

The Valuation Effects of Tax Legislation in Corporate Sell offs

by

Ashok Bhardwaj Abbott

dissertation submitted to the Faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy
in
Finance

APPROVED:

Dana J. Johnson, Chairman

Arthur J. Keown

Randall S. Billingsley

Dilip K. Shome

Raman Kumar

Jeffrey B. Birch

August 5, 1987

Blacksburg, Virginia

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Dana J. Johnson, Chairman

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(ABSTRACT)

Corporate sell off activity has recently attracted considerable attention. The existence of excess returns for selling firm stockholders has been previously reported. This study attempts to identify the source of such gains by analyzing the impact of tax benefits involved in the sell off transaction. It is found that restrictions on transferability of the tax benefits reduce the realizable gains from sell offs.

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INTRODUCTION

“The interactions between the incentives of competing management teams and the strategies they adopt is an interesting area for future research. Knowledge resulting from such research will allow us to understand better the determinants of the offer, such as structure (single or two part, cash or exchange of securities), timing, type of offer (tender, merger, or proxy contest), and tax effects.

Jensen and Ruback (1983)” Merger and acquisition activity has received close scrutiny from financial researchers for over two decades. The closely related issue of divestitures, however, has attracted such attention only recently even though they have come to represent a significant proportion of corporate control transfer transactions. To date, researchers generally report,

1. the presence of excess returns for firms participating in divestitures, and
2. unequal distribution of gains from divestitures between acquiring and divesting firm.

The existence of excess returns for divestitures and uneven distribution of realized gains, between divesting and acquiring firms is puzzling. If these results are indicative of an

inefficiency in the valuation/ negotiation process, such an inefficiency should not persist in a competitive market. Persistence of such results suggests that some external factors may be involved. Identification of such factors and their effects have received scant attention in the literature.

The focus of this research is to study the role of one such factor, the tax treatment of sell off transactions. The present research explicitly recognizes redeployable tax attributes as tangible assets that undergo a reappraisal during a divestiture. It is proposed that regulatory restraints limiting the transferability of tax attributes impose an additional transaction cost on sellers and buyers and the difference between returns obtained by divesting and acquiring firms can be explained by examining the taxation provisions as they have existed over various periods. The observed excess returns to divesting firms are analyzed to determine if valuation effects have been introduced by tax legislation. The proposed research thus extends the study of sell offs by examining the valuation effects that tax legislation may generate and consequent frictions that can develop in the market as a result of such intervention.

Tax treatment of divestiture transactions has seen major changes during the last seven years. Introduction of safe harbor leasing provisions in 1981 allowed tax benefits to be marketed without effecting any divestitures at all. These provisions were abolished and partial liquidations allowing acquiring firms to take over existing tax benefits of acquired units while generating sizable additional tax benefits were introduced in 1982. Introduction of partial liquidation provisions was described by the Wall Street Journal (WSJ) as handing over a set of keys to the treasury to business by the government. Restrictive rules limiting the transfer of tax benefits were introduced at the same time but became effective only in 1984 when the partial liquidation provisions were abolished and

the Internal Revenue Service issued additional regulations curtailing the available tax reduction alternatives.

In chapter 2 a review of the related theoretical and empirical studies of corporate sell offs is presented. A one period partial equilibrium model relating the realizable value from transfer of the existing and potential tax benefits from the accumulated Net Operating Losses (NOLs) and asset base related tax shields, e.g. depreciation and investment tax credits to the excess returns received by the selling stockholders is formulated in chapter 3. The methodology for empirically testing the hypotheses thus formulated is discussed in chapter 4. The results of empirical tests are reported in chapter 5. It is shown that the differing tax treatment of sell off transactions has resulted in valuation effects and that the tax effect is important. A summary of the research along with the applicable caveats and suggestions for further study are presented in chapter 6 .

LITERATURE REVIEW

Divestitures are an important sub set of corporate control transfer transactions, and appropriately, a substantial portion of this research originates in the merger and acquisition literature. Positive excess returns for divestitures have been documented by a number of researchers. Bourdeaux(1975) examines the market reaction to 165 divestitures occurring between 1965 and 1970. His comparison of the voluntary and involuntary divestitures shows that while voluntary divestitures are accompanied by positive excess returns, involuntary divestitures generate negative returns. Miles and Rosenfeld(1983) analyze the impact of voluntary spin offs on shareholder wealth. Their results indicate that spin offs increase stockholder wealth and are usually preceded by periods of abnormal positive excess returns for the divesting firm. Alexander, Benson and Kampmeyer(1984) find positive but insignificant (0.17%) excess returns for voluntary sell offs. They also observe that in a large number of cases sell offs are announced after a period of generally negative returns. Rosenfeld(1984) compares the effects of sell

offs and spin offs and finds that for firms of comparable financial health, there is no significant difference between realized returns for sell offs or spin offs. Jain(1985) finds that sellers in voluntary sell-offs realize significant positive excess returns of 0.70% and buyers realize significant positive excess returns of 0.34% on the day prior to announcement date. His analysis suggests that firms with accumulated losses are likely to resort to sell offs while firms with good performance are likely to spin off. Jain analyzes the effect of sell offs on the financial ratios of divesting firms and reports significant changes only for the debt/equity ratio which reduces as a result of the divestiture. Klein(1986) observes significant positive returns (1.12%) and finds that disclosure of price information at the divestiture announcement contributes towards generating higher excess returns. The proportion of the firm divested is positively related to the magnitude of excess returns realized by the selling firm. Linn and Rozeff (1986) corroborate the price announcement effect but advance no explanation for the same. They suggest that in efficient markets such an effect should not persist. Hearth and Zaima(1986) analyze the observed prices during the resolution period between the announcement and completion of a divestiture and find that prices are relatively more volatile during this period. They attribute this volatility to the prevailing uncertainty regarding completion and propose that the observed higher returns are positively associated with this variability.

Overall, results of prior empirical studies indicate that divestitures generate excess returns for the divesting firm in the range of 0.17% to 2.33%. The following factors have been found to be significant in explaining these excess returns:

1. information conveyed in the divestiture announcement;
2. financial health of the divesting firm ;

3. percentage of the firm divested ;
4. increased volatility of stock prices during the resolution period.

Several theoretical explanations have been advanced for the observed gains accruing to divesting and acquiring firms. An overview of the theory and the associated empirical evidence is presented below.

Information Generation Hypothesis

Corporate control transfer announcements provide additional information and attract greater attention to the security. This results in reduced information asymmetry and consequently higher valuation for the security. Klein (1986) examines the information content of the divestiture announcements. Her findings suggest that divestiture announcements, particularly when coupled with transaction price information, generate value as this new information is evaluated by the market. She also finds that the magnitude of the announcement day price change is related directly to the size of the divestiture (measured as a % of the divesting firm size).¹

¹ While availability of information seems to affect realized returns, Bradley, Desai and Kim(1986) show that such valuation effects endure in the case of successful transactions only. In the event of an unsuccessful takeover attempt, prices return to prior levels.

Options Pricing Framework

Higgins and Schall(1975) and Galai and Masulis(1976) show that co-insurance effect would lead to an increase in value of the merging firm's debt and a corresponding decrease in the value of equity. Sarig(1985) extends the analysis to show that the divestiture of unrelated lines of business, as in spin offs, should result in an increase in the value of equity. As equity becomes riskier, a wealth transfer from bondholders to shareholders is likely. Empirical studies by Kim and McConnell(1977) and Asquith and Kim (1981) examine the effect of mergers on the bondholders of merging firms and find that bondholders neither gain nor lose from a merger. Dennis and McConnell(1986) support this assertion. They show that when various categories of debt are evaluated separately, while convertible bonds show positive returns, none of the other categories of debt show any adverse effects of such transfers. This seems to rule out a wealth transfer being the source of the observed excess returns for stockholders.

Tax Rationale

A tax motive for the transfer of corporate control is frequently mentioned, but not fully developed [Stiglitz(1972), Scott(1977), Kim(1978)]. The loss of accumulated net operating losses (NOLs) and associated tax benefits in the event of bankruptcy is used extensively as a constraint to generate an interior optimal solution for capital structure equilibrium. Such analysis suggests that the tax rationale operates only in the case of selling firms in financial distress with accumulated NOLs. Accordingly, researchers have attempted to identify transactions that preserve the carryover of accumulated NOLs (e.g. tax-free reorganizations) and test if such transactions, in fact yield higher returns for

divesting firms. Empirical evidence does not support the existence of higher returns for such transactions. [Pastena and Ruland(1986)]

Synergy Theory

This is one of the primary explanations offered for merger gains. The concept can be traced back all the way to the seminal paper by Coase(1937). Synergy has been widely used to explain merger and acquisition activity. Mueller (1969) extends the concept to conglomerate combinations and Chung (1982) applies it to compare the relative desirability of internal investment opportunities with external mergers. The basic rationale put forth for synergy is that mergers result in removal of inefficient management, economies of scale, complementarity of operations, and efficient redeployment of resources. The perceived synergistic benefits from these factors are expected to be reflected in the market as excess returns.

In perfect competitive markets a mere transfer of ownership between buyers and sellers should not generate any gains. The market for corporate control seems to be sufficiently competitive. Ruback (1983) studies competition in acquisition markets and his results indicate that successful offer prices exhaust the potential gains for unsuccessful bidders. Eckbo(1983) finds significant differences between returns for both acquiring and divesting firms from mergers that are challenged and those that go unchallenged by regulatory agencies. Asquith (1983) examines the returns obtained by merging firms during the announcement- resolution period and observes that if unique resources are held by target firms a competitive acquiring market results in most of the gain being

captured by the target firms' stockholders. Asquith asserts that the bidder market is competitive and the source of synergy lies in the replacement of inefficient management of the target firm.

Empirical evidence concerning the combined equity value of target and acquiring firms, while mixed, generally reveals that it significantly increases during a merger. [Asquith and Kim(1982), Malatesta(1983)] Overall, target/ divesting firms record significant positive excess returns around divestiture announcements, and the acquiring firms earn zero or insignificantly positive returns during the same period. A review of the acquisition literature suggests that there is a noticeable difference in magnitude of excess returns reported for studies covering different time periods. Sell offs are reported to be value increasing transactions but the source of such gains remains elusive. The theoretical analysis undertaken in the present research aims at assessing the significance of the tax regulation in explaining such gains.

THEORETICAL FRAMEWORK

Tax Considerations

DeAngelo and Masulis [DM(1980)] recognize the existence of non-debt tax shields. They formulate a model of corporate leverage choice that explicitly treats differential personal taxes (debt vs. equity income), corporate taxes and the presence of non-debt tax shields such as depreciation and investment tax credits. They assume that the utilization of the non-debt tax shields is determined by the level of current period income and the debt level maintained by the firm. Such tax shields are fixed, non-transferable and can either be utilized or allowed to expire. While DM suggest that markets for non-debt tax shields can be included in the analysis [DM(1980) (f.n. 19)], they do not pursue the idea. The frequent advertisements in the *Wall Street Journal*, offering LOSS Corporations for sale present an explicit recognition of the fact that tax benefits are real and transferable assets.

In efficient markets prices reflect all inherent value. Tax shields that are likely to remain unutilized in the absence of sufficient income, are not valued at their full potential by the market. However, the same tax attributes when acquired by a firm that can effectively benefit from their use are appraised at their net present value (NPV). These tax attributes exhibit a peculiar property. Their full value can be realized only through a transfer of ownership. In the hands of original owners their utilization is partial; at the instant of transfer their latent value is activated. The change in value is a function of the reduction in tax liability achieved by sheltering additional taxable income for the buyer.

Examining the role of such reappraisal offers the possibility of rectifying a potentially significant omission in the divestiture (and acquisition) literature by identifying the role of tax effects in explaining excess returns observed in corporate control transactions. The importance of preserving accumulated NOLs in such transactions is widely acknowledged. The option of preserving NOLs by structuring tax-free acquisitions has been recognized in the past and researchers have tried to empirically test for expectedly superior returns for such acquisitions as compared to taxable acquisitions. The existing literature seems to ignore the possibility of profitable taxable acquisitions designed to revalue the asset base and generate increased depreciation and investment tax credits. This may in part be responsible for the inability of some researchers to find tax effects as a significant variable in their analysis of acquisitions [Pastena and Ruland(1986)]. Pursuing this line of inquiry requires some background in the area of tax regulation. The following illustration highlights this tradeoff.

If current period losses can be carried back to previous accounting periods and the firm has excess earnings/capital gains that can be offset by a capital loss sustained on sale of assets, it may be desirable to structure the divestiture as a sale of assets, realize the

accounting loss and reduce the taxes. If tax credits/operating losses can be transferred and utilized by the buyer to reduce taxes, a firm with accumulated tax credits/operating losses may be a desirable acquisition. The deal would more likely be structured as a tax-free transaction, to preserve the tax history of the unit. If regulations permit (e.g., during October 1982 to December 1983) a section 338 election, which permits a purchase of stock (i.e. preserving tax-carryovers) to be treated also as a purchase of assets, generating a stepped up depreciation basis for tax purposes would become a highly desirable alternative. It is rational for transacting corporations to structure all transactions in the most profitable way, as a taxable transaction to allow for a step up of the asset basis to generate large tax shields by way of increased depreciation and investment credits or a tax-free reorganization to preserve the net operating losses and other tax attributes.

Tax benefits available from sell offs are potentially higher for selling firm stock holders as compared to stock holders of firms acquired in their entirety for the following two reasons.

1. In a takeover, property received in distribution by stock holders is treated as ordinary income and taxed accordingly. In a sell off, the compensation is received by the parent corporation. As this corporation continues in existence, the property received is not immediately taxable to shareholders. It is possible for the shareholders to defer payment of taxes by retaining stock of the parent corporation. Alternatively, they can receive any profits as capital gains. As long as capital gains are taxed at a lower rate than ordinary income, this differential is a realizable benefit.²

² The changes in tax laws effective 1986 take away this advantage.

2. Shareholders of a corporation with prior positive earnings can carry back any deemed losses from a sell off to previous tax years and receive a refund of taxes paid in earlier periods. This option improves their returns from the transaction and is not available to the stock holders of a takeover target.

A plausible explanation for the observed significant positive returns for sellers and insignificant returns for buyers in the event of a sell off might be that prior to the instant of the transaction the prevailing uncertainty regarding the value and transferability of these benefits results in a less than full valuation. The excess returns observed for sellers represent the resolution of this uncertainty by the market at the instance of sell off when additional information becomes available. The buyers in a competitive market pay an equilibrium price equal to the realizable gains, which reduces their excess returns to zero. Regulatory treatment of the tax benefits may be important in determining the amount of such gains.

Tax Regulation History

Corporate control transfers have generally been viewed with disfavor by the lawmakers. There have been recurrent proposals for imposition of a 'Merger Tax' and restrictions on transfer of tax benefits have gradually tightened. The first major legislation restricting transfer of tax benefits to acquiring firms was enacted in 1976. Legislators expressed their concern that

“ [A] free traffic in loss carryovers could result in large windfalls for buyers of stock or assets, who could take advantage of the weak bargaining position of the existing owners of a loss business and acquire large carryovers for only a few cents on the dollar.”

[Committee report on P.L.94-455, Pg.31,637 CCH]”

This emphasis on the possibility of ‘trafficking’ in accumulated tax credits/net operating losses prompted the legislature to approve introduction of section 269 of the tax code. This section gives the IRS sweeping powers to nullify any transaction wherein it can be shown that the primary purpose of the transaction is to evade taxes. However, continuing experience in the tax courts shows that such an assertion is difficult to maintain. Conflicting opinions and regulatory problems associated with the implementation of this measure have been encountered. the enforcement of rules formulated under the 1976 law was postponed periodically until 1986. Apparently the senate finance committee did not consider these provisions to have any serious impact on the profitability of acquisition/merger activity as they estimated the revenue effects of postponing their enforcement to be a mere \$5 million per year [1980 Senate Finance Committee hearings .(Federal Tax Coordinator 2d)] which is a trivial fraction of the assessed gains for merging firms reported by researchers.

A liberal approach towards the treatment of tax attributes involved in merger and acquisition activity is evident through 1981, which appears to be the year it reached its peak with the introduction of safe harbor leasing provisions, generous accelerated cost recovery schedules(ACRS) and continuing postponement of restrictive provisions of the 1976 bill. Safe harbor leasing effectively recognized tax attributes as independent marketable assets.

“The committee recognizes that some businesses may not be able to use completely the increased cost recovery allowances and the increased investment credits available for recovery property under ACRS. ACRS will provide the greatest benefit to the economy if ACRS deductions and investment tax credits are more easily distributed throughout the corporate sector. The conferees intend that the amount and timing of the cost recovery allowances in the hands of the lessor will be the same as they would have been in the hands of the lessee. ” [Senate House committee ..(conference proceedings 1981)]”

Introduction of Safe harbor leasing turned depreciation, existing or potential, into a readily marketable asset, avoiding the need for a control transfer to realize its full value. Thus we would expect the excess returns resulting from revaluation of asset base for the firms involved in sell offs to be lower during this period as a relatively costless alternative becomes available.

Safe harbor leasing was abolished in 1982 and consistency rules prohibiting mixing and matching the taxable purchase of high value, low historical basis asset base with tax-free acquisition of the target's stock were introduced under the Tax Reform and Financial Equity Act (TEFRA). In the case of a major price change in the asset base value, it becomes profitable to realize the additional value for tax purposes by incurring the relatively low recapture of depreciation and investment tax credits taken in the past. This allows the firm to step up the asset base and generate substantially larger tax benefits for future by way of depreciation write-offs and/or investment tax credits. TEFRA also repealed as redundant section 334(b) of the regulations governing the restrictions and mandatory waiting periods imposed on partial liquidation of acquired firms, thus allowing acquiring firms to immediately take over existing tax attributes of acquired subsidiaries by liquidating them and at the same time revalue the asset base to generate large

depreciation and investment tax credits. Under partial liquidation it is possible for the acquiring corporations to go through the whole revaluation exercise without incurring any recapture costs at all. This change in regulations, aptly described by the Wall Street Journal as a handing over of the keys to the treasury created a window of opportunity for corporations to realize at virtually no cost the very benefits the legislation was aimed at curbing. Such generous treatment can be expected to result in higher excess returns for the firms involved in these transactions.

The large gains made by the corporations involved in these acquisitions prompted the IRS to try and reverse these transactions. The tax courts refused to turn the clock back and suggested that fresh legislation be enacted to plug this loop hole. The Deficit Reduction Act of 1984 abolished partial liquidation provisions of the law making the consistency rules proposed in 1982 effective. Under these rules a choice has to be made between revaluing the asset base to create additional tax benefits or preserving the accumulated tax losses of the acquired unit. The returns during this period should reflect the effect of imposition of the recapture costs and limiting the benefits to either revaluation or preservation of tax losses.

The year of 1986 saw the belated enforcement of stiff requirements of the 1976 law setting forth conditions for tax free reorganizations necessary to preserve the tax history of the business changing hands. The cycle seems to have been completed. This background should help to facilitate the understanding of factors proposed in the model being developed in the next section.

Conceptual Model Development

In view of the preceding discussion it is suggested that the magnitude of excess returns obtained by divesting and acquiring firms can be explained by examining the taxation provisions that have existed over various periods. It is hypothesized that the observed excess returns in a sell off transaction are a function of value realized by a redeployment of transferable tax attributes (NOLs, Depreciation, Investment tax credits) of the selling firm in the hands of the buying firm. The latent value of these attributes gets realized in the event of a transfer of control in the following manner.

1. Existing depreciation, investment tax credits, and NOLs are revalued at the marginal tax rate of the acquiring firm to the extent they can be utilized by the acquiring firm.
2. If the asset base can be revalued as a result of the transfer, correspondingly larger tax benefits can be realized.
3. Restrictions on transferability of the tax attributes reduce the realizable benefits from the transaction.

Model Specification

A one period partial equilibrium model analyzing the behavior of a selling firm's equity value at the instant of the transfer is developed. The following primary assumptions are made

1. There is no change in operations, financing or investment policies of the unit changing hands and as such the perceived value of the future income stream of the unit remains unchanged as a result of the transfer.
2. The corporate tax rate is a monotonically increasing function of taxable income. While in reality the tax rates are graduated, in the interest of tractability they are modelled as being smooth and continuous.

The change in value of the divesting firm as a result of the control transfer is hypothesised to be a function of the following factors.

- Marginal tax rates for the divesting and acquiring firms.
- Revaluation of the asset base during the transfer to generate additional tax benefits.
- Transferability of the tax attributes between acquiring and divesting firms.
- Costs of effecting the transfer.

Variable Definitions

The variable definitions used in developing the subsequent model are given below.

\tilde{x} = Present value of the earning stream for the unit being divested.

Tc_0 = Effective marginal tax rate for the divesting firm.

Tc_1 = Effective marginal tax rate for the buying firm

α = Regulatory factor determining transferability of existing tax attributes from selling to buying firms.

$$0 \leq \alpha \leq 1$$

α is an inverse function of the extent of tax regulations as well as their rigorous interpretation by the courts during the period.

d_0 = Amount of the asset base related depreciation/tax credits based on historical cost in the divesting firm's books.

d_1 = Amount of the asset base related depreciation/tax credits based on the transfer price in the buying firm's books.

δ_d = Revaluation of asset base related tax shield, during the transfer from divesting to buying firm's books.

$$\delta_d = d_1 - \alpha \times d_0$$

NOL = \$ value of Net operating losses transferred with the unit being sold

$$C = C_t + C_r$$

C is the cost of the transaction, composed of two components C_t and C_r ,

where,

C_t = Costs of transaction, i.e., appraiser, broker, legal fees

C_r = Costs of revaluation of the asset base, i.e., recapture of previously taken depreciation, investment tax credits, taxes payable by the seller on recognition of gains from transfer, if any.

The Conceptual Model

Defining the variables as above, the following relationships can be stated.

V_0 = Market value of the unit being divested prior to the announcement of transfer. The market value comprises the net present value of the earning stream and the appraised value of tax attributes accumulated for the unit.

$$= \bar{x} + \int_0^{Tc_0} (d_0 + NOL)\tau dt \quad (I)$$

V_1 = Market value of the unit being divested at the announcement of transfer. The market value now comprises the net present value of the earning stream which remains unchanged and the reappraised value of the transferable part of the existing tax attributes accumulated for the unit. There is a new factor involved in the valuation, namely the additional asset base related tax benefits created by revaluing the asset base during the transfer.

$$= \bar{x} + \int_0^{Tc_1} \alpha(d_0 + NOL)\tau dt + \int_0^{Tc_1} \delta_d \tau dt \quad (II)$$

Tax laws treat the transfer of debt between the acquiring and divesting firms as an equivalent to cash transfers. The debt is evaluated at its cash equivalent in the hands of the acquiring and divesting firms. The value of debt remaining on the books of the divesting firm may also change as a result of the control transfer. The change in the perceived value of the unit being divested should be reflected in the change in market value of the equity and debt of the divesting firm. Making a simplifying assumption that the change in value of the preexisting debt on the books of the selling and buying firms is negligible³ the entire reappraisal effect should be reflected in the change in the value of the equity of the selling firm.

$$V_1 - V_0 = (E_1 - E_0) \quad (III)$$

Further,

$$E_1 - E_0 = nP_0R_i \quad (IV)$$

n = Number of shares of stock outstanding

P_0 = Price per share of stock before announcement

R_i = Market return per share of stock at announcement

From (III) and (IV)

$$nP_0R_i = V_1 - V_0 \quad (V)$$

substituting for V_1 and V_0 from (I) and (II)

$$nP_0R_i = \int_0^{Tc_1} \delta_d \tau dt + \int_0^{Tc_1} \alpha(d_0 + NOL) \tau dt - \int_0^{Tc_0} (d_0 + NOL) \tau dt \quad (VI)$$

³ Please refer to previous section on application of option pricing theory to corporate divestitures. Prior empirical evidence seems to suggest that market value of debt does not change as a result of control transfers [Kim and McConell(1977), Bradley, Desai and Kim(1983), Asquith and Kim(1982)].

$$- C_t - C_r$$

Partitioning the terms to state the relationships clearly,

$$nP_0R_i = \int_0^{T_{c_1}} \delta_d \tau dt + \int_{T_{c_0}}^{T_{c_1}} \alpha(d_0 + NOL) \tau dt + \int_0^{T_{c_0}} \alpha(d_0 + NOL) \tau dt \quad (VII)$$

$$- \int_0^{T_{c_0}} (d_0 + NOL) \tau dt - C_t - C_r$$

simplifying equation (VII) yields,

$$nP_0R_i = \int_0^{T_{c_1}} \delta_d \tau dt + \int_{T_{c_0}}^{T_{c_1}} \alpha(d_0 + NOL) \tau dt \quad (VIII)$$

$$- (1 - \alpha) \int_0^{T_{c_0}} (d_0 + NOL) \tau dt - C_t - C_r$$

The terms in this equation can be interpreted as follows:

$$\int_0^{T_{c_1}} \delta_d \tau dt$$

represents the additional tax benefits created by revaluation of the asset base. The term can be signed as

$$\frac{\partial \int_0^{T_{c_1}} \delta_d \tau dt}{\partial T_{c_1}} \geq 0, \text{ and ,}$$

$$\frac{\partial \int_0^{T_{c_1}} \delta_d \tau dt}{\partial \delta_d} \geq 0$$

The benefits from revaluation are greater than or equal to zero depending on the extent of revaluation and the effective marginal tax rate for the buying firm.

$$\int_{T_{c_0}}^{T_{c_1}} \alpha(d_0 + NOL) \tau dt$$

represents the change in value of the transferred NOLs and depreciation due to their revaluation at the buyer's tax rate. This term can not be signed unambiguously.

$$\frac{\partial \int_{Tc_0}^{Tc_1} \alpha(d_0 + NOL)\tau d\tau}{\partial Tc_1} \geq 0 \text{ and } \frac{\partial \int_{Tc_0}^{Tc_1} \alpha(d_0 + NOL)\tau d\tau}{\partial Tc_0} \leq 0$$

The change in value is positive if the buyer's marginal tax rate is greater than the seller's marginal tax rate, and can be negative if the buyer's marginal tax rate is lower than the seller's marginal tax rate. The magnitude of the change in value also depends on the degree of transferability of the tax attributes and reaches zero as the transferability of the tax attributes (α) goes from one to zero.

$$\int_{Tc_0}^{Tc_1} \alpha(d_0 + NOL)\tau d\tau \rightarrow 0 \text{ as } \alpha \rightarrow 0$$

$$(1 - \alpha) \int_0^{Tc_0} (d_0 + NOL)\tau d\tau$$

represents the cost imposed by regulatory restraints on the transferability of tax attributes. The increase in transferability of tax attributes reduces these costs and thus increases the value available to the selling firm.

$$(1 - \alpha) \rightarrow 0 \text{ as } \alpha \rightarrow 1$$

In view of the consistency rules becoming operative in 1984, equation (VIII) above modifies to the following two subsets for the subsequent estimation period.

First, if the asset base is not revalued, the carryover of NOLs is not affected. The equation can be rewritten as follows:

$$nP_0R_i = \int_{Tc_0}^{Tc_1} \alpha(d_0 + NOL)\tau d\tau - (1 - \alpha) \int_0^{Tc_0} \alpha(d_0 + NOL)\tau d\tau - C_t \quad (IXa)$$

Second, if the asset base is revalued, NOLs can not be transferred and costs of tax benefit recapture C_r are imposed. The equation then takes the following form:

$$n P_0 R_i = \int_0^{T_{c_1}} \delta_d \tau d\tau + \int_{T_{c_0}}^{T_{c_1}} \alpha(d_0) \tau d\tau - (1 - \alpha) \int_0^{T_{c_0}} \alpha(d_0) \tau d\tau \quad (\text{IXb})$$

$$- C_t - C_r$$

Starting with this specification the following testable hypotheses can be developed.

Testable Hypotheses

Since at a given instant $n P_0$ is a constant the relationships can be stated in terms of R_i . Then the model specified above yields the following hypotheses.

$$\text{H.1 } \frac{\partial R_i}{\partial T_{c_1}} > 0$$

The marginal tax rate of the buying firms is positively related to the observed excess returns for the selling firm.

$$\text{H.2 } \frac{\partial R_i}{\partial T_{c_0}} < 0$$

The marginal tax rate of the selling firms is negatively related to the observed excess returns for the selling firm.

$$\text{H.3 } \frac{\partial R_i}{\partial \alpha} > 0$$

The transferability of the tax attributes is positively related to the observed excess returns for the selling firm.

$$\text{H.4 } \frac{\partial R_i}{\partial \delta_d} > 0$$

The additional tax savings generated by revaluation of the asset base to yield larger depreciation, and/or investment tax credits in the hands of the buying firm are positively related to the observed excess returns for the selling firm.

$$\text{H.5 } \frac{\partial R_i}{\partial C_r} < 0, \text{ and } \frac{\partial R_i}{\partial C_s} < 0$$

The costs of transfer and revaluation of the asset base as defined above, are negatively related to the observed excess returns for the selling firm. In competitive markets for services C_r is expected to be the minimum possible for all transactions. C_s is a function of regulation and is expected to change with changes in regulation.

In addition to these hypotheses the importance of the relative size of the unit involved in the sell off as compared to the size of the selling and the buying firm is also examined.

In the absence of publically available historical financial data for the unit being sold off, the information available for the selling firm must be used. The proportion divested alongwith the value of the transaction is information that the market can use to revalue the remaining firm. The tax benefits acquired by the buying firm can be utilized only to the extent that it has existing tax liabilities that can be reduced by using these benefits. The relative size of the acquiring firm becomes important in determining the likelihood of utilization for the acquired tax benefits. The following chapter describes the methodology used in testing these hypotheses.

EMPIRICAL METHODOLOGY

The present research is directed at examining the effects of changes in tax legislation on returns received by selling firms engaged in corporate sell offs. The empirical study is specifically focused on the following broad areas:

1. the presence of excess returns for sell off events;
2. differences in the magnitude of such returns over periods of contrasting tax regulation; and,
3. the role of the factors hypothesised in the theoretical development above in explaining the magnitude of such excess returns. Briefly, the factors theoretically suggested are:
 1. tax rates for the buying and selling firms;
 2. revaluation of the asset base during transfer; and,

3. the transfer of unutilized NOL's.

In order to avoid loss of validity due to grouping together of disparate elements, we identify homogenous subsets of events and then analyze the excess returns obtained and their functional relationships with the hypothesized variables. The primary classification is done by four types of informational events and three regulatory periods as described below.

Type of event

Finance theory indicates that all current information is impounded in market prices. Thus, market prices should reflect the effect of new information regarding an impending or completed transaction at the instant such information first reaches the market. The event date is, therefore, identified as the date of the first public announcement of the sell off. The announcement of an intention to sell a portion of the company, a news release concerning the completion of the transaction, and the announcement of an agreement to sell generally occur on different dates or in some cases may not occur at all. Thus, the following types of events are possible;

1. initial public announcement of the intention to sell an identified segment of the business, division or line of activity;

2. public announcement of an agreement in principle for the transaction in which case the buyer is identified and the terms of the exchange may be announced (price, tax structure);
3. public announcement of completion of the sale in which case the buyer and terms of the exchange may be announced; and,
4. the date on which the terms of the transaction take effect, as stated in the SEC documents filed by the transacting parties.

Sell offs usually involve more than one announcement. Typically the announcement of an intention to sell or agreement in principle is followed by an announcement of completion of the transaction. In all such cases the first announcement, of the entire chain of events is taken to be the event date. It should be noted that in cases where no public announcement is made the relevant information becomes public knowledge as soon as the SEC documents are filed. (SEC records are open to public.) There are statutory requirements that these documents be filed promptly on completion of the transaction. In cases where no public announcement is made or it is made subsequent to the date the transaction is effective, the event date is defined as the date the transaction becomes effective.

The announcement/effective date of the transaction is taken from the listing in the Mergers and Acquisitions (M&A) database provided by the Automatic Data Processing company. This database contains a listing of all corporate control transactions (i.e. mergers, acquisitions, divestitures and liquidations) valued at \$ 1 million or above. Announcement dates obtained from the M&A database are confirmed initially using the

Wall Street Journal Index (WJI) and the National Newspaper index which currently includes the N Y Times, the L A Times, and the Washington Post. All news items related to individual firms appearing during the year prior to the announcement date listed in the M&A database are studied to ascertain whether any prior mention of the sell off has been made. In the event of such prior mention, the date of its occurrence becomes the event date. In case the announcement date falls on a non-trading day (e.g. during the weekend when the stock market is closed), the first trading day following this date is taken to be the event date. The precise identification of the event date is made by verifying the announcements from the Dow Jones News Wire and the Broadtape transcripts. These services provide the date and time of the announcement, making it possible to verify if an announcement was made after the market's closing; if so, the event date is defined as the next trading day.

To ensure that only the effect of the sell off announcement is being measured, any announcement which contains potentially contaminating information (e.g. earnings/dividends announcements, changes in investment policy) is excluded from the sample. If any such extraneous announcement occurs during the 80 day period (-40 to +40), the sell off event is dropped from the sample. This 80 day period is selected in order to ensure comparability of the results obtained in the present research with the results obtained earlier by other researchers. [Klein(1986), Linn & Rozeff(1985)] The classification proposed above results in the following four sub-groups;

1. public announcement made prior to the completion of the transaction and identifying the buyer;

2. public announcement made prior to the completion of the transaction without identifying the buyer (may or may not be made available subsequently) ;
3. public announcement made only after completion of the transaction, which automatically contain buyer identification; and,
4. a control group of transaction with completion dates listed in the Mergers and Acquisitions database but for which no public announcement could be located for a two year period surrounding the completion date.

Regulatory Environment

In the theoretical model developed in the preceding chapter, α was defined as a variable representing the degree of transferability of tax attributes. That is, the larger α is, the easier it becomes to transfer the tax attributes, which yields a larger value to the selling firm in the event of a divestiture. Although α can not be quantified directly, time periods during which the tax laws and their interpretation differed significantly regarding the transferability of tax attributes can be identified.

The five year time span covered in this study extends from 1981 through 1985. This period was chosen because it contains three clearly identifiable periods during which sell off transactions received distinctly different tax treatments. The regulatory differences between these periods are detailed above in the tax regulation history section. Briefly the three periods are listed below.

1. Period I-1/1/81 to 9/30/82: During this period safe harbor leasing was available as a low cost alternative to sell offs for transferring and/or for revaluing existing asset base related tax shields.
2. Period II-10/1/82 to 12/31/83: At the beginning of this period safe harbor leasing was abolished. Introduction of simplified partial liquidation provisions reduced the costs of asset base revaluation and allowed preservation of the accumulated Net Operating Losses (NOLs) of the unit being sold off.
3. Period III-1/1/84 to 12/31/85: At the beginning of this period partial liquidation provisions were abolished and consistency rules were enforced which required that a choice be made to either preserve the accumulated NOLs or revalue the asset base.

To study the effect of the change in the tax environment on shareholder wealth, the seller sample is divided according to the date of the sell off announcement. The announcements made during the period January 1, 1981 to September 30, 1982 are assigned to Period I, those made between October 1, 1982 and December 31, 1983 are assigned to Period II; and those made between January 1, 1984 and December 31, 1985 fall in Period III.

The three regulatory periods defined above should be important in explaining the difference in excess returns earned by the sellers. During Period I Safe Harbor Leasing mechanism can be used to market existing/ potential asset base related tax attributes without incurring the expenses of a sell off. Returns from sell offs represent only the incremental value acquired by NOLs during the transfer. In Period II partial liquidations offer an opportunity to avoid the costs of tax recaptures while taking advantage of the revaluation of the asset base and related tax attributes. In addition existing/ incremental

NOL related tax attributes are preserved; thus, sell offs now yield both the advantages of the improved utilization of accumulated NOLs as well as existing and potential asset base related tax shields. Period III restricts the available options to making a choice between preserving accumulated NOLs and tax benefits, or revaluing the asset base and generating higher related tax attributes.

These rules limit the gains available from sell offs to the greater of either preserving existing tax attributes and utilizing them at the buyers tax rate or revaluation of the asset base to generate higher depreciation and Investment tax credits. The foregoing description indicates that the highest excess returns should be realized during Period II.

This classification scheme creates twelve non overlapping cells (4 event types X 3 time periods). The importance of the factors identified in the theoretical model development in preceding chapter in explaining excess returns is evaluated across the three time periods in the aggregate and then further analysed within each announcement type for the three time periods to verify that the observed effects are valid. The specific factors are listed below:

1. Tax rates for the buying and selling firms
2. Revaluation of the asset base during the transfer
3. Transfer of unutilized NOLs
4. Divested unit as a proportion of the divesting firm.

5. Divested unit as a proportion of acquiring firm.
6. Announcement of the price received for the divestiture

Klein(1986) reports that the proportion of the divesting firm sold in a divestiture is important in explaining the returns received by the selling firm. She suggests that a larger divestiture reveals more information about the worth of the firm and reports that a positive relationship exists between the size of the divestiture and the magnitude of the excess returns realized by the selling firm. The size of the divested unit as a proportion of the acquiring firm bought may be material in explaining the returns received by the selling firm since it would effect the extent to which the acquired tax attributes can shelter the buying firm's taxable income. The larger the reduction in the buyer's taxable income , the larger the savings in taxes. Maximum savings in taxes occur at or near the marginal tax rate of the buyer. The hypothesized signs therefore for the proportion sold by the seller is positive, and for the proportion bought is negative.

Previous studies [Klein(1986), Linn & Rozeff(1985)] indicate that the release of price information is associated with higher returns for selling firms. If releasing such information is value increasing behavior, in the absence of any related costs of providing such information, over time an increasing proportion of firms would release such information. A comparison of the proportion of firms including the price information in the transaction announcement for the three periods is made by assessing the significance of a simple χ^2 statistic formulated as follows

$$\chi^2 = \frac{(AN_1 - 1/2)^2}{(1/2)} + \frac{(AN_2 - 1/2)^2}{(1/2)} + \frac{(AN_3 - 1/2)^2}{(1/2)}$$

where; AN_t = Number of announcements incorporating price information in period t.

In a random sample and in the absence of any valuation effect, price information is as likely to be revealed as it is likely to be withheld. If the release of price information is a value increasing activity then a significantly higher proportion than half of the divesting firms should release such information. This χ^2 statistic measures if there is a significant difference between the proportion of firms reporting price information and the random level of half the sample being analyzed. The next step is to determine if there is any difference in the means of event day excess returns for selling firms providing price information or withholding such information. The Wilcoxon rank sum test is used to compare the returns for these two groups for the aggregate sample as well as for the subsets defined above.

Excess Return Analysis

Excess returns for the selling firms are estimated for each security from the following model:

$$ar_{it} = r_{it} - ER_{it} \quad (1)$$

where,

ar_{it} = the excess return for security i in period t

r_{it} = the observed return for security i in period t

ER_{it} = the expected return for security i in period t

The expected return generating process is assumed to be the following:

$$ER_{it} = a_i + b_i(r_{mt}) \quad (2)$$

where a_i and b_i are estimated regression coefficients obtained by regressing the returns on security i in period t , r_{it} , against the return on a market portfolio in period t , r_{mt} . Excess returns are obtained directly from the CRSP Excess Return File which uses the Scholes and Williams method [1977] of adjusting for nonsynchronous trading. Specifically, ER_{it} is estimated by grouping annually all securities listed on the NYSE and the AMEX into ten equal control portfolios ranked according to their Scholes and Williams [1977] beta estimates from the prior year. Each security is thus assigned to one of the ten portfolios. The observed return for the control portfolio to which security i is assigned is then used as the estimate of ER_{it} . The excess return, ar_{it} , is then calculated according to (1). For each portfolio of securities, the average excess return, denoted AR_{it} , is estimated for each day over the period of interest surrounding the event date ($t = 0$). The average excess returns are estimated for each value of t from -40 to +40 days around the event date according to the following equation:

$$AR_{it} = \frac{\sum_{i=1}^n ar_{it}}{n} \quad (3)$$

(for $i = 1$ to n securities).

The AR , is calculated for each of the twelve subsets defined above and preliminary analysis is carried out to establish the statistical significance of the observed excess returns received by the selling firms. When the existence of significant excess returns is established in some or all of the cases detailed above, the magnitude of such observed excess returns is compared among different pairs of cases to check for statistically significant differences.

The parametric test statistics used for such analyses require the observations to be independent and normally distributed. The entire sample excess returns as well as the subsets formed as described above are subjected to a Kolmogorov-Smirnoff test to verify the normality of the distribution for sets where the sample size is greater than fifty one. In case of smaller sample sizes the Shapiro- Wilk statistic, w , is calculated and compared with the range of critical values. Small values of the w statistic lead to rejection of the null hypothesis of normality. Verification of normality⁴ allows us to use the standard t statistics for assessing whether the observed excess returns are significantly different from zero. Once normality is verified, the excess returns are examined for the presence of autocorrelation using a time series analysis for lags from 1 to 10 days.⁵

Hearth and Zaima report that there is an increase in variance during the sell off event period. Such a shift may generate heteroscedasticity in the sample. The crosssectional variances of daily excess returns for the event period (-40, +40) are compared with the event day crosssectional variance using a standard F test to determine if

⁴ If the distribution is found to be non-normal and cannot be approximated by a normal distribution, it is advisable to use non parametric tests such as Wilcoxon rank sum test.

⁵ Prior evidence on independence of residuals is conflicting, Klein found them to be independent, Linn & Rozeff found 1st order autocorrelation

heteroscedasticity is present. If normality of the distribution is not supported, a non parametric sign test is used to test for the presence of heteroscedasticity.

In the presence of a normal distribution and in the absence of autocorrelation and heteroscedasticity a standard t-test can be used to test the statistical significance of the AR_t 's:

$$T_t = AR_t / \text{standard error of } AR_t$$

In the presence of heteroscedasticity, autocorrelation or if the distribution is not found to be normal, non parametric tests (e.g. Wilcoxon rank sum test) can be used to test for significance. Relative to parametric statistics, the non parametric tests are more powerful and yield robust results in cases of departures of the distributions from normality and homoscedasticity. The only requirement is that the observations are independent.

The next step after establishing the significance of excess returns for the subset classifications is to determine if the differences between the excess returns observed for the different subsets are statistically significant. The parametric tests for such comparisons are dependent upon the aforementioned requirements of normal, independent and homoscedastic distributions. In addition t tests of differences between means lose their sensitivity as the sample sizes for the groups being compared become much larger or smaller in comparison to each other. In view of the fact that some of the subsets formed for our analysis are much larger than others and in some very small subsets the returns may not be normally distributed a non parametric test, the Wilcoxon rank sum test, is used to compare means for different pairs of observation sub-samples to determine if the groups belong to different populations. For multiple sub-sample comparisons the

Kruskal-Wallis test is used to determine if the null hypothesis of equal means can be rejected.

The comparisons using the Kruskal-Wallis test are made for ;

1. Sub groups by event types (4 types)
2. Sub groups by time periods (3 periods)

Further the mean event day excess returns are compared for the following pairs using the Wilcoxon rank sum test ;

1. For each time period (3 pairs)
2. For each event type (6 pairs)
3. For each type among different periods (4 X 3) 12 pairs.
4. For each period among different types (3 X 6) 18 pairs.

The tests 3 and 4 above allow us to determine if significant differences exist between the subsets defined above and if such differences for the two factors (time period and event type) are independent of each other.

The effect of the sell off announcement on shareholder wealth for a given time period beginning at K and extending through L is examined using cumulative average residuals (CAR's). The CAR over the period K to L (-40 to +40) and sub periods within this period is defined as follows:

$$CAR_{K,L} = \sum_{t=K}^L AR_t \quad (4)$$

$$(L = -40, -39, \dots, +39, +40)$$

The following t-test⁶ is used to test for the significance of the CAR's. Tests of significance for the CAR's observed for the event subsets are also performed to determine if the observed magnitudes are statistically significant.

$$t_{CAR} = CAR_T / (\text{Var}(AR_t))_T^{1/2}$$

where T is the number of days from K to L.

The CARs are formed for the three non-overlapping series to determine if there is a difference in the market's reaction to the announcement between pre announcement, announcement and post announcement periods. The presence of significant CAR's for the pre announcement period may indicate the possibility of information leakages in the market. There may be some information available to the market prior to the public announcement/ SEC filing reflecting a high likelihood of the sell off occurring and its ex-

⁶ This t-test assumes that the excess returns are uncorrelated over time. The use of the Scholes-Williams method [1977] of adjusting for nonsynchronous trading should result in excess returns which approximately satisfy this assumption. Asquith and Mullins [1986] provide evidence that this is in fact the case for their sample of 531 stock offerings.

pected impact on stock value. Significant CAR's during the event period would indicate that the transaction is perceived to be value changing. The behavior of CAR's in the post announcement period would indicate if the value change is perceived to be of an enduring nature and whether any reassessment occurs after more information regarding the transaction is available to the market.

Explanatory Relationships

The central issue being examined in this study is the role of taxes in explaining any difference in the magnitude of excess returns realized by firms engaging in sell offs. The non-parametric tests discussed in the preceding section will shed some light on the importance of the tax environment, α , in explaining excess returns. The next issue to be explored is the importance of the specific tax factors hypothesized in the theoretical discussion above in determining the excess returns, specifically

1. marginal tax rates of the buying and selling firms;
2. transfer of NOLs from seller to buyer; and
3. revaluation of the asset base during the transfer to generate larger tax benefits.

A subset of sell off transactions containing enough information is identified to analyze the contributions of these variables towards explaining the observed excess returns. The following constraints are used to qualify the transactions for inclusion in the analysis.

1. The selling and buying firms are listed on the compustat tapes for verification of balance sheet data.
2. Selling firm is listed on CRSP excess returns tape for at least one year prior to the sell off.
3. The buyer and seller are involved in only one sell off during the balance sheet period so that the restated figures reflect the effect of only one transaction for which the corresponding event day excess return is available from the CRSP excess returns tape.

Utilizing this subset of transactions the following regression is formed and evaluated for the total 5 year period and for each of the identified tax periods.

$$R_i = \beta_0 + \beta_1 Tc_1 + \beta_2 Tc_0 + \beta_3 NOL + \beta_4 \delta_d$$

where;

R_i is the event day excess return.

Tc_1 = The buying firm's marginal tax rate.

Tc_0 = the selling firm's marginal tax rate.

NOL = NOLs transferred from the seller to the buyer.

δ_a = the revaluation of asset base as a result of the transfer from seller to buyer's books,(from restated figures due to acquisitions/divestitures in compustat tapes).

In general, it is expected that ;

$$\beta_1 \geq 0 ,$$

$$\beta_2 \leq 0 ,$$

$$\beta_3 \geq 0 ,$$

$$\beta_4 \geq 0 ,$$

The coefficients are evaluated for the aggregate sample and for the three sub periods to see if any structural shifts occur.

Previously it has been shown, Klein(86), that the proportion of the selling firm divested in a sell off is important in explaining the magnitude of excess returns. The present study hypothesizes that the proportional size of the asset base acquired by the buying firm should be important in explaining the returns. To solely examine the importance of the size of the divestiture in determining the magnitude of excess returns to the seller, the following regression is formed;

$$R_i = \beta_0 + \beta_1 \delta A_s + \beta_2 \delta A_b$$

where ;

δA_s is the proportion of gross value of asset base divested by seller, and, δA_b is the proportion of gross value of asset base acquired by the buyer. It is expected that

$\beta_1 \geq 0$ and

$\beta_2 \leq 0$

Next, the two terms, δA_s and δA_b , are added to the regression model with the theoretically hypothesized tax factors to yield the following augmented model;

$$R_i = \beta_0 + \beta_1 Tc_1 + \beta_2 Tc_0 + \beta_3 NOL + \beta_4 \delta_d + \beta_5 \delta A_s + \beta_6 \delta A_b$$

where the variables are as defined earlier.

An F test is then used to test if the predictive ability of the regression model improves significantly by the addition of these variables. The values of R^2 and the coefficients of this augmented model are also examined for any changes. The augmented regression is initially run for the aggregate sample and then separately for the three sub periods to examine the interaction of the explanatory factors with the three tax periods and to see if the significance of these factors changes between periods.

The hypothesized explanatory variables are examined and compared for the three periods to verify if any structural shifts have occurred. Specifically, the mean, median and standard deviation for the hypothesized variables, Tc_1 , Tc_0 , NOL, δ_d , δA_s , δA_b are calculated. Then a Kruskal-Wallis test is performed for each of the variables across the three periods to identify any changes in the composition of the factors involved in the sell off transactions. Similarly the distribution of the asset base size and the value of the divestiture are examined to ensure that the populations being compared are subsets of

the same distribution and to confirm that the magnitude of the coefficients has indeed changed with the periods.

The sample of transactions included in the analysis are reported in the next section.

Sample Description

The sample being analyzed contains a subset of all sell offs completed during the period January 1, 1981 and December 31, 1985 as evidenced by filing of 8-K reports with the Securities and Exchange Commission (SEC) and meeting data sufficiency requirements. The sample is limited to completed transactions as prior literature indicates that enduring valuation effects are observed only in the case of completed corporate control transfers. These transactions are identified from the Mergers and Acquisitions database maintained by the Automatic Data Processing Company. This database contains all corporate control transfers (Mergers, acquisitions and divestitures) valued at one million dollars or higher. A total of 578 completed sell offs are listed in this database for the period of analysis, January 1, 1981 to December 31, 1985. Dow Jones News wire and Broadtape transcripts are used in addition to the Wall Street Journal Index and the National Newspaper Index to precisely identify the date and time of the first public announcement for the transaction. These sources are initially searched for a period of one year preceding the completion date of the sell off as listed in the database. Once an announcement is located the search is made for one year preceding this announcement date to verify that no prior mention of the sell off occurred. The date of the earliest announcement is taken to be the event date. In case an announcement is made after the

market's closing time the next trading day is defined as the event date. Public announcements could be located for 542 of the sell offs listed in the M&A database. The following criteria are used to qualify the transactions for inclusion in the sample.

1. The sell off must be voluntary and not made to comply with regulatory directives. This condition eliminates 19 sell offs from the sample.
2. The selling firm must be a preexisting publicly traded entity listed on the CRSP tapes for a period of at least one year before the sell off announcement date. This condition is necessary to allow use of the excess returns data for the firm. This qualification eliminates 73 sell offs from the sample.
3. The sell off must pertain to a single identifiable unit or business segment of the selling firm. Grouped divestiture announcements involving combinations of businesses or units are excluded from the sample. Such announcements involve multiple price shocks and are likely to affect significance of the results. This condition eliminates 46 sell offs, the two major firms involved in these cases are Beatrice Corporation with 6 announcements involving 17 businesses and Gulf Corporation with 4 announcements involving 15 units. Both of these firms were undergoing major restructuring during this period.
4. The sell off announcement should not contain any other information with potential valuation impact, e.g. dividends, annual results, changes in investment policy etc. to avoid any contamination. This condition eliminates 19 sell offs from the sample.

5. The selling firm should not be involved in another corporate control transfer (Merger, acquisition or divestiture) within 40 days (-20 to + 20) of the sell off event being analyzed so that the effect of the sell off announcement can be isolated and studied. This condition eliminates 11 sell offs from the sample.
6. The sell off should not be a part of liquidation or bankruptcy proceedings. This condition eliminates 6 sell offs from the sample.

The sample thus contains 404 sell offs, of which public announcements can be located for 368 case. The subset of completed sell offs for which no public announcement can be located is treated as the comparison standard against which the announcement day effect for the sell offs is evaluated. The sell off announcements are classified by the type of announcement depending on the timing and amount of information provided as well as the regulatory period during which the announcement is made. Four such types of announcement events were previously identified. The sample size for each is given as follows;

1. Public announcement made prior to the completion of the transaction and identifying the buyer are assigned to announcement type 1. There are 281 such transactions in the sample.
2. Public announcement made prior to the completion of the transaction without identifying the buyer (may or may not be identified subsequently) are assigned to announcement type 2. 69 such sell offs are included in this sample.

3. Public announcement made only after completion of the transaction, which automatically contain buyer identification are assigned an announcement type of 3. Further, the event date used for these announcements is the date on which 8-K reports are filed with SEC. There are 18 such sell offs in the sample.
4. A control group of completion dates listed in the Mergers and Acquisitions database for which no public announcement could be located for a two year period surrounding the completion date is used for comparison purposes and is assigned the announcement type of 0. There are 36 sell offs which fall in this group.

Previously three time periods were identified, during which the tax environment changed significantly. The number of sell offs occurring in each period is given below.

1. 105 announcements made during the period (1/1/81 to 9/30/82) are assigned to announcement period 1. During this period safe harbor leasing is available as a low cost alternative to sell offs for transferring and/or for revaluing existing asset base related tax shields.
2. 95 announcements made during the period (10/1/82 to 12/31/83) are assigned to announcement period 2. At the beginning of this period safe harbor leasing was abolished. Introduction of simplified partial liquidation provisions reduced the costs of asset base revaluation and allowed preservation of the accumulated Net Operating Losses (NOLs) of the unit being sold off.
3. 168 announcements made during the period (1/1/84 to 12/31/85) are assigned to announcement period 3. At the beginning of this period partial liquidation pro-

visions were abolished and consistency rules were enforced which required that a choice be made to either preserve the accumulated NOLs or revalue the asset base.

Variable Description

The following variables are used to evaluate the relationships hypothesized in the theoretical model.

1. Net Operating Losses (NOLs) are the unutilized NOLs available to the selling firm at the end of the year preceding the year of the sell off. The level of these NOLs is standardized by dividing the absolute value of the NOLs by the equity value of the selling firm.
2. Revaluation is the difference between the value of the assets sold listed as discontinued operations in the selling firm's balance sheet and the value of the same assets listed as acquired assets in the buying firm's balance sheet for the year in which the transfer takes place. This difference is also standardized by dividing it with the selling firm's equity value.
3. The buyer's and seller's tax rates are as listed on the Compustat tape for the year of the sell off.

Empirical Analysis

Empirical results and interpretation

A preliminary finding of this study is that in general sell offs generate excess returns for the selling firms. The event day excess return for the entire sample over the 1981-1985 time span is 1.0576 % and highly significant ($t = 6.71$). As Table 1 reveals this result is in conformity with previous research. The magnitude and significance levels are both found to be comparable to previously reported results.

The distribution of observed event day excess returns is checked for any departure from assumptions of normality, homoscedasticity and the absence of correlation between the daily excess returns for the period leading up to and following the event date. The results indicate that the event day excess returns are normally distributed for the entire sample as well as for the three classifications of periods and four event type subsets. The daily average excess returns for the leading and trailing periods are also free from serial cor-

relation. The CAR's for the leading period (-20 to -1) are positive at 0.1295% and insignificant ($t=0.2605$) indicating the absence of information leakages. Similarly, the CAR's for the trailing period (+1 to +20) are negative at -0.5479% and insignificant ($t=-0.7727$). These results in combination with the event day excess returns indicate that there is an enduring increase in value as a result of the sell off transaction and a significant price reaction occurs on the event date.

Tax Environment Comparison

Table 2 reports the results of segmenting the sample for each of the three subperiods defined according to the differing tax treatments of the sell off transactions. Specifically, the event day excess returns realized for sell off announcements are positive and significant for all three sub periods as expected. Further, there are significant differences between the level of realized excess returns for the three regulatory periods and the magnitudes of the event day excess returns are as hypothesized. That is, the event day excess returns are the highest during the second period at 1.5404% ($t=5.73$), followed by the third period excess returns of 1.1454% ($t=4.53$) and the first period excess returns of 0.4803% ($t=1.72$) are the smallest as hypothesized. The null hypothesis of no difference between the observed event day excess returns across the three time periods is rejected at better than a .01 level of significance using a Kruskal-Wallis test (chi-square approximation).

Pairwise comparisons are made using the Wilcoxin Rank Sum test to assess the significance of the observed differences among periods. The results are reported in table 3. For the second period, during which the tax treatment of sell off transactions is most favorable, the event day excess returns are significantly higher than those for each of the

other two periods. The excess returns observed for the third period are higher than for the first period but the significance level for the difference is low. The results reflect the extremely favorable effect of the freedom from regulatory costs enjoyed by the firms during the second period. While the firms are free to select the option that maximizes their gains during the third period, the loss of one of the two components(NOLs/ Re-valuation) and imposition of regulatory costs result in excess returns being lower than those in the second period. The regulatory period effect is thus shown to be significant. That is $\alpha_2 > \alpha_1$ and $\alpha_2 > \alpha_3$.

Announcement Type Comparison

The effect of timing and content of the announcement is analyzed next to determine if there is a significant announcement effect. The announcements are classified as types 0 through 3 as described in the methodology chapter. A significant announcement effect can be observed in Table 4. Announcements made prior to the sell off event in which the buyer is identified result in event day excess returns of 1.1791% ($t=6.14$); and the announcements made prior to the event but not identifying the buyer earn 0.5959% ($t=2.76$) excess returns on the announcement date. Interestingly enough, sell offs for which public announcements are made after the SEC statement filing earn positive but barely significant excess returns of 0.9305% ($t=1.11$) on the day of such filing. In contrast, excess returns for cases where no announcement is made at all are negative and insignificant at -0.1932% ($t=-0.60$).

When the returns for the different announcement types are compared using a Kruskal-Wallis test, the null hypothesis of no difference between excess returns observed for the four types is rejected at better than a 0.025 level of significance. The sub sample of excess

returns for cases where announcements are made , (announcement types 1 through 3) however does not show a significant difference for the group as a whole indicating that any kind of announcement is better than no announcement at all.

To compare the effect of information contained in the announcement and to test the informational efficiency of the market, a comparison is made between excess returns obtained for the announcements with and without an identified buyer and cases where 8-K statements are filed before a public announcement is made. That is, cases where no announcements are found (type 0) are eliminated from the sample and the Kruskal-Wallis test is run again. The test results show that the observed differences in event day excess returns for the three remaining announcement types are insignificant. This supports informational efficiency of the market since even in the absence of a public announcement the information contained in the 8-K reports is immediately evaluated by the market. The Kruskal-Wallis test yields a χ^2 statistic of 2.82, ($P > \chi^2 = 0.2439$). Significance of buyer information contained in the prior announcement is examined using a Wilcoxon rank sum test. There seems to be considerable significance attached to this information as the difference between excess returns realized by the firms providing or withholding this information is significant at the 0.1066 level.(table 5)

Importance of Revealing Price Information

Prior research [Klein (1986) , Linn and Rozeff (1985)] reports that providing price information at the time of the announcement results in higher returns for the selling firm. Price information may be provided either as a dollar amount or by providing the terms of the transaction, for example, the number of shares of stock transferred to the sellers

or debt taken over by the buyers. While Linn and Rozeff (85) observe higher returns being earned by firms providing price information, they point out that such differences cannot be explained. An analysis of the event day excess returns for the present sample reveals that they are positive and significant for the sell off announcements in which price information is provided and those in which it is withheld. A Wilcoxon Rank Sum Test is used to test for the existence of any significant difference between event day excess returns earned by firms providing or withholding price information. The results presented in table 6 below indicate that there is no valuation impact of the price information. A comparison of event day excess returns for the two groups segmented by the three time periods also does not indicate that additional returns are earned by firms providing price information over the firms withholding such information. In the absence of a valuation effect price information is as likely to be withheld as it is to be provided. The χ^2 statistic of 0.2170 (with 5 degrees of freedom) testing whether the proportion of firms providing price information is different from the expected level of 0.5, which should exist in a random sample is insignificant. This suggests that the firms announcing sell off transactions are as likely to report the price information as they are to withhold it. In the presence of a valuation effect for price disclosure, such action would be irrational.

Table 1. Results of prior studies of sell offs -a comparison

Study	Sample Size	Returns (day 0)	T
Alexander, Benson & Kampmeyer	53	+0.17	0.68
Jain	1107	+0.70	4.04
Linn & Rozeff	77	+1.45	5.35
Klein	279	+1.12	*** Z = 1.71
Rosenfeld	62	+2.33	4.60
This study	368	+1.05	6.71

Table 2. Comparison of Event Day Excess Returns for Announcement Periods

ANNOUNCEMENT PERIOD	N	MEAN	STANDARD DEVIATION	T	PR > T
Total Sample	368	0.010576	0.030226	6.71	0.0001
Period 1	105	0.004803	0.028675	1.72	0.0891
Period 2	95	0.015404	0.026207	5.73	0.0001
Period 3	168	0.011454	0.032774	4.53	0.0001

Null hypothesis of equal returns for three periods is rejected.

KRUSKAL-WALLIS TEST (CHI-SQUARE APPROXIMATION)
CHISQ= 10.35 DF= 2 PROB > CHISQ=0.0056

Table 3. Pairwise Comparison of Event Day Excess Returns for Announcement

Periods ANNOUNCEMENT PERIOD	N	MEAN	STANDARD DEVIATION	T	PR > T
TOTAL SAMPLE	368	0.010576	0.030226	6.71	0.0001
PERIOD 1	105	0.004803	0.028675	1.72	0.0891
PERIOD 2	95	0.015404	0.026207	5.73	0.0001
PERIOD 3	168	0.011454	0.032774	4.53	0.0001

Null hypothesis of equal returns for period 1 and period 2 is rejected.

WILCOXON 2-SAMPLE TEST (NORMAL APPROXIMATION)
(WITH CONTINUITY CORRECTION OF .5)
S=11621.50 Z= 2.9725 PROB > |Z|=0.0030

T-TEST APPROX. SIGNIFICANCE = 0.0030

Null hypothesis of equal returns for period 2 and period 3 is rejected.

WILCOXON 2-SAMPLE TEST (NORMAL APPROXIMATION)
(WITH CONTINUITY CORRECTION OF .5)
S=16787.50 Z= 2.6156 PROB > |Z|=0.0089

T-TEST APPROX. SIGNIFICANCE = 0.0094

Null hypothesis of equal returns for period 1 and period 3 is not rejected.

WILCOXON 2-SAMPLE TEST (NORMAL APPROXIMATION)
(WITH CONTINUITY CORRECTION OF .5)
S=15415.50 Z= -1.0256 PROB > |Z|=0.3051

T-TEST APPROX. SIGNIFICANCE = 0.3059

Table 4. Event day Excess Returns for Announcement Types

ANNOUNCEMENT TYPE	N	MEAN	STANDARD DEVIATION	T	PR > T
0	36	-0.001932	0.016430	-0.71	0.4851
1	281	0.011791	0.032187	6.14	0.0001
2	69	0.005959	0.017915	2.76	0.0074
3	18	0.009305	0.035534	1.11	0.2820

Null hypothesis of equal returns for all groups (0-3) rejected.

KRUSKAL-WALLIS TEST (CHI-SQUARE APPROXIMATION)
 CHISQ= 9.44 DF= 3 PROB > CHISQ=0.0240

Null hypothesis of equal returns for all announcement types(1-3) is not rejected.

KRUSKAL-WALLIS TEST (CHI-SQUARE APPROXIMATION)
 CHISQ= 2.82 DF= 2 PROB > CHISQ=0.2439

Null hypothesis of equal returns for announcement types 1 and 3 is not rejected

WILCOXON 2-SAMPLE TEST (NORMAL APPROXIMATION)

(WITH CONTINUITY CORRECTION OF .5)

S= 2486.50 Z= -0.5990 PROB > |Z| = 0.5492

T-TEST APPROX. SIGNIFICANCE = 0.5496

**Table 5. Comparison of Event Day Excess Returns for Announcement Types
(Buyer Identification)**

ANNOUNCEMENT TYPE	N	MEAN	STANDARD DEVIATION	T	PR > T
No Announcement (0)	36	-0.001932	0.016430	-0.71	0.4851
Prior Announcement (1) Buyer Identified	281	0.011791	0.032187	6.14	0.0001
Prior Announcement (2) Buyer Not Identified	69	0.005959	0.017915	2.76	0.0074
Announcement After (3) Effective Date	18	0.009305	0.035534	1.11	0.2820

Null hypothesis of equal returns for announcement type 1 and type 2
can be rejected at .10 level

WILCOXON 2-SAMPLE TEST (NORMAL APPROXIMATION)
(WITH CONTINUITY CORRECTION OF .5)

S = 10894.00 Z = -1.6135 PROB > |Z| = 0.1066

T-TEST APPROX. SIGNIFICANCE = 0.1075

Table 6. Comparison of Event Day Excess Returns for Price Disclosure

ANNOUNCEMENT TYPE	N	MEAN	STANDARD DEVIATION	T PR > T
Price Disclosed	242	0.009158	0.031416	4.53 0.0001
Price Withheld	126	0.013301	0.027714	5.39 0.0001

Null hypothesis of equal returns for announcements providing or withholding price information can not be rejected.

WILCOXON 2-SAMPLE TEST (NORMAL APPROXIMATION)
(WITH CONTINUITY CORRECTION OF .5)
S = 15672.50 Z = -1.0266 PROB > |Z| = 0.3476

T-TEST APPROX. SIGNIFICANCE = 0.3489

Explanatory Relationships

The central issue being examined in this study is whether the tax environment is significant in explaining any differences in the magnitude of excess returns realized by the firms engaging in sell offs. Before proceeding further with this analysis it is necessary to confirm that the comparisons for transactions assigned to different time periods are in fact being made between similar cases. Kruskal-Wallis test is performed to compare the asset base size of the firms participating in sell offs. A Kruskal-Wallis test fails to find any significant difference between the size of the firms among different periods. Similarly the transactions for which prices are available are compared for transaction size across different periods and again no significant difference in size of the sell offs occurring during the three periods can be found. This adds to the validity of the findings of this study. Similar comparisons are made for the explanatory variables Tc_1 , Tc_0 , NOL , δ_a , δA_s , δA_b for the three periods to verify if any structural shifts have occurred in the content of these transactions. The results indicate that there are differences in the levels of the hypothesized variables across the three time periods.

The following tests are designed to explore if the origin of the observed event day excess returns can be explained by relating them to the factors hypothesised earlier, specifically,

1. Marginal tax rates of the buying and selling firms.
2. Transfer of NOLs from seller to buyer.
3. Revaluation of the asset base during the transfer to generate larger tax benefits.

A subset of the sell off transactions, meeting the following conditions is identified for the purpose of carrying out this analysis.

1. The selling and buying firms are listed on the Compustat tapes for verification of balance sheet data.
2. The seller is listed on the CRSP excess returns tape.
3. The buyer and seller are involved in only one sell off during the balance sheet period so that the restated figures reflect the effect of only one transaction for which the corresponding event day excess return is available from the CRSP daily excess returns tape.

The subset meeting these conditions is identified. There are 139 such pairs of sellers and buyers that are available for further analysis. Utilizing this subset of transactions the following regression is formed and evaluated:

$$R_i = \beta_0 + \beta_1 Tc_1 + \beta_2 Tc_0 + \beta_3 NOL + \beta_4 \delta_d$$

where;

R_i is the event day excess return for the i th transaction.

Tc_1 = The buying firm's marginal tax rate.

Tc_0 = the selling firm's marginal tax rate.

NOL = NOLs transferred from the seller to the buyer.

δ_d = the revaluation of asset base as a result of the transfer from seller to buyer's books, (from restated figures due to acquisitions/divestitures in Compustat)

Analysing this sample for the 1981-1985 timespan yields very low R^2 of 0.0456 and F value of 1.315. The coefficients for the complete sample have the hypothesized signs for net operating losses (NOL), revaluation (Revalue), buyer's tax rate (Btrate) and seller's tax rate (Strate) as revealed in table 9. Only the coefficient for the buyer's tax rate, however, is close to being significant. This indicates that a sell off to a buyer with a higher marginal tax rate is likely to yield higher excess returns for the seller since the transferred tax attributes can reduce the buyer's tax liability.

The regression coefficients are next evaluated for the set of hypothesized variables during each of the three tax periods. The tax periods identified above offer a stable and distinct tax environment for analysis of its effects on returns to selling stockholders. It is observed that the importance of the variables changes according to the tax environment. The results of the comparison are presented in table 10. The shifts in relative importance of the variables in explaining the excess returns during the three periods are noticeable.

During the first period the regression yields F value at 2.821 ($P > |F| = 0.0485$) and a R^2 of 0.3291. A comparison of these values with the original levels of 1.315 and 0.0456 for F value and R^2 observed for the aggregate period suggests an improved fit for the model. The positive and significant coefficient ($t = 3.196$, $P > |t| = 0.0040$) for the NOLs indicates that firms having a higher proportion of NOLs involved in the transaction benefited more from the sell off during this period as compared to firms with lower levels of NOLs involved in the sell off transactions. The coefficients on revaluation, the buyer's tax rate and the seller's tax rate are insignificant, suggesting that the level of these variables is not material in explaining the event day excess returns during this tax period. This is in line with the explanation advanced in the theory section

above. That is, in the presence of 'Safe Harbor' leasing provisions, only NOLs acquire additional value in the event of a sell off.

During the second period the F value is 1.004 ($P > |F| = 0.4268$) and the R^2 is only 0.1543. Revaluation is the only significant factor ($t = 1.97, P > |t| = 0.0614$) in explaining the excess returns realized by the selling firm stockholders. This indicates that firms with assets that could generate substantial tax benefits by transfer benefited more from sell offs. This provides support for the hypothesis being advanced that the higher benefits realizable by the seller by utilizing the tax benefits transferred from the seller result in improved returns for the selling stockholders. The low F value and R^2 may be attributed to a misspecified model resulting from an omitted variable. Specifically, acquiring firms exercising the partial liquidation option may virtually eliminate the tax benefit recapture costs on revaluation of asset base. This reduction in costs may account for the sudden spurt in excess returns generated by sell offs, data on the tax benefit recaptures are not readily available and are therefore excluded from this study.

The elimination of partial liquidation provisions for the third period results in reimposition of tax benefit recapture costs for revaluation of assets. The model performs better during this period yielding an improved F value of 4.659 ($P > |F| = 0.0026$) and an R^2 of 0.2531. The results obtained in this study show that the buyer's tax rate is statistically significant ($t = 4.014, P > |t| = 0.0002$). The insignificant coefficients for NOLs and revaluation should not be surprising since they become equally available during the third period. Since, only one of the benefits can be utilized, however, the firms involved in the transaction would logically select the most profitable option. This should result in the relative level of revaluation or available NOLs becoming immaterial.

Klein(1986) has previously shown that the proportion of the selling firm divested in a sell off is important in explaining the magnitude of excess returns to the seller. In the present study the size of the unit being transferred as a proportion of the acquirer's asset base is hypothesized to be negatively related to the excess returns to selling firm stockholders. Similarly the size of the divested unit as a proportion of the selling firm is hypothesized to be positive. The following regression is formed and evaluated to determine the role of the size of the divestiture in explaining the magnitude of selling stockholder returns;

$$R_i = \beta_0 + \beta_1 \delta A_s + \beta_2 \delta A_b$$

where ;

δA_s is the proportion of gross value of asset base divested by seller, and, δA_b is the proportion of gross value of asset base acquired by the buyer. The results of this study, however, do not support the hypothesized relationships. The model performs poorly for the aggregate sample, yielding an F value of 1.149 ($P > |F| =$) and an R^2 of 0.0216. The estimated coefficient for the proportion bought (Pbought) is positive and insignificant at the same time the coefficient on the proportion sold (Psold) is negative and marginally significant. The regression is also evaluated for each of the three sub periods separately, and the results are presented at table . The F values and R^2 are uniformly low for the three periods. This indicates that the relative size of the asset base divested may not be a significant factor in explaining the excess returns earned by the selling stockholders. The effect of relative proportions of asset base sold or bought in the presence of the tax variables originally hypothesized is evaluated next by estimating the following regression.

$$R_t = \beta_0 + \beta_1 Tc_1 + \beta_2 Tc_0 + \beta_3 NOL + \beta_4 \delta_d + \beta_5 \delta A_s + \beta_6 \delta A_b$$

Where the variables are as defined above. The results of estimating this augmented model are provided at table 12 below. The F statistic and R^2 change from 1.315 and 0.0456 to 1.329 and 0.0738 respectively with the addition of the proportion variables. An F test is used to test for improvement in the predictive ability of the regression model as a result of adding the variables for proportion sold and proportion bought to the model. The F statistic for addition of these variables is 4.497, which is below the critical value of 19.49 ($\alpha = 0.05$ significance level). Similar comparison is made between the results obtained for the original model and the augmented model for each subperiod. The addition of these variables results in the F value declining from 2.821 to 2.454 for the first period, from 1.004 to 0.990, during the second period and from 4.659 to 3.838 for the third period. The addition of these variables does not add significantly to the explanatory power of the model.

Table 7. Regression results for Hypothesized variables

(Aggregate Sample)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T	PR > T
Period 1					
Intercept	1	0.00811415	0.003199552	2.536	0.0126
NOL	1	0.00858775	0.01085171	0.791	0.4304
Revalue	1	0.00017852	0.001737595	0.103	0.9184
Btrate	1	0.00002259	0.000012206	1.851	0.0668
Strate	1	-0.00000156	0.000002511	-0.623	0.5348
F VALUE		1.315		P > F = 0.2688	
R-SQUARE		0.0456			
ADJ R-SQ		0.0109			

Table 8. Regression results for Hypothesized variables

(Announcement Periods)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T	PR > T
Period 1					
Intercept	1	0.00199640	0.00367237	0.544	0.5919
NOL	1	0.02086536	0.00652946	3.196	0.0040
Revalue	1	-0.00180726	0.00182818	-0.989	0.3332
Btrate	1	-0.00001042	0.00000955	-1.091	0.2866
Strate	1	-0.00000263	0.00000161	-0.163	0.8717
F VALUE		2.821	P > F = 0.0485		
R-SQUARE		0.3291			
ADJ R-SQ		0.2125			
Period 2					
Intercept	1	0.02036093	0.00871334	2.337	0.0290
NOL	1	0.26149587	2.16415418	0.121	0.9049
Revalue	1	0.01302550	0.00660883	1.971	0.0614
Btrate	1	0.00002375	0.00007891	0.301	0.7662
Strate	1	-0.00000392	0.00000903	-0.435	0.6681
F VALUE		1.004	P > F = 0.4268		
R-SQUARE		0.1543			
ADJ R-SQ		0.0006			
Period 3					
Intercept	1	0.00255327	0.00483223	0.528	0.5994
NOL	1	-0.04772373	0.11246955	-0.424	0.6730
Revalue	1	-0.00219442	0.00473800	-0.463	0.6451
Btrate	1	0.00007742	0.00001929	4.014	0.0002
Strate	1	-0.00000962	0.00000754	-1.276	0.2072
F VALUE		4.659	P > F = 0.0026		
R-SQUARE		0.2531			
ADJ R-SQ		0.1987			

**Table 9. Regression results for Proportion Sold or Bought
(Announcement Periods)**

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T	PR > T
Period 1					
Intercept	1	0.01025840	0.003282801	3.125	0.0023
Pbought	1	0.01020077	0.01978317	0.516	0.6072
Psold	1	-0.03801911	0.02676844	-1.420	0.1585
F VALUE		1.149			
R-SQUARE		0.0216			
ADJ R-SQ		0.0028			

Table 10. Regression results for Hypothesized variables

(Full Model)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T	PR > T
Intercept	1	0.00687310	0.003934570	1.747	0.0837
NOL	1	0.00863052	0.01246168	0.693	0.4902
Revalue	1	0.00184457	0.002425378	0.761	0.4487
Btrate	1	0.00002381	0.000012842	1.854	0.0667
Strate	1	-0.00210070	0.000002652	-0.792	0.4302
Psold	1	-0.04701577	0.02828336	-1.662	0.0996
Pbought	1	0.02300881	0.02282086	1.008	0.3158
F VALUE		1.329		P > F = 0.2515	
R-SQUARE		0.0738			
ADJ R-SQ		0.0183			

Table 11. Regression Results for Hypothesized Variables- Full Model

(Announcement Periods)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T	PR > T
Period 1					
Intercept	1	0.00432800	0.00496411	0.872	0.3942
NOL	1	0.02227462	0.00724802	3.073	0.0063
Revalue	1	0.09384020	0.05074210	1.849	0.0800
Btrate	1	-0.00001171	0.00001007	-1.163	0.2593
Strate	1	-0.00000513	0.00000016	-0.317	0.7549
Psold	1	-0.11828537	0.10216482	-1.158	0.2613
Pbought	1	0.02183963	0.03809363	0.573	0.5732
F VALUE		2.454	P > F = 0.0629		
R-SQUARE		0.4366			
ADJ R-SQ		0.2587			
Period 2					
Intercept	1	0.02033923	0.01244964	1.634	0.1197
NOL	1	0.49078213	2.38519656	0.206	0.8393
Revalue	1	0.05186507	0.04608851	1.125	0.2752
Btrate	1	0.00006884	0.00010969	0.628	0.5382
Strate	1	-0.00001087	0.00001598	-0.680	0.5049
Psold	1	0.16116508	0.12879725	1.251	0.2268
Pbought	1	-0.02446553	0.07175681	-0.341	0.7371
F VALUE		0.990	P > F = 0.4608		
R-SQUARE		0.2482			
ADJ R-SQ		-0.0024			
Period 3					
Intercept	1	-0.00212521	0.00555288	-0.383	0.7036
NOL	1	0.03191791	0.12155418	0.263	0.7940
Revalue	1	0.00331992	0.00540592	0.614	0.5420
Btrate	1	0.00008258	0.00001987	4.155	0.0001
Strate	1	-0.00001208	0.00000770	-1.569	0.1231
Psold	1	-0.02872194	0.08110743	-0.354	0.7248
Pbought	1	0.06952856	0.03042433	2.285	0.0267
F VALUE		3.838	P > F = 0.0032		
R-SQUARE		0.3197			
ADJ R-SQ		0.2364			

Summary and Conclusions

Prior empirical studies of corporate sell offs report that the shareholders of the selling firms earn positive excess return. Identification of an economic rationale for such results, however, has received only limited attention. The purpose of the present study was to theoretically and empirically examine the role of taxes in corporate sell offs. The theoretical model developed in the present study relates the change in appraised value of the divested unit during the sell off to the marginal tax rates of the buying and selling firms, presence of accumulated net operating losses, revaluation of the asset base during the transfer to generate additional depreciation and/ or investment credits.

Using excess returns analysis the impact of voluntary corporate sell offs on shareholder wealth for the selling firms. is empirically examined. The presence of gains for selling firm stockholders is confirmed and is in harmony with the prior studies. Next, an attempt is made to identify the source of such gains by analyzing the impact of the hypothesized variables on the excess returns received from the sell offs.

In view of the importance of the tax regulations in determining the magnitude and costs of realizing such benefits an analysis of the effects of regulatory environment in explaining the realized excess returns is undertaken.

The findings of the study are listed below.

- 1) The selling firm stock holders experience an increase in wealth as a result of the sell off transaction.
- 2) The regulatory environment governing tax implications of these transactions is an important factor for determining the observed excess returns.
- 3) The restrictions placed on redeployment of tax benefits result in lower returns for the selling stock holders.
- 4) The marginal tax rates of the buyer and to a lesser extent that of the seller are important in determining the gains from the sell off.
- 5) The revaluation of the asset base is an important factor in determining the excess returns during the period when such revaluation can be made without a high cost.

The results would indicate that a unit or firm with accumulated NOLs or assets that can be revalued to generate higher tax benefits would be a desirable acquisition if such benefits can be transferred and realized at an acceptable cost. The firms most likely to benefit from such transfers and therefore willing to provide a higher prices for the unit or firm being acquired would be the firms that have a high level of tax liability. The timing and information content of the sell off announcement are examined next to determine if there is any difference in the excess returns realized by the selling firm stockholders for various types of announcements and revelation or withholding of price information. The results indicate that price information by itself does not add to the realized excess returns for the selling firm stockholders.

The results of the present research have important policy implications regarding the regulatory constraints imposed on the corporate control transfer activity. There have been continuing attempts by the legislators and regulators to make it more difficult and expensive for the acquirers to benefit from utilizing Net Operating Losses (NOLs) and other tax benefits of the acquired units. Such attempts are sought to be justified as a way of preserving independence of the smaller firms. This research suggests that such restrictions reduce the benefits available to the selling firm's stockholders and result in loss of value. It is shown that if laws designed to make acquisitions more costly and therefore less profitable are motivated by the desire to help the selling firm's stockholders, they are misdirected and counter productive.

While the results of the present study support the importance of tax related factors in explaining the observed excess returns to the selling firm's stockholders, it focuses on only one of perhaps numerous sources of such gains and on a subset of all corporate sell offs.

Finally, the following caveats are in order;

- 1) Firms involved in multiple sell offs in a given year were excluded from the sample as were those involving selling firms not listed on the New York or American Stock Exchange, (predominantly smaller firms).
- 2) The periods of analysis were selected based on the differing tax environments. These periods, however, differed substantially in terms of the economic and political environments.

- 3) The sell off transactions were indirectly classified according to whether these were cash or stock exchanges through the identification of the type of benefit (NOLs or revaluation of the asset base) involved. The present study ignores the presence of possible signalling mechanisms operating through the selection of the mode of transaction. The possibility of other signals being present cannot be negated.

This study touches a small facet of the corporate sell off transactions. The factors involved in these transactions are numerous and offer opportunities for further research that are almost unlimited. Some of the areas that may prove fruitful are, resolution of information asymmetry by signals provided during such transfers, incentives for managements to take individual units private, leveraged buyouts etc.

Bibliography

- Alexander, Benson, and Kampmeyer, "Investigating the Valuation Effects of Announcements of Voluntary Corporate Sell-offs", *Journal of Finance* (June 1984) pp. 503-518
- Asquith, P. "Merger Bids, Uncertainty and Stockholder Returns", *Journal of Financial Economics* 11 (1983) pp.51-83.
- _____ and E.H. Kim, "The Impact of Merger Bids on the Participating Firms' Security Holders", *Journal of Finance*, 37 (1982) pp. 1209-1228
- Bradley, M., Desai, A. , and Kim, H.E., "Gains From Corporate Acquisitions and Their Division Between Target and Acquiring Firms" *Working paper*(1986, University of Michigan, Ann Arbor, MI)
- Boudreaux, K.J., "Divestiture and Share Price" , *Journal of Financial and Quantitative Analysis* (September 1975) pp.619-626.
- Chung, K. S., "Investment Opportunities, Synergies, and Conglomerate Mergers", Ph. D. Dissertation, Graduate School of Management, University of California, Los Angeles, (1982).
- Coase, R. H., "The Nature of the Firm", *Economica* , November 1937, pp. 386-405.
- DeAngelo, H. and Masulis, R.W., "Optimal Capital Structure Under Corporate and Personal Taxation" *Journal of Financial Economics* (Vol. 8, 1980) pp. 3-29.
- Dennis, D.K. and McConnell, J.J., "Corporate Mergers and Security Returns", *Journal of Financial Economics* (Vol. 16, 1986) pp. 143-187.
- Eckbo, E.B., "Horizontal mergers,collusion, and stockholder wealth", *Journal of Financial Economics* 11 (1983) pp.241-273

- Hearth, D.P. and Zaima, J.K., "Voluntary Divestitures and Value", *Financial Management* (Spring 1984) pp 10-16.
- _____, "The Wealth effects of Voluntary Sell offs: Implications for Divesting and Acquiring Firms", *Journal of Financial Research* (Fall 1985)pp 227-236.
- _____, "Divestiture Uncertainty and Shareholder Wealth: Evidence from the U.S.A. (1975-1982)" *Journal of Business Finance and Accounting* (Spring 1986)pp. 71-85.
- Galai, d. and Masulis, R.W., "The Option Pricing Model and Risk Factor of Stock" *Journal of Financial Economics*, 3 (1976).pp. 53-81.
- Higgins, R. C. and Schall, L. D., "Corporate Bankruptcy and Conglomerate Merger" *Journal of Finance* 30 (1975) pp. 93-114
- Jain, P.C., "The Effect of Voluntary Sell off Announcements on Shareholder Wealth", *Journal of Finance* (March 1985), pp.209-224.
- Jensen, M.C. and Ruback, R.S., "The Market for Corporate Control; The Scientific Evidence" *Journal of Financial Economics*, 11 (1983).pp. 5-50
- Kim, E.H., "A Mean-Variance Theory of Optimal Capital Structure", *Journal of Finance* (March 1978) pp.45-63
- _____, and McConnell, "Corporate Merger and the Co-Insurance of Corporate Debt", *Journal of Finance*, 32 (1977) pp. 349-365.
- Klein, A., "The Timing and Substance of Divestiture Announcements; Individual, Simultaneous, and Cumulative Effects." *Journal of Finance* (July 1986), pp.685-696.
- Malatesta, P.H., "The Wealth Effect of Merger Activity and the Objective Functions of Merging Firms", *Journal of Financial Economics*, 11 (1983)pp 155-181.
- Malatesta, P.H. and Rex Thompson, "Partially Anticipated Events; A Model of Stock Price Reactions with an Application to Corporate Acquisitions" *Journal of Financial Economics* (Vol. 14, 1985) pp. 237-250.
- Miles, J.A. and Rosenfeld, J.D.(1983), "The Effect of Spin off Announcements on Shareholder Wealth", *Journal of Finance* (December 1984) pp.1597-1606.
- Mueller, D. C., "A Theory of Conglomerate Mergers," *Quarterly Journal of Economics*;ehp1. , (November 1969) pp.643-659
- Pastena, V. and W. Ruland, "The Merger/Bankruptcy Alternative", *The Accounting Review* (April 1986) pp.288-301.
- Rosenfeld, J.D. (1984), "Additional Evidence on the Relation between Divestiture Announcement and Shareholder Wealth," *Journal of Finance* (December 1984), pp.1437-1448.

- Ruback, R.S., "Assessing Competition in the Market for Corporate Acquisitions", Journal of Financial Economics, 11, (1983). pp 141-153.*
- Sarig, Oded H.(1985) "On Mergers, Divestments, and Options: A Note", Journal of Financial and Quantitative Analysis Vol. 20 (1985)pp.385-387*
- Scott, J.H., "On the Theory of Conglomerate Mergers", Journal of Finance (September 1977) pp.1235-1250.*
- Stiglitz, J.E., "Some Aspects of the Pure Theory of Corporate Finance: Bankruptcies and Takeovers", Bell Journal of Economics and Management Science (Autumn 1972)pp. 458-482*

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