## LEVERAGE: THE TAX INCENTIVES

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#### **ABSTRACT**

This paper discusses calculations that combine the tax burden on corporations with that on equity and debt holders. It points up the great leverage incentives in the tax law. The revisions of 1986 (not significantly changed in 1990) cut the scheduled rates on both corporations and individuals (except for capital gains) and might appear to reduce the incentive for debt finance but they really increased the incentive for debt financing relative to equity financing: the burden on debt financing was reduced relatively more than than on equity financing.

The result is to tilt the well-worn playing field even more in favor of leveraging, leading to the possibility of another leverage frenzy and debacle at some time in the future.

The main reason for the tilt is the double taxation of dividends in conjunction with the single taxation of interest. Removal of double taxation would virtually remove the relative tax incentive for leveraged finance.

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#### LEVERAGE: THE TAX INCENTIVES

The prevailing concern with the use of highly-leveraged transactions, including those involving junk bonds, reopens the longstanding question whether corporate and shareholder taxes should be integrated and the double taxation of dividends removed. Leveraging is induced, at least in part, by the tax preference given bond financing over equity financing: the double taxation of corporate profits (taxable first in the corporation and then in the hands of the shareholder through dividends and presumptively through capital gains on any realized enhancement resulting from retained earnings) and the single taxation of corporate earnings that go for interest (taxable only in the hands of the debtholder). This gives debt a strong tax advantage over equity.

The problem is usually referred to as the "double taxation of dividends" but in fact the issue is the double taxation of corporate income as a whole whether paid out in dividends or not.

#### Integration and Leverage

The debt advantage is so great that it is well-nigh irresistible. To take a hypothetical example based on the 1990 law, suppose that \$100 of operating earnings are paid out entirely in interest. The tax bill, all in the hands of the debtholders, might be \$31. If there is no debt and all

of the \$100 is taxable earnings, the corporation might pay a tax of \$34; and if the net after taxes is then all paid out to taxable shareholders, the tax to them might be \$20.46 (31% of the \$66 net after tax), making a combined corporate/shareholder total of \$54.46. This is 76% more than the \$31 in the all-debt case. Variations in tax rates and dividend payout ratios - considered later in this paper would modify these results.

The debt advantage constitutes a telling argument in favor of integration of corporate and shareholder taxation. Corporate and debtholder taxation is already integrated—all tax is the responsibility of the debtholder. A thorough integration on the equity side would totally eliminate the double taxation of corporate income and with it the debt advantage. The task, though, is not without its problems.

Integration of corporate and shareholder taxation that would remove the debt advantage would occur if the marginal tax rate on the equity side (corporation and shareholder combined) were made equal to the marginal rate on the debt side (corporation and debtholder combined).

Removal of the debt advantage is in itself worthy of study in view of the junk bond debacle of 1989 and 1990 and the concern that leveraged buy-outs might once again get out of control. That leveraged buy-outs are by no means a thing of the past is suggested by reports of the renaissance of buy-out money as early as the the beginning of 1991:

"Think the leveraged buy-out business is dead? Big investors are betting more than an additional \$2 billion to the contrary."

Wall Street Journal, January 11, 1991, page C14

#### Leverage Incentives in the Tax Law<sup>1</sup>

How does the tax law affect the incentive to issue and buy new corporate bonds? Does it encourage or discourage leveraged buy-outs and other mergers and acquisitions that rely on the issuance of bonds, especially high-risk, high-interest obligations? Statistical studies have not disclosed a dominant tax effect compared with other forces that have been at work. Yet, as indicated above, the arithmetic is compelling.

The tax incentive in the 1990 law is about as strong as under the 1986 law and far stronger than it was just before that.

But didn't the 1986 tax law, with its generally lower marginal rates, reduce the incentive to leverage buy-outs and buy-backs? Not at all. Just the opposite.

The reason is that, despite the lower tax rates (other than for capital gains) compared with the pre-1986 situation, the advantage of debt over equity was actually increased both absolutely and relatively in 1986.

The enlarged debt advantage was retained in 1990: the changes that occurred did not materially affect the tax incentive to leverage.

The complete history of the causes of the junk bond debacle of 1989 and 1990 is yet to be written. But the tax incentive must have a prominent place in any comprehensive work. This comment applies to long-term debt where the interest deduction can be a major factor; short-term debt may be dominated by other considerations.

What is involved is essentially the shield against income tax that is provided by corporate debt compared with the shields that are provided for equity by the income tax rules (e.g., historically, the investment tax credit, accelerated depreciation, and the preferential treatment of capital gains).

Under the tax law that was passed in 1990, with a 28% limit on capital gains and a new 31% bracket for other types of income, the only tax burden on corporation and investors together in the all-debt case is the tax on the interest income of the debtholder. This would be \$31 or 31% of a hypothetical \$100 of corporate earnings before interest and taxes. Now turn to the all-equity case and assume a 50% dividend payout (instead of the 100% payout previously assumed). With no tax deduction for the dividends paid to the shareholders, the total corporate/shareholder tax works out to 53.47% (\$34 on the corporation itself, \$10.23 on an assumed 50% payout of \$33 of dividend income, and \$9.24 presumed capital gains tax on the resulting retained earnings of \$33.} [Table 1, Line 11]

The difference--the debt advantage--between the all-equity case and all-debt case, is 22.47% of corporate earnings before interest and taxes. [Table 1, Line 12.] This is nearly as high as the 24.48% under the 1986 law (at the 28% personal income tax level) [Table 3, Line 12] and far above the 14.90% at maximum rates just before 1986. [Table 5, Line 12]

Then there is the 1990 tax "bubble".

The 1990 tax "bubble"? Wasn't the bubble of the 1986 tax law (a rate of 33% for a certain range of incomes) removed in 1990? Moved, yes; not removed. With the deduction reduction and exemption phase-out (the "exemption redemption"?) of the 1990 law, the statutory maximum marginal rate for capital gains became approximately 31%, not 28%; and for other income, approximately 34%, not 31%; at certain income levels.

What does this do to the leverage incentives? Very little. The leverage incentives in the "bubble" of the 1990 tax law are still far above the pre-1986 level. The debt advantage in the 1990 bubble is 21.45% [Table 2, Line 12] compared with 14.90% of corporate earnings before interest and taxes in the pre-1986 law. [Table 5, Line 12] The incentives to offer and to buy junk bonds are almost as great as in the 1986 bubble (33% income and capital gains tax rate for individuals). The debt advantage there was 22.78% [Table 4, Line 12].

These calculations show that the incentive and ability to finance mergers and acquisitions by debt rather than equity financing rose sharply in 1986 and stayed up in 1990.

A prediction reflecting the above arithmetic would be that a corporation's taxable earnings would fall sharply after a leveraged buyout because of the deductibility of the heavy interest payments involved. That is precisely what happened in the case of many corporations. A reduction in taxable earnings in such cases does not necessarily mean reduced economic performance: it may simply reflect the substitution of tax-deductible interest (thus reducing reported taxable earnings) for non-deductible dividends.

#### Net Wealth of Shareholders<sup>2</sup>

Although the double taxation of dividends is to the disadvantage of shareholders, the fact that interest is integrated—i.e., interest is deductible at the corporate level—yields a wealth potential to those shareholders who own the highly leveraged companies.

We take as the increase in private wealth (which is at the expense of the Treasury) the tax saving that lies in the advantage of debt over equity financing as employed in leveraged buyouts. How much of that wealth accrues to the acquiring owners and how much to the target shareholders is a matter of negotiation between the parties before the deal is done. Various possible outcomes exist, as we saw only too well in the course of the negotiations in the RJR

Nabisco takeover in 1989. It is convenient here to assume that there is an intense bidding war such that the target shareholders alone get the full benefit of the anticipated debt advantage. We also deal with only one year's debt advantage here; in fact it should be capitalized over its expected duration to get the full wealth effect.

The acquirers might still have plenty of incentive to pursue the target even if they bid away the entire debt advantage: authors have pointed out that there are many possible reasons besides tax savings for the increase in wealth, such as restriction of "free cash flow", improved efficiency and productivity and the sell-off of assets (where the sum of the parts is greater than the whole). We confine ourselves here to that increase in private wealth that may be attributed on a hypothetical basis to the debt advantage itself. The task is to estimate how much of an increase in private wealth accrues to shareholders as a result of the tax advantages of leveraging.

The arithmetic examples here are confined to the calculable tax savings involved in financing through debt rather than equity, the debt advantage.

We treat the dollar amount of debt advantage as the potential private wealth increase (actually, a transfer from the Treasury through interest deductibility), whoever gets it. Sooner or later it would then become subject to the provisions (including exemption at death) of the capital gains tax law. To obtain the <u>net</u> private wealth increase, we

deduct the capital gains tax from the wealth increase represented by the debt advantage. All of this is purely hypothetical since an investor's private wealth increase may be greater or less than the debt advantage. The investor's tax basis may also be higher or lower than implicitly assumed here.

With the 1990 law's provision for a limit of 28% capital gains tax and a 31% tax limit on other income the net private wealth created for these shareholders by the takeover is a little over 16% of corporate earnings (before interest and taxes) or \$16 in our numerical example [Table 1, Line 14].

The other tax rate assumptions for the 1986 and 1990 laws lead to net shareholder wealth in the range of about 15% to 18% [Table 2, 3, 4, Line 14]. This is far in excess of the approximately 12% we derive for the law just before 1986 [Table 5, Line 14].

The key number is the net amount the target shareholders will have after they sell their shares and pay their taxes. On the assumptions used here, this has increased markedly since the middle 80s.

### Role of the Capital Gains Tax<sup>3</sup>

The capital gains tax is used at two points in our numerical examples: once applied to retained earnings in calculating the debt advantage; and again in estimating the net wealth increase enjoyed by the shareholders of the

target company or whoever gets the benefit of the debt advantage.

The capital gains tax is applied here at face value, i.e., at the statutory rate. In fact, it should be discounted for both time lapse until the probable time of realization and for the probability of nonpayment (as at The resulting error is mitigated somewhat for our death). purposes by the fact that the two sides of the leveraged buy-out market are affected in offsetting ways to some degree: too high an assumed capital gains tax exaggerates the relative debt advantage (because the capital gains tax is used in estimating the tax burden on retained earnings) and also exaggerates the amount taken out of the target shareholders' capital gain when the takeover occurs. Thus the amount of debt advantage is overstated but the overstatement is cut down by the larger capital gains tax estimated for the target shareholders.

#### Significance of Interest Deductibility and Double Taxation of Dividends

The combination of interest deductibility and the double taxation of dividends creates the debt advantage. The debt advantage provides at least some of the prospective liquidity that enables the promoters to bid up the target shares for the takeover.

In essence, there will be a transfer (through interest deductibility) from the Treasury to the ultimate owners of the target companies; and a partial restoration to the

Treasury in the form of the capital gains tax on the gains realized by the shareholders. The transfers will not necessarily occur in a desirable time sequence but that can be taken care of through short-term loans.

The premia offered in takeover bids, whatever their rationale, are partly enabled by prospective interest deductibility. In a capital market that is restricted in many ways, this is not a trivial consideration.

It can be argued that the expectation of interest deductibility provides an inducement for leveraged buy-outs even if it is not a major instigator of them. In effect, the Treasury supplies some of the money required for the buy-out. The tax provision is an enabler even if it is not an inducer. Of course, the expectations may be disappointed after the bonds are out in the world and it is too late to start all over: deductibility is a boon only if there are earnings against which to deduct.

### Integration Proposals and the Partnership Option<sup>4</sup>

The integration question is particularly urgent in view of concern that there will be another flood of leveraged buy-outs and another junk bond debacle at some time in the future.

If there are to be policies directed at the issuance of junk bonds for leveraged buy-outs, it is important to recognize the pressure of the tax effect, the debt advantage, and the fact that the lack of integration of

corporate and shareholder taxes contributes to the leverage incentive.

In October 1990 it was reported (Wall Street Journal, October 12, 1990, p. Al4) that Republican Representative Leach of Iowa "and two other members of Congress--one Republican and one Democratic--have just sent a memo to the House leadership of both parties calling for an end to the deductibility of interest paid on debt used in leveraged buy-outs." Various degrees of nondeductibility of interest can easily be visualized.

Another approach to integration would be to make dividends paid deductible to the corporation. This would not totally eliminate the debt advantage: there would still be the potential taxability of retained earnings plus a discrepancy between the corporate rate of 34% and the personal rate if the latter is at less than the "bubble" rate of 34%.

It would be necessary to make both dividends paid and earnings retained deductible, i.e., abolish the corporation income tax entirely, to put equity financing on a tax par with debt financing. This would be the partnership option and would essentially be like treating all corporations like Subchapter S corporations. The total elimination of the corporation income tax would finally put the debt advantage and the resulting leverage incentive to rest. Corporate earnings would still be taxed, but only once, in the hands

of the shareholders sooner (in the case of dividends) or later (in the case of capital gains, if and when paid).

If the corporation tax were continued but dividends received were tax free and there was no capital gains tax to hit retained earnings, a virtual tax equality between debt and equity financing would be achieved—only "virtual" since the corporate and individual rates are not identical, as pointed out above, the corporate rate being 34% and the individual rate used here being less than that except in the "bubble".

#### Conclusions<sup>5</sup>

The elimination of the double taxation of dividends has been widely heralded over the years as a method of encouraging investment and enterprise. What is currently of additional significance is its impact on the problem of "overleveraging". The overleveraging could conceivably have been wilful from the beginning or simply a result of reasonably unforeseeable economic or individual conditions. The overleveraging is sometimes discoverable for sure only after the fact, when the company finds that it cannot service its debt.

The integration of corporate and shareholder taxation—the elimination of the double taxation of dividends—reduces or even removes the leverage incentives in the tax law (depending on which method of integration is used.). The

same policy changes can solve both aspects of the same problem: favoring debt and burdening equity.

The tax provisions that doubly burden equity investments—thereby evoking the double taxation issue—simultaneously provide a strong debt advantage—thereby inducing overleveraging. Removal of the debt advantage by eliminating the double taxation of dividends would solve both problems at once.

The revenue consequences of integrating corporate and shareholder income taxes are, of course, of crucial importance and would have to be subjected to analysis and speculation--pro and con--as intensive as that involved in the proposal to cut the capital gains tax.

The expression "double taxation of dividends" is used here as a surrogate for "the double taxation of corporate income" which covers not only the double taxation of dividends but also that of retained earnings: they are taxed again if and when any resulting appreciation is realized and is then taxable. Both types of double taxation tilt the playing field in favor of debt.

Recent events have temporarily masked the underlying force of the debt advantage and the possibility of another leveraging frenzy and debacle: (1) The recession has dampened venturesome activity, whether financed at high interest or low. (2) Tax deductibility is temporarily worthless if there are no earnings against which to deduct the interest. (3) Fraud and overreaching in a number

of cases in the past gave high-risk, high-interest bonds a bad name, including those that might be a good buy considering the risk involved and the interest rate offered. The lapse of time may cure these defects and let loose the force of the debt advantage once again.

#### NOTES

#### 1. Leverage Incentives in the Tax Law

See Merton H. Miller, "The Modigliani-Miller Propositions After Thirty Years", Journal of Economic Perspectives, Fall 1988, pp. 99-120, and Roger H. Gordon and Jeffrey K. Mackie-Mason, "Effects of the Tax Reform Act of 1986 on Corporate Financial Policy and Organizational Form", National Bureau of Economic Research, Working Paper No. 3222, January 1990.

for the assumed rates of 31% and 34% (rather than 28% for capital gains and 31% for other income), which take account of the deduction reduction and exemption phase-out for certain income levels, see Price Waterhouse, U.S. Taxes: Views & Reviews, No. 90-4 [1990].

For a finding that dividends are historically 50% of the total return to equity see Alan J. Auerbach, *Journal of Economic Perspectives*, Summer 1987, pp.73-86 at p. 79.

For the financial and legal innovations that contributed to the leveraging frenzy of the 80's see Bruce C. Greenwald and Joseph E. Stiglitz, "Information, Finance, and Markets: The Architecture of Allocative Mechanisms," National Bureau of Economic Research, Working Paper No. 3652, March 1991.

The change in income-tax advantage in relation to the height of the nominal interest rate is shown in Frederick T. Furlong, "Tax Incentives for Corporate Leverage in the

1980's", Federal Reserve Bank of San Francisco, *Economic Review*, Fall 1990, pp. 3-17.

For the various motivations for leveraged buy-outs see, for instance, Michael C. Jensen, "Takeovers: Their Causes and Consequences", Journal of Economic Perspectives, Winter 1988, pp. 21-48; and Margaret Mendenhall Blair, "A Surprising Culprit Behind the Rush to Leverage", The Brookings Review, Winter 1989/90, pp. 19-26.

It should be noted that short-term debt may provide little tax benefit in the aggregate. Both tax deductibility and efficiency incentives require time to show their strength.

For the duration of the leveraging condition see

Steven N. Kaplan, "The Staying Power of Leveraged Buyouts",

National Bureau of Economic Research Working Paper No. 3653,

March 1991, pp. 2-4. Kaplan finds that the (unconditional)

median time LBOs remain private equals 6.70 years. (Those

conditional on returning to public ownership have a median

of only 2.63 years.) This figure suggests that both tax
deductibility and efficiency incentives have had time to

play an important role in motivating leveraged takeovers.

#### 2. Net Wealth of Shareholders

The net shareholder wealth in our hypothetical approach is obtained by deducting the capital gains tax paid or payable on the amount of the debt advantage on the assumption that the debt advantage represents the capital

gain involved in financing through debt rather than through equity.

Empirical studies of private wealth created during the merger and acquisition boom of the 80's include Daniel Asquith, Tim C. Opler and J. Fred Weston, "The Size and Distribution of Shareholder Wealth Gains from Mergers: Evidence from the Takeover Boom of the 1980's", UCLA Program in Applied Econometrics, Discussion Paper No. 11, February 1990; and Michael C. Jensen, Steven Kaplan, and Laura Stiglin, "Effects of LBOs on Tax Revenues of the U. S. Treasury", Tax Notes (Tax Analysts), February 6, 1989, pp. 727-733.

#### 3. Role of the Capital Gains Tax

For the President's proposal to cut the limit on the capital gains tax to 19.6% see Wall Street Journal, April 10, 1991, p. A4, February 5, 1991, p. A12, January 30, 1991, p. A3; and for his earlier proposal along similar lines, July 27, 1990, p. A10.

For an evaluation of various proposals to cut the capital gains tax, see Gerald E. Auten and Joseph J. Cordes, "Policy Watch: Cutting Capital Gains Taxes, Journal of Economic Perspectives, Winter 1991, pp. 181-192.

For a more thoroughgoing revision of the capital gains tax see Alan J. Auerbach, "Retrospective Capital Gains Taxation", American Economic Review, March 1991, pp. 167-178.

#### 4. Integration Proposals and the Partnership Option

For an overview of the integration issue see Geraldine Gerardi, Michael J. Graetz, and Harvey S. Rosen, "Corporate Integration Puzzles", National Tax Journal, September 1990, pp. 307-314.

#### 5. Conclusions

For early detectable signs of the junk bond debacle of 1989-90, see, for instance, Frederick T. Furlong, "Corporate Cash Flow and Investment", FRBSF [Federal Reserve Bank of San Francisco] Weekly Letter, November 24, 1989 and Richard H. Jefferis, Jr., "The High Yield Debt Market: 1980-1990", Federal Reserve Bank of Cleveland, Economic Commentary, April 1, 1990.

In mid-1991 Jerome Stein expressed the opinion: "There is no doubt that tax considerations have played an important - and in some particular cases a dominant - role in buyout activity. But tax factors alone cannot explain the richesto rags evolution of the buyout market." He concluded that "...although leveraged buyouts are far from a thing of the past, those financed with large amounts of publicly issued junk bonds may well be." ("What Went Wrong With the LBO Boom", Wall Street Journal, June 19, 1991, p. A14.)

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#### **TABLES**

The accompanying tables illustrate the method of arriving at the hypothetical figures used in the text. The taxes payable by the corporation are added to those payable by the capital suppliers (whether shareholders or bondholders) to get the total tax paid in the all-debt case and in the all-equity case. These totals are shown in Line 11 of the tables.

The difference between the equity and debt totals is the **Debt Advantage**, shown in **Line 12**. The assumption is then made that the Debt Advantage measures the gross wealth increase to owners as a result of the leverage. The capital gains tax presumed payable on this presumed wealth increase is shown in **Line 13**. This leaves the **Shareholder Wealth After Capital Gains Tax** in **Line 14**. It should be noted that the very restrictive assumption is made that the total pie available to be divided up among the owners is the **Debt Advantage** of **Line 12**.

A hypothetical \$100 of corporate earnings before interest and taxes is taken as the starting point in the tables. The corresponding percentages are used in the text. For instance, the \$22.47 Debt Advantage in Line 12 of Table 1 is 22.47% of the initial \$100. The key percentages are summarized below. The tables and text should be consulted for details.

		Debt Advantage (Line 12) (As a Percentage of	Net Wealth (Line 14) Initial \$100)
Table 1	1990	22.47%	16.18%
Table 2	1990 Bubble	21.45%	14.80%
Table 3	1986	24.48%	17.63%
Table 4	1986 Bubble	22.78%	15.26%
Table 5	Pre-1986	14.90%	11.92%

## LEVERAGE INCENTIVES IN THE 1990 TAX LAW Assuming 28% CAPITAL GAINS TAX AND 31% INCOME TAX BRACKET DEBT ADVANTAGE AND SHAREHOLDER WEALTH A Hypothetical Case

		ALL DEBT	ALL EOUI	<u>ry</u>
2. 3. 4. 5. 6. 7. 8.	CORPORATE EARNINGS BEFORE INTEREST AND TAXES INTEREST PAID TAXABLE EARNINGS CORPORATE TAX @ 34% NET CORPORATE EARNINGS DIVIDENDS PAID @50% PAYOUT RETAINED EARNINGS TAX ON DIVIDEND INCOME @31% CAPITAL GAINS TAX PRESUMED ON RETAINED EARNINGS @28%	\$100.00 \$100.00 0 0 0 0 0	\$100.00 \$100.00 \$ 34.00 \$ 66.00 \$ 33.00 \$ 10.23 \$ 9.24	Tax
10.	TAX ON INTEREST INCOME @31% TOTAL TAX BURDEN ON CORPORATION AND INVESTORS	\$ 31.00		Total Tax
12.	DEBT ADVANTAGE (Dollar difference between total tax burdens under all-equity and all-debt financing)	\$ 2	2.47	
13.	CAPITAL GAINS TAX ON DEBT ADVANTAGE	<b>\$</b>	6.29	
14.	SHAREHOLDER WEALTH AFTER C G TAX (assuming that Debt Advantage measurements increase in target shareholders' we	ures	6.18	

# [The 1990 "Bubble"] LEVERAGE INCENTIVES IN THE 1990 TAX LAW Assuming 31% CAPITAL GAINS TAX AND 34% INCOME TAX BRACKET DEBT ADVANTAGE AND SHAREHOLDER WEALTH A Hypothetical Case

		ALL DEBT	ALL EOUI	<u>ry</u>	
1.	CORPORATE EARNINGS BEFORE	4444	4100 00		
	INTEREST AND TAXES	\$100.00			
	INTEREST PAID	\$100.00			
	TAXABLE EARNINGS	0	\$100.00	_	
4.	CORPORATE TAX @ 34%	0	\$ 34.00	Tax	
	NET CORPORATE EARNINGS	0	\$ 66.00		
6.	DIVIDENDS PAID @50% PAYOUT	0	\$ 66.00 \$ 33.00 \$ 33.00		
	RETAINED EARNINGS	0	\$ 33.00		
	TAX ON DIVIDEND INCOME @34%	0	\$ 11.22	Tax	
	CAPITAL GAINS TAX PRESUMED				
	ON RETAINED EARNINGS @31%	0	\$ 10.23	Tax	
10.	TAX ON INTEREST INCOME @34%	\$ 34.00	0	Tax	
	TOTAL TAX BURDEN ON CORPORATION	•			
	AND INVESTORS	\$ 34.00	\$ 55.45	Total	Tax
12.	DEBT ADVANTAGE	\$ 2	1.45		
•	(Dollar difference between total tax burdens under all-equity and	·			
	all-debt financing)				
13.	CAPITAL GAINS TAX ON DEBT ADVANTAGE @31%		6.65		
14.	SHAREHOLDER WEALTH AFTER C G TAX (assuming that Debt Advantage measuring increase in target shareholders' we	ires	4.80		

The assumed maximum rates of 31% and 34% are obtained by taking account of the 1990 tax law's deduction reduction and exemption phase-out for an assumed taxpayer. See, for instance, Price Waterhouse, U. S. Taxes: Views & Reviews, No. 90-4 [1990].

## LEVERAGE INCENTIVES IN THE 1986 TAX LAW (@28%) 28% CAPITAL GAINS TAX AND 28% INCOME TAX DEBT ADVANTAGE AND SHAREHOLDER WEALTH A Hypothetical Case

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		AL	L I	DEF	T	Al	LL	EQU:	ITY	
1.	CORPORATE EARNINGS BEFORE INTEREST AND TAXES				0	\$1		.00		
	INTEREST PAID	\$	100		0		0			
	TAXABLE EARNINGS		(			Ş	100	.00	_	
	CORPORATE TAX @ 34%			)		Ş	34	.00	Tax	
	NET CORPORATE EARNINGS		(	)		Ş	66	.00		
	DIVIDENDS PAID @50% PAYOUT					Ş	33	.00	Tax Tax	
	RETAINED EARNINGS		(			Ş	33	.00		
	TAX ON DIVIDEND INCOME @28%		(	)		Ş	9	. 24	Tax	
9.	CAPITAL GAINS TAX PRESUMED					_	_			
	ON RETAINED EARNINGS @28%		(	-		\$	9	. 24	Tax	
	TAX ON INTEREST INCOME @28%	\$	28	3.0	0		0		Tax	
11.	TOTAL TAX BURDEN ON CORPORATION									
	AND INVESTORS	\$	28	3.0	0	\$	52	. 48	Total	Tax
12.	DEBT ADVANTAGE (Dollar difference between total tax burdens under all-equity and all-debt financing)			\$	24	. 48	3			
13.	CAPITAL GAINS TAX ON DEBT ADVANTAGE	;		\$	6	. 85	<b>;</b>			
14.	SHAREHOLDER WEALTH AFTER C G TAX (assuming that Debt Advantage measuring increase in shareholder wealth)	re	S	\$	17	. 63	3			

# [The 1986 "Bubble"] LEVERAGE INCENTIVES IN THE 1986 TAX LAW (@33%) 33% CAPITAL GAINS TAX AND 33% INCOME TAX DEBT ADVANTAGE AND SHAREHOLDER WEALTH A Hypothetical Case

#### ALL DEBT ALL EQUITY

1.	CORPORATE EARNINGS BEFORE						
	INTEREST AND TAXES		100.00				
2.	INTEREST PAID	\$:	100.00				
3.	TAXABLE EARNINGS		0		100.00		
4.	CORPORATE TAX @ 34%		0	•	34.00	Tax	
5.	NET CORPORATE EARNINGS		0		66.00		
6.	DIVIDENDS PAID @50% PAYOUT		0		33.00		
	RETAINED EARNINGS		0	Ş	33.00		
8.	TAX ON DIVIDEND INCOME @33%		0	\$	10.89	Tax	
9.	CAPITAL GAINS TAX PRESUMED						
	ON RETAINED EARNINGS @33%		0	\$	10.89		
10.	TAX ON INTEREST INCOME @33%	•	33.00		0	Tax	
11.	TOTAL TAX BURDEN ON CORPORATION	1					_
	AND INVESTORS	\$	33.00	\$	55.78	Total	Tax

12. DEBT ADVANTAGE \$ 22.78

(Dollar difference between total

tax burdens under all-equity and all-debt financing)

- 13. CAPITAL GAINS TAX ON DEBT ADVANTAGE \$ 7.52
- 14. SHAREHOLDER WEALTH AFTER C G TAX \$ 15.26 (assuming that Debt Advantage measures increase in shareholder wealth)

## LEVERAGE INCENTIVES IN THE PRE-1986 TAX LAW Assuming 20% CAPITAL GAINS TAX AND 50% INCOME TAX BRACKET DEBT ADVANTAGE AND SHAREHOLDER WEALTH A Hypothetical Case

		ALL DEBT	ALL EOUI	<u>ry</u>	
1.	CORPORATE EARNINGS BEFORE INTEREST AND TAXES	\$100.00	\$100.00		
2.	INTEREST PAID	\$100.00	0		
	TAXABLE EARNINGS	0	\$100.00		
	CORPORATE TAX @ 46%	Õ		Tax	
	NET CORPORATE EARNINGS	Ö	\$ 46.00 \$ 54.00		
	DIVIDENDS PAID @50% PAYOUT	0	\$ 27.00		
	RETAINED EARNINGS	Ō	\$ 27.00		
	TAX ON DIVIDEND INCOME @50%	Ó	\$ 27.00 \$ 27.00 \$ 13.50	Tax	
	CAPITAL GAINS TAX PRESUMED		•		
	ON RETAINED EARNINGS @20%	0	\$ 5.40	Tax	
10.	TAX ON INTEREST INCOME @50%	\$ 50.00	. 0	Tax	
	TOTAL TAX BURDEN ON CORPORATION	•			
	AND INVESTORS	\$ 50.00	\$ 64.90	Total	Tax
12.	DEBT ADVANTAGE (Dollar difference between total tax burdens under all-equity and all-debt financing)	\$ 1	4.90		
13.	CAPITAL GAINS TAX ON DEBT ADVANTAGE		2.98		
14.	SHAREHOLDER WEALTH AFTER C G TAX (assuming that Debt Advantage measuring increase in shareholder wealth)	•	1.92		

#### **FORMULA**

The following formula has been developed to facilitate the measurement of the <u>debt advantage</u> for any degree of leverage and any combination of corporate, personal income and capital gains tax rates, and dividend payout ratios.

The approach is simply to follow the tax code down through the corporation and its debt and equity holders.

The total amount, T, of tax paid by the corporation and its capital suppliers (debt and equity holders) combined is:

$$T = T_{c} + T_{d} + T_{v} + T_{a} \tag{1}$$

where  $T_c$  = the income tax paid by the corporation,

 $T_d$  = the tax paid by dividend receivers,

 $T_{xx}$  = the tax paid by interest receivers, and

 $T_g$  = the accrued tax on capital gains imputed to

retained earnings

and where 
$$T_c = R(1 - v)c$$

$$T_d = R(1 - v)(1 - c)d.y$$

$$T_v = R.v.y$$

$$T_a = R(1 - v)(1 - c)(1 - d)g$$

c = the maximum marginal corporate tax rate,

v = the fraction of gross earnings for interest expense,

d = the dividend payout ratio,

y = the maximum marginal personal income tax rate,
applicable to interest and dividends received, and

g = the maximum personal capital gains tax rate. This need not be the statutory rate but that rate discounted for any exclusion, time lag and probability of liability because of the peculiarities of the capital gains tax.

A combined, single, formula can be developed from the above but the result is about as elegant as the Internal Revenue Code itself. It is:

$$T = R[(1 - v)Z + v.y]$$
where  $Z = c + (1 - c)[d.y + (1 - d)g]$ 

The Z term combines all the relevant tax rates: the corporate rate plus the shareholder taxes on what is left, i.e., the personal income tax on dividends (which is also the same as the personal income tax rate on interest) and the capital gains tax imputed to retained earnings. The Z term has to be worked out only once for a particular tax regime, e.g., pre-1986 law, or current law, or proposed law.

In order to obtain the <u>debt</u> <u>advantage</u> under a particular tax code, the value of **T** is obtained for the highly leveraged and for the unleveraged companies and their capital suppliers. A comparison of the two **T**'s reveals the <u>debt</u> <u>advantage</u>, if any. The formula for the <u>debt</u> <u>advantage</u> is then:

$$DA = (T_g - T_b) \tag{3}$$

where DA = the debt advantage,

 $\mathbf{T_S}$  = the total of all taxes paid in the unleveraged case, obtained from (1), using the  $\mathbf{v}$  for the applicable degree of leverage (zero if literally all-equity) and

 $T_b$  = the total of all taxes paid in the highly leveraged case, obtained from (1), with an appropriate v.

This is done for each tax regime.