

**THE POTENTIAL FOR TAX GAIN AS A MERGER MOTIVE:
A SURVEY OF CURRENT KNOWLEDGE AND RESEARCH OPPORTUNITIES**

**Denis A. Breen
Bureau of Economics
Federal Trade Commission**

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I. Introduction

The 1980's have seen an increase in corporate merger and acquisition activity in terms of both the number and total value of transactions. This increased activity has attracted considerable attention, and has rekindled the long-running debate regarding merger motives. It has also renewed interest in distinguishing between efficient and inefficient mergers.

Efficient mergers make society as a whole better off, whereas inefficient mergers may allow a few to gain at the expense of a greater loss to society. Some potential mergers would be inefficient because they would benefit a few by reducing competition, while at the same time raising prices and reducing output for society. The antitrust statutes are concerned with distinguishing and preventing mergers of this type.

Some other mergers that actually take place might be inefficient without being anticompetitive. It is often argued that certain tax provisions create incentives for mergers. If a significant number of inefficient mergers occur because of these provisions, then these provisions are appropriately a matter of public policy concern. However, to the extent that tax incentives are incidental to a drive for efficiencies -- for scale or scope economies, for instance -- and do not affect merger decisions, the tax code need not be a source of concern for public policy in this area.

This report evaluates the literature on the "tax-incentive hypothesis" that tax provisions provide important incentives for mergers. We focus on four provisions of the tax code that are widely thought to create important merger incentives: (1) the opportunity to carry over, between acquiror and target, net operating losses and unused tax credits; (2) the opportunity to step-up assets, or use their new sales price as a basis for depreciation; (3) the incentive, provided by the lower income tax rate on capital gains than on dividends, to retain earnings, and to use these earnings to acquire other firms; and (4) the opportunity for an acquiring firm to deduct from taxable income the interest payments incurred on acquisition-related indebtedness.

Tax provisions may affect not only the decision to merge but the way a merger is structured. Different ways of structuring a merger have different tax consequences, and no one structure is eligible for all the potential tax gains.

To determine whether tax incentives might be important in causing inefficient mergers, or in structuring otherwise efficient mergers in an inefficient manner, we examined the theoretical and empirical literature dealing with the four tax provisions described above. We did not undertake original econometric research. Based on our review of the literature dealing with theoretical considerations, we conclude that while there is a potential for tax gain, it is less than it would at first appear because a merger is not eligible for both of the first two tax benefits (i.e., effectively, the acquiring firm must choose between them), because of restrictions on the use of these tax benefits (e.g., restrictions on trading in tax losses and credits), and because of offsetting tax costs (e.g., recapture provisions). Moreover, any

tax incentive to merge might be mitigated by the availability of non-acquisition methods of realizing the same tax benefits afforded by merger (e.g., use of retained earnings for internal expansion rather than merger).

While there is no shortage of anecdotal evidence, there are relatively few systematic empirical studies of the effects of tax provisions on mergers. These studies are on the whole inconclusive or, at best, weakly supportive of the tax-incentive hypothesis. What this implies, however, is not so much that the tax provisions are unimportant but rather that further research is needed to determine their effect. In the Appendix, we make some suggestions concerning future research.

In the existing empirical literature, support for the tax-incentive hypothesis ranges from weak to none with respect to the carryover of net operating losses and unused tax credits. The hypothesis is weakly supported with respect to the potential to step-up assets. Apart from an ambiguous opinion survey, there is no empirical study of the hypothesized effect of the different tax treatment of capital gains and dividends. Studies are consistent with the argument that merger decisions are sensitive to tax-code provisions pertaining to the deductibility of interest expenses on acquisition-related indebtedness. There is some support for the hypothesis that both the deferral of capital gains taxes and the tax subsidy to debt financing provide incentives on how to structure mergers.

As a test of the simple tax-incentive hypothesis, we reviewed the relevant changes in the tax code that occurred during the 1980's to see whether these coincided with changes in the level of merger activity. However, our discussion of the 1986 Tax Reform Act is confined to a description of the Act's provisions, without an analysis of its ultimate effect, which cannot yet be determined empirically.¹

¹ The provisions of the Tax Reform Act of 1986 have just recently gone into effect on January 1, 1987. These provisions, for the most part, remove previous existing tax advantages for mergers. The Act has eliminated deferral by the target of capital gains taxation on those types of taxable transactions which allow step-up of basis of assets, thereby reducing much of the advantage of step-up: in Section 337 transactions the target corporation must now pay the capital gains tax, and the acquiror must pay them in a 338 election. In addition, carryover of NOL's is limited annually to a long-term bond rate multiplied by the pre-sale value of the target; the top tax rate on corporate profits is reduced from 46 to 34 percent, lessening the value of interest payment deductions on debt to finance acquisitions; and the preferential rate on individual and corporate capital gains vis-a-vis the respective rates on ordinary income is repealed, removing an incentive to retain earnings rather than pay dividends. While these changes appear to be far reaching, small target corporations are exempted from the change in the capital gains tax deferral provision (they can continue to defer). Since this size corporation has constituted the bulk of step-up of assets in the past, it is hard to make any unambiguous prediction about likely effects on merger activity.

Our review of tax legislation since 1980 did not reveal changes that might explain either an increase in merger activity or an increase in the relative importance of large-scale transactions. Nor do the 1981 and 1984 spurts in merger activity correspond in any obvious manner to particular tax changes. Thus, consideration of recent tax changes casts doubt on the importance of tax changes as an explanation for changes in merger activity since 1980.

Further empirical investigation may yet reveal a significant effect of recent tax changes on merger activity. However, to obtain unbiased estimates of the effects of taxes, non-tax factors should also be included in the analysis. For example, it has been suggested that recent mergers have been playing a role in the restructuring of a number of basic industries having relatively large firms. This includes capacity reductions in the oil and gas industry and the restructuring of natural gas pipelines and financial markets in response to deregulation initiatives. It also includes adjustments by older industries to increased foreign competition.

Our analysis begins with Chapter II's description of recent merger activities. Chapter III moves on to consider a number of competing explanations, including tax gains, for mergers. That section also develops a more precise definition of "tax-motivated merger" and discusses the public policy concerns raised by such mergers. Chapter IV provides a summary of the array of tax treatments of corporate mergers and acquisitions. There are several ways to structure a merger or acquisition transaction for tax purposes, and tax treatment is not uniform across those alternatives. The main analysis of the importance and effects of tax considerations begins in Chapter V, which focuses on specific tax provisions alleged to produce incentives to merge and identifies the circumstances under which these provisions would be expected to have that effect. That analysis shows that there are a number of factors that could reduce or eliminate the potential for tax gain from merger. Chapter VI summarizes available evidence concerning the hypothesized tax incentives considered in Chapter V. Chapter VII discusses the predicted effects of recent merger-related changes in the tax code, and considers using these predictions to assess the possible role already played by taxes in past merger activity. Since relatively few empirical studies have addressed the issue of tax-motivated mergers, an Appendix is devoted to an in-depth review of available methodologies for testing the tax-incentive hypothesis, and to suggestions for further research.

II. Description of Recent Merger Activity

A. The Number and Value of Merger Transactions

Merger activity historically has been a cyclical phenomenon with peaks tending to occur during periods of economic prosperity. The economy is currently experiencing another upswing in corporate mergers and acquisitions. To specify in greater detail the merger phenomenon considered by some to have a tax motivation, it is desirable to take a closer look at available merger statistics.

Table 1 on the next page presents data from two sources for use in characterizing recent merger activity.² Column (1) indicates an upward trend in merger completions for the period 1980-1986, with spurts occurring in 1981, 1984 and 1986. The upward trend during 1980-1986 is confirmed by data on net merger announcements, as shown in column (3). The increase in merger activity is even more apparent when measured in terms of the total dollar value of transactions, as shown in column (2) for merger completions and in column (4) for merger announcements.

Whether the upswing for 1980-1986 is a continuation or a commencement of an upward trend is less certain from the two data sources. In terms of the number of merger completions, the upward trend began in 1976 (following a steady decline from the previous peak in 1968³ to 1975). The total value of net merger announcements has also trended upward since 1975, and at a more rapid pace. However, in terms of the number of net merger announcements, a decline occurred from the early to the late 1970's.

Other discrepancies between the two data sources become apparent when recent levels of merger activity are compared to previous record levels. In terms of the number of merger completions, the previous record had been set in 1968 and was broken in 1981. Although the value-of-net-merger-announcements series also had its previous record set in 1968, this record was broken in 1980, not 1981. A much larger discrepancy exists for the number of net merger announcements, for the record was set by that measure in 1969 and was unbroken through 1986.

Discrepancies between the measures do not apply to the 1980-1986 period (except for values in 1986), during which all four measures show an upswing in merger activity. Nevertheless, these measures are still subject to criticism because they are stated in nominal terms. With respect to column (1), the increase in merger activity during the 1980's or for the entire period 1975-1986 is overstated by an unknown amount because the threshold dollar figure for inclusion as a transaction (\$1 million) has not been adjusted

² Economic Report of the President (1985) and Joint Committee on Taxation (1985a) also provide overviews of recent merger activity.

³ FTC, Statistical Report on Mergers and Acquisitions, 1979. GPO: Washington, D.C., July 1981.

Table 1
MERGER AND ACQUISITION ACTIVITY
(1968-1985)

Year	<u>Mergers & Acquisitions</u>		<u>Mergerstat Review</u>		
	No. of Trans.* (1)	Total \$ Value of Trans. ^a (millions) (2)	No. of Trans.** (3)	Total \$ Value of Trans. ^a (millions) (4)	Total Constant \$ Value of Trans. (millions of 1982 dollars) (5)
1968	1,829	n.a.	4,462	\$43,609.0	\$99,791.8
1969	1,712	n.a.	6,107	23,710.9	51,997.6
1970	1,318	n.a.	5,152	16,414.9	34,777.3
1971	1,269	n.a.	4,608	12,619.3	25,859.2
1972	1,263	n.a.	4,801	16,680.5	33,162.0
1973	1,064	n.a.	4,040	16,664.5	31,383.2
1974	926	n.a.	2,861	12,465.6	21,793.0
1975	981	n.a.	2,297	11,796.4	19,088.0
1976	1,145	n.a.	2,276	20,029.5	30,767.3
1977	1,209	n.a.	2,224	21,937.1	32,071.8
1978	1,452	n.a.	2,106	34,180.4	47,015.7
1979	1,529	\$33,964.9	2,128	43,535.1	55,247.6
1980	1,574	32,407.4	1,889	44,345.1	51,504.2
1981	2,326	67,545.8	2,395	82,617.6	87,797.7
1982	2,295	64,358.7	2,346	53,754.5	53,754.5
1983	2,339	51,890.9	2,533	73,080.5	70,269.7
1984	2,946	124,027.5	2,543	122,223.7	112,648.6
1985	3,363	143,950.3	3,001	179,800.0	159,964.4
1986	4,024	190,500.0	3,336	173,100.0	151,179.0

^a Values refer to only those transactions in which sales price was revealed. In 1985, the value of merger completions is based upon 1,613 transactions, while the value of merger announcements is based upon 1,320 transactions. Values in columns (2) and (4) are expressed in current dollars, not adjusted for inflation.

* Transactions reported in Mergers & Acquisitions are in terms of merger completions. A transaction is included if valued at \$1 million or more. Partial acquisitions of 5 percent or more of a company's capital stock are included if the payments are \$1 million or more.

** Transactions reported in Mergerstat Review are in terms of net merger announcements. This measure includes transactions announced during a year, less transactions cancelled during that year. A transaction is included if there is an announced transfer of ownership of at least 10 percent of a company's assets or equity where the purchase price is at least \$500,000.

Sources: Mergers & Acquisitions, Almanacs (1982-1987) and Quarterly Profiles (1985-1987); and Mergerstat Review, W.T. Grimm and Co., 1981-1986.

for inflation. The extent of overstatement of increased merger activity could be significant, particularly for the longer time period, when one considers the increase in the general price level from 1975 to 1986. Using the implicit GNP price deflator, for example, a \$1 million threshold in 1975 is, in 1975 dollars, only a \$655,000 threshold in 1980 and a still lower \$506,000 threshold in 1984.

The increase in the dollar value of transactions for the period 1980-1986 (or 1968-1986) is also overstated by columns (2) and (4) to the extent that the effects of inflation have not been taken into account. Prices paid in transactions have not been computed in constant dollars. Using column (4) to illustrate, in nominal terms the value of transactions in 1968 was first exceeded in 1980. However, using column (5), the constant dollar value of transactions in 1968 was not exceeded until 1984. Similarly, the constant dollar increase between 1968 and 1986 was 51 percent, much less than the nominal dollar increase of over 300 percent.

Moreover, when the change in the constant dollar value of transactions is adjusted for the real growth in economic activity between 1980 and 1986, as measured by GNP (15.4 percent), the percentage increase is smaller still.

In conclusion, available merger statistics indicate that mergers and acquisitions have been increasing during the 1980's, particularly when measured in terms of the total dollar value of transactions. However, some of that increase merely reflects a general price increase in the economy. In fact, in constant dollar terms, the value of merger activity during the 1980's did not exceed the 1968 level until 1984.

B. Other Characteristics of Recent Merger Activity

Perhaps the most notable characteristic of recent merger activity is the increasing number of large-scale transactions. Both Mergers & Acquisitions and Mergerstat Review show that transactions with a nominal value of \$100 million or more, as a percent of total transactions (also based on a nominal value threshold), rose during the period 1980-1985. Merger completions valued at \$1 billion or more (in 1975 dollars) numbered 8 in 1981, 4 in 1982, 2 in 1983, increased again to 8 in 1984 and 10 in 1985. The number of merger announcements valued at \$1 billion or more (in 1975 dollars) numbered 38 for the period 1981-1985 as compared to only 11 for the previous 12-year period.⁴

Relative to the earlier merger peak, the current activity is characteristically more horizontal than vertical.⁵ Divestitures of subsidiary units included in Table 1 account for a significant proportion of total transactions (41 percent of net merger announcements and 31 percent of

⁴ This difference may be overstated, however, because the values in the previous 12-year period, of which 1975 is the mid-point, are not in terms of constant 1975 dollars.

⁵ Mergerstat Review, 1984, p. 1.

merger completions during 1985). These figures suggest a continuation of a movement away from conglomerate-type acquisitions of the 1960's and early 1970's.

Also included in the transactions reported in Table 1 are leveraged buyouts (LBO's). The recent increase in mergers and acquisitions has included many LBO's, the distinguishing feature of which is heavy reliance on debt financing. That is, buyers put up only a small proportion of the purchase price and borrow the balance, often pledging the assets of the acquired firm as collateral. As a percentage of the number of merger completions, LBO's account for somewhat less than 10 percent. However, they account for closer to 15 percent of the total value of merger completions.

Many LBO's are not mergers at all, but rather are just changes in ownership without any effect on concentration, size, etc. Management buyouts and going private transactions have both been increasing in recent years. In a management buyout, which is almost always an LBO, the acquiring firm is owned in whole or in part by the management of the target corporation. Mergerstat Review reports that management buyouts, as a percentage of total divestitures announced, rose from 7 percent in 1980 to 11 percent in 1985. In a going private transaction, which too is almost always an LBO, a publicly traded corporation is acquired by a private investment group or an individual. According to Mergerstat Review, going private transactions accounted for 7.5 percent of the acquisitions of publicly traded corporations in 1980 and a much higher 23 percent in 1985.

Also attracting attention recently have been the tactics used in hostile takeovers. This attention appears to reflect an increase in the share of hostile takeovers. Contested tender offers for publicly traded corporations, according to Mergerstat Review, accounted for 38 percent of the total number of tender offers in 1985, in contrast to 23 percent in 1980. Moreover, the intensity of takeover battles has increased, indicated by the proliferation of bidder and defensive tactics (colorfully described as greenmail, golden parachutes, shark repellents, the sale of crown jewels, etc.).

A final descriptor of merger activity is the method of payment or medium of exchange used in recent merger transactions. Standard categories for reporting the method of payment include "all cash", "all stock", or "combination of cash, stock, debt and other." Mergerstat Review data indicate that the exchange of stock was the predominant form during the late 1960's and early 1970's, but since 1974 (with the exception of 1983) there has been a shift to cash as the medium of exchange. The use of cash as the predominant form of payment during the 1980's (including 1983) is confirmed by Mergers & Acquisitions data.

Having provided some descriptive statistics on recent merger activity, we can now turn to the task of explaining why mergers occur. Our particular interest will be in discerning what role, if any, tax considerations have played in inducing firms to combine.

III. Merger Motives

A. Competing Theories

The explanations traditionally offered for why firms merge are numerous and varied. Weston and Chung (1983), for example, draw on the industrial organization and finance literature to produce the following list of possible merger motives:⁶

- tax factors
- differential efficiency
- inefficient management (market for corporate control)
- operating synergy
- financial synergy
- undervaluation (Tobin's "q-ratio")
- strategic planning
- agency problems
- managerialism (growth and promotion)
- market power

With the exception of "managerialism", these motives share the common premise that mergers can be rationalized as value increasing transactions for the stockholders of the combining firms. Of course, private gains do not necessarily translate into public benefits (e.g., consider the market power and tax motives), but in many cases the hypothesized wealth gain for shareholders does imply efficiency improvements for the economy.

Several developments in recent years are thought to have created a particularly favorable climate for mergers by increasing opportunities to exploit one or more of the above listed motives. Jensen (1985) attributes the recent increase in merger activity and hostile takeovers to a number of underlying institutional changes and changes in market conditions. He views mergers as a response to increased globalization of markets and increased competition from imports. He also sees mergers as a method of radically restructuring energy markets by eliminating excess capacity and of restructuring the financial services market in response to deregulation. Cutting across markets are what he considers to be improvements in the legal and financial aspects of takeover technology and a relaxation of the antitrust constraint on corporate combinations. Saul (1985) disagrees with Jensen's assessment that takeovers generate gains for the economy and, although offering a similar list of factors thought to be driving recent merger activity, he would give greater weight to "tax-subsidized" debt-financing as a merger motive.

The potential for tax gains has long been considered in the literature, including standard industrial organization textbooks, as a possible merger motive. Scherer (1980) lists tax considerations as one of the "many reasons

⁶ Carleton et al. (1980) provide an extensive discussion of these and other motives.

why business leaders might seek to merge" (p. 127). Shepherd (1979) considers the pursuit of profit to be the underlying motive for mergers and considers there to be several ways of achieving that result, including taking advantage of merger-related tax provisions. Clarkson and Miller (1982) make the point more directly when they state that "[m]ergers may be profitable purely on a tax basis" (p. 340).

The possibility that recent merger activity has been driven by tax considerations is of interest and concern to various Congressional committees. Numerous hearings have been held in recent years to take testimony on the issue and to consider proposals for reform.⁷ Some of these hearings have considered tax incentives to merge generally, while others have focused on specific tax provisions. Furthermore, since 1980 Congress has passed several tax bills containing provisions that could possibly influence merger decisions.⁸

The predicted effects of these tax changes will be discussed in Chapter VII and used to make a tentative assessment of tax considerations as an explanation for recent merger activity. Before turning to that assessment, however, it is useful to review briefly the possible welfare effects of tax motivated mergers. We will then consider at some length the tax provisions traditionally thought to create merger incentives and the evidence concerning the hypothesized tax effects (Chapters IV - VI).

B. The Welfare Implications of Tax Incentives for Merger

Social loss results from mergers that are inefficient. The antitrust laws are designed to prohibit mergers that would be anticompetitive on balance, because the exercise of market power is one source of inefficiency. However, inefficient mergers with no antitrust implications could be profitable because of tax benefits or other distortions. It is also possible that otherwise efficient mergers could be structured in an inefficient manner to capture tax gains. Both types of mergers could be termed tax-motivated mergers.

Some argue that, under some circumstances, tax incentives for merger may increase social welfare.⁹ That the tax benefits from merger may lead to a reduction in social welfare is more easily seen. Again, the tax benefits

⁷ See, for example, Congressional Research Service (1984); House Committee on Ways and Means (1982) and (1983); Joint Committee on Taxation (1984), (1985a), (1985b), and (1985c); and Senate Finance Committee (1982), (1983a), (1983b), and (1984).

⁸ Of particular interest are the Installment Sales Revision Act of 1980, Economic Recovery Tax Act of 1981, Tax Equity and Fiscal Responsibility Act of 1982, Tax Reform Act of 1984, and Tax Reform Act of 1986.

⁹ According to Auerbach and Reishus (1985), a reduced tax liability for combining firms may increase the incentive to invest, which offsets somewhat the effect of the tax code in discouraging capital formation.

may be so large that inefficient mergers are made profitable, and to obtain tax benefits an otherwise efficient merger may be structured inefficiently. However, mergers that happen to attract tax benefits are not necessarily inefficient. Irrespective of the tax benefits resulting from a merger, the merger may involve efficiencies that make it profitable.

IV. Background on Tax Treatment of Corporate Mergers and Acquisitions

A. Legal and Tax Classifications of Acquisition Methods

Not all forms of corporate combinations are treated the same by the tax code. Some transactions incur tax costs not levied on others, and some transactions make available potential tax benefits that are not available to transactions falling into different categories. That is, a proposed combination may be structured to fall into any one of several different categories for tax purposes.

The differences in tax treatment can be explained by considering the various acquisition methods presented in Table 2.

Table 2

LEGAL AND TAX CLASSIFICATIONS FOR ACQUISITION METHODS

		Tax Forms	
		Taxable Acquisition ("Acquisition")	Nontaxable Acquisition ("Merger")
LF : Acquisition	:	338 Transaction	Type A Reorganization
eo : of Stock	:	Stock Transaction	Type B Reorganization
gr : Acquisition	:	Asset Transaction	Type C Reorganization
am : of Assets	:		

Source: Marren (1985).

The alternative legal forms for effecting a transaction are the acquisition of assets and the acquisition of stock. In an asset acquisition, part or all of a target corporation's assets are acquired for stock, cash or other consideration. The target remains in existence, initially, but often the target adopts a plan to completely liquidate its assets (primarily the consideration received), and distribute the proceeds to its shareholders. In a stock acquisition, the acquiring corporation buys the stock of the target by making a tender offer to the target's shareholders. In exchange for the stock acquired, the buyer offers stock, cash or other securities.

An advantage to structuring the transaction as a stock acquisition is that the transfer of stock can be less complicated than the separate conveyance of each asset and liability, as is required of asset acquisitions.

On the other hand, an asset acquisition has the advantage of enabling the buyer to be more selective with respect to the liabilities it acquires.

As far as tax forms are concerned, an acquisition can take the form of either a so-called "taxable" acquisition or a so-called "non-taxable" merger. A transaction is "taxable" if the gain or loss on the asset or stock sale is recognized for current tax purposes either by the target corporation or its shareholders. The general rule is that realized gains or losses are recognized for current tax purposes, i.e., they do create current tax liabilities.

Taxable transactions corresponding to the general rule for recognition include asset transactions, stock transactions and Section 338 transactions, as shown in Table 2. In most taxable transactions there is recognition for the shareholder. Depending upon the form of the taxable transaction, however, the target corporation may or may not have to recognize gains.

In a taxable stock acquisition, for example, the target's shareholders recognize capital gain or loss on the sale of their stock for current tax purposes. However, the recognition of any gain or loss by the target corporation is deferred until triggered by some future act. In contrast, taxable asset acquisitions are treated as recognition events for target corporations. The target remains in existence, at least initially, and bears the responsibility for taxes due on any gain or loss associated with the transaction. If the target distributed the proceeds of the sale to its shareholders, which would often be their preference, double taxation would occur: first at the corporate level by the target on the sale of assets, and then at the shareholder level on the distribution of the proceeds.

The use of Section 337 has become a popular method of avoiding this double taxation. Under a 337 liquidation, no gain or loss is recognized by the target, although one is recognized by the shareholders, if the target adopts a plan of complete liquidation and distributes all of its assets pursuant to that plan.¹⁰

Another taxable acquisition method is a Section 338 transaction. This is a stock acquisition which, for tax purposes, is treated as an asset acquisition. If a 338 election is made, the target is generally treated as if it had adopted a plan of complete liquidation under Section 337 and sold all of its assets. The transaction becomes a non-recognition event for the target. Recapture rules are still fully applicable, however, because LIFO, investment tax credit and depreciation recapture rules override Section 337. Moreover, the target's shareholders do recognize gain or loss on the sale of their stock.

¹⁰ However, the target must still recognize as ordinary income the recapture of previous deductions taken on certain items (e.g., all or a portion of previously claimed depreciation, LIFO inventory deductions, and investment tax credits) as a result of the sale. See discussion on p. 27 on recapture.

The points made above with respect to recognition of gain or loss for targets and their shareholders in taxable transactions are summarized in the first three columns of Table 3 on the next page.¹¹

By comparison, the tax code has special provisions that defer recognition of gain or loss for the target as well as its shareholders until triggered by some future act. These so-called "tax-free" reorganizations or mergers (as opposed to acquisitions) are summarized in the other columns of Table 3 as Type A, Type B, and Type C reorganizations. These reorganization structures are important exceptions to the general rule that realized gains or losses are recognized for current tax purposes.¹² The theory behind this non-recognition is that the shareholder is merely changing the form of his investment, by exchanging stock in one company for stock in another.¹³

¹¹ A similar table can be found in Joint Committee on Taxation (1985a).

¹² A Type A reorganization is a stock acquisition in which stock, cash and securities may be used as the medium of exchange so long as at least 50 percent is some form of equity. The transaction is tax free to all parties if only equity is used to purchase the target's stock. To the extent other consideration ("boot") is used, the transaction is partially taxable. Type B and Type C reorganizations are also tax free to all parties. In the former, the acquiror must use only its own voting stock to purchase the target's stock while in the latter the acquiror must purchase substantially all of the target's assets solely with its own voting stock, although in limited circumstances some boot may be used.

¹³ To qualify for non-recognition treatment, these types of transactions must meet four general requirements, as explained by Marren (1985):

- a) a substantial portion of the consideration received by the target's shareholders must be in the form of equity interest in the acquiring corporation (continuity of interest doctrine);
- b) the acquiring corporation must continue the target's historic business (or at least one significant line of it) or use a significant portion of the target's assets in its ongoing business (continuity of business doctrine);
- c) the reorganization must have a legitimate business purpose (business purpose doctrine); and
- d) the tax treatment of a transaction carried out in a series of steps must follow the substance of the transaction, rather than its form (step-transaction doctrine).

Table 3

INCOME TAX TREATMENT OF CORPORATE ACQUISITIONS

Tax Consequences	-----Tax Acquisitions----- (Cash)			---Tax-Free Reorganizations--- (Stock)			
	Sec. 338 Trans.	Taxable Stock Trans.	Taxable Asset Trans W/O Liquid	Sec. 337 Trans.	Type A Reorg.	Type B Reorg.	Type C Reorg.
Seller: Target							
Capital Gains Recognition	No	Defer	Yes	No*	Defer	Defer	Defer
Recapture	No	Defer	Yes	Yes	Defer	Defer	Defer
Seller: Shareholder							
Capital Gains Recognition	Yes	Yes	N/A	Yes	Defer	Defer	Defer
Buyer:							
Capital Gains Recognition	No.	No	No	No	No	No	No
Recapture	Yes	No	No	No	No	No	No
Step-up of Basis	Yes	No	Yes	Yes	No	No	No
Carryover of Tax Attributes	No	Yes	No	No	Yes	Yes	Yes
Tax Deduction of Interest on Debt to Finance Acquisitions	Yes	Yes	Yes	Yes	N/A	N/A	N/A

* These tax consequences are reversed by the Tax Reform Act of 1986. Moreover, any capital gains tax borne will be borne at a new higher maximum rate of 28 percent, instead of 20 percent; and the value of tax deductions will fall with the fall in the new corporate tax rate from 46 to 34 percent.

In sum, a basic distinction can be made between taxable transactions and tax-free reorganizations in terms of recognition of gain or loss. The distinction is that a transaction structured as a tax-free reorganization offers the target and its shareholders the advantage of deferring any capital gains taxes on the sale.

B. Other Tax-Related Distinctions Between Acquisition Methods

The previous section dealt with recognition of capital gains as the distinguishing feature amongst various forms of corporate combinations. This distinction is one that focuses solely on the seller as the affected party, since the buyer (acquiror) does not sustain capital gains (or losses).

Further distinctions can be made between acquisition methods concerning potential realization of various tax benefits (such as carryover of losses) which do affect the buyer. A distinction of particular interest here, and one emphasized by Marren (1985) and others, lies in the treatment of the tax basis of acquired assets.¹⁴ If the acquisition is structured as either a taxable asset acquisition (including a 337 transaction) or a taxable 338 transaction, the acquiring firm can take depreciation deductions based on the fair market value of the assets, i.e., generally what the buyer paid for them, rather than their adjusted tax basis. If the fair market value exceeds the adjusted tax basis, the buyer can "step-up" the depreciable basis of the assets and thereby take larger depreciation deductions than the target was taking.

The "new-cost-basis methods" of acquisition just described are shown in Table 3, and can be contrasted with the following no-change-in-basis acquisition methods: taxable stock transactions, and Type A, B and C reorganizations. If the acquisition is structured as one of these four types, the tax basis of the assets is unchanged and the acquiring firm may continue to depreciate only the adjusted tax basis of buildings, improvements and equipment. Furthermore, these assets can be depreciated only using methods and useful lives in effect when assets were placed into service.

Another important distinction between acquisition methods, as explained in Joint Committee on Taxation (1985a), is whether the tax attributes of the target carry over to the combined entity. Examples of tax attributes are accounting method, earnings and profits account, capital loss carryforwards, net operating losses, and unused investment tax credits. In a "carryover transaction", the tax basis of assets remains the same, i.e., step-up is not allowed, but net operating losses and other credits can be carried over to the acquiring corporation. Thus, carryover transactions take one of the four no-change-in-basis forms of acquisition discussed above: taxable stock transactions and Type A, B and C reorganizations. If, instead, the

¹⁴ A taxpayer's original basis in any property is equal to its cost while the adjusted basis equals the original basis adjusted for such items as depreciation, amortization, capital expenditures, earnings and profits, stock dividends, and distributions representing return on capital.

acquisition is structured as one of the new-cost-basis acquisition methods, no carryover of tax attributes occurs. The mutually exclusive nature of new-cost-basis methods of acquisition and carryover transactions is shown in Table 3.

Also, in the case of a taxable acquisition, the buyer or acquiring corporation can take a tax deduction on the interest expense associated with acquisition-related indebtedness. Tax treatment of interest payments by type of transaction is shown also in Table 3. This tax deduction will be examined more closely in subsequent sections.

A final tax-related distinction between acquisition methods of interest here relates to the medium of exchange used in a merger or acquisition. If stock only is used to acquire a target, the transaction can qualify as a tax-free reorganization. However, a cash acquisition makes the transaction taxable. In addition, the more heavily the acquiror relies on debt or cash from debt financing, the more likely it is that the acquisition will become a taxable transaction.

C. Conclusions

The tax treatment of corporate mergers and acquisitions depends considerably upon the specific form the transaction takes. Furthermore, "tax treatment" is multidimensional in nature, affecting buyers and sellers differentially. Various tax provisions interact to create a set of tradeoffs for parties to consider in structuring a transaction. The circumstances under which these tax provisions influence the merger or acquisition decision itself will be examined in the next section.

V. Merger Incentives Allegedly Produced by the Tax Code

A. Introduction and Framework for Analysis

A review of books, papers, interviews and speeches by tax experts, business executives, researchers, Treasury Department officials, legislators and other commentators reveals a wide range of opinion, pro and con, on tax benefits as merger incentives. Despite these differences there is a consensus on those tax variables thought most likely to provide such incentives.

The consensus candidates for tax incentives to merge are the following: (a) the opportunity to carryover net operating losses, and other tax credits, between the target and the new entity, (b) the opportunity to step-up the taxable basis of assets and thereby generate higher depreciation allowances, (c) the tax-favored treatment of capital gains over dividend income, and (d) interest deductions on debt-financed acquisitions. A survey of the arguments that these tax variables provide significant merger incentives will be presented in this section.¹⁵ Also, testable implications of the "tax-incentive hypothesis" will be presented for each tax variable so that we will know what to expect of the empirical studies to be reviewed in Chapter VI.

Having presented the arguments for each tax incentive, this chapter will then use the framework provided by Gilson et al. (1985) to evaluate the alleged tax incentives. Gilson et al. point out that it is not sufficient that a reading of the tax code indicates the availability of a tax benefit; it is also necessary to take into account (a) any restrictions or limitations that could nullify the use of the tax benefit, and (b) whether the same tax benefit could be realized at less cost by means that do not involve merger.

B. Carryover of Net Operating Losses, Capital Losses and Tax Credits as a Merger Incentive

'Carryover' refers to the opportunity to transfer carrybacks and carry forwards of net operating losses, capital losses and unused tax credits, between the target and the acquirer.

¹⁵ The "tax-incentive hypothesis" refers to the hypothesis that mergers and acquisitions are significantly motivated by tax considerations, and that a large number of those observed would be unprofitable but for the tax benefits. See pp. 8-9, *supra*.

1. The Mechanics of Carryover

Corporations, as taxpayers, are generally permitted to carry a net operating loss (NOL) back three and forward 15 years.¹⁶ For carrybacks, the corporation may seek a refund equal to the amount by which the tax liability is reduced in the three previous years when NOL's are taken into account. If the NOL's are greater than the sum of taxable incomes in the preceding three years, the corporation may apply the unused NOL to taxable income in the next 15 years. The rationale for carrybacks and forwards is to reduce the difference in tax treatment of firms that experience fluctuations in income as compared to those with stable incomes.

The tax code also permits net capital losses and unused investment tax credits (ITC's) to be carried back and forward. The carryback and forward periods for net capital losses are three and five years, respectively, and these losses are permitted to be used only as an offset to capital gains. The ITC, along with certain other business expenses, may be taken as a credit against tax liability. The credit is equal to a percentage of the amount spent for certain property. In general, the credit is computed at the basic rate of ten percent of the qualified investment, which includes depreciable tangible personal property (machinery, equipment and automobiles) and depreciable real property (excluding buildings and their structural components). If the ITC cannot be fully utilized during a year, it can be carried back three years and forward 15 years.

The carryover as a tax incentive to merge can work as follows. Suppose a firm has a history of losses and does not anticipate being able to fully utilize its NOL and other tax credits before they expire, or even in the near future when their present discounted value is greater. These tax benefits can be transferred to an acquiring firm that has taxable income if certain conditions are met, and if the merger is structured as a tax-free reorganization or a taxable stock transaction. The opportunity to carry over NOL's and other tax credits is considered by many to create an incentive to merge and an incentive to structure mergers in a particular manner.¹⁷ Feld (1982) offers the following explanation for the tax incentive to combine when the target firm is the loss corporation:

A history of losses can render a corporation more valuable if the losses can be brought into conjunction with profits before the carryover period expires. Both the profit-making acquiror and the loss-burdened target hope to profit if they combine: the profit-making corporation seeks to obtain the use of tax

¹⁶ See Joint Committee on Taxation (1985c) and Marren (1985) for explanations of NOL's, capital losses, unused tax credits and the carryover of these tax attributes in corporate acquisitions.

¹⁷ See, for example, Feld (1982), Steiner (1977), Marren (1985), Joint Committee on Taxation (1985a), Pearlman (1983) and Rokoff (1981).

benefits, and the target corporation or its stockholders realize something on the losses before they expire. (p. 91)

More generally, the naive tax-incentive hypothesis implies that merger is more likely to occur between two firms, *ceteris paribus*, if one -- whether acquiror or target -- has been incurring losses and the other has taxable income. Moreover, a merger involving a profit corporation and a loss corporation is, *ceteris paribus*, more likely to be structured as a carryover transaction rather than as a new-cost-basis acquisition.

Proponents of the argument that the carryover is a significant tax incentive for mergers argue that this incentive is reinforced by the Accelerated Cost Recovery System (ACRS), which generally permits the cost of depreciable assets acquired after 1980 to be recovered much more rapidly than assets acquired in previous years.¹⁸ Auerbach (1982) asserts that the number of companies with NOL carryforwards "surely has been increased by the larger depreciation deductions of ACRS" (p. 278). This could happen, for example, when larger deductions create additional NOL's for unprofitable or otherwise marginally profitable firms.

Congress enacted ACRS in 1981 to provide an incentive for capital investment. It represents what Marren (1985) describes as a radical departure from the previous system in which depreciation was based on estimates of the useful lives of assets. Deductions permitted by ACRS early in the tax life of an asset can be quite large compared to economic depreciation of the asset. The ACRS also simplified depreciation rules significantly by reducing to three the main "capital recovery" classes. Assets in these classes qualifying for write-off, according to Auerbach (1982), are as follows:

- (a) Most Section 1245 property (certain types of depreciable business property, mostly personal property such as machines, tools, and office equipment) qualifies for a 5-year write off; and
- (b) Section 1250 property (consists of all other types of depreciable business property, principally buildings) qualifies for a 15-year write off; and
- (c) Autos, trucks and other equipment with a midpoint life of 4 years or less qualify for a 3-year write-off.

Auerbach notes that the consolidation of depreciation classes led to a significant reduction in average tax lifetimes for Section 1245 and Section 1250 property, thereby increasing the effects of accelerated cost recovery.

ACRS creates a difference between the economic and the tax rate of depreciation. Due to differences in the degree of acceleration of write-off periods for different types of property, one might expect the tax benefits of

¹⁸ See Joint Committee on Taxation (1985a).

ACRS to vary from industry to industry, depending upon the composition of fixed assets. One might also expect the tax benefits from ACRS to favor the acquisition by or of corporations with a higher proportion of post-1980 assets since assets must be purchased after January 1, 1981 to qualify for ACRS. Auerbach (1982) explains, however, that used assets, even though put into service before 1981, can still qualify if acquired by the current owner after the effective date.

Suppose the target corporation offers a NOL carryover, as explained above, of \$1 million while the potential acquiror has taxable income of well over \$1 million. The marginal tax liability on \$1 million in income, at the maximum marginal tax rate of 46 percent, would be \$460,000. The NOL therefore provides a tax savings from merger of \$460,000. This tax benefit could, according to the naive tax-incentive hypothesis, tip the balance in favor of acquisition, and the acquiring corporation presumably would be willing to pay up to \$460,000 for this tax benefit, if the merger were costless otherwise.

2. Restrictions on Carryover

There are, however, restrictions and limitations on the use of NOL carryovers that could serve to reduce the attractiveness of this potential tax benefit and thereby discount the tax variable as a merger motive. As explained by Feld (1982), for example, Section 269(a) authorizes the Treasury to disallow deductions and other tax benefits if the principal purpose of an acquisition is evasion or avoidance of federal income tax by securing a tax benefit that would not otherwise be enjoyed. This statutory restriction is intended to prevent cases of trafficking in loss histories which, as described by Bacon and Tomasulo (1983), "involves buying tax losses and credits without being primarily interested in acquiring the business of the loss company" (p. 838).¹⁹

The Treasury considers tax evasion or avoidance to be the principal purpose of an acquisition if it exceeds in importance any other single purpose. To make such a determination requires, according to Code of Federal Regulations (1985), "scrutiny of the entire circumstances in which the transaction occurred" [Section 1.269-3(a)]. Certain (rebuttable) presumptions have been established, however, to screen potential cases. In an acquisition of controlling interest in a target's stock, tax evasion or avoidance is presumed to be the principal purpose, for example, under the following set of circumstances: (a) a highly profitable corporation acquires a firm operating in an unrelated line of business and having NOL carryforwards and unused tax credits in an amount approximating its net worth, and (b) shortly thereafter assets are transferred from the acquiror to

¹⁹ According to Bittker and Eustice (1980), a principal purpose of Section 269 when it was first enacted in 1943 was to prevent further expansion of the market for "defunct corporate shells." This market had been growing because owners of businesses benefitting from the wartime boom were seeking methods of sheltering income from excess profits taxes.

the target so that the tax benefits which the target is unable to fully utilize can serve as an offset to taxable income of the acquiror's unrelated business.

The Treasury Department has disallowed what they view as suspicious merger-related deductions and other tax benefits, although a number of these rulings have been taken to court under Section 269. The success rate for Treasury in these cases appears to have varied over time. There have been periods when courts seemed willing to accept almost any business excuse as a rationale for the challenged acquisition and other periods when the courts showed considerable skepticism toward taxpayer arguments. According to Bittker and Eustice (1980), the Treasury has accumulated sufficient legal victories over the long term to pose a deterrent to trafficking.

In addition to Section 269 restrictions, the tax code contains special limitations on the use of carryovers following tax-free reorganizations and taxable stock transactions. These too could reduce the value of merger-related tax benefits. The application of special limitations to taxable stock transactions is governed by the rules of Section 382(a).²⁰ If the special limitations are found applicable, NOL carryovers are disallowed entirely. For tax-free reorganizations, the application of special limitations is governed by a different set of rules contained in Section 382(b). For these transactions, NOL carryovers are allowed in full as long as the loss corporation shareholders' continuing interest does not drop below 20 percent of the value of the successor corporation. Should their interest fall below 20 percent, the allowable NOL carryover is reduced by 5 percent for each percentage point below 20, thereby allowing only a partial carryover. While the special limitations of Section 382 are aimed at NOL carryovers, Section 383 incorporates the same limitations for carryovers of ITC's and other tax attributes. In sum, the special limitations of Sections 382 and 383 could make potential tax benefits less attractive, but the effectiveness of this constraint on carryovers is essentially a matter for empirical investigation.

Some commentators have argued that there is a certain asymmetry in restrictions on the use of carryovers, and that the naive tax-incentive hypothesis should be qualified accordingly. Harris et al. (1982) argue that the tax laws make it more difficult for an acquiring firm to carryover the NOL from the target than it is for the acquiror to carryover its NOL to the taxable income of a target. Thus, the probability of two firms merging is

²⁰ As interpreted by Joint Committee on Taxation (1985c), the special limitations apply if (a) one or more of the loss corporation's 10 largest stockholders have increased their common stock ownership within a 2-year period by more than 50 percentage points, and (b) the loss corporation fails to continue the conduct of a trade or business substantially the same as that conducted before the increase in percentage points just described.

expected to be greater, ceteris paribus, if the transaction can be structured with the loss corporation as the acquiror rather than the target.²¹

It should be apparent from the discussion of this subsection that the potential for a net tax gain from merging cannot be established simply by documenting that the tax code provides for the carryover of valuable NOL's and other tax credits in merger transactions. A more sophisticated specification of the tax-incentive model would take into account restrictions and limitations that could possibly reduce or eliminate the value of the tax benefit.

3. Alternatives to Acquisition

Assuming for purposes of discussion that a potential for net tax gain from carryovers does exist, the question becomes whether merger is the best method of realizing the tax gain. To the extent non-acquisition methods are available as substitutes for realizing the tax benefits of merger, the tax incentive for merger may be correspondingly reduced. One alternative method of transferring ACRS deductions and ITC's from loss corporations to corporations with taxable income has been "safe harbor leasing", which became quite popular during its brief period of existence. Safe harbor leases were made possible by the Economic Recovery Tax Act of 1981, which permitted businesses to sell tax credits and ACRS deductions outright while retaining actual use of the property. This was accomplished through sham lease-back transactions.²² According to Economic Report of the President (1982), the Treasury Department developed this mechanism to facilitate the transfer of tax benefits for two purposes: (a) to allow firms with no current taxable income to take advantage of the investment incentives provided by the new tax law, and (b) to reduce the incentive to merge, since firms with

²¹ Auerbach (1985) suggests that this asymmetry does in fact exist, at least with respect to tax-free reorganizations, because, as the acquiror, the loss corporation is almost certain to represent the required 20 percent or more of the new firm's total value.

²² "Safe harbor", according to Auerbach (1982), means that any transaction meeting certain legal requirements will be viewed as a lease for tax purposes, despite its unconventional nature. The unconventionality of "safe harbor" leases, as opposed to traditional leases, was the substantial loosening of the criteria for an 'at risk investment', which criteria would qualify a contract as a lease. Basically, the transaction was a "safe harbor lease" if the buyer of tax benefits ("lessor") holds an "at risk" investment of a minimum of only 10 percent of the asset's adjusted basis throughout the term of the lease. In a typical safe harbor lease ("wash lease") as explained by Auerbach (1982), the lessor borrows up to 90 percent of the purchase price from the lessee. The lease payment by the lessee and principal and interest payments by the lessor on the loan cancel one another. No cash changes hands other than the downpayment made by the lessor. For this, the lessor receives the tax benefits of ITC's and depreciation allowances. At the expiration of the lease, the asset is sold back to the lessee at a price set equal to zero, to avoid recapture taxes.

taxable income could purchase the tax benefits of other firms without acquiring them. It should be noted that this mechanism applied only to current year tax credits and ACRS deductions, and could not be used for carry forward or carryback of NOL's. It therefore is not a perfect substitute for merger in achieving tax benefits of carryover.

Sunley (1982) notes that safe harbor leasing came under widespread criticism because it was perceived as being used in unwarranted and unintended ways. The Tax Equity and Fiscal Responsibility Act of 1982 provided for the phaseout of safe harbor leasing, leaving the more traditional forms of leasing, with their more stringent criteria for an 'at risk' investment, as alternatives to merger for transferring tax benefits. At the time, Sunley (1982) argued that the repeal of safe harbor leasing would not eliminate the transfer of tax benefits through leases, but predicted that it would make leasing less efficient and thereby reduce its use.

Gilson et al. (1985) offer several alternatives to acquisition as means of achieving potential tax gains from the carryover of NOL's and other tax credits. Each involves an investment strategy for using up the tax benefits internally. For example, the loss corporation could sell depreciable assets (because the loss corporation was not making full use of depreciation deductions) and buy taxable bonds, thereby generating taxable income against which to apply its NOL and tax credit carryforward. This route may not provide a complete substitute for the tax benefits achievable through merger. Whether the information and transaction costs associated with these non-acquisition alternatives are lower (thereby eliminating a tax incentive to merge), as Gilson et al. argue, is a matter for empirical investigation. Any analysis of the tax-incentive hypothesis should, however, take these substitute methods into account.

C. Increased Depreciation Allowances from Stepped-Up Assets as a Merger Incentive

The tax benefits from stepping up assets have appeared, in some cases, to be large enough that some observers have suggested that they have affected the decision to merge as well as the form the merger takes. Suppose a target corporation has been taking depreciation deductions based on assets with an adjusted tax basis equal to \$60. Moreover, assume that the target is acquired for a purchase price (and fair market value) of \$120, \$90 of which is allocated to depreciable assets. If this transaction is structured either as a taxable asset acquisition (including a 337 transaction) or a taxable 338 transaction, i.e., as a new-cost-basis method of acquisition, the acquirer would be able to step up the acquired assets and take depreciation deductions on the new tax basis of \$90, rather than \$60. Assuming a marginal tax rate on corporate income of 46 percent, this would produce a merger-related tax savings of \$13.80 for the acquirer.²³

²³ However, since the \$13.80 would be saved over a number of years, its present discounted value would be less than \$13.80. Furthermore, there would be three at least partially offsetting tax liabilities: the target firm would be liable for recapture of past depreciation deductions; the target

The Joint Committee on Taxation (1984) suggests that oil and gas company acquisitions have been encouraged by opportunities to realize higher depreciation deductions from the step-up of assets. Brown (1982) agrees that the opportunity to step up can make assets less valuable to their owner than to an acquiring corporation. Moreover, it is argued that the tax benefits may be particularly great in an industry such as petroleum where the price of oil rose dramatically for several years. Marren (1985) argues that the significant inflation of the 1970's made large differences between fair market value of assets and their adjusted bases the norm, rather than the exception. In sum, an incentive for merger is more likely to exist if the acquiror has taxable income and the target's depreciable assets have the potential for being stepped up.²⁴

We now give consideration to the offsetting depreciation recapture provisions which are triggered by step-up and which could impose tax liabilities on the acquired firm. The depreciation recapture rules override the non-recognition of gain or loss by the acquired company otherwise provided for in either a 338 transaction or a taxable asset acquisition (with complete liquidation). Recapture of depreciation occurs when depreciable assets are sold by a target for more than their remaining tax basis. Tax recognition occurs, and at the ordinary income tax rate rather than at the capital gains tax rate. Moreover, the amount of (recapture) tax is calculated on the amount of prior depreciation deductions taken.²⁵ Step-up together with recapture determine the net merger-related tax gain.

To illustrate the potential tax cost of recapture, the Joint Committee on Taxation (1985a) provides a hypothetical example of a transaction in which

shareholders would be liable for capital gains taxes; and the target firm would have a deferred capital gains tax liability because of the increase in the value of its stock or assets. Recapture and the capital gains tax liability of target shareholders are discussed below. See Ferguson and Popkin (1982) for additional details on the mechanics of the tax benefits flowing from the opportunity to step up assets and, as a result, raise the current market value of the target corporation.

²⁴ The Joint Committee on Taxation (1985a) suggests that the value of step-up may be more difficult to measure for non-depreciable assets. Land, for example, is not depreciable so the tax benefit of a high basis tends not to be realized until subsequent disposition of the property, and the form of the benefit is a reduced taxable gain. Similarly, a step-up in the basis of inventories will eventually appear as an increase in the cost of goods sold and at that point reduce taxable income.

²⁵ Joint Committee on Taxation (1985a) provides a numerical example to show that the net tax benefit (i.e., increased depreciation allowances less recapture taxes) of step-up is also a function of the discount rate. This is because the tax benefits from larger depreciation allowances will be realized over the remaining tax lives of assets while recapture tax is generally payable in the first year. *Ceteris paribus*, the present value of the net tax benefit is greater, the lower is the discount rate.

much of the target's adjusted tax basis has already been depreciated, and this depreciation is subject to recapture. The discussion concludes with a recommendation that the transaction not be structured as a taxable asset acquisition or 338 transaction under such circumstances since there is little or no benefit to step-up and the target's shareholders would incur capital gains taxes.²⁶

The consideration of recapture as a potential tax cost becomes more complicated with the recognition that the tax code contains different recapture provisions for different classes of property. As a result, the extent to which the target is subject to recapture, and therefore the net value of step-up, depends on the mix of property. As explained by Marren (1985), the depreciation recapture rules are contained in Sections 1245 and 1250, both of which distinguish between (a) recovery property placed into service under ACRS, and (b) property placed into service prior to 1981. For Section 1245 recovery property,²⁷ the recapture amount is taxed as ordinary income in an amount equal to all ACRS deductions previously taken. For Section 1250 recovery property which is residential real property,²⁸ the recapture amount, taxed as ordinary income, is only prior depreciation deductions which exceed those allowable under the straight-line method. Commercial or non-residential real property is treated as if it were Section 1245 property. For property placed into service prior to 1981, the gain on Section 1245 property would be taxed as ordinary income in an amount equal to all depreciation and amortization taken since 1961, and for Section 1250 property the amount would be the extent to which depreciation deductions after 1965 exceed straight-line deductions that would have been allowable. It appears from this difference in tax treatment that step-up would trigger larger recapture taxes on the gain from sale of Section 1245 property.

Marren (1985) explains that the step-up of asset basis triggers not only depreciation recapture taxes for the acquired corporation, but also recapture of investment tax credits and LIFO inventories. For qualified property (i.e., property eligible for the investment credit) disposed of before the end of its useful life, there will be an increase in the tax liability for the disposal year equal to the amount of the credit that is recaptured. For companies using LIFO, the LIFO recapture amount is equal to the excess of the value of the inventory under FIFO over its LIFO value. As with depreciation recapture,

²⁶ In testimony before a subcommittee of the Senate Finance Committee, the Chairman and Chief Executive Officer of Standard Oil of California stated that SoCal planned not to elect a stepped-up basis for the SoCal-Gulf merger because of the amount of recapture taxes that would be due. It was intended that a carryover transaction be executed instead. See Keller (1984).

²⁷ Section 1245 property includes personal property and other tangible property (not including a building or its structural components) used in manufacturing, production, or extraction.

²⁸ Section 1250 property includes real property, other than Section 1245 property, that is subject to depreciation.

the acquired company's non-recognition of gain or loss is overridden by the ITC (investment tax credit) and LIFO recapture provisions.

In sum, the various recapture provisions represent one tax cost that could serve to reduce or eliminate the value of tax benefits from the step-up of acquired assets. There is an additional tax barrier to the realization of this tax benefit because the use of a new-cost-basis acquisition method to obtain the benefits of step-up means that the transaction will be a so-called "taxable" one. That is, the target's shareholders must recognize any capital gain for current tax purposes, in contrast to tax-free reorganizations where recognition would be deferred.

The Joint Committee on Taxation (1984) considers the taxation of capital gains to the target's shareholders to be the principal disadvantage of a taxable transaction. Nonetheless, it is possible that there remains a net tax incentive to merge, due to step-up opportunities, or to structure the merger as a taxable transaction. Steiner (1977), for example, develops conditions under which a taxable transaction would still have a tax advantage over a tax-free merger. He explains that the tax-free merger may benefit the seller less than it disadvantages the buyer. Stated alternatively, if the "depreciation deduction to the buyer is more valuable than the avoidance of capital gains to the seller, there will be a net incentive to merge via a taxable rather than a tax free form" (p. 83). Through algebraic manipulation, Steiner shows this is more likely to be true the higher the tax rate on corporate income against which the depreciation deduction is taken, and the lower the capital gains tax sellers will have to pay.

Steiner ignores recapture taxes in his analysis, so a more general statement of the tax incentive would be that the depreciation deduction to the buyer must be more valuable than the avoidance of capital gains to the target's shareholders and any recapture taxes the target must pay. Furthermore, any NOL carryforwards or unused tax credits which are available in a tax-free merger cannot be carried over in a 338 transaction or a taxable asset acquisition. Thus, the decision as to which form a merger takes, and ultimately the merger decision itself, is rationally determined by weighing the tax benefits of stepping up assets, net of recapture and capital gains recognition, against opportunities to carry over NOL's and other tax credits.

Even assuming that the potential exists for a net tax gain from stepping up the basis of acquired assets, one cannot conclude that there is a tax incentive to merge unless it can be shown that alternative non-acquisition methods for realizing the potential tax benefit are weak substitutes. In this context, Gilson et al. (1985) suggest that the purchase of particular depreciable assets could represent a viable alternative to acquisition. Conceding that the piecemeal sale of assets may give rise to higher transaction costs, they argue that asset purchases might still be desirable because only those assets offering the greatest potential for tax gains could be purchased. Asset purchases appear more attractive in their model because they may also involve lower information costs (in terms of moral hazard, adverse selection, etc.) and because certain tax costs may be lower (i.e., prior to 1984, recapture could be deferred in an installment asset

sale). Mitigating factors such as these should be taken into account in specifying the tax-incentive hypothesis or, alternatively, in interpreting empirical tests of the hypothesis in its naive form.

D. Preferential Tax Treatment of Capital Gains Relative to Dividends as a Merger Incentive

Until January 1, 1987 capital gains were treated more favorably than dividends in the personal income tax system. The lower tax on capital gains relative to ordinary dividend income may have provided an incentive to retain earnings rather than to pay dividends, and the accumulation of these retained earnings then provided an incentive to make acquisitions, if the rate of return from merger was greater than the rate of return from other investments.²⁹

There were two aspects of the differential treatment of capital gains. First, individual shareholders were taxed at ordinary income rates, up to a maximum of 50 percent on dividends paid from corporate earnings. By contrast, individuals were taxed on only 40 percent of the capital gains from sale of stock (because 60 percent of the capital gains were deductible), which means that the maximum marginal tax rate on capital gains was 20 percent.³⁰ Second, shareholders could (and still can) defer tax on corporate income that was reinvested, but not on corporate income that was distributed as dividends.

The result of this differential, according to Feld (1982), was that there was a "substantial incentive to retain income in the corporation rather than to distribute it to shareholders as a dividend" (p. 56).³¹ This incentive increased with the proportion of high tax-bracket shareholders in the

²⁹ However, once the decision to merge has been made, the threat of capital gains taxation, to be borne by the target and its shareholders, provides an incentive to structure the merger as a tax-free reorganization. This part of the incentive is discussed in greater detail below.

³⁰ The difference in tax rates was increased by state taxation in some cases.

³¹ This incentive is stated more formally by Sherman (1972). His algebraic model shows that shareholders experience wealth gains from the conversion of dividends into capital gains as long as the personal tax rate on capital gains is lower than the personal tax rate on income, which historically has been the case. Furthermore, so long as the firm can earn a return equal to its cost of capital, reinvesting within the firm would produce a wealth gain for its shareholders. A more precise statement of the tax incentive can be credited to discussions with my colleague Michael Salinger who argues that the tax incentive depends not simply on the difference between the personal tax rates on income (t) and capital gains (c) but, instead, the ratio $(1-c)/(1-t)$. In either case, however, the tax incentive would be expected to increase if t rose, or c fell, or if t rose relative to c .

corporation.³² The retention incentive was also greater for investors who would, in fact, experience capital gains if they sold shares.

Taking the argument one step further, large accumulations of undistributed corporate earnings may have provided the firm with a tax incentive to merge, whether by tax-free reorganization or by taxable transaction, if the rate of return from merger was greater than the rate of return from other forms of investment. Which structure was chosen depended in part upon the composition of the target shareholders, because target shareholders in a taxable transaction would recognize any capital gains for current tax purposes while such gains could be deferred in a tax-free reorganization. Furthermore, the existence of an incentive to merge depended on differences in the relative cash positions of acquiror and target. In a taxable transaction, a positive incentive depended on the acquiring firm having excess cash (used to acquire the target), but the cash position of the target itself was not crucial. For tax-free reorganizations, by contrast, a positive incentive depended on one firm being cash rich and the other being cash poor, since the benefits of this structure hinged upon the firm with excess cash financing the investments of its merger partner.

There was, however, a potential tax cost to retention: Section 531 detailed an "accumulated earnings tax" on "unreasonable" accumulations of corporate earnings undertaken to shelter shareholders from personal income tax rates. The accumulated earnings tax was imposed at the rate of 27.5 percent on the first \$100,000 of "accumulated taxable income" and at the rate of 38.5 percent on accumulated income in excess of \$100,000. In applying the unreasonable accumulation rule, however, consideration was given to "reasonable needs of business" for accumulating earnings. According to Bittker and Eustice (1980), the accumulation of earnings for such purposes as expansion, acquisitions, retirement of debt, and redemption of stock generally qualified as reasonable business needs, thereby enabling the corporation to avoid the tax penalty. Feld (1982) suggests that it may be appropriate to discount the importance of this potential tax cost to retention.

A more obvious weakness in this tax-incentive argument is its failure to recognize that mergers and acquisitions are only one purpose to which retained earnings could be put. Alternatives include (a) internal expansion or diversification through new investment, (b) repurchase of the corporation's own stock, and (c) retirement of corporate debt. These alternative uses of retained earnings offer some of the same tax advantages as merger, and they can produce wealth gains for shareholders, so the relevant question is whether they represent higher return alternatives. One would expect the tax incentive to merge to be greater for large firms in stagnant industries having significant amounts of excess cash but lacking both attractive investment opportunities and the know-how needed for de novo entry into a new line of business. One would expect the tax incentive

³² If, by contrast, shares are held by tax-exempt organizations (e.g., charities and pension funds), retention has little or no value.

to be greater where the use of retained earnings to repurchase stock would trigger a capital gains tax for shareholders, since merger and some forms of taxable acquisition would not trigger a capital gains tax for shareholders.³³ The incentive to merge would increase along with the tax cost to using retained earnings to retire debt. This cost takes the form of foregone tax deductions on interest payments related to the indebtedness. In addition, the use of retained earnings to retire debt may run counter to a firm's efforts to achieve a target leverage ratio. Albeit with limitations, non-acquisition methods of avoiding the payout of dividends should not be ignored. A more sophisticated approach to the tax-incentive hypothesis would consider these alternatives, together with their tax, information, and transaction costs, and weigh these against the same factors for acquisitions.

In principle, one could control for these alternatives, either with multiple regression techniques or through sample selection, in order to isolate any pure tax effect. For example, holding investment alternatives constant as one does in regression analysis, one would expect to find the probability of merger increasing the higher is the personal income tax rate on dividends and the lower is the capital gains tax rate. If, instead, these alternatives are left out of the regression equation when they sometimes may represent more attractive uses of retained earnings, one will get a bias towards finding the naive tax-incentive hypothesis lacking in empirical support.

E. Interest Deductions on Debt-Financed Acquisitions as a Merger Incentive

Although corporations sometimes use accumulated cash to acquire other firms, according to the Joint Committee on Taxation (1985b), virtually all merger and acquisition transactions use some debt or equity financing. Between these two other methods of financing, the use of debt is said to have a tax advantage because the acquiror is permitted to deduct from taxable income the interest cost of the funds borrowed. By comparison, equity financing does not permit the issuer of stock to deduct the amount it pays (dividends) for the use of capital supplied by investors.

The difference in tax treatment can be illustrated with a numerical example drawn from Joint Committee on Taxation (1985b), which compares the after-tax rate of return on corporate income from an equity-financed investment with the after-tax return from a debt-financed investment. The after-tax return on \$100 in corporate income paid out as dividends is \$27, assuming the corporation must pay the maximum marginal tax rate on its income (46 percent) and assuming the shareholders face the maximum marginal tax rate on personal income (50 percent) with respect to the \$54 actually received as dividends. By comparison, the after-tax return on \$100 in corporate income paid out as interest to debtholders will be \$50. The \$100 is not taxable at the corporate level because interest payments in the

³³ Sherman (1972) also argues that shareholders might not welcome a stock repurchase and that extra transaction costs associated with it "make the practice inappropriate in many instances" (p. 525).

same amount are deductible; and if debtholders face the maximum marginal tax rate, they will realize \$50 in interest income on corporate income of \$100.³⁴

The deductibility of interest payments on debt is considered by many to affect not only the form an acquisition takes³⁵ but the merger decision itself. According to Joint Committee on Taxation (1985a), "the use of debt financing can reduce significantly the after-tax cost of an acquisition" (p. 41). Saul (1985) states that "[t]ax policies subsidize the use of debt to finance mergers and acquisitions" (p. 19), and "the subsidy for debt helps drive takeover activity" (p. 20).

Is this tax-incentive argument plausible? It implicitly assumes, for example, that an increase in leverage has a positive impact on the market value of a firm. Under what circumstances would this assumption be expected to hold? Modigliani and Miller (1958) considered this issue in their seminal article on the cost of capital and corporate financial structure. A major implication of their model is that, in a world without transaction costs or taxes, the value of a firm (or its cost of capital) is independent of its capital structure. That is, the use of debt financing to increase leverage would not be expected to increase the value of the firm (or reduce its cost of capital). This result is attributed to opportunities to create "homemade leverage" in amounts needed to generate equivalent returns from alternative investments that represent different degrees of leverage for the investor. On the other hand, when the Modigliani-Miller model is extended to allow for corporate taxes and the deductibility of interest on debt, it can be shown that the weighted cost of capital declines as leverage increases. In this version of their model, the subsidy to debt does have the effect of increasing the value of the firm. The model has limited usefulness in this form, however, because it implies that a higher debt-to-equity ratio is always better and that 100 percent debt is best, an implication that is not consistent with observed corporate capital structures.

The original Modigliani-Miller model has since been much modified with a now common prediction that an optimal degree of leverage exists. These new models can be summarized by saying that the tax subsidy to debt initially makes increasing levels of leverage attractive -- an implication of particular interest here -- but beyond some point its positive effect is outweighed by offsetting considerations which cause the weighted cost of capital to rise and the market value of the firm to fall. Frequently cited as

³⁴ A more formal statement of the tax advantage of debt appears in Sherman (1972).

³⁵ As explained earlier and shown in Table 3, the use of significant amounts of debt to finance an acquisition tends to preclude use of Type A, B and C reorganizations as methods of acquisition. Ceteris paribus, the availability of the interest deduction creates a bias in favor of structuring the transaction as an asset acquisition, 338 transaction or taxable stock transaction.

"offsetting considerations" are bankruptcy costs and agency costs. The probability that legal, accounting, and administrative costs will be incurred in bankruptcy proceedings will increase as the debt ratio rises and thereby increases the chance that higher fixed charges will not be covered. Agency costs refer to costs that must be incurred to protect the position of bondholders, given that the interests of stockholders and bondholders can be expected to diverge. Bankruptcy costs, agency costs, multiple tax shields [see, DeAngelo and Masulis (1980)], and information asymmetry and signalling [see, Ross (1977)] can serve to limit the leverage ratio that maximizes the value of a firm. Thus, the finance literature suggests that a firm's capital structure is not indeterminate. Moreover, there is arguably a range over which tax-induced increases in leverage can increase the market value of a firm.

The argument that increased leverage generates tax benefits often fails to consider non-acquisition uses to which the proceeds of debt could be put, which would mitigate the tax incentive to merge. One alternative to acquisition is internal expansion. By borrowing a sum of money to repurchase its own stock, the firm could realize the tax benefits of a higher debt/equity ratio without merging. Capital gains taxes would be incurred by selling shareholders in either case, but the firm could reduce its taxable income by taking an interest deduction on the funds borrowed to finance the repurchase. In effect, continuing shareholders would have acquired stock of redeemed shareholders with a resulting increase in per-share cash flow and therefore per-share value.

Although alternatives to acquisition should not be overlooked, the finance literature offers a number of theories that attempt to explain why the tax advantage of increased leverage is more valuable in connection with mergers and acquisitions. Three such theories are summarized in Shrieves and Pashley (1984b) and will be referred to in subsequent discussion as the "latent debt capacity" motive, the "increased debt capacity" motive, and the "neutralization of wealth transfers" motive. All three motives have as a testable implication an expected merger-related increase in leverage.

For the first theory, it is alleged that a firm's failure to exploit the potential tax subsidy of debt-financing creates an incentive for acquisition by another firm whose management will take full advantage of the target's debt potential. This latent debt capacity merger incentive is attributed to Lewellen (1971) and a recent statement of the argument can be found in the Joint Committee on Taxation (1985a). Lewellen refers to "management ineptitude in capital structure planning" by the target and writes of the "astute acquiror" who is the "first to identify and react to the error" (pp. 524-525). When cast in these terms, however, the motive for merger appears to be inefficient management, or differential efficiency, rather than potential tax gain.

For the second motive, it is alleged that merger may reduce the chance of default at pre-merger levels of debt, thereby creating debt capacity for the combined firm which is greater than the firms' combined pre-merger debt capacities. This is really an argument that scale and/or scope economies may exist for debt capacity as a result of merger. Moreover, it is argued

that the anticipated merger-related increase in leverage is facilitated by the tax advantage to debt financing and by the shareholders benefitting from the tax saving. According to this increased debt capacity motive, also attributed to Lewellen, the same tax saving is available from debt financing of internal expansion but the heavier debt load would increase the chance of default if done internally while it would reduce the chance of default if done in combining firms.

For the third motive, it is argued that merger may reflect a situation in which one of the merger partners would have been solvent, and the other insolvent, had the merger not occurred. In this case, the merger decreases the wealth of the solvent firm's shareholders and increases the wealth of the insolvent firm's bondholders. As a result, there is a merger-related wealth transfer from stockholders to creditors, contrary to the latent and increased debt capacity rationales wherein stockholders are expected to benefit. Carrying the argument further, by increasing leverage in connection with the merger, stockholders can minimize or neutralize wealth transfers due to these "coinsurance effects". This is particularly attractive because of the tax benefits of debt financing. Thus, stockholders end up gaining to the extent of the tax savings net of the reduction in wealth transferred from them to creditors. Empirical tests of this and the other two tax-related leverage theories will be discussed in the next section.

There are also restrictions or limitations on the deductibility of interest expense on debt-financed acquisitions which might mitigate the tax incentive to merge. One restriction exists in Section 279, which disallows deductions for certain corporate acquisition indebtedness interest payments in excess of \$5 million per year. According to Joint Committee on Taxation (1985a) and Bittker and Eustice (1980), the limitation applies if the acquiror issues obligations (bonds, debentures, notes, etc.) to the acquired firm's stockholders as consideration for an acquisition of stock or assets, and (a) the obligations are subordinated, (b) the obligations are convertible, and (c) the issuer has an excessive debt-to-equity ratio (i.e., debt to book net worth is greater than 2 to 1), or projected annual earnings do not exceed 3 times annual interest costs.

The Section 279 restriction on interest deductions can best be understood in the context of practices prevailing prior to enactment of the section in 1969. According to Steiner (1977) and Feld (1982), some acquirors issued their own marketable long-term debentures in exchange for the target's stock. Often these debentures could be converted into the acquiror's common stock at some time in the future. Thus, the target's shareholders received debt instruments that were liquid and directly related to the equity value of the acquiror. Although use of debt to finance acquisitions tended to make them taxable events, interest payments by the new corporation were deductible and the target's shareholders could elect installment reporting of the gain, thereby deferring capital gains taxes for

the life of the debenture or until it was sold or converted.³⁶ Thus, the acquiror had the opportunity to step-up the basis of assets, in addition to taking interest deductions, while the target's shareholders received a tax deferral on capital gains, thereby providing the practical benefits of a tax-free reorganization.

Steiner (1977) has shown algebraically that the following conditions must be satisfied for there to be a tax advantage of a convertible debenture exchange over another taxable transaction:³⁷

- (a) the acquiror prefers a convertible debenture exchange if the rate of return earned by the new corporation exceeds the debenture rate he must pay; and
- (b) the selling shareholders prefer a convertible debenture exchange if their after-tax annual debenture interest payment plus the annual equivalent of the saving in capital gains tax, if they accept debentures, exceeds their after-tax share of the earnings of the merged firm, if they accept stock.

These conditions are more likely to be satisfied simultaneously the greater the value to sellers of the deferral of the capital gains and the higher the corporate tax rate (i.e., the more valuable the interest deduction). Steiner concludes: "This taxable convertible route provided the greatest incentive to merge relative to the tax-free acquisition." (p. 84)

Steiner argues that this tax advantage was weakened significantly by the Tax Reform Act of 1969. That legislation established the limitations on interest deductions now comprising Section 279. It also prohibited installment reporting of the sale when "readily marketable" or "payable on demand" indebtedness was used.

In contrast, Bittker and Eustice (1980) suggest that the tax advantage has not been weakened significantly. They claim that the provisions of Section 279 "can be avoided in various ways" (pp. 4-29). Ely (1981) and Joint Committee on Taxation (1985a) explain, for example, that when term debt of the acquiror that is not payable on demand or readily marketable is used to acquire the target, recognition of gain generally may still be deferred until payments on the note are received. To the target's shareholders, this tax deferral can approximate the tax benefits of a tax-free reorganization, although compared to the use of convertible debentures it

³⁶ Presumably the rationale for allowing the reporting of gain on an installment basis was that the seller might not have the cash needed to pay current taxes.

³⁷ Conditions for taxable transactions to have a tax advantage over a tax-free reorganization have also been developed by Steiner and were discussed earlier in connection with increased depreciation allowances from asset step-up.

results in some sacrifice of liquidity. To the acquiror, the use of debt financing in connection with one of the (taxable) new-cost-basis methods of acquisition means that interest expense is fully deductible and there is the opportunity to step-up the basis of assets for a tax benefit from higher depreciation allowances.

The limitations that Section 279 may impose on the deductibility of interest payments relate only to debt obligations issued to the target as consideration. Aside from this form of debt, current law allows a full deduction for interest on debt incurred (e.g., funds borrowed from financial institutions) to finance an acquisition. Thus, the impact of the restriction might be small.

To complete this discussion of interest deductions on debt financed acquisitions, it is appropriate to consider Employee Stock Ownership Plans (ESOP's) as a special case of potential tax subsidies to debt financing. Key et al. (1985) and Joint Committee on Taxation (1985b) define an ESOP as a tax-qualified plan primarily designed to invest in employer stock. Preferential tax treatment is given to ESOP's to encourage employees to gain an equity interest in their employer.

ESOP's can also be used as an especially attractive financing tool in mergers and acquisitions.³⁸ Typically, the ESOP would borrow an amount necessary to acquire the target but use the proceeds to purchase the employer's stock. The employer, in turn, would use the cash received from the ESOP to make the acquisition. In post-acquisition years, the employer would make tax-deductible cash contributions to the ESOP in the amount needed to amortize the loan principal and to make interest payments on the loan. Interest payments are fully deductible, as they are on any loan, but the employer may also deduct amounts used to repay the loan principal up to a deduction limit of 25 percent of payroll costs. As for the bank or other lender, it may exclude, from its gross income, 50 percent of the interest earned with respect to any such loan. This is done as an inducement to make loans to ESOP's, and as Key et al. note, competition among lenders may induce them to share the benefits of the tax break with borrowers, in the form of lower interest rates on the loan. Thus, use of this financing technique could mean a lower cost of borrowing than would be available with conventional debt or equity financing.

While the ESOP financing technique provides an incentive to merge, those funds can also be used for other investment purposes including attempts by management to oppose hostile takeover attempts. As Key et al. point out, the ESOP's are sometimes used to thwart takeover attempts. Moreover, formation of an ESOP can be costly (in terms of legal and other professional fees) and time consuming. Because of these transaction costs and because ESOP funds can be used for non-merger purposes, the ESOP

³⁸ Joint Committee on Taxation (1985b) makes similar arguments with respect to overfunded pension plans but the nature of the alleged tax incentive to merge is more elusive and, therefore, will not be discussed here.

route may not be attractive, where, for example, acquisition timing is important.

F. Summary and Conclusions

In this section, four tax provisions were considered as potentially providing incentives to merge. Carryover of NOL's and unused tax credits was found to be a potential tax benefit associated with tax-free reorganizations and ordinary taxable stock transactions, while higher depreciation allowances from step-up and interest deductions on debt financing were found to be potential tax benefits associated with taxable transactions. The more favorable tax treatment of capital gains in the personal income tax system was viewed as providing a merger incentive independent of the form a transaction takes. The circumstances under which potential tax gains provide a merger incentive were derived from the naive tax-incentive hypothesis.

The possibility that the naive tax-incentive hypothesis overstates the merger incentive was considered with respect to each tax variable. We conclude from this examination that the potential for tax gain may be reduced because of restrictions or limitations on the use of tax benefits, or because of offsetting tax costs. Moreover, any tax incentive to merge might be mitigated by the availability of non-acquisition methods of realizing the same tax benefits afforded by merger. Given these possibilities, it becomes apparent that models used to empirically estimate the relationship between tax variables and merger decisions need to take these other influences into account in order to isolate any tax effect on mergers. Not considering these other influences, or omitting important variables, may bias the estimated impacts of the included variables towards a false reading of insignificance. More importantly, all four of the major tax-incentive provisions should be considered simultaneously, along with their restrictions and non-acquisition alternatives. It is their 'net' impact that matters in the merger decision. With these principles in mind, we are now prepared to consider empirical tests of the tax-incentive hypothesis.

VI. Survey of Literature on Tax-Motivated Mergers

A. Overview of Evidence on Tax Incentives

A considerable amount has been written about the tax treatment of corporate mergers and acquisitions and the tax incentive to merge. To the extent evidence is offered in support of the positions taken, it is largely anecdotal in nature. Relatively few studies have attempted to isolate the tax effect on mergers in a systematic manner. The findings of those that have addressed one or more of the four alleged tax incentives considered in the previous section are briefly summarized below. This evidence is very limited and when read in the best light it is somewhat inconclusive. A more detailed critique of available methodologies for testing the tax-incentive hypothesis is presented in the Appendix.

Carryover of NOL's and Unused Tax Credits. Harris et al. (1982) found that the probability of a firm being acquired is less, the larger is the target's NOL carryforward. This statistically significant relationship is argued to be consistent with a more sophisticated version of the tax-incentive hypothesis -- one that recognizes it is more difficult to realize tax benefits when the target is the loss corporation than when the acquiror is the loss corporation. However, this version may be difficult to disentangle from another story: 'losers' are not purchased as often as 'winners'. In contrast to Harris et al., Robinson (1985) failed to find a significant relationship between the existence or magnitude of acquired NOL'S (and unused tax credits), whether those of the acquiror or the target, and the premium paid to the target's stockholders as a measure of the importance of merger gains. Moreover, Auerbach and Reishus (1987a, 1987c) conclude from their estimate of tax gains that the potential tax benefit from carryovers is a factor in a significant number of mergers but is unlikely to be determinative in more than a small fraction of them.

Higher Depreciation Allowances from Step Up. The percentage of premiums offered for Marathon's stock by Mobil and U.S. Steel that was offset by anticipated tax savings from the step-up of basis and partial liquidation of Marathon's assets was estimated by the FTC (1982) to be 25 percent and 26 percent for Mobil and U.S. Steel, respectively, leading to the conclusion that this might have been what was needed to induce enough shareholders to sell. Brown (1982) also looked at the U.S. Steel-Marathon merger and calculated that the new opportunities for cost depletion of Marathon's oil reserves would produce a tax savings of approximately \$100 million in the first year and an additional \$1 billion over the life of the oil field. Noting that recapture taxes could be avoided through partial liquidation and a consolidated tax return, Brown concludes that "this is clearly a situation in which the tax system enhances the opportunities for corporate mergers" (p. 564). Auerbach and Reishus (1987a, 1987c) estimate the potential value of tax benefits from step-up in basis for acquired firms for structures subject to only limited recapture. They conclude that the tax gains are positive but small and are substantially smaller than what they estimated for carryover of NOL's and unused credits. In contrast, Robinson (1985) found that the tax advantage of step-up may be offset by the tax cost of recapture.

Dividends and Capital Gains. Most empirical work testing the effects on merger incentives of the preferential tax treatment of capital gains over dividends deals with the choice of merger form rather than the decision to merge. Carleton et al. (1983) used the acquired firm's stock-market-to-book value as a proxy for potential capital gains and found that the probability of being acquired in a tax-free securities exchange relative to a taxable cash transaction is higher, the greater is the market-to-book ratio. This finding is interpreted as being consistent with the proposition that target shareholders prefer to avoid capital gains taxes, *ceteris paribus*. Along this same line Robinson (1985) found that the premium offered target shareholders is lower for tax-free reorganizations than for taxable transactions. He argues that this finding is consistent with the proposition that tax deferral would be valuable to target shareholders; thus, they would be willing to accept a lower premium. A more ambiguous finding on the import of this tax incentive comes from Boucher (1980), who interviewed a panel of merger experts on the importance of each of 31 possible merger motives and the frequency with which each has that importance. He found that the panelists were aware of the different tax treatment of capital gains and dividends and how acquisitions might be favored as a result. However, the motive "satisfy present stockholders who would prefer capital gains rather than dividends" ranked only 13th in significance among the motives considered by Boucher. This somewhat ambiguous ranking might derive from a confounding of the two separate incentives related to the preferential capital gains tax.

Interest Deductions on Debt Financing. Using a time-series model to capture the effects of the Tax Reform Act of 1969, Beckenstein (1979) found merger activity to be less than otherwise expected in the post-1969 period. This confirmed his contention that the new tax law's restrictions on deductibility of interest payments on convertible debentures would dampen merger activity. Asquith et al. (1983) found that stockholders of bidding firms received lower cumulative excess returns after 1969. The yearly average number and constant dollar value of acquisitions was lower in their post-1969 than in their pre-1969 test period,³⁹ suggesting that an increase in the number of mergers was not the cause of the lower returns. Schipper and Thompson (1983), using a somewhat similar methodology, also found that the tax law changes of 1969 and other regulatory changes occurring at about that time had a significantly adverse impact on the share values of bidding firms.

The potential tax benefits from debt-financed acquisitions have also been examined in terms of the implications for changes in leverage. Stevens (1973) found that acquired firms have systematically lower levels of leverage

³⁹ The pre-1969 period used by Asquith et al. was 1963-1969, and their post-1969 period was the 10 years following 1969. In the period 1963-1969, according to the FTC's Statistical Report on Mergers and Acquisitions, 1979 (1981), the average number of acquisitions per year was 102, and acquired assets averaged \$6.186 (billion) per year. In the period 1970-1979, the average number of acquisitions per year was 79, and assets acquired averaged \$6.188 (billion) in nominal dollars.

than their non-acquired counterparts, consistent with the latent debt capacity version of the tax-incentive hypothesis. However, Shrieves and Pashley (1984b), also examining leverage ratios, found no significant difference between pre-merger leverage ratios of acquired firms and a control group of non-merging firms. In various other comparisons involving leverage ratios, Shrieves and Pashley did find support for the increased debt capacity and neutralization of wealth transfers arguments. Finally, Auerbach and Reishus (1987a, 1987c) seek to determine whether merger-related increases in leverage are observed, for that would be consistent with the potential for tax benefits from debt-financed acquisitions. They find, however, that the pre-to-post debt/equity ratio increased only slightly for merged firms and conclude that even this change could simply reflect aggregate changes in the ratio.

B. Conclusions

In conclusion, existing studies provide mixed empirical support for the tax-incentive hypothesis. It seemed appropriate under these circumstances to examine more closely the methodologies used in these studies and to consider the manner in which research efforts in this area might be extended. This more technical task is presented in the Appendix.

One motivation for the critical review of existing studies was to determine the level of research effort on the tax-incentive hypothesis. The literature search did, in fact, produce relatively few studies with a focus on alleged tax incentives to merge and the empirical results from these studies tend to be mixed: support ranges from weak to negative for all four of the tax opportunities.

The inconsistency and weakness of results stems from a variety of factors including (a) inherent limitations of the methodology used, e.g., case studies and opinion surveys; (b) possible flaws in the interpretation of research findings, e.g., Harris et al. (1982) and Carleton et al. (1983); (c) failure to consider offsetting tax costs and non-acquisition alternatives to the realization of tax benefits, e.g., Brown (1982); and (d) failure to isolate the alleged tax effects from other determinants of merger activity, or specification error with a bias towards a false reading of insignificance for the tax effects in time-series studies, event studies, and use of leverage ratios to measure tax effects; (e) differences in operationalization of tax variables; (f) differences in time periods considered; (g) differences in methods and focus (e.g., distinctions between potential tax benefits and tax-motivated mergers or tax-motivated forms of merger); and (h) last, but most important, the major tax provisions should be considered simultaneously since it is their 'net' impact that matters in the merger decision.

Reconciling the findings of existing studies, while discounting the results of the more seriously flawed efforts, results in the following tentative conclusions concerning tax incentives to merge. Support for the tax-incentive hypothesis ranges from weak to negative with respect to the carryover of NOL's and unused tax credits. The hypothesis is only weakly supported with respect to the potential to step-up assets, if one relies on the work of Auerbach and Reishus (1987a, 1987c) and Robinson (1985) in

conjunction with that of Brown (1982) and the FTC (1982). On the other hand, Robinson (1985) provides some support for potential capital gains taxes as a determinant of merger form. The findings of Beckenstein (1979), Asquith et al. (1983) and Schipper and Thompson (1983) are at least consistent with the argument that merger decisions are sensitive to tax-code provisions pertaining to the deductibility of interest expenses on acquisition-related indebtedness. Finally, Shrieves and Pashley (1984) provide some support for the tax-incentive hypothesis, with respect to merger form, if one accepts merger related changes in leverage as a measure of tax subsidy to debt financing.

While these conclusions are, at best, weakly supportive of the tax-incentive hypothesis, they are also tentative and qualified, clearly indicating the need for further research. Judging by the research proposals reviewed in connection with this paper, the subject appears to be of interest to academics. It is also apparent that this field of research is multi-disciplinary in nature, cutting across tax law, accounting, and finance as well as economics. Among available techniques for testing the tax-incentive hypothesis, the use of premiums paid, as suggested by Robinson (1985), holds some promise, although total wealth gain may be a more appropriate dependent variable. In addition, extensions of the time-series model and the probit (or discriminant) model along the lines suggested in the Appendix are worth considering. Besides arriving at suitable techniques for testing the tax incentive hypothesis, the researcher faces additional hurdles. The tax variables of interest are difficult to operationalize because of data limitations, restrictions and limitations on the use of tax benefits, and offsetting costs. There is also a challenge to be met in specifying and measuring non-acquisition methods of realizing potential tax gains. Furthermore, the merger incentive allegedly produced by the deductibility of interest on debt-financing needs to be modeled more carefully, and most important, should be included in any studies of step-up, carryovers and capital gains tax impacts. Finally, it appears that greater consideration must be given to possible non-tax determinants of why firms merge if unbiased tests of the tax-incentive hypothesis are to be designed.

VII. Tentative Assessment of the Role Played by Taxes in Recent Merger Activity

Our ability to assess the role of taxes in explaining recent merger activity is restricted by the somewhat limited empirical tests of the tax-incentive hypothesis. The most that can be offered is a tentative assessment based on the assumption that the potential for tax gain associated with the four tax variables does provide an incentive to merge. Could we attribute merger activity in recent years to tax considerations even under this less restrictive standard? As described in Section II, aggregate merger activity increased during the 1980's compared to the 1970's, with spurts occurring in 1981, 1984 and 1985, and with preliminary indications of the largest value of transactions yet in 1986. An important aspect of this increase has been an increasing number of large-scale mergers and acquisitions. In order to conclude that tax considerations played an important role in explaining these changes, one would need to find corresponding changes in the tax code or its application that would be expected to provide additional stimulus to merger activities. One would also need to find that tax code changes were particularly favorable to large-scale transactions.

Congress passed several tax bills during the 1980's, and there have been numerous IRS rulings and court cases on tax matters. Limiting our discussion to legislative changes only, we must consider the merger-related provisions and predicted effects of the Installment Sales Revision Act of 1980, Economic Recovery Tax Act of 1981, Tax Equity and Fiscal Responsibility Act of 1982, and Tax Reform Act of 1984. Each has a direct or indirect effect on one or more of the four tax variables of interest here. The predicted effects of these legislative changes will be considered below to see if a pro-merger pattern or large transaction bias emerges, and to single out any tax changes that might be particularly stimulative as merger inducements.

The Installment Sales Revision Act of 1980 (ISRA) defines "installment sale" as a disposition of property or a business in which the seller receives at least one payment after the close of the taxable year in which the disposition occurs. (Thus, the seller initially receives installment notes along with other consideration.) According to Ely (1981), prior to ISRA the receipt of more than 30 percent of the selling price in the year of sale subjected the entire capital gain to tax in that year. ISRA permits greater flexibility by allowing the seller to set his own limit on the sale-year payment, subject only to a ceiling of 99 percent. The new law also eliminates the requirement that the sale have two or more payments to qualify for installment reporting. With ISRA the transaction can be structured so that just one payment is made (after the year of sale). Ely argues that the increased flexibility created by these changes and others should create additional opportunities to sell firms on an installment basis.

Perhaps more to the point, ISRA provides that capital gain from the sale can be deferred, and recognized by the seller as payments of principal are received.⁴⁰ This option appears to be particularly attractive for 338 transactions and taxable asset acquisitions (with liquidation), where the acquiror has the opportunity to step-up the basis of assets. Formerly, there had been a tax cost to step-up in installment sales because capital gains were recognized by target shareholders for current tax purposes, even though installment notes might be outstanding for several years. Thus, ISRA might create an incentive to structure acquisitions as taxable transactions. In so doing it may provide some additional inducement to merge but does not appear to be particularly favorable to large-scale transactions.

The Economic Recovery Tax Act of 1981 (ERTA) contains several merger-related provisions. For example, ERTA reduced the marginal tax rates on personal income (including a top-bracket reduction from 70 to 50 percent), and reduced the marginal tax rate on capital gains from 28 to 20 percent. As discussed previously (p. 27, footnote 31), the relevant formula for the existence of a merger incentive is a ratio with the capital gains tax in the numerator, and the personal income tax in the denominator. This formula fell from 2.4 to 1.6 with the tax law change,⁴¹ indicating that the incentive to merge decreased with this tax law.

The accelerated cost recovery system (ACRS) provisions of ERTA, as explained earlier, significantly reduced the time periods over which classes of assets could be depreciated, and permitted more of the depreciation to be taken in the early tax life of an asset. These changes would tend to increase potential depreciation allowances that could be realized from stepping up a target's asset basis. Alternatively, the higher depreciation allowances would tend to increase NOL's for unprofitable or what otherwise would be marginally profitable firms. In addition, there would be a reduction in corporate taxable income against which previously incurred NOL's could be applied. Thus, more firms would have NOL carryforwards and unused tax credits and the potential tax benefits from merger would be larger. Many observers predicted that ACRS would make it more difficult for firms to use up the carryforwards and tax credits internally, thereby making mergers more attractive as an alternative. ERTA also liberalized the investment tax credit for some classes of property and permitted a 25 percent credit to be taken for incremental research and experimentation expenditures. These changes would tend to increase the number of unprofitable or marginally profitable firms with unused tax credits and increase the magnitude of those credits, thereby providing a further incentive to merge.

⁴⁰ To qualify for this deferral, the transaction must involve installment notes that are non-readily marketable and not payable on demand.

⁴¹ Before 1981, $(1-c)/(1-t) = (1-.28)/(1-.70) = 2.4$; after 1981, $(1-c)/(1-t) = (1-.20)/(1-.50) = 1.6$.

Since ACRS and liberalized investment tax credits (ITC's) were made available to both small and large corporations, the tax code changes would not appear to be particularly favorable to large-scale transactions. One would have to argue that large corporations are more capital intensive or have a higher propensity to investment in order for them to benefit disproportionately from these deductions and credits. This is not obviously the case, however, and even if true it is not clear that these changes favored large corporations any more than did previous depreciation deductions and ITC's.

On the other hand, ERTA extended the carryforward period for NOL's and unused tax credits from 7 to 15 years in an effort by Congress to increase the likelihood that a firm could fully utilize tax benefits before they expired. To this extent, the change reduced the incentive to merge.⁴² Furthermore, the safe harbor leasing provisions of ERTA provided an alternative to acquisition as a method of transferring ACRS deductions and ITC's from loss corporations to corporations with taxable income. However, this provides an ability to carryover only current year losses to a profitable corporation, and does not include the merger option of carrying over carry-forwards or carrybacks of NOL's. Even so this would be expected to reduce the incentive to merge as a method of realizing these potential tax benefits. In sum, the predicted combined effect of the merger-related provisions of ERTA would seem to have been ambiguous.

Many provisions of the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) were also merger-related. Bittker and Eustice (1985) argue that TEFRA "materially contracted the safe-harbor leasing rules" (p. S16-1). As explained by Green (1982), safe-harbor leases entered into after the effective date of TEFRA provisions were subject to rules that reduce lease term, limit ACRS benefits and delay full ITC benefits. Moreover, TEFRA provided for the termination of safe-harbor leasing after 1983.⁴³ Thus, it appears that safe-harbor leasing became a less attractive substitute for merger as a method of realizing potential tax benefits.

Also rewritten in TEFRA were the ACRS and ITC provisions. These revisions tended to reduce the incentive to merge because they reduced the value of ACRS deductions and ITC's. TEFRA extended the recovery period

⁴² An offsetting effect, it might be argued, is that the extension also made firms with NOL carryforwards and unused tax credits more attractive as potential targets. However, the hypothesis being considered is that loss corporations, *ceteris paribus*, tend to be acquired by firms with taxable income. As such the acquiror would be in a better position than the loss corporation to fully utilize carryforwards and tax credits even if there is a statutory time limit of only 7 years. Thus, the net effect of the extension would appear to reduce the incentive to merge.

⁴³ A new class of "finance leases" would be available after 1983. Although considered to be more liberal than traditional leveraged leases, finance leases were not as free from restriction as the safe-harbor leases they were intended to replace.

and modified the recovery method for ACRS deductions. The acceleration of ACRS was repealed. As for ITC's, TEFRA reduced from 90 to 85 percent the amount by which the ITC could offset net tax liability exceeding \$25,000. Moreover, TEFRA allowed only 20 percent of an ITC to be taken in each of the first five years as opposed to the 100 percent formerly allowed for the year when the property was placed into service.

Another disincentive to merge was created by TEFRA's treatment of taxable stock transactions that are followed by partial liquidations of target assets. Essentially, TEFRA changes meant that an acquiror generally would be denied the opportunity to step up the basis of those properties distributed to it by a target in a partial liquidation.⁴⁴ Either the acquiror would have to forego the opportunity to step up the target's assets, or it had to step up all the acquired assets and this would immediately trigger recapture taxes. Previously, according to Joint Committee on Taxation (1984), the acquiror had the option of directing the target to distribute a portion of its assets through a partial liquidation. Since the acquiror was permitted to step up the basis of those assets distributed, there was an incentive to distribute those assets for which the potential for step-up was the greatest. Moreover, a partial liquidation done in connection with a consolidated return meant that there was no recapture of ITC's, and other recapture taxes were deferred. Those assets most vulnerable to recapture taxes could remain with the target/subsidiary. TEFRA's elimination of the option to selectively step up assets could, therefore, be viewed as a disincentive to merge.

The predicted effects of other merger-related provisions of TEFRA are less obvious. The new Section 338 rules, for example, enabled parties to elect to have stock purchases treated as asset acquisitions (with liquidation under Section 337). As a result, and in contrast to regular taxable stock transactions, the target firm recognized no gain and the acquiror had an opportunity to step-up assets. Since the predecessor provision, Section 334(b)(2), provided for somewhat similar treatment, the predicted effect of the TEFRA change on merger activity is not clear.

The Tax Reform Act of 1984 (TRA) has been characterized by some as an exercise in "loophole closing".⁴⁵ Numerous provisions appear to deal with particular alleged "abuses" that had been receiving public attention. In the corporate area, these include the curtailment of various innovative financing techniques developed by investment bankers.⁴⁶ TRA also curtails opportunities to create royalty trusts to effect tax-free distribution of interests in oil properties. Another TRA provision denies a deduction for "excessive" compensation ("golden parachute payments") to corporate officers when triggered by takeovers. According to Bittker and Eustice (1985), this provision also imposes a 20 percent excise tax on the excess, the tax to be

⁴⁴ See Joint Committee on Taxation (1984).

⁴⁵ See, for example, Willens and Mirsky (1984).

⁴⁶ For example, some provisions were intended to prevent certain debt/equity swaps from qualifying as tax-free transactions.

paid by the executive along with his personal income tax. To the extent generous severance contracts created a disincentive for corporate executives to resist hostile takeover attempts, these curbs would be expected to make such attempts more difficult.

The remaining relevant corporate tax provisions of TRA involve what Willens and Mirsky describe as "minor tinkering with highly specialized situations" (p. 578). For example, the deemed sales price⁴⁷ of a target's assets, which is used in 338 transactions to support the basis step-up being sought, is defined in greater detail but with an unknown effect. Perhaps more important is the additional stimulus provided to use ESOP's as a financing tool in mergers and acquisitions. TRA allows banks and other lenders to exclude, from gross income, 50 percent of interest earned on such loans. In sum, TRA contains many provisions that are related to tax variables of interest here, but their effect is difficult to predict.⁴⁸

Finally, there is now the Tax Reform Act of 1986. This Act has eliminated many tax provisions thought to be inducements to merger. Deferral of capital gains is eliminated for one additional party to those types of transactions that allow step-up of assets. For example, in a Section 337 transaction the target corporation must now also pay capital gains tax, whereas this tax was previously borne only by the target shareholders. In a Section 338 election, the acquiror must now also pay the capital gains tax, along with the target's shareholders. This double taxation effectively eliminates most of the advantages of step-up in these types of transactions. In addition, carryover of NOL's is now limited annually to a long-term bond rate multiplied by the pre-sale value of the target; the top tax rate on corporate profits is reduced from 46 to 34 percent, thereby lessening the value of interest payment deductions on debt-financed acquisitions; and the preferential rate on individual and corporate capital gains, vis-a-vis the respective rates on income, is repealed. The latter provision eliminates the incentive to retain earnings rather than pay dividends. Finally, the new law imposes an alternative minimum corporate profits tax which insures that corporations pay taxes equal to at least 20 percent of their incomes above an exemption amount of \$40,000.

On first reading of its major provisions, the 1986 Act looks like a severe constraint on merger activity in pursuit of tax benefits. However, once again it is hard to make an unambiguous prediction, given a review of all the Act's provisions. In particular, there are exemptions to the

⁴⁷ A 338 transactions is a stock sale with the acquiror electing to step-up the basis of the targets assets, where the value of these assets is 'deemed' to be equivalent to the sales price of the stock.

⁴⁸ Perhaps more predictable would have been the effect of enacting certain provisions, originally appearing in the 1976 Tax Reform Act, which appear to limit opportunities to transfer tax activities; or as Feld (1982) states: "to limit the ability to traffic in loss corporations" (p. 93). TRA, however, merely provided for another postponement of the effective date of these amendments.

recognition of gain for relatively small corporations. According to merger experts, step-up of basis is taken much more frequently in mid-size than in large deals, and the largest share of transactions involve small to mid-size companies. This could mean that the bulk of transactions will be unaffected by the change in step-up. Furthermore, avoidance of the new 20 percent minimum corporate profits tax might provide an incentive to combine firms in much the same manner that NOL's may have provided an incentive to merge.

Making the prior assumption that the potential for tax gains provides a merger incentive, this brief review of recent tax changes has not revealed a pro-merger pattern or large-scale transaction bias for the changes that occurred in the 1980's. The typical tax bill tends to include some disincentives as well as some incentives to merge. Tax incentives to merge may also be offset by subsequent adjustments in tax provisions. Nor do the 1981 and 1984 spurts in merger activity correspond in any obvious manner to particular tax changes. Thus, consideration of recent tax changes leads to some doubt regarding tax changes as an explanation for increased merger activity.

Empirical investigation may yet reveal a strong net positive effect of recent tax changes on merger activity. However, non-tax factors should be included in the analysis to obtain unbiased estimates of the effects of taxes. It may be that the recent increase in merger activity can be rationalized in macroeconomic terms, including capital market and stock market conditions, and the pace of business activity. It has been suggested that the trend toward large-scale mergers may be due to innovations in takeover technology that have reduced the costs of financing large-scale acquisitions. It has also been suggested that mergers are playing a role in the restructuring of a number of basic industries having relatively large firms. This includes capacity reductions in the oil and gas industry and the restructuring of financial markets in response to deregulation initiatives. It also includes adjustments by older industries to increased foreign competition. Finally, it has been suggested that the increasing number and size of transactions reflects a change in antitrust legal standards.

VIII. Conclusions

The popular notion that merger decisions are frequently driven by tax considerations is based on particular provisions of the tax code that offer the potential for merger-related tax benefits and on anecdotal evidence suggesting a connection between a particular realized tax benefit and merger decisions. When subjected to closer scrutiny, however, this simple tax-incentive argument is found to be naive.

First, there are restrictions or limitations on the use of potential tax benefits, and there may be offsetting tax costs. All of these factors must be taken into account in calculating any tax incentive to merge. Second, the various potential tax benefits are not necessarily cumulative in nature. For example, taxable transactions provide an opportunity to realize higher depreciation allowances from step-up, and tax-free reorganizations provide an opportunity to carry over net operating losses and other tax credits. However, a transaction cannot be structured to permit both step-up and carryover. Third, there are sometimes non-acquisition alternatives to realizing the same tax benefits, and some of these methods may be more cost effective. Fourth, tax considerations may affect the form a merger takes without affecting the merger decision itself. Fifth, even if there were a tax gain from merger, the merger may have been proposed in the absence of the tax gain. What is significant for public policy is the possible increase in merger activity caused solely by the presence of tax benefits.

Not surprisingly there is only weak evidence indicating a systematic relationship between any one potential tax benefit, taken in isolation, and merger decisions. Relatively few studies have recognized the importance of calculating the 'net' impact of all the tax provisions taken together, and none have actually done this. Several methods are available for investigating merger-related tax benefits, and a few seem promising in terms of providing direct tests of the tax-incentive hypothesis.

Further empirical research could reveal that tax considerations played an important role in explaining the recent increase in merger activity. In the meantime, however, a review of recent changes in the tax code does not suggest that those changes would have substantially increased merger incentives.

APPENDIX

<u>Authors referred to in text</u>	<u>Pages in Appendix</u>
1) Asquith et al.	pp. 60-61
2) Auerbach and Reishus	pp. 48-49, 53-55
3) Beckenstein	pp. 61-64
4) Boucher	p. 64, fn.
5) Brown	pp. 47-48
6) Carleton et al.	pp. 50-52
7) FTC	pp. 55-56
8) Harris et al.	pp. 65-67
9) Robinson	pp. 56-57
10) Schipper & Thompson	pp. 60-61
11) Shrieves & Pashley	pp. 51-55
12) Stevens	pp. 67-68

Critical Review of Empirical Studies and Possibilities for Further Research

Existing empirical studies can be placed into three general categories which correspond to important distinctions made earlier. These include investigations of (1) the potential for tax gains from merger, (2) potential tax benefits as a determinant of merger form, and (3) tax benefits as a merger motive. The latter category consists of studies falling into various subgroups which, roughly speaking, can be ordered on the basis of how directly they test the tax-incentive hypothesis. These subgroups of section 3 will be considered in ascending order as follows: (a) studies focusing on merger-related changes in leverage, (b) studies estimating the impact of tax code changes on cumulative abnormal returns to merger activity, (c) studies focusing on the premiums paid target shareholders for potential tax benefits, (d) studies relating potential tax benefits to aggregate merger activity, and (e) studies relating potential tax benefits to the merger decision itself.

1. Estimates of Potential Tax Benefits

Some studies provide insight into the nature and magnitude of potential tax benefits but stop short of developing behavioral models for testing the tax-incentive hypothesis itself. Brown (1982), for example, offers a case study of the potential tax benefits of the U.S. Steel-Marathon merger. Relying on figures published in the U.S. Steel merger prospectus, Brown estimates that the \$6 billion price for Marathon will be offset by as much as \$500 million in tax savings in the first year alone. Most of this amount is attributed to interest deductions on acquisition-related indebtedness. Brown also uses a competing offer for Marathon's primary oil reserve as a measure

of the value of stepping-up assets and estimates that approximately \$1 billion worth of additional cost depletion deductions⁴⁹ can be taken by the new corporate parent over the useful life of the oil field.

Brown recognizes that step-up triggers recapture taxes -- at least \$400 million in this case -- but argues that the amount of recapture could be reduced and deferred by partially liquidating Marathon's assets (a practice no longer permitted) and by filing a consolidated return. Brown concludes that mergers are likely to be tax-motivated in circumstances such as these but she ignores the offsetting capital gains taxes that might be incurred by Marathon's shareholders as a result of this taxable event and she does not consider alternatives to acquisition as methods of realizing the potential tax gains.

Auerbach and Reishus (1987a) also consider the "potential importance of tax factors in the merger decision" (p. 3) but do this for a large sample of mergers and acquisitions occurring during the period 1968-1983. Of particular interest are the estimated tax gains from NOL and credit carryovers, and from step-up of asset basis, both being expressed as a percentage of the target firm's value in the final calculations. Their data base consists of time-series financial data for (a) merging partners prior to the merger, and (b) the combined firm thereafter.

Conceptually, Auerbach and Reishus seek to compare, in present value terms, projected tax payments for each partner, considered separately, with projected tax payments for the two firms combined. Any reduction provides a measure of the tax benefit from merger. Auerbach and Reishus settle for less, however, because of difficulties in determining how firms would have performed without the merger, and because the inability to distinguish between the taxable transactions and the tax-free reorganizations in their sample complicates the projected-tax calculation for the combined firm.

For NOL carryover and tax credit calculations, Auerbach and Reishus focus on the 63 mergers in their sample for which one partner has taxable income and the other partner has unused tax credits, or NOL carryforwards and unused tax credits. This approach provides a "most favorable estimate" of potential tax gains. It also recognizes that the tax position of both partners should be considered because it allows the acquiror (or the target) to be a profit corporation or a loss corporation.⁵⁰

For the 63 mergers, Auerbach and Reishus find that the estimated tax gains from carryovers average 10.5 percent of the value of the target firms, and in only 21 of these mergers were the potential tax benefits in excess of 10 percent. In generating these estimates, Auerbach and Reishus ignore (a) possible Section 269 and Section 382 restrictions, (b) possible expiration of

⁴⁹ The mechanics of this calculation are not revealed.

⁵⁰ Auerbach and Reishus identified 21 mergers in which the firm with taxable income was acquired by a firm with a NOL carryforward and/or unused tax credits.

the carryover, and (c) opportunities to use up the carryforwards internally. As an offset, however, it is assumed, somewhat arbitrarily, that the tax benefit is used by the merging partner for only a 3-year period. In only one-third of the cases did the estimated tax gain exceed 10 percent, leading Auerbach and Reishus to conclude that this tax benefit is a factor in a number of mergers but significant in only a small proportion of them.⁵¹

To illustrate the potential tax benefits from asset step-up, Auerbach and Reishus focus on the "structures" (Section 1250 property) of target firms because these are arguably subject to only limited recapture.⁵² The step-up in basis of structures (i.e., the difference between estimates of current market value and current book value) is determined for each acquired firm in the sample and an estimate is made of the present value of the resulting increase in depreciation allowances. (The procedure involves numerous sub-calculatons which are made possible by various simplifying assumptions.) What Auerbach and Reishus find is that only seven of the 278 mergers for which step-up calculations could be performed are expected to generate tax benefits greater than 5 percent of the acquired firm's value. They do not consider potential capital gains taxes as another offsetting tax cost.

Auerbach and Reishus conclude that the potential tax benefits from step-up appear to be even smaller than those associated with NOL carryovers and unused tax credits. A sensitivity test of these results is provided in a subsequent paper (1987c) in which the mean leverage ratio is compared with the mean of a pseudomerger group -- similar firms which did not merge. There was no significant difference between the means.

⁵¹ The few cases in which this tax benefit might be considered significant as a merger motive are, according to Auerbach, likely to be situations in which leasing is not considered an attractive alternative and the firm does not anticipate sufficient taxable income against which its carryforwards could serve as an offset in the future.

⁵² Recapture on Section 1250 property (buildings and their structural components) is calculated as only prior depreciation deductions which exceed those allowable under straight-line depreciation, whereas recapture on Section 1245 property (personal property and other tangible property used in manufacturing) is all prior ACRS deductions previously taken.

2. Potential Tax Benefits as a Determinant of Merger Form

A few studies attempt to examine the relationship between the medium of exchange, or method of acquisition, and tax considerations. While these studies provide only indirect evidence on alleged tax incentives to merge, they are worth reviewing because some of the methods used are transferable to more direct tests of the tax-incentive hypothesis.

Carleton et al. (1983) distinguish between the tax treatment of cash acquisitions (taxable transactions) and security exchanges (tax-free reorganizations) and argue that firms with certain financial characteristics might be able to take advantage of various tax benefits if transactions are structured appropriately. Thus, financial characteristics should be useful in explaining the form a merger takes. The empirical analysis is based on a sample of 30 cash takeovers and 31 security exchanges occurring during the period 1976-1977.⁵³ Carleton et al. consider the following financial characteristics as possible explanatory variables: liquidity, leverage, P/E ratio, size, profitability, dividend policy, and market-to-book-value ratio. Pre-merger data for these characteristics are taken from COMPUSTAT for the firms in the merger sample, and for 1352 non-acquired firms.

A conditional logit model is estimated for the following bivariate choices:

A_3 v. A_2	where A_1 = not acquired
A_2 v. A_1	A_2 = cash takeover
A_3 v. A_1	A_3 = security exchange

Thus, the empirical question is whether an increase in the value of a certain explanatory variable "causes", for example, a cash takeover to be more probable relative to not being acquired. The most important empirical result is that the probability of being acquired in a securities exchange relative to a cash acquisition is systematically greater, the higher the dividend payout, and the higher the ratio of market value to book value. These findings support the argument that cash takeovers and security exchanges tend to be motivated by different considerations. Carleton et al. argue that the positive sign for the market-to-book-value ratio is consistent with the assumption that this ratio is positively related to potential capital gains taxes for the target's shareholders. Thus, one would expect to observe (taxable) cash takeovers more often when the market-to-book ratio is low.

The flaw in this interpretation is that a relatively high market-to-book ratio also suggests that the acquirer has an opportunity to step-up assets and realize higher depreciation allowances for use in offsetting taxable income. One would expect the potential for these gains to have an influence

⁵³ COMPUSTAT tapes were used to identify these transactions and the FTC Large Merger Series was used to classify the mergers by type of transaction.

on the form a merger takes that is counter to the potential capital gains effect. The authors recognize this earlier in their paper but fail to account for it separately in their empirical analysis.

The paper by Carleton et al. can also be criticized for its failure to explain the basis of selection, and predicted effects, of the financial characteristics included in the analysis. As their results show, the dividend payout is the only variable other than the market-to-book ratio that is statistically significant in the A_3/A_2 bivariate choice model and the authors do not offer a satisfactory explanation for the sign of the estimated coefficient.

Several shortcomings of the paper by Carleton et al. are being addressed by other researchers. Shrieves and Pashley (1984a) have been investigating the "inflationary-tax-loss-avoidance" (ITLA) rationale for taxable mergers. Specifically, they argue that a merger or acquisition might be structured as a taxable transaction if the potential tax benefits of step-up, which are driven by inflation in their view, exceed potential capital gains taxes to sellers.

Shrieves and Pashley compare these tax variables across the following groups of firms: (a) merger partners in taxable transactions, (b) merger partners in tax-free reorganizations, and (c) and (d) -- control groups of non-merging firms matched by industry and by size characteristics to the firms in (a) and (b).⁵⁴ The comparisons are structured to provide empirical tests for three implications of the ITLA rationale for taxable mergers:

- (a) the potential for asset write-up involving targets in taxable transactions is greater than for targets in non-taxable mergers or for matched non-targets;
- (b) the combined firm in a taxable transaction realizes a larger pre-to-post merger period increase in depreciation allowances than the partners would have experienced in the absence of the taxable acquisition; and
- (c) target shareholders in taxable transactions experience capital losses (or smaller gains) relative to targets in non-taxable mergers, for a period prior to acquisition.

The Shrieves and Pashley approach represents a significant improvement over Carleton et al. (1983) and if the tax variables prove significant they could also be used in more direct tests of the tax-incentive hypothesis. Problems have been encountered, however, in making these variables operational. In addition, it does not appear as though any of the

⁵⁴ Mergers occurring during the period 1970-1977, a period of relatively high inflation, were identified by reference to the FTC Statistical Report on Mergers and Acquisitions.

depreciation-related variables have been adjusted for potential recapture taxes. The research effort has also been frustrated by an initial misclassification of mergers by tax type.

A more direct extension of the efforts by Carleton et al. to explain the form a merger takes can be found in a recent research proposal by Shrieves (1985). He argues that purely financial motives for merger, including tax considerations, are more likely to be manifested in the medium of exchange used. Thus, the focus of his proposed logit or probit analysis, as with Carleton et al., is the form of merger rather than the merger decision itself. Consideration by Shrieves of several merger-related financial theories leads to selection of 13 possible explanatory variables. Unlike Carleton et al., Shrieves will select data on the financial characteristics of acquirors as well as targets.⁵⁵

Shrieves also proposes to improve upon the study by Carleton et al. by including potential capital gains taxes (measured by stock price appreciation for a pre-merger period) and potential tax benefits from step-up (measured by an inflation adjustment to target-firm fixed assets).⁵⁶ Thus, the probability of a taxable acquisition is expected to be greater when target shareholders experience a capital loss and when there is an opportunity to step-up assets. Alternatively, the transaction is more likely to be tax-free when target shareholders experience a capital gain, when there is little or no opportunity to step-up assets, and when the target (or acquiror) has tax loss carryforwards.

Thus, research proposed by Shrieves offers several advantages over Carleton et al. On the other hand, some would take issue with Shrieves' position that purely financial motives are primarily manifested in the form of merger. They view tax considerations, at least, as having a direct influence on the merger decision itself. Since the logit or probit analysis considered here is also a useful approach to more direct tests of the tax-incentive hypothesis, it will be discussed again at a later point.

3a. Merger-Related Changes in Leverage

Moving somewhat closer to providing direct tests of the tax-incentive hypothesis are two studies of merger-related changes in leverage. As explained in Section V, there is arguably a tax advantage to debt financing and it is alleged that the potential tax benefit associated with increases in

⁵⁵ This approach seems preferable when viewing acquisitions as corporate "marriages." In fairness to Carleton et al., a univariate analysis of the financial characteristics included in their study revealed no significant differences between acquiring firms in cash acquisitions and acquiring firms in security exchanges. Thus, they considered the medium of exchange used to be more closely related to differences in characteristics of targets.

⁵⁶ Shrieves does not indicate whether he will attempt to account for potential recapture taxes.

acquisition-related indebtedness provides an incentive to merge. If the potential tax subsidy to debt financing is driving merger decisions, one would expect to observe merger-related increases in leverage.

Auerbach and Reishus (1987a) provide an empirical test of this implication by calculating the ratio of long-term debt to long-term debt plus equity for two years prior to merger and two years following a merger. They do this for 163 pairs of merging firms in their sample for which data are available and find, contrary to expectation, only a slight increase in the ratio (from 30.0 to 31.9 percent).

Their calculation can be criticized for its failure to separate merger-related changes in leverage from economy-wide decreases in leverage occurring during the same period.⁵⁷ In addition, the calculated increase is for all acquired firms in the sample, not just those acquired with debt or borrowed funds and for which a larger increase in leverage might be expected. Finally, Auerbach and Reishus's sample includes mergers prior to 1980, and leverage ratios prior to 1982, while Saul (1985), for example, claims that there has been a more recent surge in debt-financed takeovers.

Shrieves and Pashley (1984b) correct for some of the shortcomings of Auerbach and Reishus's study by considering the potential tax subsidy to debt-financed acquisitions within the context of the latent debt capacity, increased debt capacity, and neutralization of wealth transfers motives, as described in Section V. These theories all predict merger-related increases in leverage. Three measures of leverage are considered (including interest expense/ earnings), each of which is calculated for the three years prior to and three years following a merger. The ratios are then compared across three groups of "test" firms: (a) acquiring firms, (b) acquired firms, and (c) merging firms. In addition, Shrieves and Pashley introduce three corresponding groups of "control" firms which are matched in terms of time period, asset size, and SIC code.⁵⁸ This approach improves upon Auerbach and Reishus (1987a) because it is an attempt to control for capital market conditions or industry factors that might also affect leverage.

In a comparison of test merging firms and control merging firms, Shrieves and Pashley found that leverage did not increase for test merging firms in a pre-to-post merger comparison. However, relative to control merging firms, which exhibited absolute declines in a pre-to-post merger

⁵⁷ However, their subsequent work (1987c) corrects for this gap by using a control group of 'pseudomergers' -- similar firms which did not merge. The difference between the means for the two groups is not significant except for a subset of the two groups in which the firms acquire similar size (usually large) targets. For this subset, leverage in the 'real' merger sample is larger than in the 'pseudomerger' sample.

⁵⁸ Control merging firms represent simulated combinations i.e., Shrieves and Pashley consolidated the balance sheets of the two firms as if a merger had occurred.

comparison, leverage did increase. This result is supportive of the increased debt capacity and neutralization of wealth transfer merger incentives and it demonstrates the need to control for industry-wide and economy-wide effects on capital structure. Shrieves and Pashley also compared pre-merger leverage ratios of acquired firms (test v. control) and found no significant difference in group means, which is contrary to the expectation of the latent debt capacity rationale that test acquired firms would have lower leverage ratios.

Additional tests were performed to provide support for the above findings. For example, Shrieves and Pashley subdivided their sample according to accounting treatment of the merger. "Pooling accounting" is used when two corporations and their shareholders have merely combined their interests. The acquiror and target add together assets and liabilities at their historical book values on the acquisition date, leaving future reported earnings and cash flows unaffected. The alternative accounting method is "purchase accounting," which is used when the transaction more closely resembles the acquisition of a target. With purchase accounting, there is an opportunity to write up assets (when the purchase price exceeds book value) thereby generating higher depreciation and amortization, and lower future reported earnings. Because those differences correspond to differences in tax treatment, pooling and purchase accounting can be viewed as proxies for tax-free reorganizations and taxable transactions, respectively, although there is less than a perfect correlation between the two measures. By stratifying the sample along these lines, Shrieves and Pashley provide a further refinement of Auerbach and Reishus (1987a) where measured increases in leverage were averaged over both types of transactions. As expected, Shrieves and Pashley find no systematic increases in leverage for the pooling subset of merging firms (which are stock-for-stock exchanges) while merger-related increases were observed for the purchase subset and in amounts greater than for the overall sample.⁵⁹

⁵⁹ The interaction between the tax and accounting treatment of mergers has some interesting implications for Shrieves and Pashley's work as well as many others. First, although the correspondence between the accounting and tax treatment is likely to be high, it is far from exact. There are at least six key differences between the IRS tax rulings and APB accounting opinions [See, Deban and Loscocco (1971)]. Second, the pooling/purchase choice can bias studies of leverage. For pooling mergers the premium paid for the acquired company is added to the equity account whereas for purchase mergers the assets are stepped up or goodwill is increased. If, for example, leverage is measured as the ratio of debt to equity, leverage ratios will tend to be lower for pooling mergers. Third, the tax and accounting motivations often diverge. When the premium paid is high, choosing a taxable purchase treatment may minimize taxes, but it does this by depressing accounting earnings (the returns are measured against a basis enlarged by the premium). Accountants, therefore, have often recommended pooling accounting when premiums are high, so that the company produces favorable earnings reports. If favorable earnings reports have a value analogous to the tax savings from structuring as a taxable transaction, then the accounting motivations could dominate the tax

Despite the advantages Shrieves and Pashley offer over Auerbach and Reishus, there remains a methodological problem that is common to both and that is not easily overcome. The finance literature suggests that a firm's capital structure is determinate but depends on a number of factors in addition to tax considerations. Unfortunately, the theories considered here do not effectively isolate the tax effect on leverage from these other determinants. Nor do efforts to date to model a firm's leverage decision appear to offer the necessary degree of guidance for isolating this effect in empirical studies. Thus, a proper specification of the relationship between merger decisions and tax deductions for debt financing may depend on further advancements in the theory of capital structure.

3b. Premiums Paid to Target Shareholders

Perhaps a more direct measure of the incentive to merge is the premium paid to target shareholders. This premium reflects the share of total merger gains (increased market power, efficiency gains, tax savings, etc.) that target shareholders receive. Numerous stock-market studies show that merger gains are in fact shared with target stockholders. Jensen (1985), for example, has observed that "the bargaining power of target managers coupled with competition among potential acquirers grants most of the acquisition benefits to selling shareholders" (p. 2). To the extent tax benefits have value and cannot be realized efficiently without merger, they will, *ceteris paribus*, contribute to the size of the premium offered.

A case study of the U.S. Steel-Marathon merger by the FTC (1982) attempts to estimate the percentage of premiums offered by competing bidders for potential tax benefits. The staff report argues that the opportunity to step-up assets may motivate mergers but recognizes that the potential tax gains from step-up must exceed potential capital gains taxes and recapture taxes for there to be a net tax gain. As for recapture taxes, however, the report notes that, prior to 1982, recapture could be deferred through partial liquidation within a corporate family. Using the merger prospectus and underlying data from internal documents, the report estimates the potential tax benefit of increased depreciation allowances to represent 25 percent and 26 percent of the premiums offered by Mobil and U.S. Steel

motivations. This may be suggested by the finding of Carleton et al. (1983) that stock-for-stock transactions have higher implied premiums in that they tend to have higher market to book ratios.

respectively.⁶⁰ The report concludes that this may have been sufficient to tip the balance in favor of the merger.

The FTC report correctly discounts the importance of recapture taxes but not necessarily for the right reason since the recapture was fairly small, in any event.⁶¹ On the other hand, potential capital gains taxes are not taken into account, so the final figures do not necessarily represent net tax gains. It is also evident that the case study approach, while providing useful insights, tends to be of limited value in explaining behavior.

Robinson (1985) provides a more systematic examination of the relationship between premiums paid and potential tax benefits. His analysis focuses on the "relative premium paid" to target shareholders which is defined as the difference between (a) the market value of the consideration paid by the acquiror, and (b) the estimated market value of the tendered stock, absent combination,⁶² with the difference then divided by the market value of the consideration paid by the acquiror. Robinson offers five alternative measures of the value of tendered stock, absent combination, so his results are presented for five different measures of the relative premium.⁶³

The tax variables considered in the Robinson analysis include (a) NOL and ITC carryover in the target or the acquiror, (b) deferral of target shareholder gain, and (c) step-up of tax basis and recapture. Not considered was the interest deduction on debt-financed acquisitions. In the initial analysis, the tax considerations appear as binary variables: that is, whether

⁶⁰ The method used to calculate these percentages is not revealed but presumably it involves an estimate of the total consideration paid that is allocated to Marathon's domestic exploration and producing properties (i.e., the stepped-up basis) and an estimate of the adjusted tax basis of Marathon's assets. Then, increased depreciation allowances reflecting the difference in the estimates can be calculated for the assumed remaining lives of assets. Using an appropriate discount rate, the potential tax benefits can be converted to a present value estimate and expressed as a percentage of the total consideration paid. When converted again to a dollar/share figure, the potential tax benefits can be expressed as a percentage of the premium offered.

⁶¹ According to Senate Finance Committee (1984), the oil and gas properties were relatively old and, under Section 1245, recapture of intangible drilling cost deductions is limited to post-1975 deductions.

⁶² The alternative of simply using the observed price of the target's stock was ruled out because the merger proposal itself is likely to affect that value.

⁶³ His original sample of corporate combinations included 412 transactions taken from the FTC Large Merger Series for the period 1974-1978. Limitations on the use of tax data caused this sample to shrink to 108 corporate combinations.

NOL and ITC carryovers are disclosed; whether the transaction was tax-free in nature, thereby providing deferral of shareholder gain; and whether the transaction was a taxable asset acquisition, thereby providing an opportunity to step-up assets (but also triggering immediate recapture).

Robinson found systematically lower premiums to be associated with deferral of shareholder tax (i.e., tax-free reorganizations relative to taxable stock transactions without liquidation). This is consistent with tax deferral being valuable to target shareholders and thereby leading to a lower asking price. On the other hand, the estimated positive relationship between relative premiums and step-up (net of recapture) was not statistically significant, leading Robinson to conclude that recapture taxes may be offsetting the potential tax gains from asset step-up. Nor did Robinson find a significant relationship between relative premiums and the disclosure of NOL and ITC carryovers, whether they were attributed to the acquiror or the target.

One possible extension of the Robinson research would be to separate out those taxable transactions where debt financing was most likely to have been used and see what effect this distinction has on relative premiums paid.⁶⁴ Of course, the problem of isolating the tax influence on use of debt remains. The Robinson analysis could also be extended by converting tax variables to quantitative measures, by adding non-tax determinants of relative premiums, and by examining relative premiums in a multiple regression framework. Robinson has, in fact, been considering some of these extensions. What is not known is whether any attempt is being made to control for conditions in the merger market that affect the distribution of merger gains between acquirors and target stockholders. The share of target stockholders (i.e., the premium) would seem to be higher or lower depending upon the degree of competition in the market for corporate control and the relative bargaining strength between potential acquirors and targets. Failure to account for this could obscure any relationship between premiums and potential tax gains. Robinson seems to assume that merger gains are appropriated by target shareholders but this assumption is, perhaps, too extreme. Some consideration should be given to merger market conditions as a source of variation in premiums paid; alternatively, it may be more appropriate to use the total wealth gain as the variable to be explained.

3c. Cumulative Abnormal Returns to Merger Activity

In studies of the type reviewed in the previous section, merger incentives are inferred from premiums paid to target shareholders. Numerous related studies attempt to determine the wealth effects of merger activity by estimating the effects of mergers on stock prices of bidder and target firms around the time of announcement of merger bids.⁶⁵ Specifically, these "event studies" use estimates of the abnormal stock price changes around

⁶⁴ Robinson simply drops these transactions from his analysis.

⁶⁵ For a review of these studies see Weston and Chung (1983) or Halpern (1983).

merger announcement dates as a measure of the wealth effects of the merger. Merger incentives are then inferred from the estimated wealth gains or losses.⁶⁶

The abnormal rate of return (including dividends and capital gains) for the i th security at time t is defined as the difference between the actual return for the security and the normal or predicted return on the security market. Frequently the "efficient-market" model of finance theory is used to estimate abnormal returns, defined as follows:

$$AR_{it} = R_{it} - (a_i + b_i R_{mt})$$

where AR_{it} = abnormal or residual rate of return for security i at time t ;

R_{it} = observed rate of return on security i at time t ;

R_{mt} = rate of return on the market.

The coefficients a_i and b_i are generated by estimating the following market model:

$$R_{it} = a_i^* + b_i^* R_{mt} + E_{it}$$

where a_i^*, b_i^* = regression coefficients;

E_{it} = random disturbance term.

⁶⁶ More recent studies [Eckbo (1983), Eckbo and Weir (1985), and Stillman (1983)] attempt to identify the economic sources of merger-created gains by examining the stock market reactions of all firms that are potentially affected by the merger. A merger which increases monopoly power is expected to increase the capital market values of rival firms (as a result of higher industry output prices), whereas a merger which brings an efficiency gain only to the merging firms will lower the capital market values of rival firms (as a result of lower prices and increased market share of merged firms). Generalizing this methodology to an analysis of tax gains or tax code changes as incentives to merge, at a merger announcement rival firms should gain if the merger is taking place for tax gain since the merger signals that such opportunities exist for similar firms.

This new methodology, however, cannot distinguish industry-wide efficiency gains from monopoly power results, nor can it distinguish industry-wide efficiency gains from tax gains. A merger which results in industry-wide efficiency gains will have the same effect on the capital market values of rival firms as will an increase in monopoly power resulting in higher industry output prices, and as will an increase in tax benefits.

Thus, AR_{it} is a security's adjusted rate of return, which represents the impact of event specific information. The rate is "adjusted" in the sense that market influences have been purged from the return on a security during the information-event time period.

Individual securities in the sample are then aggregated into portfolios based on time periods relative to the event date. The average residual for day or month t can be calculated as follows:

$$AR_t = (1/N) \sum_{i=1}^N AR_{it}$$

where N is the number of securities in the portfolio. The "cumulative average return" (CAR) for days or months in the interval 1 to T can be calculated as follows:

$$CAR_T = \sum_{t=1}^T AR_t$$

Weston and Chung (1983) calculate CAR's for a sample of 49 conglomerate and 68 product-extension mergers (1958-1978) to see if there is empirical support for any of the following merger theories: (a) mergers promote efficiency, (b) mergers promote management (an inefficiency theory), and (c) mergers increase market power. The study also promises to consider tax advantages as a merger motive because of their potential wealth-increasing effect, as measured by positive CAR's. On the other hand, the researchers suggest that alternative methods of achieving equivalent tax gains could mitigate against this incentive. Moreover, they explain that positive CAR's could be attributed to the efficiency and monopoly arguments, as well as to tax considerations.

Weston and Chung seem to dismiss the tax incentive argument on the basis of these statements because they proceed to ignore tax considerations in their subsequent analysis. However, the tax incentive cannot be dismissed on the basis of the methodology used and the results reported. As Halpern (1983) notes, the CAR approach does not lend itself to disentangling effects of the factors considered. Weston and Chung find, for example, that there tends to be an increase in share values for merging partners, and that there is a positive correlation between gains to acquiring shareholders and target shareholders. These results are used to reject the inefficiency theory and reference to other studies causes them to rule out the market power argument. They conclude that their study supports the efficiency rationale but their approach does not enable one to eliminate tax considerations as an alternative explanation for the wealth increase.

Perhaps the Weston/Chung analysis could be extended by subdividing the sample according to some tax attribute, e.g., mergers with one partner having large NOL carryforwards as compared to neither partner having NOL carryforwards. One would expect, ceteris paribus, CAR's for the first group to be greater if tax benefits increase value in mergers. Shrieves (1985) has

suggested that some event studies could have been improved by stratifying the sample by medium of exchange, which bears a correspondence to potential tax benefits. Alternatively, some researchers have recognized that merger-related events, other than the announcement itself, can also affect CAR's during the time period under consideration. Examples would be changes in (a) merger antitrust enforcement, (b) security regulation, (c) financial accounting requirements, and (d) the tax code.

Asquith et al. (1983) and Schipper and Thompson (1983) take the latter approach and seem to be the only such studies to consider changes in the tax code. As an alternative to the market model approach to estimating abnormal returns explained above, these studies use versions of the related capital asset pricing model in which expected return to security i is linearly related to risk of the security in the portfolio of all securities. The return-generating function is of the following form:

$$R_{it} = R_{ot} + a^*_i + b^*_i(R_{mt} - R_{ot}) + E_{it}$$

where R_{ot} = either a risk-free return or the zero-beta return in period t ;

b^*_i = risk of security i relative to risk of market portfolio.

Estimates of b^*_i are obtained and abnormal returns are then calculated.

Both papers attempt to estimate abnormal returns to shareholders of bidding firms for periods surrounding announcement of acquisitions programs.⁶⁷ Previous studies tend to show that shareholders of bidding firms gain little or nothing from the announcement of mergers. However, these studies typically focus on specific acquisitions considered separately while Asquith et al. and Schipper and Thompson argue that mergers are more likely to be events occurring as part of acquisitions programs. Thus, the gains to shareholders, if any, are more likely to be associated with the announcement of acquisitions programs.

Both papers consider 1969 to be a year of significant change in terms of securities regulation, financial accounting requirements, and tax law changes. Together, these changes are hypothesized to have a negative effect on abnormal returns. For the Tax Reform Act of 1969, the predicted negative effect primarily stems from disallowal of interest deductions on

⁶⁷ Asquith et al. estimate cumulative excess returns for target firms as well, which permits an assessment of the overall wealth effect.

convertible bonds used to finance acquisitions.⁶⁸ Asquith et al. estimate the impact of these changes by subdividing the sample and comparing abnormal returns for bids made prior to October 1969 to abnormal returns for bids made in October 1969 and thereafter. As expected, the changes were found to have an adverse effect on CAR's. Schipper and Thompson estimate the impact of these changes by comparing abnormal returns, with months leading up to these changes included, to abnormal returns with months leading up to these changes excluded. The expectation was that the former CAR's would be less and this is what was found.

The basic problem with this approach when studying the effect of tax code changes, aside from difficulty in identifying event dates, is that the effect of a tax code change on abnormal returns is not isolated from other changes occurring at about the same time that can also be expected to influence abnormal returns. Perhaps there is a year in which the tax change can reasonably be argued to be the only significant change and its predicted effect is unambiguous. Alternatively, perhaps the sample could be stratified if one knew that non-tax changes affected only a certain type of merger.

3d. Time-Series Studies of Aggregate Merger Activity

A more direct approach to testing the tax-incentive hypothesis is presented by time-series models of aggregate merger activity. The dependent variable can be measured as the number or value of merger and acquisition transactions at time t and taxes can be considered as an explanatory variable. Other explanatory variables might include measures of macroeconomic conditions, capital market conditions, stock market performance and institutional changes.

Beckenstein (1979), for example, investigates post-World War II merger activity by estimating several alternative specifications of the following general relationship:

$$\text{MERGER}_t = f(\text{SP500}_t, \text{GNP}_t, \text{PRATE}_t, \text{BND}_t, \text{GORT}_t, \text{DUMPK}, \text{DUMLOW})$$

where MERGER_t = large mergers reported by FTC for year t ;

SP500_t = stock market index for year t ;

GNP_t = gross national product for year t ;

PRATE_t = prime rate for year t ;

⁶⁸ If a change in the tax code is expected to produce merger-related tax benefits, one would predict an upward shift in CAR's. If no shift is observed, despite changes in the tax code, it could be that (a) the statutory change does not actually produce or destroy tax benefits, or (b) the increase or decrease affects non-merging firms similarly, i.e., it is essentially a market-wide change.

BND_t = yield on corporate bonds in year t ;

$GORT_t$ = the absolute value of the year-to-year change in change in SP500 times the absolute value of the year-to-year change in GNP;

DUMPK = a dummy variable for "merger mania" = 1 if 1967 or 1968; = 0 otherwise; and

DUMLOW = a dummy variable to capture effects of the Tax Reform Act of 1969 and changes in financial accounting standards:
DUMLOW = 1 for 1969 and thereafter; = 0 for prior years.

The variable SP500 is included to test both the general business conditions theory of mergers and the promotional gains theory (the "P/E game"). GNP is included as a measure of general business conditions. PRATE and BND serve as alternative proxies for the cost of capital and are used to test the managerial (or growth-maximization) theory. According to this theory, the growth-oriented managers of firms that have matured turn to external sources of growth and, as a result, begin to acquire younger, more profitable firms. This incentive is said to be reinforced during periods when the cost of capital is relatively high, although this conflicts with other predictions concerning the cost of capital and merger activity, e.g. fn. 67. The economic disturbance theory is tested by inclusion of the GORT variable. The variable DUMPK is expected to have a positive coefficient while the tax dummy is expected to have a negative coefficient, for the reasons given above.⁶⁹ To test Steiner's multiple-cause theory (including interaction effects), the models were also estimated with non-linear forms.

Beckenstein finds the coefficient for SP500 to be positive and significant in most equations thereby lending some support to the general business conditions and promotional gains theories. The managerial theory, as stated, also has some support as the coefficients for PRATE and BND are generally significant with positive signs.⁷⁰ The dummy variable DUMPK performed well, as expected, and the tax dummy variable, DUMLOW, had the predicted negative coefficient, although it was not always statistically significant.⁷¹

⁶⁹ The extent of merger litigation was considered as another institutional factor but did not perform well in earlier runs and thus was dropped from subsequent estimations.

⁷⁰ Beckenstein finds no support for the economic disturbance theory and his results are inconclusive with respect to whether multiplicative forms are more appropriate specifications of the time-series model.

⁷¹ At an earlier stage, Beckenstein considered another dummy variable to capture the effects of the Tax Reform Act of 1964. He argued that the reduction in top-bracket marginal tax rates should increase the attractiveness of interest income relative to capital gains. This, he expected, would lead

Unfortunately, DUMLOW captures all the influences operating during the dummy time period, not just the hypothesized tax effect. Beckenstein acknowledges financial accounting standards as another institutional change for 1969 and subsequent years, and, as considered earlier, Asquith et al. (1983) cite additional factors for this period. The tax effect would be better isolated if the time-series analysis focused on a year for which an important tax change does not coincide with other institutional changes. Some researchers consider 1981 to be a year of important tax changes. As explained in Section VII, however, the predicted effect of the merger-related tax provisions of the Economic Recovery Tax Act of 1981 is ambiguous.

Another opportunity to improve upon the Beckenstein study is to exploit the advantage time-series analysis offers in measuring the more favorable tax treatment of capital gains as a merger incentive. More specifically, the relationship between the average marginal tax rate for personal income and capital gains may vary over time. To the extent it does, it is possible, at least in principle, to test for a negative relationship between aggregate merger activity and the capital gains tax rate relative to the personal tax rate. Furthermore, if NOL and tax credit carryovers and the potential to step-up assets are thought to vary over time and can be operationalized with aggregate time-series data, they too could be considered directly as possible explanations for the level of merger activity.⁷²

While extensions of the Beckenstein study are worth considering, a word of caution is in order. It appears that we have less than a complete understanding of the non-tax variables that explain aggregate merger activity. Beckenstein admits that there is no well-defined theory of aggregate merger activity to serve as a guide for empirical testing. Moreover, few have run time-series regressions to provide empirical support for alleged determinants of merger activity, and for those who have, the results tend to be inconclusive. Beckenstein, for example, found stock prices to be a significant determinant but, contrary to conventional wisdom, neither general business conditions (as measured by GNP) nor merger litigation were found to be significant. Furthermore, his results were sensitive to the time periods chosen for estimation.

to an increase in the optimal debt/equity ratio for firms, thereby making some mergers attractive that would not otherwise be. An alternative argument is that the decrease in the personal income tax rate (on dividends) relative to the capital gains rate should be a disincentive to retain earnings for such purposes as acquisitions. Perhaps the poor performance encountered by Beckenstein for this dummy variable can be explained by these counteracting influences.

⁷² Employing tax variables measured in this fashion, however, may encounter estimation problems (multicollinearity) since, for example, the potential for step-up probably depends upon business conditions -- a variable (argument) already in the merger equation -- as well as the underlying tax provisions. The high correlation between these two variables, or the business variable and any of the tax variables, may lead to difficulties in interpreting the estimated impacts of these variables.

More recently, Melicher et al. (1983) have offered a general theory of aggregate merger activity but their "merger-activity-economic prosperity" rationale is nothing more than the informal statement that mergers reflect both changes in economic conditions and changes in capital market conditions.⁷³ They estimate the merger relationship in a multiple regression time-series analysis but find empirical support only for capital market conditions as a determinant of merger activity. Thus, their study further illustrates that investigations of tax incentives may be frustrated by the lack of an adequate empirical record on non-tax merger motives. Unlike some other areas of economic inquiry, measuring tax incentives for mergers appears to involve more than adding tax variables to an otherwise well-specified equation.

3c. Potential Tax Benefits and the Merger Decision

Corresponding to time-series analysis of aggregate merger activity would be cross-section studies relating merger decisions to financial, product market, and tax characteristics of acquiring firms and their targets. Several estimating techniques, including logit, probit, and discriminant analysis seem appropriate for investigations of why firms merge. Each provides more direct tests of the tax-incentive hypothesis than is the case with many of the studies reviewed earlier in this section.⁷⁴

Harris et al. (1982), for example, estimate a relationship of the following form:

⁷³ Specifically, expectations of economic growth (as measured by rising industrial activity), and capital market conditions that are favorable to financing mergers (as measured by rising stock prices and falling interest rates), are predicted to lead to increased merger activity. Conversely, deteriorating economic conditions (as measured by an increase in business failures, along with falling stock prices and rising interest rates), are expected to reduce merger activity. Taxes do not appear in their theory and their methodological approach does not lend itself to inclusion of tax changes, at least when measured by shift dummies.

⁷⁴ An alternative and less preferable approach to investigating why firms merge is the Delphi interview technique used by Boucher (1980). A panel of "merger experts" were asked to rank the importance of each of 31 possible merger motives and indicate the frequency with which each has that importance. Tax incentives were among the motives considered. One problem with this approach is that the opinions, although informed, are not necessarily unbiased since the experts also have a personal stake in public policy toward mergers. A more basic problem is that opinion surveys -- even carefully constructed and controlled ones -- provide no basis for testing the validity of the results. Either one believes the panelists, because they are experts, or one does not. It seems preferable to test for merger motives by deriving implications from hypotheses concerning acquisition behavior, and applying statistical techniques to a sample of merger and acquisition transactions.

$$ACQ = f(FIN, PM)$$

where ACQ = probability of being acquired;

FIN = a vector of 16 acquired-firm financial characteristics; and

PM = a vector of 4 acquired-firm product-market characteristics.

The financial variables are drawn from the finance literature where they are "frequently mentioned" as characteristics that make targets desirable. Included among the financial characteristics is a tax-savings variable, measured as tax-loss carryforward/total assets of the target. The product-market variables are drawn from the industrial organization literature.

Harris et al. use COMPUSTAT tapes and the FTC Large Merger Series to develop a cross-section sample of acquired and non-acquired firms. Financial and product-market characteristics are measured as average values for the two years prior to year of acquisition, or year of inclusion in the sample. The above relationship is then estimated in a fixed-coefficients probit model where the dependent variable takes the value 1 for acquired firms and 0 for non-acquired firms. The significance of the fixed-coefficients model is that an independent variable is assumed to have "one true effect" on the attractiveness of the target for all potential acquirors. Harris et al. run 6 models using different combinations of the independent variables and find the likelihood ratios of the models to all be statistically significant. Generally, the price/earnings ratios and firm size were found to have a significant negative relationship to the probability of acquisition. Other financial variables, including the NOL variable, were not found to be significant and addition of the product-market variables did not increase the explanatory power of the models. Overall, the models do not provide much power to discriminate between acquired and non-acquired firms.

Harris et al. recognize that a target might not be equally attractive to all potential acquirors, e.g., a firm with low liquidity might prefer to acquire a high-liquidity firm. To allow for differences in acquiring firms' motivations, they estimate a random-coefficients probit model. Such a model generates both the mean effect of an independent variable and the variability of this effect. Unfortunately for their argument, variability proves to be significant for only one of their independent variables so the random-coefficients model does not represent a real improvement over the fixed-coefficients version in this respect, or in terms of explanatory power.

Price/earnings ratios and firm size do remain significant in the random-coefficients model and asset turnover and the tax variable achieve significance. The estimated negative coefficient for the tax variable indicates that firms with large NOL carryforwards are less likely to be acquired. Harris et al. argue that tax-code restrictions on the transfer of

NOL's and unused tax credits from targets to acquiring firms make firms with these tax characteristics less attractive as targets. Unless the restrictions are prohibitive, however, it would seem that firms with larger NOL's are still more attractive as targets than firms with smaller, or no NOL's, i.e., a positive relationship would be expected, contrary to that estimated by their model.

The assertion by Harris et al. that the transfer of NOL carryforwards from acquirors to targets is valuable and less restricted suggests that proper specification of the relationship between the acquisition decision and tax considerations involves examination of the tax characteristics of acquirors, as well as targets, and their interaction. In fact, one explanation Harris et al. offer for the weak explanatory power of their models is the failure to consider merger as a matching phenomenon. They conclude that "the ideal empirical design for studying mergers should incorporate information on both acquired and acquiring firms" (p. 183).⁷⁵

One method of pursuing the matching phenomenon and incorporating additional tax variables is to extend the probit model offered by Harris et al. For example, consider the following relationship:

$$MER_{ij} = f(FIN_i, FIN_j, PM_i, PM_j, T_i, T_j)$$

where MER_{ij} = the probability of the i th firm acquiring the j th firm;

FIN_i, FIN_j = vectors of financial characteristics of potential acquiring firms and targets, respectively;

PM_i, PM_j = vectors of product-market characteristics of potential acquiring firms and targets, respectively; and

T_i, T_j = vectors of tax characteristics of potential acquiring firms and targets, respectively.

It has been suggested that a relationship of this type could be estimated for a manageable sample of firms with all possible merger combinations considered (except $i = j$), unlike Harris et al., where only firms actually making acquisitions were considered as bidders. The dependent variable takes the value 1 if i did acquire j ; otherwise, $MER_{ij} = 0$. Estimating a model in this form would allow characteristics of potential acquiring firms, not just those of target firms, to be considered directly. Where theory indicates the importance of interaction between acquiring-firm and

⁷⁵ In an earlier report [Carleton et al. (1980)], from which Harris et al. (1982) is derived, the researchers suggested the use of cluster analysis as a method of grouping "similar" acquiring firms and "similar" acquired firms along multiple dimensions. The question then becomes whether firms in a particular cluster tend to acquire firms that are also in a common cluster. This approach, however, was apparently not pursued to a final stage.

target-firm characteristics, the model could be expanded to include appropriate interaction terms (e.g., ratios, or products of the i th-firm and j th-firm characteristics).

Harris et al. consider one tax variable in their model. An expanded model might include the following tax-related variables with efforts being made to account for restrictions and limitations on the use of tax benefits, and offsetting tax costs:

- (a) NOL carryovers and unused tax credits (NOL) should enter positively for both potential acquirors and targets. Firm i and firm j are also expected to interact with respect to this tax variable. Interaction terms such as $(NOL_i)(Profits_j)$ and $(Profits_i)(NOL_j)$ should also enter positively.
- (b) potential for asset step-up (ASU) should be positively related to MER_{ij} and measured with respect to potential targets only;
- (c) potential for capital gains taxes (CGT) should be negatively related to MER_{ij} and measured with respect to potential targets only; and
- (d) potential for tax subsidy from debt-financing where, consistent with the increased debt capacity and neutralization of wealth transfers arguments, increased leverage (LEV) is expected to be positively related to MER_{ij} . LEV is measured with respect to the pre- and post-merger leverage ratios of potential acquirors and targets, combined.

This approach holds some promise for increased understanding of alleged tax incentives to merge although it still does not adequately isolate the tax effect of debt-financing. Unfortunately, further research efforts on tax effects may be frustrated by an inadequate understanding of the role played by non-tax factors in explaining why firms merge. Moreover, there will be some specification error in the model if important non-acquisition alternatives for realizing tax benefits are omitted, but it may well prove difficult to identify and measure such variables.

Aside from the use of probit or logit models, some consideration has been given in the literature to discriminant analysis as a related method of investigating why firms merge. Stevens (1973) illustrates the usefulness of this approach. The purpose of his study is to determine whether a group of acquired firms differed from a group of non-acquired firms in terms of pre-merger financial characteristics. Merger incentives can then be inferred from any such differences. Stevens' problem lends itself to discriminant analysis because his samples are drawn from two populations (which are multivariate), the dependent variable is binary in nature (acquired v. non-acquired), and group membership is known a priori. The objective of discriminant analysis is to use the sample observations to develop a linear discriminant function (i.e., a statistical rule) that best discriminates between

the two groups.⁷⁶ Once the linear discriminant function is estimated, it can be used to calculate discriminant scores for individual observations in the original sample (or new observations), and probabilities of group membership can then be estimated based on these scores.⁷⁷ The estimated linear discriminant function can also be used to indicate which variables are most important in discriminating between the two groups.

Using this method, Stevens estimated a discriminant function with several financial ratios serving as independent variables.⁷⁸ An F-test for group separation led to rejection of the null hypothesis of no difference between acquired and non-acquired firms. Tax variables were not considered explicitly, but the leverage variable proved to be significant and the finding that acquired firms have systematically lower leverage lends support to the latent debt capacity rationale for merger.⁷⁹ The leverage variable, in fact, contributed the most to group differentiation. Stevens also calculated discriminant scores for each firm in the original sample and estimated probabilities of group membership. He found a total classification accuracy of 70 percent.⁸⁰

Stevens' discriminant model could be extended in much the same manner as has been discussed for the probit model. Tax and product-market variables could be added to the analysis and, where appropriate, acquired-firm characteristics and interaction effects could also be considered. Discriminant analysis does not, however, seem to offer any clear-cut advantages over the probit model.⁸¹

⁷⁶ Stevens adopts the rule of maximizing the ratio of among-groups to within-groups variance-covariance from the set of independent variables.

⁷⁷ This procedure provides a basis for assigning new observations to groups and for identifying "misclassified" observations in the original sample.

⁷⁸ Twenty ratios were considered initially but these were "factored" into 6 distinct and uncorrelated factors (ratios).

⁷⁹ As explained in Section V, however, latent debt capacity is more a test for inefficient management or differential efficiency merger motives than it is a test for the tax motive.

⁸⁰ Although statistically significant, this accuracy rate does not seem particularly high when one considers that chance would be expected to produce an accuracy rate of 50 percent and informed observers might be able to do better than 50 percent.

⁸¹ See Judge et al. (1985) for a comparison of the statistical properties of logit, probit, and discriminant models.

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