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Author(s): Steven Kaplan

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Management Buyouts: Evidence on Taxes as a Source of Value

STEVEN KAPLAN*

ABSTRACT

This paper estimates the value of tax benefits in 76 management buyouts of public companies completed in the period 1980 to 1986. The median value of tax benefits, estimated at the time the buyout company goes private, has a lower bound of 21% and an upper bound of 143% of the premium paid to pre-buyout shareholders. The estimated value depends on the rate buyout debt is repaid and the tax rate applied to the interest deductions. The paper also presents evidence on the actual taxes paid and debt repayment rates by these companies after the buyout. The results in this paper suggest that tax benefits are an important source of the wealth gains in management buyouts.

MANAGEMENT BUYOUTS (MBOs) have increased both in size and numbers in recent years. Before 1980, MBOs were infrequent and usually involved smaller companies. According to the Joint Committee on Taxation (1989), MBOs and third party leveraged buyouts accounted for approximately 20% of all takeover activity in the United States between 1985 and 1987. In the typical MBO, buyout investors pay pre-buyout shareholders a premium more than 40% above the prevailing market price to take the company private. (See DeAngelo, DeAngelo, and Rice (1984), Marais, Schipper, and Smith (1989), and my results which follow.) This paper considers the importance of tax benefits in explaining the premiums or wealth gains in 76 management buyouts of publicly held companies completed in the period 1980 to 1986.¹

The paper examines two major sources of tax benefits available during the sample period. First, the large amount of debt used to finance the typical MBO generates large interest deductions. At a maximum, the corporate tax savings from a one dollar interest deduction would equal the marginal corporate tax rate, or \$0.46 during the sample period. However, while the interest deductions available to the MBO increase, these deductions will surface as interest income to the lenders. If the lenders are taxable, this interest income may generate a greater tax liability for the lenders than capital gains and dividend payments generated for pre-buyout shareholders. In the extreme case of the equilibrium

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¹ DeAngelo and DeAngelo (1987) and Shleifer and Vishny (1988) provide detailed descriptions of other possible sources of wealth gains.

presented in Miller (1977), new interest deductions and interest income offset each other completely and debt has no tax advantage.²

During the sample period, management also could elect to increase the tax basis of the assets of their company from the historical basis to the sum of the value of the purchased equity and the value of the firm's outstanding liabilities. The higher tax basis would generate higher depreciation deductions after the buyout. The step-up election, however, also generates a tax liability—the recapture tax paid on depreciation deductions and investment tax credits previously taken on the assets. (The Tax Reform Act of 1986 significantly increases the recapture tax liability, effectively eliminating any economic benefit to a step-up election.)

The paper also briefly considers the potential tax benefits available to a MBO from the use of an Employee Stock Ownership Plan (ESOP). MBOs which borrow through an ESOP can deduct principal repayments as well as interest payments on the loan. In addition, the Tax Reform Act of 1984 allows lenders to deduct 50% of the interest payments on ESOP loans from taxable income. This subsidy allows banks to charge a lower rate on ESOP loans than on non-ESOP loans. Only 5 of the 76 companies in the sample, however, borrow through an ESOP. Because the benefits are potentially illusory (as discussed below) and infrequently used, the paper does not include the value of the ESOP benefits in the calculations of total tax benefits.

This paper first estimates the potential values of these deductions from information that was publicly available at the time of the buyout announcement. The paper presents a range of estimates of the tax benefit from increased interest deductions based on different assumptions for the (unobserved) marginal tax advantage to debt and the extent to which the buyout debt increases are permanent. The median estimated value of interest deductions varies from 14.1% to 129.7% of the premium paid to pre-buyout shareholders. For those companies which elect to step-up the basis of their assets, the median value of the asset step-up is 30.4% of the premium paid to pre-buyout shareholders. Only slightly more than half of the companies which announced their intentions planned to make the step-up election. The median value of the combined benefit from interest deductions and asset step-up varies from 21.0% to 142.6% of the premium paid to pre-buyout shareholders. Again, this value depends on the tax rate and debt repayment assumptions.³

The paper then examines the relationship between these potential deductions and the premium paid (market adjusted) to pre-buyout shareholders. The results in this section are consistent with the application of a longer repayment schedule and higher tax rates. These exercises provide *ex ante* estimates of the value of the tax deductions.

Finally, the paper examines the actual post-buyout tax and debt repayment experience of 48 of the sample companies. The actual debt repayment schedule is consistent with the maintenance of relatively high levels of debt. Consistent

² Gilson, Scholes, and Wolfson (1987) provide a detailed discussion of this issue and other tax aspects of corporate acquisitions.

³ These results agree, in general, with those in Schipper and Smith (1988) who also estimate the potential value of interest deductions and depreciation deductions for a different sample of buyouts.

with the ex ante analysis, the typical company in the sample pays little federal tax in the first two post-buyout years. The typical company does pay taxes in the third post-buyout year.

Together, the evidence on debt repayment and the strong correlation between total tax deductions and the premium paid are consistent with tax benefits being an important source of the wealth gains in management buyouts.

Although this paper focuses on potential tax benefits from the perspective of the buyout company, it includes a brief discussion of the potential cost of the capital gains taxes incurred by pre-buyout shareholders who sell their shares to the buyout investors. This is a tax liability the shareholders may not incur without a buyout. For a discussion of all tax aspects of management buyouts from the perspective of the U.S. Treasury, see Jensen, Kaplan, and Stiglin (1989). They present estimates of the net effects of management buyouts on tax revenues to the U.S. Treasury under 1988 tax law.

Finally, the paper does not consider why a company has to go through a buyout to obtain these tax benefits. A public company could arguably obtain many of the tax benefits without going private.

The paper proceeds as follows: Section I describes the sample of MBOs. Section II uses information available when the buyout is proposed, but before it is completed, to calculate the potential value of the tax benefits generated by the buyout. This section also briefly discusses the potential cost of the capital gains taxes paid by pre-buyout shareholders who sell their shares to the buyout investors. Section III compares the market adjusted returns earned by pre-buyout shareholders to the potential value of tax benefits calculated in Section II. Section IV uses post-buyout financial data for 48 of the 76 companies in the sample to measure the experience of the MBOs in repaying debt and reducing tax payments. Finally, Section V concludes the paper with a summary of the results and a brief discussion of the implications of the Tax Reform Act of 1986 on the tax benefits in management buyouts.

I. Sample and Data

A. MBO Companies

The sample of potential management buyouts is taken from those companies delisted from the New York or American Stock Exchanges during the period 1980 to 1985 and from companies listed as acquisitions (completed and pending) in W. T. Grimm's Mergerstat Review from 1980 to 1985. The final sample of management buyouts includes those transactions which satisfied the following criteria:

1. *The Wall Street Journal* contains an announcement that the company proposed to go private.
2. The newly private firm is an independent entity, not a subsidiary of another private company.
3. The proxy statement or *The Wall Street Journal (WSJ)* confirms that at least one member of the incumbent management team would have an equity interest in the newly private firm.

Table I

**Distribution of 76 Management Buyouts Completed in the Period
1980–1986 by Year, Availability of Post-Buyout Information, and
Information Source**

Firms included in the sample as a management buyout meet the following criteria: (1) The *Wall Street Journal* contains an announcement that the company proposed to go private; (2) the newly private firm is an independent entity; (3) the proxy statement or the *Wall Street Journal* confirms that at least one member of incumbent management will obtain an equity interest in the newly private firm; (4) the total transaction value exceeds \$50 million. Companies were identified by (1) examining all companies delisted from the New York and American Stock Exchange from 1980 to 1985; and (2) examining W. T. Grimm's Mergerstat Review from 1980 to 1985.

Panel A: Announcement Dates of Successful MBO Proposals Greater Than \$50 MM by Year								
Year:	1979	1980	1981	1982	1983	1984	1985	Total
All Firms	1	3	4	13	16	21	18	76
Firms with Post-Buyout Data	0	1	3	7	9	15	13	48

Panel B: MBOS by Original and Latest Source of Post-Buyout Information ^a					
	10-K Report ^b	IPO Filing ^c	Releveraging Sale ^d Filing ^e		Total
Original Source of Data	28	11	5	4	48
Latest Source of Data	14	13	14	7	48

^a Original Source of Data refers to the initial source of post-buyout information for a buyout company. Latest Source of Data refers to the most recent source of data or information for a buyout company.

^b Company is in sample because it has publicly traded debt and files 10-K reports with the SEC.

^c Company is in sample because it filed an initial public offering (IPO) prospectus after the buyout. After IPO, these companies file annual and 10-K reports.

^d Company is in sample because it was purchased by a company that filed an 8-K report with the SEC describing its purchase.

^e Company is in sample because it filed a prospectus to borrow money in the public bond markets after the buyout (usually to leverage the buyout company). After the debt issue, the company must file 10-K reports with the SEC.

- The total transaction value (i.e., the value of equity and debt purchased from outsiders) exceeds \$50 million.⁴

Seventy-six companies, in buyouts completed between 1980 and 1986, met these criteria.⁵ All 76 buyouts were announced in the period 1979 to 1985. Panel A of Table I summarizes the distribution of these buyout announcements over time.

B. Pre-Buyout Data

Information describing the transactions is obtained from Proxy, 10-K, 13-E and 14-D statements and from the *Wall Street Journal*.⁶ Most of the sample

⁴ The intent of this size criterion is to restrict the sample to larger, more fully disclosed transactions.

⁵ Sixty-one companies were delisted by the New York or American Stock Exchanges between 1980 and 1985. Fifteen companies were obtained from the W. T. Grimm data. Six of the W. T. Grimm companies announced buyouts in 1985, but were delisted by the New York or American Stock Exchanges in 1986. Nine of the W. T. Grimm companies were OTC companies.

⁶ One company did not have any of these statements. The information used for this paper was obtained from the *Wall Street Journal* article.

companies filed a detailed proxy statement describing the proposed buyout. Stock prices are obtained from Standard & Poor's *Daily Stock Price Record*.

C. Post-Buyout Data

Post-buyout financial information existed for 48 of the 76 MBOs in the *Wall Street Journal Index*, the list of SEC Filing Companies available from *Disclosure*, or *Going Public: The IPO Reporter*. Twenty-eight of these companies filed 10-Ks with the SEC because they had publicly held debt or preferred stock outstanding; nine companies issued publicly traded equity and filed offering prospectuses; two companies filed initial public offering prospectuses, but later chose not to issue public equity; five companies were purchased by other publicly traded companies; and four companies subsequently filed a prospectus for publicly-held debt to repurchase equity issued at the time the company went private. Panel B of Table I summarizes this information.

D. Summary Information and Statistics

Table II provides summary information for the 76 sample buyout companies. The companies have a median market value of \$253.8 million at the time of the buyout. The table shows that pre-buyout shareholders of MBOs earn a median premium of 42.3% where the premium equals the difference between the final purchase price of the equity in the MBO and the market price two months before the initial announcement.⁷ Adjusted for the return on the S&P 500 over the same period, pre-buyout shareholders earned a median return of 37.3%.⁸

The results also show that the buyout companies experience very large increases in debt levels. Before the buyout, the median ratio of (book value of) debt to total capital at the time of the buyout equals 18.8%. Total capital equals the sum of the market value of equity (based on the buyout price) and the pre-buyout book values of total debt and preferred stock. After the buyout, the median ratio of (book value of) debt to total capital increases to 37.8%. In fact, the new debt created in these buyouts typically exceeds (by 15.5%) the market value of the company's equity two months before the buyout announcement.

II. Potential Tax Benefits and Costs

This section uses data from the buyout proxy statements to estimate the potential tax benefits created by the buyouts. These benefits are compared to the premium paid to pre-buyout shareholders and to the total equity value of the company two months before the buyout announcement. If the buyout is anticipated more than two months before the buyout announcement, the measured premium will be lower than the true premium. Tax benefits as a percentage of the premium will be biased upwards, while tax benefits as a percentage of total equity will be biased downwards.

⁷ An analysis of excess returns suggests that the stock price begins to rise two months prior to the bid, either in anticipation of a MBO or because of hostile pressure. In those cases where a MBO proposal followed a hostile takeover bid, the date of the hostile bid was considered the announcement date.

⁸ Event study methodology which will not be presented here is consistent with these results.

Table II
**Summary Statistics for Size, Premium, and Leverage for 76 Management Buyouts
 Completed in the Period 1980-1986 (Dollars in Millions)**

Financial data were obtained from proxy, 13-E and 14-D statements describing the management buyouts. Stock price data were obtained from Standard and Poor's Daily Stock Price Record.

Variable	Median	Mean	Std. Dev.	N
Book Value of Total Assets	\$284.0	\$525.8	\$1081.0	76
Total Equity Value ^a	\$253.8	\$523.8	\$ 889.1	76
Premium ^b	42.3%	45.9%	23.7%	76
Market Adjusted Premium ^c	37.3%	34.9%	25.2%	76
Pre-Buyout Book Value of Total Debt as Percentage of Value of Total Capital at Time of Buyout ^d	18.8%	20.7%	14.8%	76
Post-Buyout Book Value of Total Debt as Percentage of Value of Total Capital at Time of Buyout ^d	87.8%	85.6%	14.3%	75
Post-Buyout Book Value of New Buyout Debt as Per- centage of Market Value of Equity Two Months Before Proposal ^a	115.5%	122.1%	35.4%	75

^a Equity value is the value of all outstanding equity at the price paid to complete the buyout.

^b Premium is calculated as the percentage difference between the final buyout price paid to pre-buyout shareholders and the value of the equity two months before the proposal.

^c Market adjusted premium is the difference between the percentage premium paid to pre-buyout shareholders and the return on the S&P 500 from two months before the buyout proposal until buyout completion.

^d Value of total capital at the buyout is calculated as the sum of (1) the final buyout equity value; (2) the pre-buyout book value of debt; and (3) the pre-buyout book value of preferred stock.

A. Value from Interest Deductions

Table III reports estimates of the (potential) value of interest deductions. This analysis assumes that all deductions can be used in the year they are generated. If the company does not generate enough taxable income to use all the tax deductions when they occur, then the actual value of the deductions will be lower than the estimates presented here. Section II.E. and Section IV reconsider this assumption.

The first estimate of the value of interest deductions, MaxDebt, multiplies the increase in debt associated with the buyout by the appropriate marginal tax rate. This implicitly assumes that the increased debt level will be maintained forever.

The second estimate, RepayDebt, assumes that the additional debt will be repaid in level principal payments over eight years. (In these management buyouts, eight years is the median maturity of the bank loans and bank loans

Table III
Potential Value of Additional Interest Deductions

Potential value of additional interest deductions as a fraction of premium paid to pre-buyout shareholders and of pre-buyout equity value for 76 management buyouts completed in the period 1980–1986. Values are estimated from information publicly available at the time of the buyout announcement.

	Median	Mean	Std. Dev.	Percent >1.0	N
Panel A: Potential Value of Interest Deductions if Debt is Permanent (MAXDEBT) ^a					
1. As a Fraction of Premium ^b					
Assumes a marginal tax rate of 46%	1.297	1.442	0.895	73.3%	75
Assumes a marginal tax rate of 30%	0.845	0.941	0.583	29.3%	75
Assumes a marginal tax rate of 15%	0.423	0.470	0.292	5.3%	75
2. As a Fraction of Market Value of Equity ^c					
Assumes a marginal tax rate of 46%	0.531	0.562	0.163		75
Assumes a marginal tax rate of 30%	0.346	0.366	0.106		75
Assumes a marginal tax rate of 15%	0.173	0.183	0.058		75
Panel B: Potential Value of Interest Deductions if Debt is Retired in 8 Years (REPAYDEBT) ^d					
1. As a Fraction of Premium ^b					
Assumes a marginal tax rate of 46%	0.402	0.447	0.277	5.0%	75
Assumes a marginal tax rate of 30%	0.262	0.292	0.181	1.3%	75
Assumes a marginal tax rate of 15%	0.131	0.146	0.090	0.0%	75
2. As a Fraction of Market Value of Equity ^c					
Assumes a marginal tax rate of 46%	0.165	0.174	0.050		75
Assumes a marginal tax rate of 30%	0.107	0.114	0.033		75
Assumes a marginal tax rate of 15%	0.054	0.057	0.016		75

^a MAXDEBT is the value of interest deductions assuming the increase in debt is permanent. This equals the tax rate multiplied by the increase in debt.

^b Premium is calculated as the difference between the final buyout price paid to pre-buyout shareholders and the value of the equity two months before the proposal multiplied by the total number of shares outstanding.

^c Market value of equity is the total market value of equity two months before the buyout proposal.

^d REPAYDEBT equals the present value of interest payments generated by debt with a level principal repayment schedule over 8 years multiplied by the appropriate tax rate. This calculation uses 12.5% as the interest rate on the debt and as the discount rate.

typically make up 70.9% of the total new buyout debt.) RepayDebt equals the discounted value of the interest deductions generated by such a loan multiplied by the appropriate tax rate. I use an interest rate and a discount rate of 12.5% where 12.5% is the median interest rate (prime rate + spread) on the bank debt for the sample companies.⁹

I do not use the actual loan maturities to calculate the potential tax benefit for several reasons. First, a buyout company may choose to borrow more money and releverage the previously leveraged company. Second, if a company can meet its interest payments, but not principal payments, lenders will extend new loans, in effect, rescheduling the principal repayments. Third, some of the loan repayments come from proceeds obtained from selling divisions of the buyout company in leveraged transactions. In this case, debt is not actually retired. Finally, a buyout company that has higher than expected operating income may choose to pay back the loans at a faster rate than required.

The analysis applies tax rates of 46%, 30%, and 15% to the interest deductions for MaxDebt and RepayDebt. In a Modigliani-Miller (1963) world, each \$1 of additional permanent debt would be valued at the 46% corporate marginal tax rate that applied during the sample period. In this paper, 46% is taken as the upper bound on the value of the tax benefits.¹⁰

In a Miller (1977) world, lenders pay taxes on interest income and equity investors pay taxes on dividends and capital gains. If the arguments in Miller (1977) hold and the tax on lenders is higher than the tax rate on equity investors, the net benefit of replacing \$1 of equity income with \$1 of interest is less than 46%. Explicitly, it equals: $[1 - ((1 - \tau^e)(1 - \tau^c)/(1 - \tau^d))]$, where τ^e , τ^c , and τ^d are, respectively, the tax rates on equity investors, corporations, and lenders. To account for this, I use marginal tax rates of 30% and 15% throughout this paper.

Under the tax rates between 1980 and 1986, it is possible to have a Miller Equilibrium in which the appropriate marginal rate on debt is 0%. However, this is unlikely to have occurred during this period for maturities of 5 years or more. Poterba (1986) examines the marginal lender tax rates implied by taxable and tax-exempt bond yields in 1981–1983. For a 20 year maturity, the implied tax rate varied from 15.4% to 22.0%; for a 10 year maturity, from 24.9% to 32.3%; and for a 5 year maturity, 33.6% to 39.5%. Poterba also finds evidence that the tax rate on equity during this period exceeded 0. With τ^c at 46%, and assuming τ^d at 39.5% and τ^e at 5%, the net tax advantage of debt is 15%.¹¹ During the sample period, before the Tax Reform Act of 1986, this represents a plausible lower bound on the tax advantage of debt.¹²

⁹ The results are not sensitive to using different interest rates as long as the interest rate and the discount rate used are the same. According to Brealey and Myers (1984), p. 411, the appropriate discount rate is equal to the interest rate on debt if the tax shields are as risky as the interest payments.

¹⁰ Inclusion of state tax rates would raise the marginal corporate rate above 46%. Because state tax rates differ among states, they are not included here.

¹¹ Evidence in Poterba (1989) finds that the implied marginal rates on 20 year debt in 1984 and 1985 were less than or equal to those in 1983. 39.5%, therefore, is assumed to be the highest implied marginal tax rate for debt with a maturity of 5 years or more from 1981 to 1985. The assumption of a 5% marginal tax rate on equity is arbitrary, but consistent with the Poterba's results.

¹² The Tax Reform Act of 1986 changed corporate, individual and capital gains tax rates. The effect of these changes on the value of interest deductions is discussed in Section V.

For MaxDebt and a 46% tax rate, Panel A of Table III shows that the median value of the interest deductions is 129.7% of the premium paid to pre-buyout shareholders. The median value using a 30% tax rate is smaller, but a still large 84.5%. At a 15% tax rate, the median value is 42.3%. These are all very large fractions of the premium. If the added debt is permanent, then it is likely that tax benefits are extremely valuable. The estimated values of the interest deductions as a fraction of market value of equity are also relatively large. At a 46% tax rate, the median value of the interest deductions is 53.1% of the market value of equity two months before the buyout announcement.

The estimates using RepayDebt in Panel B of Table III present a somewhat different picture of the size of the potential tax benefits. In the median case, the estimated values of the interest deductions using the 46%, 30%, and 15% tax rates are, respectively, 40.2%, 26.2%, and 13.1% of the premium paid to pre-buyout shareholders.

Not surprisingly, the estimated value of the tax benefits from interest deductions varies with the marginal tax rate and the maturity assumptions. For longer maturities and higher marginal tax rates, the value of the interest deductions increases.

B. Value from Basis Step-Up¹³

This section presents estimates of the tax benefits from stepping up the tax basis of a buyout company's assets. Between September 1982 and December 1986, a MBO could step-up the basis of its assets under Section 338 or Section 337 of the Internal Revenue Code. Before September, 1982, a MBO would step-up its basis under Section 334 (b). In a step-up election, the MBO could increase the tax basis of its assets from the pre-buyout tax basis to the appraised fair market value of those assets. When the fair market value of the firm's assets is less than the aggregate deemed sale price (which equals the sum of old liabilities and the purchase price of the equity), the difference is allocated to goodwill and does not generate tax deductions. Appendix A defines aggregate deemed sale price and describes the method used to calculate the basis step-up. The calculation of the basis step-up in this analysis assumes that the fair market value equals the aggregate deemed sale price.

The value of the increased depreciation deductions generated by the step-up will depend on the depreciation schedules of the assets to which the step-up is applied. Inventory could be expensed in the year of the MBO. Equipment and machinery could be depreciated under the ACRS schedule over five years. Finally, structures could be depreciated under the ACRS schedule over 15 years. The potential values of these step-ups at a 46% marginal tax rate are:

Disc. Rate	Inventory	Equipment	Structures
10%	.46	.345	.261
15%	.46	.311	.211

The appropriate discount rate for these deductions would be the after-tax cost of debt if they were riskless.¹⁴ However, these deductions are subject to both

¹³ The discussion of basis step-up relies heavily on Freeman (1986) and Bonovitz (1983).

¹⁴ See Ruback (1986).

uncertainty in corporate tax rates and uncertainty in utilizing the deductions. The discount rates of 10% or 15% are chosen arbitrarily as plausible rates.¹⁵

Without knowledge of fair market values, it is not possible to know how much of the total step-up in asset basis is applied to each of the different asset classes. Auerbach and Reishus (1987) and Schipper and Smith (1988) present detailed analyses that try to estimate this for, respectively, samples of mergers and management buyouts.

In the analysis that follows, I do not attempt to distinguish between different asset classes. Instead, I assume that the gross value of the increased depreciation deductions equals 26% of the step-up (STEP). The use of 26% produces more accurate predictions of the companies that plan to elect a basis step-up than does the use of any other integer percentage.¹⁶ The downward adjustment of 26% relative to the percentages given above probably reflects the application of some of the step-up to goodwill and the uncertainty in tax rates and benefit utilization.

The gross value of the increased depreciation deductions does not come without a cost in most step-up elections. Before the Tax Reform Act of 1986, the election of a basis step-up under section 337 or 338 of the federal tax code would trigger an immediate recapture tax liability at the full 46% federal tax rate on the tax depreciation and (non-vested) ITC previously claimed by the company.

I estimate this recapture tax as

$$.46 \times [\text{Accumulated Book Depreciation} + (\text{Deferred Tax}/.46)],$$

where Accumulated Depreciation is the book depreciation already taken on the company's assets. Deferred Tax divided by .46 is added to Accumulated Book Depreciation to obtain an estimate of accumulated tax depreciation. This assumes that Deferred Tax equals the difference between tax depreciation and book depreciation multiplied by the marginal tax rate of 46%. Finally, the recapture tax is estimated by multiplying accumulated tax depreciation by the marginal tax rate of .46. This measure will overestimate recapture because all deferred taxes and accumulated depreciation do not pertain to assets subject to recapture. On the other hand, this measure will underestimate recapture because it assumes an ITC recapture of 0.

The net value of the step-up election, Asset Step-up, is estimated as the difference between (i) 26% of the step-up of asset basis (STEP) and (ii) the estimated tax on recapture.

Before September 1, 1982 and the Tax Act of 1982 (TEFRA), the potential advantages from step-up to a MBO were even greater. Under Section 334 (b), a

¹⁵ These calculations also assume that the depreciation schedules applied to the new asset bases are the same as the depreciation schedules applied to the old bases. In fact, new, more valuable ACRS depreciation schedules applied to the new asset bases, especially for those transactions completed in 1981 and 1982. As a result, the estimates of the value of the asset step-up election may understate the true value.

¹⁶ I estimated step-up values using parameter values of 21% to 30% (in 1% increments). The value of 26% maximized the likelihood of successfully predicting which companies would elect to step-up asset basis. Twenty-six percent also maximized the likelihood function in several logit regressions used to predict the decision to elect a step-up. Values below 24% and above 29% performed significantly worse than values from 24% and 29%. The results presented in Tables IV and V do not differ materially when values of 24% to 29% are used.

Table IV
Potential Value of Asset Step-Up

Potential value of election to step-up asset basis (net of recapture tax) as a fraction of premium paid to pre-buyout shareholders and of pre-buyout equity value for 76 management buyouts completed in the period 1980–1986. Values are estimated from information publicly available at the time of the buyout announcement.

	Median	Mean	Std. Dev.	Percent >0	N
Potential Value of Asset Step-Up ^a					
As a Fraction of Premium ^b					
Companies electing step-up ^c	0.304	0.278	0.255	90.9%	33
Companies not electing step-up ^c	−0.270	−0.202	0.566	31.0%	29
Companies with no information ^c	0.153	0.008	0.513	64.3%	14
As a Fraction of Market Value of Equity ^d					
Companies electing step-up ^c	0.131	0.112	0.099	90.9%	33
Companies not electing step-up ^c	−0.081	−0.136	0.340	31.0%	29
Companies with no information ^c	0.074	0.011	0.241	64.3%	14

^a Asset Step-up is the difference between 26% of the step-up of asset basis (STEP) and the tax on recapture. Where STEP equals:

Final Market Value of Equity − Book Value of Equity + (Deferred Taxes)/.46 + .46 × Accumulated Depreciation,

and the tax on recapture equals:

Deferred Taxes + .46 × Accumulated Depreciation.

For transactions completed before September 1, 1982, the tax on recapture is assumed to equal 0. This also reduces STEP by the sum of deferred taxes and 46% of accumulated depreciation.

All calculations using book values are based on values from the last annual report before the buyout announcement.

^b Premium is calculated as the difference between the final buyout price paid to pre-buyout shareholders and the value of the equity two months before the proposal multiplied by the total number of shares outstanding.

^c Companies (not) electing step-up are those companies which indicate they will (not) step-up the basis of the buyout company's assets after the buyout. Companies with no information did not provide any information in the proxy statement about the step-up decision.

^d Market value of equity is the total market value of equity two months before the buyout proposal.

buyout company could elect a partial liquidation and step-up the value of its assets which had a small recapture liability, while maintaining the tax status of those assets with a large recapture liability. In the analysis, Asset Step-up assumes that MBOs completed prior to September 1982 can avoid the recapture tax completely.

Table IV presents estimates of Asset Step-up as a fraction of the premium paid to pre-buyout shareholders and of the market value of equity two months before the buyout announcement. Companies are categorized by their step-up decision. In the proxy statements, 29 of the 76 companies in the sample announced that they would elect to step-up the basis of their assets. An additional 4 companies stated that they were considering such an election. These 33 companies are grouped as companies electing step-up. Twenty-nine companies announced that they would not step-up the basis of their assets. Finally, 14 companies either made no announcement or did not have a proxy statement available. Of the transactions completed after TEFRA, only 25 of 53 companies which announced their intentions, planned to elect a step-up.

Under the assumption that the value of the deductions equals 26% of the maximum step-up (STEP), Table IV shows that 30 of 33 companies which elected a step-up have a positive value for Asset Step-up. The median value for those companies is 30.4% of the premium paid to pre-buyout shareholders. Alternatively, the median Asset Step-up for those companies which did not elect a step-up is -27.0% of the premium; only 9 of these 29 companies have a positive value for Asset Step-up. Finally, for those companies which did not report a step-up decision, the median value of Asset Step-up is 15.3% of the premium. The median value of Asset-Step-up for the three groups of companies, therefore, follows the expected pattern. The strong relationship between the estimated step-up value calculation and the actual step-up election gives strong support to the method used to calculate them.

Kaplan (1988) estimates several logit regression specifications using Asset Step-up and other variables that may affect the step-up decision to predict whether the buyout company will make a step-up election. The regressions are highly significant and make the correct prediction in more than 80% of the cases.

These results suggest that while asset step-up elections do have a positive value when made, they are not the driving force behind management buyouts. First, almost 50% of the MBOs do not elect a basis step-up. Second, for those companies that do make such an election, the value of the Asset Step-up (30.4% of the premium) is much smaller than the maximum value of the interest deductions of 129.7% of the premium (under MaxDebt and a 46% tax rate). Instead, Asset Step-up just exceeds the value of interest deductions under the assumption of a 30% tax rate and an 8 year maturity (26.2% of the premium).

C. Value from ESOPs

The third potential source of tax advantage in a MBO is the use of an Employee Stock Ownership Plan (ESOP). If the buyout company borrows money through an ESOP, the principal repayments on the ESOP loan (as well as the interest payments) are tax deductible up to 25% of eligible payroll.¹⁷ While this may seem like a large benefit, it probably is not in practice. Principal repayments to the ESOP loan over time may effectively replace employer contributions to the employee pension plan.¹⁸

Since 1984, banks making loans to ESOPs have received the additional benefit of being able to deduct 50% of the ESOP interest payments from income. This should lower the interest rate at which banks are willing to lend.

In practice, buyouts in the sample rarely use ESOPs. Only five MBOs (out of a possible 76) use an ESOP as an integral part of the buyout. An average of 84.4% of the additional debt created in those 5 buyouts is borrowed through the

¹⁷ In an ESOP financed transaction, the new company borrows money from a bank which it then lends to its ESOP. The ESOP promptly returns the loan proceeds in exchange for equity in the new company. The new company uses the proceeds to finance the purchase of the equity of the old company. Over time, the new company makes contributions to the ESOP equal to the principal and interest on the loan. The ESOP uses the payments to pay off the loan and the employees eventually end up with a large equity stake in the company.

¹⁸ In a private conversation, a buyout promoter who has used ESOPs confirmed that this is standard practice with ESOP loans.

ESOP. For these transactions, the potential tax benefits from the ESOP are large if the ESOP principal payments do not replace other pension plan contributions. Assuming a level principal repayment over 8 years, a 46% tax rate, and a 10% discount rate, the tax deductions of the principal payments on the ESOP debt have a median value of 59.0% of the premium in the 5 transactions.¹⁹

Because ESOP principal payments probably replace other pension plan contributions and because ESOPs occur so infrequently in this sample, the calculation of combined tax benefits in the next section does not include the potential tax benefits from the ESOPs.

D. Adding Up the Potential Tax Benefits

It is now possible to add up the potential value of the tax benefits involved in a MBO. Table V adds the potential value of the interest deductions to the potential value of the step-up in basis and compares the sum to the premium paid to pre-buyout shareholders.

The estimated value of the step-up in basis is included for those companies which announced intentions to make a step-up election and for those companies which did not announce their intentions, but for whom the estimated value is positive. As noted above, ESOP deductions are not included in this calculation. Neither of these two assumptions has a material effect on the results.

The estimates in Panel A assume that the buyout generated debt is permanent and apply different marginal tax advantages to interest deductions on that debt. The potential tax benefits in Panel A.1, which use a 46% marginal tax rate, equal a median of 142.6% of the premium. The estimate for those companies which elect a basis step-up equal a slightly larger 161.2% of the premium. These estimates in Panel A.1 represent upper bounds for the value of the buyout generated tax benefits.

Alternatively, the estimates in Panel B assume that the buyout generated debt will be repaid in 8 years. The potential tax benefits in Panel B.3, which use a 15% marginal tax rate, equal a median of 21.0% of the premium. The potential benefits, again, are somewhat larger, 45.1% of the premium, for those companies which make a step-up election. The estimates in Panel B.3 represent plausible lower bounds on the value of buyout generated tax benefits.

These results in Table V provide a wide range for the potential value of tax benefits in management buyouts. Even at the low end of that range, however, the median of 21.0% is a nontrivial portion of the premium paid to pre-buyout shareholders.

E. Ability to Use All Deductions

The calculations in Table V assume that the buyout companies will have enough taxable income to use the tax deductions as they occur. This assumption may not be correct in some cases. This section estimates whether the buyout companies will be able to use all of the tax benefits generated. Post-buyout taxable income is estimated as the difference between (1) Earnings Before

¹⁹ It should also be noted that only one of the ESOP loans appears to have benefitted from the 50% tax break available to bank lenders.

Table V
Potential Combined Value of Tax Savings

Potential combined value of tax savings from interest and depreciation deductions as a fraction of premium paid to pre-buyout shareholders^a for 76 management buyouts completed in the period 1980–1986. Values are estimated from information publicly available at the time of the buyout announcement.

	Median	Mean	Std. Dev.	Percent >1.0	N
Panel A: Potential Value of Interest Deductions and Asset Step-Up ^b as a Fraction of Premium ^a Assumes Added Debt is Permanent (MAXDEBT) ^c					
1. Assumes a marginal tax rate of 46%					
All buyout companies ^d	1.426	1.597	0.926	80.0%	75
Companies electing a step-up ^d	1.612	1.777	1.047	84.8%	33
2. Assumes a marginal tax rate of 30%					
All buyout companies ^d	0.971	1.096	0.630	48.0%	75
Companies electing a step-up ^d	1.161	1.252	0.714	63.6%	33
3. Assumes a marginal tax rate of 15%					
All buyout companies ^d	0.536	0.625	0.375	14.7%	75
Companies electing a step-up ^d	0.741	0.763	0.424	21.2%	33
Panel B: Potential Value of Interest Deductions and Asset Step-Up ^b as a Fraction of Premium ^a Assumes Added Debt is Retired in 8 Years (REPAYDEBT) ^c					
1. Assumes a marginal tax rate of 46%					
All buyout companies ^d	0.510	0.602	0.364	13.3%	75
Companies electing a step-up ^d	0.719	0.741	0.411	21.2%	33
2. Assumes a marginal tax rate of 30%					
All buyout companies ^d	0.371	0.446	0.296	2.7%	75
Companies electing a step-up ^d	0.576	0.580	0.333	6.1%	33
3. Assumes a marginal tax rate of 15%					
All buyout companies ^d	0.210	0.300	0.251	1.4%	75
Companies electing a step-up ^d	0.451	0.429	0.279	3.0%	33

^a Premium is calculated as the difference between the final buyout price paid to pre-buyout shareholders and the value of the equity two months before the proposal multiplied by the total number of shares outstanding.

^b Asset Step-up is the difference between 26% of the step-up of asset basis (STEP) and the tax on recapture, where STEP equals:

$$\text{Final Market Value of Equity} - \text{Book Value of Equity} + (\text{Deferred Taxes}) / .46 + .46 \times \text{Accumulated Depreciation}$$

and the tax on recapture equals:

$$\text{Deferred Taxes} + .46 \times \text{Accumulated Depreciation}.$$

For transactions completed before September 1, 1982, the tax on recapture is assumed to equal 0. This also reduces STEP by the sum of deferred taxes and 46% of accumulated depreciation.

All calculations use book values taken from the last annual report before the buyout announcement.

^c MAXDEBT is the value of interest deductions assuming the increase in debt is permanent. This equals the tax rate multiplied by the increase in debt. REPAYDEBT equals the present value of interest payments generated by debt with a level principal repayment schedule over 8 years multiplied by the appropriate tax rate. This calculation uses 12.5% as the interest rate on the debt and as the discount rate.

^d Companies (not) electing step-up are those companies which indicate they will (not) step-up the basis of the buyout company's assets after the buyout. Companies with no information did not provide any information in the proxy statement about the step-up decision. The potential tax benefits include the estimated step-up value presented in Table IV for all companies which indicated they would make a step-up election, and for the companies with no information if the estimated value of asset step-up is positive.

Interest and Taxes (EBIT) in the year before the buyout proposal and (2) the yearly interest and depreciation deductions generated by the MBO. EBIT is an accounting number obtained from the MBO company's income statement for the last full year before the buyout. Technically, the correct income variable is the company's pre-buyout taxable income before interest. Because this measure is unavailable, the analysis assumes that it equals EBIT. The use of pre-buyout EBIT also implicitly assumes that EBIT will not increase after the buyout, and, therefore, understates the amount of taxable income.

New interest deductions are estimated by multiplying the new debt in the buyout company by the sum of the prime rate at the time of the transaction and the spread charged by the bank lenders over the prime rate. The median spread over the prime rate in the sample is 1.5%. The additional annual depreciation deductions from step-up are estimated as 1/8 of the step-up of asset basis (STEP) defined in Appendix A.²⁰

Under these assumptions, 64% of the MBOs will have negative taxable income in the year following the buyout. In the median case, the deductions exceed EBIT by 32.6%. On the surface, this suggests that the buyout companies will have to increase operating income by that 32.6% to use all of the tax benefits as they occur.

However, buyout companies which do not elect an asset step-up can carry back net operating losses after the buyout to offset taxable income earned in the three years before the buyout. Furthermore, the net operating loss is carried back to the earliest possible year. It is likely, therefore, that those companies which expect to have net operating losses because of large interest deductions will not elect a step-up. Instead, they will offset those net operating losses for three years against taxable income earned in the three years prior to the buyout. In most cases, taxable income in the three years before the buyout will be greater than 32.6% of EBIT. For companies which elect an asset step-up, the value of the step-up must exceed the value of being able to offset future operating losses against past taxable income.

Net operating losses which cannot be carried back, can be carried forward to offset future taxable income for up to 15 years. If operating income increases after the buyout, the buyout companies will be able to use any loss carryforwards they obtain. For companies which increase operating income, the marginal value of the tax benefits will be less than 46%, but not by very much.

The discussion in this section, particularly the ability to offset net operating losses against taxable income in the three years before the buyout, supports the assumption of a 46% value for the corporate tax rate, τ^c .

F. The Cost of Capital Gains Taxes

As noted in the introduction, a buyout also generates tax costs, primarily the capital gains taxes incurred by shareholders who sell their shares to the buyout investors. This cost is incorporated in the premium that the buyout investors

²⁰ The actual fraction of STEP that will be deducted from taxable income in the early post-buyout years will be larger to the extent that the step-up is applied to inventories and equipment rather than to structures.

must pay pre-buyout shareholders to take the company private. This section presents a rough estimate of the potential capital gains taxes paid by selling shareholders.

The capital gains tax is calculated as 20% of the premium paid to taxable pre-buyout shareholders where (i) 20% is the maximum tax rate on capital gains during most of the sample period and (ii) the holdings of taxable pre-buyout shareholders are calculated by treating institutional holdings of a company's stock (reported by the Value Line Investment Survey) as tax-exempt. This assumes that the basis of the shares equals the market price two months before the buyout proposal. The calculation also excludes shares of stock exchanged by buyout company managers for shares in the new company. For the 59 companies with available data, the median value of the capital gains tax is 13.8% of the premium paid to pre-buyout shareholders.

The 13.8% estimate is likely to be a lower bound because many shareholders will have a basis in the stock that is lower than market price two months before the announcement. If the average basis is 20% below that price, then the median capital gains tax is 16.6% of the premium paid to pre-buyout shareholders.

The estimates of capital gains taxes in this section are sizable, but still below the lower bound value of tax savings of 21.0% calculated in Section II.D. This suggests that some, but not all, of the buyout generated tax benefits offset the cost of the capital gains tax.

III. Tax Benefits and the Returns to Pre-Buyout Shareholders

The results in Section II suggest that tax benefits can provide value to a buyout transaction and that outsiders can predict the value of these tax benefits once a buyout is proposed. The results in that section, however, leave open a wide range of possible values for the benefits. In this section, I present results which regress the potential value of the tax benefits against the (market adjusted) premium paid to pre-buyout shareholders. The coefficient in this regression will provide a point estimate of the value of the tax benefits.

If shareholders anticipate a buyout prior to the buyout announcement and the tax benefits are appropriable by other potential buyers, then the benefits will be incorporated in the stock price before the buyout announcement and will not be related to the total premium paid to pre-buyout shareholders. If the buyout proposal signals, *ex post*, that the tax benefits exist and they are appropriable by other buyers, then the tax benefits will be incorporated in the premium paid to pre-buyout shareholders. Finally, if the tax benefits are unanticipated prior to the buyout proposal and are not appropriable by other buyers, they will not be incorporated in the premium paid to pre-buyout shareholders. Gilson, Scholes, and Wolfson (1987) present a detailed discussion of these issues.

In a competitive market for corporate control, the excess returns or premium paid to pre-buyout investors should incorporate those potential tax benefits which are predictable and obtainable by third parties. Post-buyout investors should receive only those benefits which they create themselves.

The dependent variable used here is the market adjusted premium paid (MAP)

to pre-buyout shareholders. This measures the difference between the return earned by pre-buyout shareholders and the return on the S&P 500 from two months before the buyout announcement until the buyout is completed.

Three independent variables are used. MaxDebt equals the value of interest deductions under the assumption that the buyout generated debt is permanent and the marginal tax rate is 46%. This is the maximum value of the interest deductions. The coefficient, therefore, should not exceed 1. Asset Step-up measures the potential value of the step-up in asset basis. It is included if the buyout company plans to step-up its basis or if the buyout company announces no plans, but has a positive expected value from such an election. Finally, Total Tax Deductions is set equal to the sum of MaxDebt and Asset Step-up. These three measures are buyout generated tax deductions.

Before presenting the estimates, I should note the limitations of these variables. By construction, they may be correlated with the premium paid to pre-buyout investors. If this premium increases by \$1 and debt finances 85% of this increase, the MaxDebt component of Total Tax Deductions (which assumes a 46% marginal tax rate), will increase by \$0.391. Similarly, for MBOs which elect to step-up their asset basis, each \$1 increase in the premium becomes a \$1 increase in the asset basis and a \$0.25 increase in Asset Step-up. The three variables also may serve as a proxy for other expected gains from the buyout.

Regressions 1 and 2 show that the tax variables are positively and significantly related to the market adjusted premium paid to pre-buyout shareholders. A \$1 increase in the value of MaxDebt is associated with an \$0.85 increase in the Market Adjusted Premium. This is consistent with the debt having a long expected maturity and a high marginal tax rate. A \$1 increase in the value of step-up is associated with a \$0.46 increase in the Market Adjusted Premium. This is consistent with the market having partially anticipated the Asset Step-up.

(1)	MAP =	-0.16 +	0.85 × MaxDebt	+ 0.46 × Asset Step-up	Adj. R ² = .32
		(1.6)	(5.9)	(1.9)	N = 75
(2)	MAP =	-0.13 +	0.76 × Total Tax Deductions		Adj. R ² = .31
		(1.5)	(5.9)		N = 75

(t-statistics in parentheses)

The large coefficients on the variables are consistent with the view that taxes play a large role in management buyouts. From Table V, the median value of Total Tax Deductions for the sample is 1.426 of the premium paid to pre-buyout shareholders. The coefficient of .76 on Total Tax Deductions implies that Total Tax Deductions equal 108% (.76 × 1.426) of the market adjusted premium paid to pre-buyout shareholders.

There is at least one alternative interpretation, however, for these results. The large coefficients, particularly on MaxDebt, may proxy for other wealth increases the buyout is expected to generate. In that case, the value of the tax benefits will be lower than 108%. Kaplan (1989) presents evidence that the buyout companies increase cash flows from operations significantly after the buyout.

Table VI
Total Debt Outstanding and Current Federal Tax Payments

Total debt outstanding as a fraction of total debt at buyout completion^a and current federal tax payments as a fraction of operating income^b from two years before the buyout to four years after the buyout for 48 management buyouts completed in the period 1980–1986.

	Median	Mean	Std. Dev.	Percent <1.0	N ^b
Panel A: Book Value of Debt Outstanding/Book Value of Debt Outstanding at Buyout Completion^a					
Last full year before buyout	0.256	0.258	0.174	100.0%	48
First full year after buyout	0.851	0.875	0.279	78.0	41
Second full year after buyout	0.750	1.071	1.130	76.7	30
Third full year after buyout	0.714	1.047	1.208	82.4	17
Fourth full year after buyout	1.055	1.320	0.977	50.0	12
	Median	Mean	Std. Dev.	Pct >0.0	N ^b
Panel B: Current Federal Taxes Paid^c/Operating Income^d					
Second full year before buyout	0.224	0.173	0.233	86.4%	44
Last full year before buyout	0.203	0.160	0.191	86.4%	44
First full year after buyout	0.002	0.016	0.100	51.4%	35
Second full year after buyout	0.008	0.054	0.091	56.5%	23
Third full year after buyout	0.048	0.092	0.114	66.7%	12
Fourth full year after buyout	0.000	0.109	0.162	42.9%	7

^a Total debt is the sum of short-term and long-term debt and capitalized leases (all measured at book value).

^b The number of observations do not match in the two panels because current federal taxes and debt outstanding are not always available.

^c Current federal taxes are taken from the notes to a company's income statement and represent taxes paid currently to the federal government.

^d Operating Income equals Earning Before Interest and Taxes + Depreciation and Amortization.

IV. Post-Buyout Results

The preceding analysis of the ability of companies to use tax benefits has been speculative, using pre-buyout data to predict post-buyout behavior and results. This section presents evidence on the debt repayment and tax payment experience for 48 buyouts which have filed post-buyout financial reports.²¹

Panel A of Table VI presents the debt repayment pattern for the MBOs in the years surrounding the buyout. The book value of debt relative to total debt outstanding at the time of the buyout decreases to 85.1% by the first full year after the buyout (an average of 18 months), to 75.0% by the second full year after the buyout, and to 71.4% by the third full year of the buyout. In this sample, the level of debt shoots up in the fourth year after the buyout to 105.5% of the total debt outstanding. This reflects the fact that four of the twelve companies borrowed money to repurchase equity in that fourth year. Three of these com-

²¹ The discussion of the post-buyout results assumes that the 48 firms with post-buyout data do not differ systematically from the 28 MBOs which do not have post-buyout data. Although this is impossible to test explicitly, other evidence in Kaplan (1989) is not supportive of such a selection bias.

panies had issued public equity in initial public offerings after the buyout, but before the repurchase/releveraging.

The repayment rates over the first three full years are consistent with debt repayment over a 10 to 12 year period. This is slower than the 8 year assumption used for RepayDebt. The actual repayment rate may be even slower if these companies subsequently re-leverage themselves or are re-leveraged by outside purchasers. The results for the fourth year after the buyout suggest that this slower rate may be appropriate. They are based, however, on only 12 observations.

Panel B of Table VI shows the level of current federal taxes paid for the MBOs from two years before the proposal to four years after the buyout. Current federal taxes measure the actual taxes paid by the buyout company to the federal government. This is a cash measure, not an accounting measure.

In Panel B, current federal taxes are divided by operating income (the sum of EBIT and depreciation). This ratio provides an estimate of a company's average tax rate. Before the buyout, the median ratio of current federal taxes to operating income is more than 20%.²² In the first two full years after the buyout, the ratio drops below 1%. The buyout companies pay very little in taxes those two years.²³ At least seven MBOs use operating losses in the first two post-buyout years to offset pre-buyout operating income.

In the third post-buyout year, the median tax rate moves upward to 4.8%. Two thirds of the buyouts pay taxes in the third post-buyout year. If this pattern continues, and the typical buyout company fully uses its tax benefits by the third post-buyout year, then the estimates in Table V should not be heavily discounted. While the median tax rate (for the seven available observations) falls to 0 in the fourth post-buyout year, this largely reflects the re-leveraging undertaken by three of the seven firms in the fourth year. These three firms paid taxes in the third post-buyout year.

Evidence on operating loss carryforwards provides additional information on the utilization of tax deductions. Of the 44 companies with post-buyout tax data, 14 have operating loss carryforwards in the last year with available data. Of these 14, 5 have a loss carryforward that is less than 21% of operating income in that last reported year. These 5 companies are likely to exhaust the operating loss carryforwards in the following year. Of the 9 remaining companies with loss carryforward, 4 elected to step-up the basis of their assets. For these 4 MBOs, the step-up election was expected to be more valuable than the ability to offset operating losses against pre-buyout operating income. Finally, the remaining 5 companies have operating loss carryforwards that may not have been planned and may not be exhausted. Only for these 5 companies is the corporate tax advantage of interest deductions clearly lower than the 46% corporate tax rate.

The results for debt repayment suggest that the value of the tax benefits in the buyouts, for a given marginal tax advantage, exceeds the value calculated as

²² The ratio of current federal taxes to operating income for the buyout companies is not significantly different from the value of that ratio for a sample of comparison companies in the same industry. See Kaplan (1988) for details of the industry comparisons.

²³ These tax rate decreases are not caused by industry wide changes. Kaplan (1988) finds that these large decreases are significantly different from the changes in taxes paid by other companies in the same industry.

RepayDebt but will be less than the value of maintaining the debt forever as in MaxDebt. The results for federal taxes paid and for loss carryforwards suggest that most of the buyout companies receive close to the maximum value of the deductions.

V. Summary and Discussion

The results in this paper support the hypothesis that tax benefits are an important source of the wealth gains in management buyout transactions. Using data provided to public shareholders at the time of the buyout, the paper presents a range of estimates of the combined tax benefit from increased interest and depreciation deductions based on different assumptions for the marginal tax advantage to debt and the extent to which debt increases are permanent. Depending on the measure used, the median value of the tax benefits for the sample varies from a lower bound estimate of 21.0% to an upper bound estimate of 142.6% of the premium paid to pre-buyout shareholders.

A regression of the total tax deductions generated by the buyout on the market adjusted premium paid to pre-buyout shareholders to take the company private is highly significant. The magnitude of the coefficient on the total tax deductions is consistent with a longer repayment schedule and a higher tax advantage to debt. However, the large coefficient may also serve as a proxy for other buyout generated gains. In any event, this result is consistent with a market for corporate control that forces the buyout companies to pay pre-buyout shareholders for tax benefits that are ex post predictable and obtainable by other bidders.

Finally, the paper examines the actual post-buyout tax and debt repayment experience of 48 of the sample companies. The actual debt repayment pattern is consistent with the maintenance of relatively high levels of debt. Consistent with the earlier analysis, the typical company in the sample pays almost no federal taxes in the first two post-buyout years. The typical company resumes paying taxes in the third year. Most of the buyout companies do not have tax loss carryforwards.

The speed of debt repayment and the strong relationship between total tax deductions and the premium paid are consistent with tax benefits being an important source of the wealth gains in management buyouts. Again, the exact point estimate of the size of these gains will depend on the marginal tax advantage of debt.

Under tax law in effect during the sample period, a rough calculation finds that the capital gains tax for the companies in this sample has a median value of approximately 15% of the premium paid to pre-buyout shareholders. This suggests that some of the tax benefits generated by the buyout are used to offset the cost of the capital gains tax. Jensen, Kaplan, and Stiglin (1989) take this cost and others into account when they estimate the net effect of management buyouts on tax revenues of the U.S. Treasury under 1988 tax law.

The estimates in this paper are based on tax rates in effect prior to the Tax Reform Act of 1986 (TRA). TRA lowered the maximum corporate rate from 46% to 34% and effectively eliminated the asset step-up election. Clearly, this lowers the maximum tax benefit of interest deductions from 46% to 34%.

When personal taxes are considered, however, the net effect of TRA on the tax benefit of interest deductions becomes unclear. TRA also lowered the effective maximum personal tax rate on debt and dividends to 28%, and increased the tax rate on capital gains to 28%.²⁴ Assuming a tax rate of 28% on debt, τ^d , and 5% on equity, τ^e , (as in Section II.A.), the net tax advantage of debt is still 13%. Evidence in Poterba (1989) suggests that the implied marginal rate on debt of longer maturities is below 28%. The changes in TRA, therefore, do not reduce the lower bound estimates based on a marginal tax advantage of 15% and may increase them.

The effective elimination of the ability to step-up basis will reduce the tax benefits available in some transactions and may reduce the premium paid to pre-buyout shareholders in those transactions. This change, however, is unlikely to eliminate buyouts. This conclusion is based on the result that fewer than half of the MBOs after 1982 elected a basis step-up. Many buyouts were completed during the sample period without the asset step-up.

This discussion suggests that the tax advantages of management buyouts have decreased slightly under TRA. However, the discussion also suggests that tax advantages still exist and remain valuable. Consistent with this, management and leveraged buyout activity has continued at a high level in the two years since the Tax Reform Act of 1986 went into effect.

Appendix A: Methodology for Calculating Asset Step-Up Value

The aggregate deemed sale price (ADSP) used as the maximum new basis of the buyout company equals the sum of (1) the grossed-up basis of the recently purchased stock (MVEQ); and (2) the liabilities of the company (including any recapture tax liability resulting from the deemed sale).²⁵ The definition of grossed-up basis allows the new company to apply the final buyout price to all shares of stock of the old company, including those traded in for new company shares by the management group.

The total basis in the new company, therefore, will be

$$\text{NEWBASIS} = \text{MVEQ} + \text{OLIAB} + \text{RECAP} - \text{DEFTAX},$$

where

$$\begin{aligned} \text{OLIAB} &= \text{the liabilities of the old company, including DEFTAX,} \\ \text{RECAP} &= .46 \times \text{ACCDEP} + \text{DEFTAX.} \end{aligned}$$

This assumes that all deferred taxes are erased at the time of the buyout—they would be associated with past tax depreciation.

The total tax basis of the old company is

$$\text{OLDBASIS} = \text{BVEQ} + \text{OLIAB} - (\text{DEFTAX}/.46),$$

where

$$\text{BVEQ} = \text{Net book value of equity.}$$

²⁴ Some individual taxpayers will have a marginal tax rate of 33%. I assume that the amount of income subject to this marginal tax rate is small.

²⁵ See Freeman (1986), pp. 392–398.

The increase in tax basis, STEP, equals the difference between NEWBASIS and OLDBASIS:

$$\begin{aligned}\text{STEP} &= \text{NEWBASIS} - \text{OLDBASIS} \\ &= \text{MVEQ} - \text{BVEQ} + .46 \times \text{ACCDEP} + \text{DEFTAX}/.46.\end{aligned}$$

The paper assumes the increased depreciation deductions of STEP are worth \$0.26 for each \$1 of STEP. The net asset step-up value is the difference between the value of step and the cost of recapture, or

$$\text{ASSET STEP-UP} = .26 \times \text{STEP} - \text{RECAP}.$$

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