tax characteristics of acquiring firms influence acquisition structure, additional work in this area is warranted. An analysis of the determinants of other types of corporate reorganizations, such as divisive restructurings, seems a viable avenue for future research. Investigation of the determinants of the structure of international business combinations may also provide a substantial contribution to existing knowledge.

Table 1
Descriptive Information on the Structure of the Transaction
For 344 Completed Corporate Acquisitions During the
Period 1985-1988

The source of tax status information is *Capital Adjustments*, *Capital Changes Reporter*, *Mergers and Acquisitions* and *The Wall Street Journal*. The source of consideration offered information is *Mergerstat Review*, *Mergers and Acquisitions* and *The Wall Street Journal*. The source of transaction characteristic information is *Mergers and Acquisitions* and *The Wall Street Journal*.

Panel A: By Year and Tax Status

Year	Taxable	% Taxable	Tax Free	% Tax Free	Total	% Total
1985	54	65.1%	29	34.9%	83	24.1%
1986	77	74.8%	26	25.2%	103	29.9%
1987	58	75.3%	19	24.7%	77	22.4%
1988	56	69.1%	25	30.9%	81	23.5%
Total	245	71.2%	99	28.8%	344	100.0%

Panel B: By Tax Status and Other Transaction Characteristics

Transaction Characteristics	Taxable	% Total Taxable	Tax Free	% Total Tax Free	Total	% Total
Tender Offer	134	54.7%	2	2.0%	136	39.5%
Merger	111	45.3%	97	98.0%	208	60.5%
Hostile	31	12.7%	3	3.0%	34	9.9%
Multi-bidder	55	22.4%	11	11.1%	66	19.2%
Total Deals	245 *		99 *		344	

Panel C: By Year and Consideration Offered

Year	Taxable			Tax-Free		Total
	100% Cash	Other Mixed	> 50% Debt Financed (1)	100% Stock (2)	> 50% stock	
1985	47	7	44	25	4	83
1986	66	11	51	22	4	103
1987	53	4	45	18	2	77
1988	55	1	39	22	3	81
Total	221	23	179	87	13	344
Percent of Total	64.2%	6.7%		25.3%	3.8%	100.0%

Notes:

* Does not sum to total. Some transactions included in more than one category (i.e. multi-bidder tender offer).

(1) Taxable transactions in which greater than 50% of the transaction's value was financed with debt. Debt financing information obtained from the acquiring firm's statement of cash flows.

(2) All but one of these transactions qualifies as a tax-free reorganization.

Table 2
Descriptive Statistics for 344 Completed Corporate
Acquisitions during 1985-88

Firm specific descriptive data is for the year prior to the acquisition. In some cases, the number of observations does not equal the total sample due to outliers or missing price data. All monetary items are in millions of dollars.

	Acquisition Premium (1)	Transaction Value (2)	Acquirer MVE (3)	Target MVE (3)	Acquirer BVE (4)	Target BVE (4)
Mean	42.3%	\$389.43	\$2,253.82	\$250.05	\$1,219.21	\$140.86
Median	38.1%	94.40	697.91	57.70	376.72	37.76
S.D.	35.9%	1,041.39	4,538.88	654.91	2,236.27	332.86
N=	341	341	344	344	344	344
	Acquirer EBT (5)	Target EBT (5)	Acquirer D/E (6)	Acquirer Manage% (7)	Acquirer MTB (8)	Target MTB (8)
Mean	\$278.54	\$24.27	0.81	15.1%	2.18	1.99
Median	67.43	4.61	0.51	7.3%	1.67	1.59
S.D.	548.34	92.62	1.30	19.0%	2.00	3.37
N=	344	344	343	339	344	344

Notes:

- (1) Computed as the final price per share in the completed transaction less the market price of the target firm's stock 20 trading days prior to the first announcement of the transaction.
- (2) Total deal value as reported by *Mergers and Acquisitions* or *Mergerstat Review*.
- (3) Market value of equity of the acquirer (target) measured the year prior to the acquisition.
- (4) Book value of equity of the acquirer (target) measured the year prior to the acquisition.
- (5) Earnings before taxes for the acquirer (target) measured the year prior to the acquisition.
- (6) Acquirer firm book value of debt divided by book value of equity, both measured the year prior to the acquisition.
- (7) Percentage of outstanding common stock owned by the officers and directors of the acquiring firm measured the year prior to the acquisition. Source of information is *Spectrum 6* and firm proxy statements.
- (8) Acquirer (target) market value of equity divided by book value of equity, both measured the year prior to the acquisition.

Table 3
Descriptive Statistics for 344 Corporate Acquisitions
Completed During 1985-1988 by Tax Status of the Transaction

Firm specific descriptive data is for the year prior to the acquisition. In some cases, the number of observations does not equal the total number of transactions due to outliers or missing price data. All monetary items are in millions of dollars.

Panel A: Taxable Transactions

	Acquisition Premium (1)	Transaction Value (2)	Acquirer MVE (3)	Target MVE (3)	Acquirer BVE (4)	Target BVE (4)
Mean	44.6%	\$407.47	\$2,601.74	\$259.82	\$1,395.12	\$142.78
Median	38.6%	95.75	796.00	58.75	461.81	39.85
S.D.	35.7%	1,117.56	5,116.81	687.72	2,475.53	314.84
N=	244	244	245	245	245	245
	Acquirer EBT (5)	Target EBT (5)	Acquirer D/E (6)	Acquirer Manage% (7)	Acquirer MTB (8)	Target MTB (8)
Mean	\$323.09	\$26.90	0.90	13.7%	1.97	1.92
Median	84.67	5.50	0.50	6.6%	1.59	1.54
S.D.	605.01	88.24	1.48	17.6%	1.63	3.83
N=	245	245	244	241	245	245

Panel B: Tax-Free Transactions

	Acquisition Premium (1)	Transaction Value (2)	Acquirer MVE (3)	Target MVE (3)	Acquirer BVE (4)	Target BVE (4)
Mean	36.7%	\$344.07	\$1,392.81	\$223.44	\$786.35	\$136.11
Median	34.6%	70.40	427.05	42.05	165.49	27.25
S.D.	36.2%	815.62	2,141.83	568.57	1,406.89	375.44
N=	97	97	99	99	99	99
	Acquirer EBT (5)	Target EBT (5)	Acquirer D/E (6)	Acquirer Manage% (7)	Acquirer MTB (8)	Target MTB (8)
Mean	\$168.39	\$17.75	0.59	18.7%	2.72	2.18
Median	34.40	3.11	0.55	8.9%	2.02	1.76
S.D.	352.07	102.83	0.64	21.6%	2.63	1.79
N=	99	99	99	98	99	99

Notes:

- (1) Computed as the final price per share in the completed transaction less the market price of the target firm's stock 20 trading days prior to the first announcement of the transaction.
- (2) Total deal value as reported by *Mergers and Acquisitions* or *Mergerstat Review*.
- (3) Market value of equity of the acquirer (target) measured the year prior to the acquisition.
- (4) Book value of equity of the acquirer (target) measured the year prior to the acquisition.
- (5) Earnings before taxes for the acquirer (target) measured the year prior to the acquisition.
- (6) Acquirer firm book value of debt divided by book value of equity, both measured the year prior to the acquisition.
- (7) Percentage of outstanding common stock owned by the officers and directors of the acquiring firm measured the year prior to the acquisition. Source of information is *Spectrum 6* and firm proxy statements.
- (8) Acquirer (target) market value of equity divided by book value of equity, both measured the year prior to the acquisition.

Table 4
Comparison of Tax Variables by Tax Status of the Transaction
For 344 Corporate Acquisitions Completed During 1985-1988

Panel A:

	<i>Acquirer Effective Tax Rate (1)</i>			<i>Target Effective Tax Rate (1)</i>		
	Taxable	Tax-Free	Difference	Taxable	Tax-Free	Difference
Mean	22.4%	17.2%	5.3% ***	20.3%	16.8%	3.5% #
S.D.	14.7%	15.3%		17.4%	17.2%	
Median	22.2%	12.3%	9.9% **	19.0%	10.8%	8.2% #
N =	245	99		245	99	
Number = 0	18	22		57	28	
Percent = 0	7.3%	22.2%	-14.9% ***	23.3%	28.3%	-5.0%

Panel B:

	<i>Acquirer Net Operating Losses (2)</i>			<i>Target Net Operating Losses (2)</i>		
	Taxable	Tax-Free	Difference	Taxable	Tax-Free	Difference
Mean	\$0.032	\$0.038	(\$0.005)	\$0.056	\$0.106	(\$0.051) **
S.D.	0.137	0.140		0.178	0.253	
Median	0.000	0.000	0.000	0.000	0.000	0.000
N =	245	99		245	99	
Number > 0	33	26		67	37	
Percent with NOLs	13.5%	26.3%	-12.8% ***	27.3%	37.4%	-10.0% **

Panel C:

	<i>Target Institutional Ownership % (3)</i>			<i>Target Dividend Yield (4)</i>		
	Taxable	Tax-Free	Difference	Taxable	Tax-Free	Difference
Mean	29.5%	21.9%	7.6% ***	1.5%	0.9%	0.7% **
S.D.	20.3%	20.3%		2.9%	1.6%	
Median	27.1%	16.2%	10.9% ***	0.2%	0.0%	0.2% **
N =	245	99		244	99	
Number > 0				125	37	
% Paying Dividends				51.2%	37.4%	13.9% **

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Table 4 (continued)
Comparison of Tax Variables by Tax Status of the Transaction
For 344 Corporate Acquisitions Completed During 1985-1988

Panel D:

	Target Step-Up (5)			Target Recapture Tax (6)		
	Taxable	Tax-Free	Difference	Taxable	Tax-Free	Difference
Mean	\$0.156	\$0.167	(\$0.011)	\$0.214	\$0.150	\$0.064
S.D.	0.203	0.128		0.347	0.389	
Median	0.148	0.161	(0.013)	0.116	0.096	0.020
N =	245	99		245	99	

Notes:

- (1) Sum of taxes paid during 3 years prior to the acquisition divided by the sum of taxable income for the same period. Truncated at zero and the top statutory tax rate.
 - (2) Net operating losses multiplied by the top statutory tax rate divided by firm market value of equity.
 - (3) Percentage of the target firm owned by institutional investors for the month prior to the acquisition as reported by the *Standard and Poors Stock Guide*.
 - (4) Average annual dividend yield for the three years prior to the acquisition.
 - (5) Potential tax benefits from a basis step-up of the target's assets. Defined as target market value of equity less target book value of equity, multiplied by the statutory tax rate and divided by target firm market value of equity, all measured the year prior to the acquisition.
 - (6) Recapture taxes arising from a basis step-up. Defined as the sum of target firm accumulated depreciation plus grossed up deferred taxes multiplied by the statutory tax rate, divided by target market value of equity all measured the year prior to the acquisition.
- * Significant at the 10% level (one tail test).
 ** Significant at the 5% level (one tail test).
 *** Significant at the 1% level (one tail test).
 # Significant at the 5% level (two tail test).

Table 5
Comparison of Tax Variables by Consideration Offered (Using
Only 100% Cash or 100% Stock Transactions) For 308
Corporate Acquisitions Completed During 1985-1988

Panel A:

	<i>Acquirer Effective Tax Rate (1)</i>			<i>Target Effective Tax Rate (1)</i>		
	Cash	Stock	Difference	Cash	Stock	Difference
Mean	23.1%	17.4%	5.7% ***	20.8%	16.6%	4.2% #
S.D.	14.6%	15.0%		17.4%	17.5%	
Median	25.0%	12.9%	12.1% **	20.3%	10.3%	10.0% #
N =	221	87		221	87	
Number = 0	13	18		50	25	
Percent = 0	5.9%	20.7%	-14.8% ***	22.6%	28.7%	-6.1%

Panel B:

	<i>Acquirer Net Operating Losses (2)</i>			<i>Target Net Operating Losses (2)</i>		
	Cash	Stock	Difference	Cash	Stock	Difference
Mean	\$0.035	\$0.039	(\$0.004)	\$0.042	\$0.117	(\$0.075) ***
S.D.	0.144	0.147		0.139	0.267	
Median	0.000	0.000	0.000	0.000	0.000	0.000
N =	221	87		221	87	
Number > 0	28	22		59	34	
Percent with NOLs	12.7%	25.3%	-12.6% ***	26.7%	39.1%	-12.4% ***

Panel C:

	<i>Target Institutional Ownership % (3)</i>			<i>Target Dividend Yield (4)</i>		
	Cash	Stock	Difference	Cash	Stock	Difference
Mean	29.1%	21.1%	8.0% ***	1.5%	0.7%	0.7% **
S.D.	20.5%	20.8%		2.9%	1.4%	
Median	26.2%	14.1%	12.1% ***	0.1%	0.0%	0.1% ***
N =	221	87		221	87	
Number > 0				111	29	
% Paying Dividends				50.2%	33.3%	16.9% ***

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Table 5 (continued)
Comparison of Tax Variables by Consideration Offered (Using
Only 100% Cash or 100% Stock Transactions) For 308
Corporate Acquisitions Completed During 1985-1988

Panel D:

	Target Step-Up (5)			Target Recapture Tax (6)		
	Cash	Stock	Difference	Cash	Stock	Difference
Mean	\$0.143	\$0.176	(\$0.033) #	\$0.196	\$0.118	\$0.078 #
S.D.	0.122	0.131		0.279	0.384	
Median	0.143	0.188	(0.045)	0.108	0.081	0.027
N =	221	87		221	87	

Notes:

- (1) Sum of taxes paid during 3 years prior to the acquisition divided by the sum of taxable income for the same period. Truncated at zero and the top statutory tax rate.
 - (2) Net operating losses multiplied by the top statutory tax rate divided by firm market value of equity.
 - (3) Percentage of the target firm owned by institutional investors for the month prior to the acquisition as reported by the *Standard and Poors Stock Guide*.
 - (4) Average annual dividend yield for the three years prior to the acquisition.
 - (5) Potential tax benefits from a basis step-up of the target's assets. Defined as target market value of equity less target book value of equity, multiplied by the statutory tax rate and divided by target firm market value of equity, all measured the year prior to the acquisition.
 - (6) Recapture taxes arising from a basis step-up. Defined as the sum of target firm accumulated depreciation plus grossed up deferred taxes multiplied by the statutory tax rate, divided by target market value of equity all measured the year prior to the acquisition.
- * Significant at the 10% level (one tail test).
 ** Significant at the 5% level (one tail test).
 *** Significant at the 1% level (one tail test).
 # Significant at the 5% level (two tail test).

TABLE 6

Correlation Matrix of Equation (1) Independent Variables

Data reported is the Pearson Correlation Coefficient Between the Variables in question. Two Tailed p-values are Reported in Parentheses Below Correlation Coefficients.

	AcqETR	TarINST%	TarNOL	STEP-UP	RECAP-TURE	AcqMTB	AcqD/E	AcqMVE	MANAGE%	MULTI	HOSTILE	AcqNOL	DIVYLD
AcqETR	1.000 (0.00)												
TarINST%	0.075 (0.17)	1.000 (0.00)											
TarNOL	-0.121 * (0.03)	-0.246 * (0.00)	1.000 (0.00)										
STEP-UP	-0.083 (0.13)	-0.066 (0.23)	0.180 * (0.00)	1.000 (0.00)									
RECAP-TURE	-0.064 (0.24)	0.016 (0.76)	0.237 * (0.00)	0.206 * (0.00)	1.000 (0.00)								
AcqMTB	0.054 (0.32)	0.009 (0.87)	-0.043 (0.43)	0.074 (0.18)	-0.107 * (0.05)	1.000 (0.00)							
AcqD/E	-0.094 (0.08)	0.048 (0.38)	-0.052 (0.34)	-0.124 * (0.02)	0.077 (0.16)	-0.217 * (0.00)	1.000 (0.00)						
AcqMVE	0.036 (0.50)	0.173 * (0.00)	-0.085 (0.12)	0.089 (0.10)	0.048 (0.38)	0.092 (0.09)	-0.151 * (0.01)	1.000 (0.00)					
MANAGE%	-0.090 (0.10)	-0.115 * (0.03)	0.142 * (0.01)	-0.100 (0.07)	-0.033 (0.54)	0.226 * (0.00)	0.047 (0.39)	-0.250 * (0.00)	1.000 (0.00)				
MULTI	-0.013 (0.82)	0.215 * (0.00)	-0.019 (0.73)	0.021 (0.70)	0.167 * (0.00)	-0.062 (0.26)	0.135 * (0.01)	0.040 (0.47)	-0.062 (0.26)	1.000 (0.00)			
HOSTILE	0.065 (0.23)	0.214 * (0.00)	-0.103 * (0.06)	-0.084 (0.12)	0.074 (0.18)	0.009 (0.86)	0.241 * (0.00)	0.001 (0.99)	-0.012 (0.83)	0.115 * (0.03)	1.000 (0.00)		
AcqNOL	-0.383 * (0.00)	0.031 (0.57)	0.124 * (0.02)	-0.070 (0.20)	-0.002 (0.97)	0.119 * (0.03)	0.099 (0.07)	-0.162 * (0.00)	0.253 * (0.00)	0.085 (0.12)	-0.045 (0.41)	1.000 (0.00)	
DIVYLD	0.087 (0.11)	0.215 * (0.00)	-0.145 * (0.01)	-0.147 * (0.01)	0.216 * (0.00)	-0.091 (0.09)	0.096 (0.08)	0.043 (0.43)	-0.111 * (0.04)	0.153 * (0.00)	0.175 * (0.00)	-0.031 (0.57)	1.000 (0.00)

Notes:

* Significant at the 5% level (two tails).

(1) See variable definitions in Figure 2 and Tables 2 and 4.

Table 7

Results of Equation (1) Binomial Logit Model Estimation

In Panel A, the dependent variable takes the value one if the transaction was taxable, zero if tax free. Panel B includes only all cash or all stock corporate acquisitions. In this panel, the dependent variable takes the value of one if the consideration offered by the acquirer was all cash, zero if all stock. Panel C includes only all cash and all stock deals. Unlike Panel B, Panel C removes any cash deal that was less than 50% debt-financed.

Independent Variable	Predicted Sign	Panel A		Panel B		Panel C	
		Coefficient Estimate (t-statistic)	Change in Probability (1)	Coefficient Estimate (t-statistic)	Change in Probability (1)	Coefficient Estimate (t-statistic)	Change in Probability (1)
Constant		0.86		0.38		0.51	
AcqETR	+	2.84 (3.04) ***	7.9%	3.16 (3.06) ***	8.0%	2.81 (2.44) ***	8.3%
TarINST%	+	1.19 (1.63) *	4.5%	0.94 (1.22)	3.3%	0.29 (0.35)	1.2%
TarNOL	-	-0.45 (-0.71)	-1.7%	-1.22 (-1.65) **	-3.9%	-1.18 (1.43) *	-4.6%
STEP-UP	+	0.43 (0.58)	1.5%	-0.79 (-0.62)	-1.7%	-1.23 (-0.83)	-0.7%
RECAPTURE	-	-0.07 (-0.18)	-0.5%	-0.19 (-0.34)	-0.9%	-0.17 (-0.28)	-1.0%
AcqMTB	-	-0.38 (-4.09) ***	-14.2%	-0.44 (-4.25) ***	-15.1%	-0.60 (-4.29) ***	-23.7%
AcqD/E	-	0.51 (3.23) #	12.3%	0.55 (2.97) #	12.1%	0.64 (3.13) #	17.1%
MANAGE%	+	-0.03 (-0.04)	-0.1%	0.05 (0.05)	0.1%	0.20 (0.22)	2.5%
AcqMVE	?	0.0002 (2.64) #	12.9%	0.0002 (2.57) #	13.4%	0.0002 (2.65) #	18.1%
MULTI	+	0.52 (1.29)	9.7%	1.32 (2.34) ***	22.5%	1.61 (2.64) ***	32.6%
HOSTILE	+	0.86 (1.31) *	16.0%	1.13 (1.38) *	19.4%	1.06 (1.32) *	21.4%
Model Chi-square (d.f. = 11)		57.82		69.41		72.42	
p-value		0.000		0.000		0.000	
Pseudo R ²		0.142		0.192		0.225	
% Correct Predictions		75.8%		76.6%		79.2%	
Naive Model % Correct		71.1%		71.7%		65.6%	
N =		339		303		250	

Notes:

- (1) The change in the probability that the dependent variable takes the value one when the independent variable increases by one standard deviation and all other variables are evaluated at their mean. In the case of indicator variables (e.g. MULTI), the change in the probability when the dummy variable takes the value one.

*** Significant at the 1% level (one tail test).

** Significant at the 5% level (one tail test).

* Significant at the 10% level (one tail test).

Significant at the 5% level (two tail test).

Table 8

*Results of Equation (1) Binomial Logit Model Estimation**Sensitivity Analysis - Tax Exhaustion and Shareholder Capital Gains Taxes*

In Panel A, the dependent variable takes the value one if the transaction was taxable, zero if tax free. Panel B includes only all cash or all stock corporate acquisitions. In this panel, the dependent variable takes the value of one if the consideration offered by the acquirer was all cash, zero if all stock. Panel C includes only all cash and all stock deals. Unlike Panel B, Panel C removes any cash deal that was less than 50% debt-financed. In this table the dummy variable AcqNOL replaces AcqETR and DIVYLD replaces TarINST%.

Independent Variable	Predicted Sign	Panel A		Panel B		Panel C	
		Coefficient Estimate (t-statistic)	Change in Probability (1)	Coefficient Estimate (t-statistic)	Change in Probability (1)	Coefficient Estimate (t-statistic)	Change in Probability (1)
Constant		0.97		1.46		1.43	
AcqNOL	-	-0.74 (-2.14) **	-13.9%	-0.84 (-2.16) **	-14.6%	-0.84 (-1.96) **	-16.9%
DIVYLD	+	3.72 (0.55)	1.8%	4.06 (0.50)	1.8%	-7.07 (-0.60)	-0.2%
TarNOL	-	-0.65 (-1.03)	-2.5%	-1.29 (-1.71) **	-4.2%	-1.20 (-1.42) *	-4.7%
STEP-UP	+	0.16 (0.21)	0.5%	-1.54 (-1.19)	-3.4%	-2.15 (-1.42)	-5.4%
RECAPTURE	-	-0.11 (-0.27)	-0.7%	-0.36 (-0.61)	-1.8%	-0.21 (-0.36)	-1.3%
AcqMTB	-	-0.31 (-3.60) ***	-12.1%	-0.36 (-3.82) ***	-12.6%	-0.53 (-4.07) ***	-20.6%
AcqD/E	-	0.46 (3.06) #	11.2%	0.45 (2.60) #	10.1%	0.60 (2.90) #	15.0%
MANAGE%	+	0.02 (0.02)	0.6%	-0.02 (-0.02)	-0.1%	0.14 (0.16)	0.6%
AcqMVE	?	0.0001 (2.45) #	11.7%	0.0001 (2.33) #	11.7%	0.0002 (2.46) #	15.8%
MULTI	+	0.70 (1.77) **	13.1%	1.39 (2.52) ***	24.0%	1.73 (2.87) ***	34.9%
HOSTILE	+	1.07 (1.63) *	19.9%	1.32 (1.63) *	22.8%	1.29 (1.61) *	26.0%
Model Chi-square (d.f. = 11)		50.23		62.28		69.56	
p-value		0.000		0.000		0.000	
Pseudo R ²		0.123		0.173		0.217	
% Correct Predictions		75.5%		77.2%		75.6%	
Naive Model % Correct		71.1%		71.7%		65.6%	
N =		339		303		250	

Notes:

- (1) The change in the probability that the dependent variable takes the value one when the independent variable increases by one standard deviation and all other variables are evaluated at their mean. In the case of indicator variables (e.g. MULTI), the change in the probability when the dummy variable takes the value one.

*** Significant at the 1% level (one tail test).

** Significant at the 5% level (one tail test).

* Significant at the 10% level (one tail test).

Significant at the 5% level (two tail test).

Table 9
Results of Equation (1) Binomial Logit Model Estimation
After Removal of Outlying Observations Identified Using Logistic Regression Diagnostics of Pregibon (1981)
 All estimations of equation (1) in this table include only 100% stock transactions or more than 50% debt-financed all cash transactions. This analysis corresponds to that presented in Panel C of Tables 7 and 8.

Independent Variable	Predicted Sign	Panel A		Panel B		Panel C	
		Coefficient Estimate (t-statistic)	Change in Probability (1)	Coefficient Estimate (t-statistic)	Change in Probability (1)	Coefficient Estimate (t-statistic)	Change in Probability (1)
Constant		0.69		1.57		0.65	
Acquiring Firm Tax Status Proxies:							
AcqETR	+	4.93 (3.40) ***	8.6%				
AcqNOL	-			-1.24 (-2.41) ***	-15.5%		
Graham's MTR	+					(3.67) (2.14) **	5.2%
TarINST%	+	0.89 (0.90)	2.1%	1.56 (1.53) *	3.8%	1.16 (1.07)	2.5%
TarNOL	-	-1.78 (-1.78) **	-4.0%	-2.00 (-1.82) **	-4.7%	-2.11 (-1.87) **	-4.3%
STEP-UP	+	-2.59 (-1.46)	-3.8%	-3.50 (-1.92) #	-5.2%	-4.60 (-2.34) #	-6.3%
RECAPTURE	-	-0.29 (-0.44)	-1.0%	-0.19 (-0.29)	-0.7%	-1.34 (-1.52) *	-4.3%
AcqMTB	-	-0.99 (-4.86) ***	-23.2%	-0.78 (-4.56) ***	-19.1%	-0.96 (-4.87) ***	-21.6%
AcqD/E	-	0.93 (3.32) #	14.8%	0.78 (3.04) #	12.9%	0.84 (3.07) #	12.9%
MANAGE%	+	-0.12 (-0.12)	-2.8%	0.06 (0.06)	0.1%	0.60 (0.56)	1.3%
AcqMVE	?	0.0004 (3.48) #	21.4%	0.0004 (3.24) #	19.9%	0.0005 (3.66) #	24.2%
MULTI	+	3.49 (2.73) ***	41.4%	3.25 (2.83) ***	40.2%	3.15 (2.81) ***	34.9%
HOSTILE	+	4.44 (0.93)	52.7%	4.43 (0.92)	54.7%	4.61 (0.94)	51.3%
Model Chi-square (d.f. = 11)		115.62		111.25		109.01	
p-value		0.000		0.000		0.000	
Pseudo R ²		0.387		0.372		0.396	
% Correct Predictions		80.3%		79.5%		80.6%	
Naive Model % Correct		68.2%		68.2%		68.9%	
N =		239		239		222	

Notes:

(1) The change in the probability that the dependent variable takes the value one when the independent variable increases by one standard deviation and all other variables are evaluated at their mean. In the case of indicator variables (e.g. MULTI), the change in the probability when the dummy variable takes the value one.

- *** Significant at the 1% level (one tail test).
- ** Significant at the 5% level (one tail test).
- * Significant at the 10% level (one tail test).
- # Significant at the 5% level (two tail test).

Table 10
Results of Equation (2) Binomial Logit Model Estimation
Interaction of Acquirer and Target Tax Effects

In Panel A, the dependent variable takes the value one if the transaction was taxable, zero if tax free. Panel B includes only all cash or all stock corporate acquisitions. In this panel, the dependent variable takes the value of one if the consideration offered by the acquirer was all cash, zero if all stock. Panel C includes only all cash and all stock deals. Unlike Panel B, Panel C removes any cash deal that was less than 50% debt-financed.

Variable	Predicted Sign	Panel A	Panel B	Panel C
		Parameter Estimate (t-statistic)	Parameter Estimate (t-statistic)	Parameter Estimate (t-statistic)
Constant		0.59	1.05	0.86
AcqHIGHTAX*TarLOWTAX	+	0.18 (0.33)	-0.22 (0.36)	-0.36 (0.53)
AcqLOWTAX*TarHIGHTAX	-	-1.85 (3.32) ***	-2.11 (3.34) ***	-2.12 (2.99) ***
TarNOL	-	-0.50 (0.83)	-1.23 (1.64) *	-0.93 (1.15)
STEP-UP	+	0.13 (0.18)	-1.11 (0.86)	-1.69 (1.14)
RECAPTURE	-	0.00 (0.03)	-0.03 (0.05)	-0.02 (0.04)
AcqMTB	-	-0.17 (2.18) **	-0.24 (2.45) ***	-0.34 (2.60) ***
AcqD/E	-	0.96 (2.73) #	0.93 (2.24) #	0.97 (2.17) #
Manage%	+	0.25 (0.33)	0.18 (0.21)	0.44 (0.49)
AcqMVE	?	0.0001 (2.52) #	0.0001 (2.32) #	0.0002 (2.50) #
MULTI	+	0.50 (1.27)	1.21 (2.16) **	1.43 (2.39) ***
HOSTILE	+	0.96 (1.47)	1.21 (1.50)	1.27 (1.57)
Model Chi-square (d.f. = 11)		57.80	71.10	75.28
p-value		0.000	0.000	0.000
Pseudo R ²		0.138	0.196	0.244
% Correct Predictions		73.6%	78.6%	80.5%
Naive Model % Correct		71.1%	71.9%	66.0%
N =		339	303	250

Notes:

AcqHIGHTAX = 1 if the acquirer's effective tax rate is greater than the 75th percentile of the acquiring firms, zero otherwise. AcqLOWTAX = 1 if the acquirer's effective tax rate is less than the 25th percentile of the acquiring firms, zero otherwise. TarLOWTAX = 1 if the institutional ownership of the target is greater than the 75th percentile of the target firms, zero otherwise. TarHIGHTAX = 1 if the institutional ownership of the target is less than the 25th percentile of the target firms, zero otherwise.

*** Significant at the 1% level (two tail test).

** Significant at the 5% level (two tail test).

* Significant at the 10% level (two tail test).

Significant at the 5% level (two tail test).

Table 11
Analysis of Tax Status and Consideration Offered
Across the Tax Reform Act of 1986: Erickson Sample Transactions
Transactions Consummated Before and After the Tax Reform Act of 1986
Percentage of Deals that were Taxable vs. Tax-Free and the Percentage of All
Cash vs. All Stock Deals.

	1985	1986	1987	1988	Pre TRA86	Post TRA86	Chi- Square (1)
Erickson Sample Transactions							
Panel A: By Tax Status							
Taxable	65.1%	74.8%	75.3%	69.1%	70.4%	72.2%	
Tax-Free	34.9%	25.2%	24.7%	30.9%	29.6%	27.8%	0.12
Panel B: By Consideration Offered							
All Cash	65.3%	75.0%	74.6%	71.4%	70.6%	73.0%	
All Stock	34.7%	25.0%	25.4%	28.6%	29.4%	27.0%	0.21

Notes:

(1) The chi-square statistic has one degree of freedom.

Significant at the 5% level (two tails).

Table 12
Analysis of Tax Status and Consideration Offered
Across the Tax Reform Act of 1986: Mergerstat Review Data
Transactions Consummated Before and After the Tax Reform Act of 1986
Percentage of Deals that were All Cash vs. All Stock.

	1985	1986	1987	1988	Pre TRA86	Post TRA86	Chi- Square (1)
Mergerstat Review Data							
Panel A: All Acquisitions of Publicly Held Companies							
All Cash	70.0%	68.7%	67.9%	82.8%	69.4%	77.1%	7.62 #
All Stock	30.0%	31.3%	32.1%	17.2%	30.6%	22.9%	
Panel B: All Transactions Disclosing Medium of Payment							
All Cash	68.3%	57.0%	54.6%	72.5%	63.0%	64.0%	0.28
All Stock	31.7%	43.0%	45.4%	27.5%	37.0%	36.0%	
Panel C: All Deals with a value of less than 25 million							
All Cash	65.5%	49.8%	35.9%	72.3%	59.3%	55.1%	1.50
All Stock	34.5%	50.2%	64.1%	27.7%	40.7%	44.9%	
Panel D: All Deals with a value between \$25 million and \$50 million							
All Cash	74.2%	55.2%	58.8%	82.5%	65.7%	71.6%	1.40
All Stock	25.8%	44.8%	41.2%	17.5%	34.3%	28.4%	
Panel E: All Deals with a value of between \$50 million and \$100 million							
All Cash	80.9%	77.1%	76.1%	81.9%	79.1%	79.8%	0.03
All Stock	19.1%	22.9%	23.9%	18.1%	20.9%	20.2%	
Panel F: All Deals with a value of between \$100 million and \$999 million							
All Cash	84.9%	75.2%	75.2%	90.4%	80.0%	83.7%	1.22
All Stock	15.1%	24.8%	24.8%	9.6%	20.0%	16.3%	
Panel G: All Deals with a value of over \$999 million							
All Cash	95.2%	85.7%	87.5%	88.5%	91.4%	88.1%	0.23
All Stock	4.8%	14.3%	12.5%	11.5%	8.6%	11.9%	

Notes:

- (1) The chi-square statistic has one degree of freedom.
 # Significant at the 5% level (two tails).

Table 13

Comparison of Tax Variables by Tax Status of the Transaction
For 186 Corporate Acquisitions Completed During 1985-86 (Pre-TRA86)

Panel A:

	<i>Acquirer</i>			<i>Target</i>		
	<i>Effective Tax Rate (1)</i>			<i>Effective Tax Rate (1)</i>		
	Taxable	Tax-Free	Difference	Taxable	Tax-Free	Difference
Mean	20.9%	15.0%	5.9% **	20.9%	18.3%	2.5%
S.D.	14.7%	14.8%		17.0%	17.2%	
Median	20.1%	10.5%	9.6%	21.2%	15.5%	5.7%
N =	131	55		131	55	
Number = 0	12	16		28	15	
Percent = 0	9.2%	29.1%	-19.9% ***	21.4%	27.3%	-5.9%

Panel B:

	<i>Acquirer</i>			<i>Target</i>		
	<i>Net Operating Losses (1)</i>			<i>Net Operating Losses (1)</i>		
	Taxable	Tax-Free	Difference	Taxable	Tax-Free	Difference
Mean	\$0.028	\$0.045	(\$0.017)	\$0.053	\$0.088	(\$0.035)
S.D.	0.125	0.164		0.181	0.219	
Median	0.000	0.000	0.000	0.000	0.000	0.000
N =	131	55		131	55	
Number > 0	16	14		29	20	
Percent with NOLs	12.2%	25.5%	-13.2% **	22.1%	36.4%	-14.2% **

Panel C:

	<i>Target</i>			<i>Target</i>		
	<i>Institutional Ownership % (1)</i>			<i>Dividend Yield (1)</i>		
	Taxable	Tax-Free	Difference	Taxable	Tax-Free	Difference
Mean	27.0%	18.6%	8.5% ***	2.0%	1.0%	1.0% *
S.D.	19.6%	19.2%		3.6%	1.6%	
Median	24.8%	12.5%	12.3%	1.0%	0.0%	1.0%
N =	131	55		131	55	
Number > 0				75	23	
% Paying Dividends				57.3%	41.8%	15.4% *

Panel D:

	<i>Target Step-Up (1)</i>			<i>Target Recapture Tax (1)</i>		
	Taxable	Tax-Free	Difference	Taxable	Tax-Free	Difference
	Taxable	Tax-Free	Difference	Taxable	Tax-Free	Difference
Mean	\$0.166	\$0.166	\$0.000	\$0.251	\$0.244	\$0.007
S.D.	0.141	0.127		0.325	0.365	
Median	0.162	0.149	0.013	0.137	0.137	0.000
N =	131	55		131	55	

Notes:

(1) See variable definitions provided in Table 4 and Figure 2.

*** Significant at the 1% level (two tail test).

** Significant at the 5% level (two tail test).

* Significant at the 10% level (two tail test).

Significant at the 5% level (two tail test).

Table 14

Comparison of Tax Variables by Tax Status of the Transaction
For 158 Corporate Acquisitions Completed During 1987-88 (Post-TRA86)

Panel A:

	<i>Acquirer</i>			<i>Target</i>		
	<i>Effective Tax Rate (1)</i>			<i>Effective Tax Rate (1)</i>		
	Taxable	Tax-Free	Difference	Taxable	Tax-Free	Difference
Mean	23.8%	19.9%	3.9%	19.6%	14.9%	4.7%
S.D.	14.5%	15.7%		17.9%	17.2%	
Median	25.5%	18.0%	7.5%	15.9%	4.8%	11.1%
N =	114	44		114	44	
Number = 0	6	6		29	13	
Percent = 0	5.3%	13.6%	-8.4% *	25.4%	29.5%	-4.1%

Panel B:

	<i>Acquirer</i>			<i>Target</i>		
	<i>Net Operating Losses (1)</i>			<i>Net Operating Losses (1)</i>		
	Taxable	Tax-Free	Difference	Taxable	Tax-Free	Difference
Mean	\$0.038	\$0.029	\$0.009	\$0.075	\$0.174	(\$0.099) **
S.D.	0.150	0.104		0.202	0.340	
Median	0.000	0.000	0.000	0.000	0.000	0.000
N =	114	44		114	44	
Number > 0	17	12		38	17	
Percent with NOLs	14.9%	27.3%	-12.4% *	33.3%	38.6%	-5.3%

Panel C:

	<i>Target</i>			<i>Target</i>		
	<i>Institutional Ownership % (1)</i>			<i>Dividend Yield (1)</i>		
	Taxable	Tax-Free	Difference	Taxable	Tax-Free	Difference
Mean	32.3%	26.1%	6.2% *	1.0%	0.7%	0.3%
S.D.	20.8%	21.1%		1.4%	1.6%	
Median	28.8%	23.0%	5.8%	0.0%	0.0%	0.0%
N =	114	44		114	44	
Number > 0				50	14	
% Paying Dividends				43.9%	31.8%	12.0%

Panel D:

	<i>Target Step-Up (1)</i>			<i>Target Recapture Tax (1)</i>		
	Taxable	Tax-Free	Difference	Taxable	Tax-Free	Difference
	Taxable	Tax-Free	Difference	Taxable	Tax-Free	Difference
Mean	\$0.144	\$0.169	(\$0.025)	\$0.173	\$0.034	\$0.139
S.D.	0.257	0.129		0.368	0.391	
Median	0.130	0.165	(0.035)	0.081	0.051	0.030
N =	114	44		114	44	

Notes:

(1) See variable definitions provided in Table 4 and Figure 2.

*** Significant at the 1% level (two tail test).

** Significant at the 5% level (two tail test).

* Significant at the 10% level (two tail test).

Significant at the 5% level (two tail test).

Table 15

Results of Equation (1) Binomial Logit Model Estimation(Pre-TRA86 Deals)

In Panel A, the dependent variable takes the value one if the transaction was taxable, zero if tax free. Panel B includes only all cash or all stock corporate acquisitions. In this panel, the dependent variable takes the value of one if the consideration offered by the acquirer was all cash, zero if all stock. Panel C includes only all cash and all stock deals. Unlike Panel B, Panel C removes any cash deal that was less than 50% debt-financed.

Variable	Predicted Sign	Panel A		Panel B		Panel C	
		Parameter Estimate (t-statistic)	Change in Probability (1)	Parameter Estimate (t-statistic)	Change in Probability (1)	Parameter Estimate (t-statistic)	Change in Probability (1)
Constant		-0.11		0.07		0.07	
AcqETR	+	2.01 (2.62) ***	9.8%	2.54 (2.80) ***	11.2%	2.44 (2.30) **	12.4%
TarINST%	+	1.20 (1.94) *	7.7%	1.85 (2.38) **	10.5%	1.60 (1.90) *	10.7%
TarNOL	-	0.10 (0.16)	0.6%	-0.56 (-0.70)	-2.9%	-0.38 (-0.44)	-2.3%
STEP-UP	+	1.10 (1.14)	4.9%	1.94 (1.66) *	7.8%	1.42 (1.01)	6.5%
RECAPTURE	-	-0.11 (-0.31)	-1.2%	0.08 (0.17)	0.7%	0.14 (0.27)	1.6%
AcqMTB	-	-0.27 (-2.79) ***	-13.2%	-0.60 (-4.02) ***	-23.9%	-0.76 (-3.77) ***	-36.9%
AcqD/E	-	0.41 (2.60) #	14.2%	0.35 (1.67)	9.5%	0.51 (2.11) #	16.9%
Manage%	+	-0.38 (-0.56)	-2.3%	0.02 (0.03)	0.1%	-0.15 (-0.17)	-1.0%
AcqMVE	?	0.0001 (1.13)	6.1%	0.0001 (1.00)	5.7%	0.0001 (1.86)	11.8%
MULTI	+	0.22 (0.71)	7.2%	1.83 (2.17) **	53.6%	2.09 (1.85) *	71.6%
HOSTILE	+	0.09 (0.21)	3.4%	0.00 (0.00)	0.0%	0.30 (0.48)	10.1%
Model Chi-square (d.f. = 11)		34.57		53.67		54.48	
p-value		0.000		0.000		0.000	
Pseudo R ²		0.155		0.282		0.326	
% Correct Predictions		76.1%		79.1%		80.5%	
Naive Model % Correct		70.7%		70.9%		64.1%	
N =		184		158		128	

Notes:

(1) The change in the probability that the dependent variable takes the value one when the independent variable increases by one standard deviation and all other variables are evaluated at their mean. In the case of indicator variables (e.g. MULTI), the change in the probability when the dummy variable takes the value of one.

*** Significant at the 1% level (two tail test).

** Significant at the 5% level (two tail test).

* Significant at the 10% level (two tail test).

Significant at the 5% level (two tail test).

Table 16

Results of Equation (1) Binomial Logit Model Estimation (Post-TRA86 Deals)

In Panel A, the dependent variable takes the value one if the transaction was taxable, zero if tax free. Panel B includes only all cash or all stock corporate acquisitions. In this panel, the dependent variable takes the value of one if the consideration offered by the acquirer was all cash, zero if all stock. Panel C includes only all cash and all stock deals. Unlike Panel B, Panel C removes any cash deal that was less than 50% debt-financed.

Variable	Predicted Sign	Panel A		Panel B		Panel C	
		Parameter Estimate (t-statistic)	Change in Probability (1)	Parameter Estimate (t-statistic)	Change in Probability (1)	Parameter Estimate (t-statistic)	Change in Probability (1)
Constant		0.27		0.66		0.08	
AcqETR	+	1.18 (1.41)	5.4%	1.79 (1.97) **	7.7%	1.40 (1.38)	6.6%
TarINST%	+	0.22 (0.37)	1.4%	-0.25 (-0.40)	-1.6%	-0.89 (-1.27)	-6.0%
TarNOL	-	-0.40 (-0.79)	-3.1%	-1.06 (-1.74) *	-7.7%	-0.97 (-1.59)	-8.4%
STEP-UP	+	-0.49 (-0.77)	-3.5%	-2.85 (-2.03) **	-9.2%	-2.38 (-1.62)	-8.8%
RECAPTURE	-	0.58 (1.33)	6.8%	0.33 (0.62)	3.1%	0.31 (0.58)	3.6%
AcqMTB	-	-0.19 (-2.97) ***	-14.7%	-0.17 (-2.44) **	-12.6%	-0.25 (-2.50) ***	-19.3%
AcqD/E	-	0.23 (1.82)	10.9%	0.20 (1.54)	9.4%	0.28 (1.90)	14.8%
Manage%	+	0.28 (0.43)	1.7%	0.64 (0.83)	3.6%	0.80 (0.99)	5.2%
AcqMVE	?	0.0001 (2.20) #	16.6%	0.0001 (2.10) #	16.3%	0.0001 (1.61)	15.3%
MULTI	+	0.32 (0.92)	9.9%	0.42 (1.11) .	12.5%	0.71 (1.75) *	23.6%
HOSTILE	+	0.69 (1.30)	21.3%	0.49 (0.91)	14.5%	0.49 (0.85)	16.3%
Model Chi-square (d.f. = 11)		30.31		36.45		37.75	
p-value		0.001		0.000		0.000	
Pseudo R ²		0.164		0.213		0.232	
% Correct Predictions		76.1%		76.6%		73.0%	
Naïve Model % Correct		71.6%		72.4%		67.2%	
N =		155		145		122	

Notes:

- (1) The change in the probability that the dependent variable takes the value one when the independent variable increases by one standard deviation and all other variables are evaluated at their mean. In the case of indicator variables (e.g. MULTI), the change in the probability when the dummy variable takes the value of one.

*** Significant at the 1% level (two tail test).

** Significant at the 5% level (two tail test).

* Significant at the 10% level (two tail test).

Significant at the 5% level (two tail test).

Table 17
Results of Equation (3) Binomial Logit Model Estimation
Across the Tax Reform Act of 1986

In Panel A, the dependent variable takes the value one if the transaction was taxable, zero if tax free. Panel B includes only all cash or all stock corporate acquisitions. In this panel, the dependent variable takes the value of one if the consideration offered by the acquirer was all cash, zero if all stock. Panel C includes only all cash and all stock deals. Unlike Panel B, Panel C removes any cash deal that was less than 50% debt-financed.

The coefficients reported are the λ coefficients from equation (3). Chi-square statistics for both the full model (including interactive λ terms), and the reduced model (no interactive terms) are also reported.

Independent Variable	Predicted Sign	Panel A	Panel B	Panel C
		Coefficient Estimate (t-statistic)	Coefficient Estimate (t-statistic)	Coefficient Estimate (t-statistic)
TRA*AcqETR (λ_1)	?	0.15 (0.12)	2.52 (1.35)	2.99 (1.52)
TRA*TarINST% (λ_2)	+	-0.40 (0.34)	-1.00 (0.71)	-1.85 (1.23)
TRA*TarNOL (λ_3)	+	-0.66 (0.52)	-0.89 (0.54)	-0.46 (0.26)
TRA*STEP-UP (λ_4)	-	-1.67 (1.01)	-3.98 (1.75) **	-1.32 (0.75)
TRA*RECAPTURE (λ_5)	+	1.32 (1.42)	-0.65 (0.70)	0.68 (0.57)
Full Model Chi-square (d.f.=16)		60.99	75.11	74.15
Reduced Model Chi-square (d.f. = 11)		57.82	69.41	72.42
L.R. Chi-square (d.f. = 5)		6.34	11.40	3.46
p-value		0.274	0.044	0.629
N =		339	303	250

Notes:

TRA is a dichotomous variable that takes the value one for post-TRA86 acquisitions, zero otherwise.

*** Significant at the 1% level (one tail test).

** Significant at the 5% level (one tail test).

* Significant at the 10% level (one tail test).

Significant at the 5% level (two tail test).

Figure 1
Tax Implications of Various Transaction Structures
 Information provided indicates the normal implications of each transaction type. Partially taxable transactions qualifying for tax-free status may have slightly different tax consequences for the target and the acquirer.

Tax Consequences	Tax-Free Reorganization	Taxable Stock Purchase	
		338 Election	No 338 Election
Target Shareholders:			
<i>Gain Recognized:</i>			
Stock Received	No	Yes	Yes
Boot Received	Yes	Yes	Yes
Target Corporation:			
Recapture and Capital Gains Taxes Recognized on Transaction	No	Yes ⁽²⁾	No
Tax Basis of the Target's Assets Stepped-up or Down	No	Yes	No
Target Tax Attributes Survive	Yes	No	Yes ⁽³⁾
Acquiring Corporation:			
Recapture and Capital Gains Taxes Incurred	No	Yes	No
Additional Interest Deductions from debt financing	No	Yes	Yes
Possible triggering of Section 382 limitation on tax attributes	Yes	No	No
Primary Tax Benefits:			
Step-Up in Basis of Target Assets	No	Yes	No
Additional Interest Deductions	No	Yes	Yes
Transfer of Target Attributes	Yes	No	Yes ⁽³⁾
Deferral of Target Shareholder Capital Gains Taxes	Yes	No	No

(Continued on Next Page)

Figure 1 (continued)
Tax Implications of Various Transaction Structures

Tax Consequences	Tax-Free Reorganization	Taxable Stock Purchase	
		338 Election	No 338 Election
Primary Tax Costs:			
Recapture and Capital Gains Taxes	No	Yes	No
Target Shareholder Capital Gains Tax	No	Yes	Yes
Loss of Target Attributes	No	Yes	No ⁽³⁾

Notes:

The tax implications of a taxable stock purchase followed by a 338 election are identical to those in an asset sale.

(1) This table is based heavily on Scholes and Wolfson (1992), pg. 499, 552 and Karls (1989) pg. 201.

(2) No capital gains taxes were levied pre-TRA86.

(3) Attributes are severely limited or extinguished (in all cash deals: pre-TRA86).

Figure 2
Variable Definitions and the Predicted Impact of Each Variable on the Probability of a Taxable Transaction.

Variable	Equation (1) Variable Notation	Definition	Coefficient Predicted Sign
Acquirer Effective Tax Rate	AcqETR	Acquiring firm effective tax rate: A proxy for the likelihood of tax exhaustion measured as the sum of taxes paid over the three years prior to the acquisition divided by the three year sum of earnings before taxes. Truncated at zero and the maximum statutory rate.	+
Acquirer Net Operating Loss Indicator	AcqNOL	Dummy variable indicating the presence of acquiring firm net operating losses in the year prior to the acquisition. A proxy for the likelihood of tax exhaustion. Information on acquiring firm tax NOLs obtained from the tax footnotes of financial statements. Variable takes the value of 1 if acquirer has NOLs, zero otherwise.	-
Acquirer Net Operating Losses as a Percentage of Market Value of Equity	AcqNOL%	Acquirer net operating losses as reported in Tables 4, 5, 13 and 14. Measured as acquirer NOLs multiplied by the top statutory tax rate divided by acquirer market value of equity.	-
Target Firm Institutional Ownership Percentage	TarINST%	Percentage of target firm common stock owned by institutional investors. Measured as common shares held by institutions, as reported by the <i>Standard & Poors Stock Guide</i> for the month prior to the acquisition announcement, divided by total shares outstanding.	+

Figure 2 (continued)
Variable Definitions and the Predicted Impact of Each Variable on the Probability
of a Taxable Transaction.

Variable	Equation (1) Variable Notation	Definition	Coefficient Predicted Sign
Target Dividend Yield	DIVYLD	Dividend yield of the target firm. Measured as the average dividend yield for the target over the three years prior to the acquisition.	+
Target Firm Net Operating Losses as a Percentage of Market Value of Equity	TarNOL	Estimate of the amount of taxable income that can be shielded by the target firm's NOLs. Measured as target firm tax basis net operating losses as reported in the tax footnotes to the financial statements multiplied by the top statutory tax rate in effect at the time, divided by target market value of equity. All financial variables are measured the year prior to the acquisition.	-
Target Step-Up	STEP-UP	Potential tax benefits from an increase in the basis of the target firm's assets. Measured as the difference between market value of equity and book value of equity for the year prior to the acquisition, multiplied by the top statutory tax rate in effect at the time, all divided by target firm market value of equity.	+
Target Recapture Tax	RECAPTURE	Estimate of recapture taxes associated with a step-up in the basis of the target firm's assets. Measured as the sum of accumulated depreciation plus grossed up deferred taxes all multiplied by the top statutory tax rate.	-

Figure 2 (continued)
Variable Definitions and the Predicted Impact of Each Variable on the Probability
of a Taxable Transaction.

Variable	Equation (1) Variable Notation	Definition	Coefficient Predicted Sign
Acquiring Firm Market To Book Ratio (year t-1)	AcqMTB	Estimate of the percentage of the acquiring firm's value represented by growth opportunities. Defined as the acquiring firm's market value of equity divided by book value of equity, measured the year prior to the acquisition.	-
Acquiring Firm Debt to Equity Ratio (year t-1)	AcqD/E	Variable designed to control for amount of debt present in the capital structure of the acquiring firm. Measured as long term debt divided by book value of equity for the year prior to the acquisition.	-
Acquiring Firm Market Value of Equity (year t-1)	AcqMVE	Control variable for the size of the acquiring firm. Measured as the market value of equity of the acquiring firm for the year prior to the acquisition.	?
Acquiring Firm Management Ownership Percentage	MANAGE%	The percentage of the acquiring firm's common stock held by officers and directors. Variable designed to control for dilution effects of equity offerings. Measured as total shares held by all officers and directors divided by total shares outstanding for the year prior to the acquisition. Source of data is <i>Spectrum</i> 6 and firm proxy statements.	+
Multiple Bidder Indicator Variable	MULTI	Dummy variable to control for the circumstances surrounding the acquisition. Takes the value 1 if more than one firm sought to acquire the target in the year prior to the completed acquisition, zero otherwise.	+
Hostile Transaction Indicator Variable	HOSTILE	Dummy variable to control for the circumstances surrounding the acquisition. Takes the value 1 if management or shareholders resisted the acquisition, zero otherwise.	+

Figure 3
Significant Tax Changes Resulting From TRA86 and their Predicted Impact
on Acquisition Structure

Specific Change	Specifics of the Change	Predicted Impact on Corporate Acquisition Structure
Repeal of the <i>General Utilities</i> Doctrine	Results in taxation of capital gains realized (excess of purchase price over historical cost) in basis step-up transactions.	Makes taxable transactions accompanied by a basis step-up more costly thereby making this transaction form less desirable.
Increased Limitation on the Transfer of Target Tax Attributes	The limitation pre-TRA86 was applied to the total amount of the tax attribute and was often avoidable altogether. Post-TRA86 an annual limitation on the usage of the attributes applies.	Makes target tax attributes relatively less valuable reducing the desirability of tax-free reorganizations.
Increase in Shareholder Capital Gains Tax Rate	Prior to 1987, capital gains were taxed at 40% of ordinary rates resulting in a maximum tax rate of 20%. After 1986, the 60% exclusion no longer applies resulting in a maximum capital gains tax rate of 28% - a 40% increase.	If shareholder capital gains tax liabilities influence the transaction structure selected, then the increase in the capital gains tax rate makes taxable transactions much more costly and therefore prohibitive.
Reduction in the Top Statutory Corporate Tax Rate	TRA86 cut the top corporate statutory tax rate from 46% to 34% (phased in).	An additional dollar of interest deductions post-TRA86 reduces the tax bill by 26% less than it did prior to TRA86 arguably making debt less valuable. If in fact the statutory change reduced the value of interest deductions, then debt-financed taxable deals should be less appealing post-TRA86.
Broadening of the Taxable Income Base	Expanded the useful lives of many classes of assets. Repealed the investment tax credit. Change should increase the amount of taxable income a firm reports as non-debt tax shields are reduced.	A reduction in non-debt tax shields should lead firms to substitute debt up until the point of tax exhaustion. This change should make debt-financing more appealing.

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