Taxation and the Sectoral Allocation of Capital in the U.S.

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I. INTRODUCTION

The current structure of U.S. corporate and personal income taxation is traditionally believed to distort the allocation of capital among different sectors of the economy. This view is based on general equilibrium models of tax incidence initially developed by Harberger and updated by Shoven (1976).

The prevailing view was first questioned by Stiglitz (1973, 1976) who argued that corporate financial behavior was an important element in a complete analysis. A significant implication of Stiglitz's analysis is that income from corporate capital is not taxed more heavily at the margin than noncorporate capital because of adjustments in corporate financial structure made in response to taxation. In particular, Stiglitz argues that when corporations finance investment through issuing debt, the corporate income tax does not misallocate scarce capital between sectors.

Feldstein and Slemrod (1980) have also reappraised the incidence of the corporate income tax. Feldstein and Slemrod extend Harberger's 1962 analysis to an economy with two groups of capital owners, one group facing high marginal tax rates on capital income, the other facing low tax rates. It

has long been recognized that for some holders of corporate equity, corporate taxes plus taxes on dividends and on capital gains may be less than personal income taxes. For such investors, corporate equity investments would be a form of tax shelter, and corporations would have an incentive to finance investments with equity. Feldstein and Slemrod argue that this feature of the corporate tax may, under plausible circumstances, actually favor corporate over noncorporate investments.

Both the Stiglitz and Feldstein-Slemrod analyses imply either that the corporate income tax does not misallocate capital, or that the degree of misallocation is less than that predicted by the Harberger model. However, the analyses diverge in terms of roles played by debt and equity finance. In the Stiglitz model, a critical assumption is that all investment is financed at the margin by debt. In the Feldstein-Slemrod model, however, it is the ability of corporations to issue (tax-preferred) equity that is relevant. Indeed, in the absence of diversification motives, the Feldstein-Slemrod model implies a very strong incentive for equity finance.

Merton Miller (1977) has recently shown that the interaction between corporate and personal taxes may produce an equilibrium in which corporations would be indifferent

between issuing debt or equity. This result contrasts with the types of corporate financial structure implicit in the Stiglitz and Feldstein-Slemrod anlayses.

The primary objective of this paper is to integrate and reconcile these differing points of view. Using Miller's model, we first show that the tax system will not cause sectoral misallocations of capital when : (1) earnings retention by corporations is the only way in which ordinary income may be transformed into income which is tax-preferred, and (2) the tax advantage of debt finance is fully capitalized into the relative prices of debt and equity. That is, the return paid to debt holders exceeds the return paid to equity holders by the tax advantage to debt. However, these are strong assumptions. The remaining sections of the paper, therefore, consider the consequences of relaxing each assumption.

Section III examines the implications of relaxing the first assumption. Though corporate earnings retention is a convenient way of transforming ordinary income into tax-favored income, it is not the only way. Of particular interest are features of the tax code which permit income earned in certain activities to be taxed in the same tax-preferred way as corporate equity without requiring that such favored activities be incorporated. High-income investors would have at least as strong an incentive to

invest in such "natural deferral industries" as they would in corporate equity. Hence, corporate equity investments may provide less of a tax shelter than implied by the Feldstein-Slemrod model. Perhaps more significantly, capital will be misallocated among sectors in a manner similar to that implied by Harberger's anlaysis. However, the sources of such misallocations are the natural deferral provisions of the tax code, rather than the corporate income tax.

Section IV considers the case in which full capitalization of the tax advantage to debt finance does not occur. It has long been recognized that firms will not be indifferent between debt and equity finance because of bankruptcy costs. More recently, DeAngelo and Masulis (1980) have shown that firms will not be indifferent because of the interaction between interest deductions and other "non-debt corporate tax shields," such as depreciation allowances and investment tax credits. The presence of either bankruptcy costs, or significant non-debt tax shields results in incomplete capitalization of the tax advantage to debt. This leads to a misallocation of capital between corporate and non-corporate sectors.

The principal conclusions are summarized in Section V. One important policy implication is that tax policies which either broaden or narrow the range of activities which qualify for natural tax deferral, or which increase or reduce the value of non-debt corporate tax shields, may have

important effects on the sectoral allocation of capital. Hence, efficiency in the allocation of capital can be achieved through changes in tax policy other than integrating the corporate and personal tax systems.

II. SECTORAL ALLOCATION OF CAPITAL IN MILLER EQUILIBRIUM

Though interest payments on debt are deductible at the corporate level of taxation, interest payments are taxed at the personal level at a higher rate than equity returns. Because debt and equity are treated differentially under the corporate and personal income taxes, the before tax yields on these financial claims will differ even in a certain world. 1/

Let t_D^i and t_E^i be the effective tax rates on debt and equity income respectively faced by investor i. 2/ Because equity income is taxed more favorably than debt income, $t_E^i < t_D^i$. Specifically, assume that the tax rate on equity is a fixed fraction θ of the tax rate on debt income. An investor will be indifferent between holding debt and equity claims if:

$$(1-t_D^i)\ r_D = (1-t_D^i\theta)\ r_E \qquad (1)$$

where r_D and r_E are the yields on debt and equity, respectively. As tax rates t_D^i increase, the required before tax yield on debt relative to equity increases. This

leads to the upward sloping "demand" curve for corporate debt in Figure 1. That is, interest rates must rise to entice investors with higher marginal tax rates into the market for corporate debt.

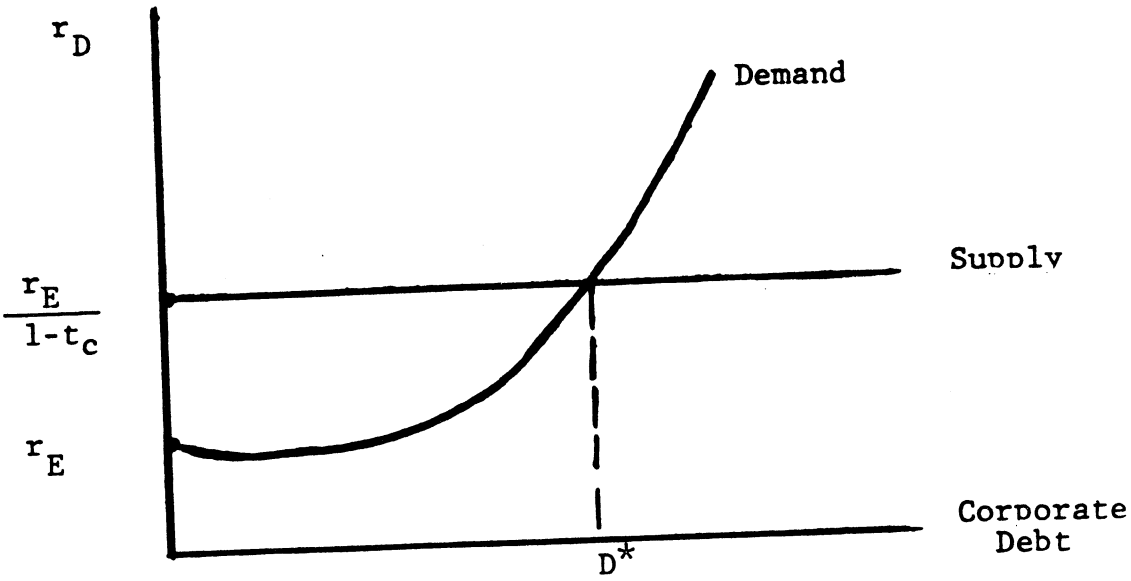
Firms will be indifferent between issuing debt and equity claims if $r_D(1-t_c) = r_E$, where t_c is the corporate tax rate. This implies that firms would be willing to supply debt elastically as shown in Figure 1 at a return given by, $r_D = \frac{r^E}{(1-t_c)}$.

Equilibrium in the market for corporate debt occurs when the supply of debt equals the demand. At that point, the return on bonds and equity must satisfy equation (1) for the marginal investor i*. Substituting for the bond rate from equation (1) and cancelling terms yields:

$$(1-t_c)(1-t_D^{i*}\theta) = (1-t_D^{i*}) \qquad (2)$$

The supply of corporate debt by firms will adjust until this equality is satisfied for the marginal investor. Investors in personal tax brackets below t_D^{i*} will hold only debt; investors in higher tax brackets will hold only equity. In equilibrium investors hold the securities that provide the highest post-tax rate of return and firms cannot increase their market value by changing their capital structure.

Figure 1



The Market for Corporate Debt:
Miller Equilibrium

In financial market equilibrium, a corporation financing an investment on the margin by debt faces the first-order condition:

$$(1-t_c)F_k^c = r_D(1-t_c) \tag{3}$$

where F_k^c is the marginal product of corporate capital. Since $r_D = \frac{r_E}{1-t_c}$ equation (3) can be rewritten as:

$$(1-t_c)F_k = r_E. \tag{4}$$

This is the first-order condition for an equity financed firm. In equilibrium, investment decisions are independent of the financing decision. 3/

If corporate earnings retention is the only means of systematically transforming ordinary income into equity income, then only corporate investments would qualify for preferential tax treatment. Income from investments in the unincorporated sector would therefore be taxed at the personal level in the same manner as bonds--that is, as ordinary income. In a world of certainty this would imply that: (1) only investors in tax brackets below that of the marginal investor would invest in unincorporated activities, and (2) the capital stock would be allocated efficiently between corporate and noncorporate sectors.

The first proposition follows from equation (2). Investors with marginal personal tax rates greater than t_D^{i*} would earn a higher after-tax return on corporate investment. The opposite would be true for those with marginal personal tax rates less than t_D^{i*}. Deriving the second proposition is also straightforward. The after-corporate and personal tax return to corporate equity investment is $(1-t_c)(1-t_D^i\ \theta)F_k^c$. The after-tax return to non-corporate investment is $(1-t_D^i)F_k^u$. However, the equilibrium condition for the marginal investor requires that $(1-t_D^{i*}) = (1-t_c)(1-t_D^i\ \theta^*)$. Hence, $F_k^c = F_k^u$ -- the pre-tax marginal products of capital are equal in both sectors. Capital is allocated efficiently because it earns the same before tax return in both sectors.

Intuitively, efficiency in the sectoral allocation of capital follows from the assumption that income from corporate capital qualifies for a personal tax preference not given to income earned by non-corporate capital. Net earnings from an investment in the corporate sector are initially taxed at the corporate rate. However, retention of some portion of earnings permits the shareholder to enjoy the personal tax advantages of deferral and preferential taxation of capital gains. These tax advantages are, however, obtained at a price; namely the earnings available for retention are net of corporate taxes. In contrast, non-corporate investments are taxed only once at the personal level. However, the income from such investments is also assumed to be taxed immediately and at ordinary rather than

capital gains tax rates. Thus, income from corporate capital is taxed twice, but receives a personal tax advantage. Income from noncorporate capital is taxed only once, but receives no personal tax advantage.

III. NATURAL DEFERRAL INDUSTRIES

One unsatisfactory implication of Miller equilibrium is that corporate equity should be held exclusively by high-bracket taxpayers, while investments in the noncorporate sector should be made exclusively by low-bracket taxpayers. This predicted pattern of investment is not consistent with observed portfolios.

Feldstein and Slemrod have argued that portfolio diversification is a primary reason why both high- and low-income taxpayers would invest in both sectors. While risk may be a determinant of observed patterns of corporate and noncorporate ownership, certain features of the tax code ignored in the Feldstein-Slemrod analysis also make investments in particular unincorporated activities attractive.

From the investor's perspective, the ideal investment activity would be one which benefitted from the tax advantages of both the corporate and the personal tax system, while incurring the disadvantages of neither. Such an

activity would permit the investor to defer tax liabilities and convert ordinary income into capital gains while paying taxes only once at the personal level. Any industry closely approximating this ideal would be a "natural deferral industry."

As noted by Galper and Zimmerman (1977), the interaction of tax depreciation rules and tax rules for defining and computing capital gains in the U.S. tax code has created a number of industries which approximate the "natural deferral" ideal. The industries identified by Galper and Zimmerman include: real estate; livestock feeding and breeding; fruit, tree, nut and vegetable farming and forestry; and oil and gas extraction. Agricultural activities in addition to those identified by Galper and Zimmerman would also qualify as natural deferral industries since returns to capital are primarily reflected in appreciation of land values.

The distinctive feature of investments in such industries is that incorporation is not required in order for investors to be able to defer tax liabilities and convert ordinary income into capital gains. This has two implications. First, the incremental personal tax benefits of incorporation, namely, deferral and capital gains treatment through corporate earnings retention, would be less valuable for natural deferral industries than other industries. Hence, the share of output produced by unincorporated firms should <u>certeris paribus</u> be larger in

natural deferral industries than in other industries. Second, the existence of natural deferral industries would encourage high tax-bracket individuals to invest in the non-corporate sector for reasons quite distinct from portfolio diversification motives.

Table 1 provides comparative data on the relative importance of unincorporated firms in various sectors. The share of output produced by unincorporated firms is largest in those industries which closely approximate the natural deferral ideal: agriculture, forestry and fishing, and real estate.

Table 1

Industry	Total Industry Business Receipts ($1,000)	Receipts Earned by Unincorporated Firms ($1,000)	Share of Unincorporated Firms in Industry ($1,000)
Agriculture, Forestry, and Fishing	104,503,590	77,879,449	.75
Real Estate	45,288,920	31,721,922	.69
Oil and Gas Extraction	48,498,391	4,889,537	.10
Manufacturing	127,285,370	14,515,096	.01
All Non-deferral	3,476,432,800	365,442,100	.10

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Source: U.S. Treasury Department, Corporation Income Tax Returns, Business Income Tax Returns, Statistics of Income, 1975.

The share of unincorporated firms in oil and gas extraction, is smaller than the shares in the other deferral industries though substantially greater than the comparable share in manufacturing.

Investments in noncorporate activities which closely approximate the natural deferral ideal would be favored by the tax system relative to investments in the corporate sector and the non-deferral unincorporated sector. This preferential treatment results in a misallocation of capital. Since firms in "pure" natural deferral industries would face tax incentives to remain unincorporated, the pattern of such misallocation would appear to be the same as that in the Harberger model; namely, a greater than optimal amount of capital would flow into the non-corporate sector.

There are, however, two distinct differences between these results and those implied by the Harberger model. First, the sources of the misallocations are the natural deferral features of the personal income tax rather than double-taxation of corporate income. This implies that integrating the corporate and the personal income taxes would not improve the allocation of capital between natural deferral and other industries. Second, our analysis demonstrates that the industrial composition of the non-corporate sector is not exogenous, but instead is partly determined by provisions in the tax structure.

IV. INCOMPLETE ADJUSTMENT TO MILLER EQUILIBRIUM

The previous section demonstrates that natural deferral provisions in the personal income tax code will result in sectoral misallocations of capital even when Miller equilibrium is attained. However, an important characteristic of this equilibrium is the full capitalization of the tax advantage to debt. If complete capitalization does not occur, the equilibrium described in Section II does not obtain; and the corporate income tax will misallocate capital between corporate and non-corporate sectors.

Some empirical evidence implies that financial and capital market equilibrium of the sort described in Section II has not been attained. Specifically, the marginal investor in corporate debt faces a personal tax rate on ordinary income, t_D^{i*} given by equation (2):

$$(2) \quad (1-t_D^{i*}) = (1-t_c)(1-t_D^i\,\theta)$$

If, for simplicity, the effective tax rate on equity income is assumed to be zero, so that $\theta = 0$, equation (5) implies that the marginal investor faces a marginal tax rate equal to the corporate tax rate of 46 percent.

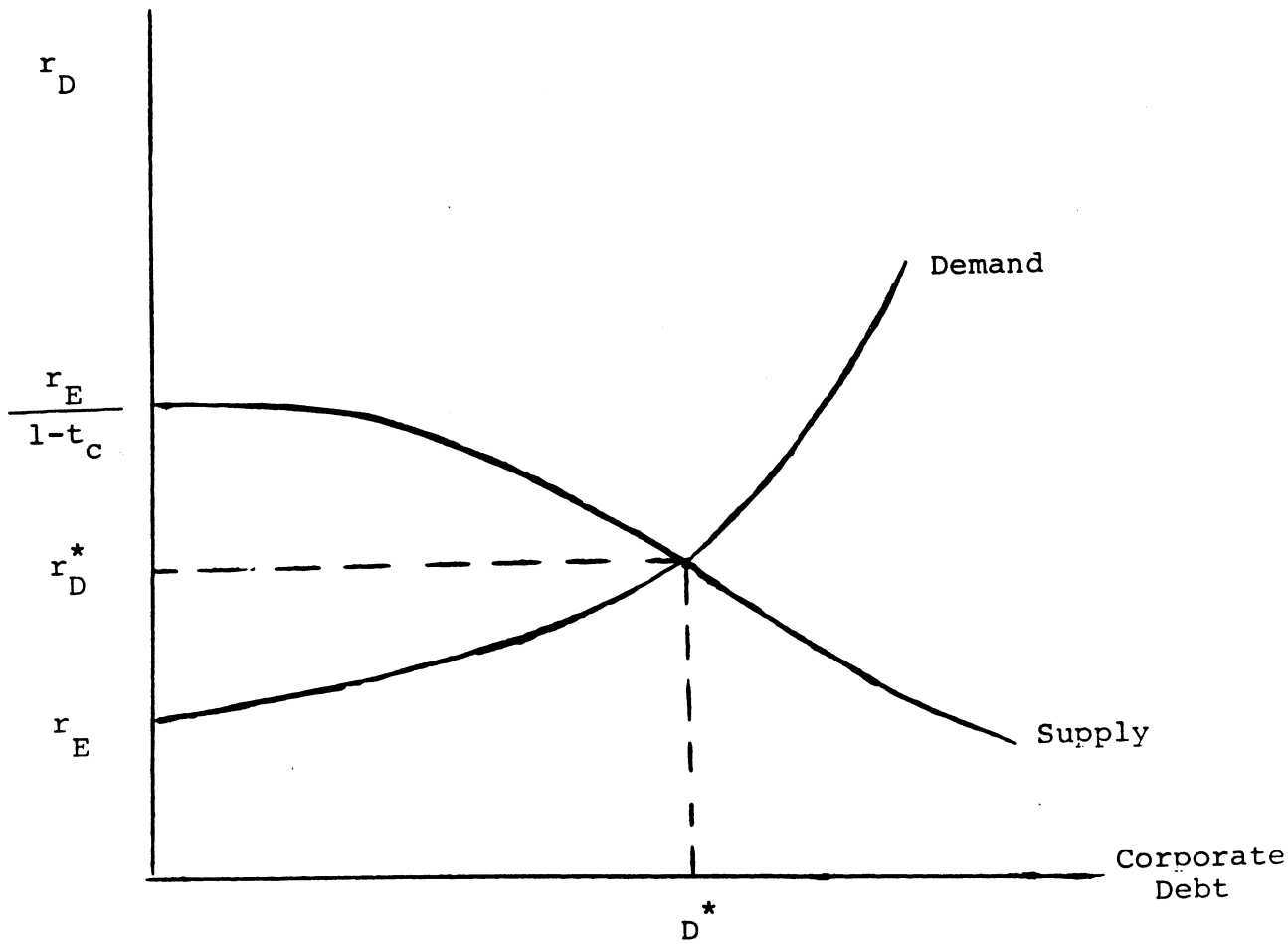
When $\theta = 0$, equation (1) implies that the equilibrium relationship between r_D and r_E should be:

$$(5)\quad r_E = r_D\ (1-t_D^{i*}) = r_D(1-t_c) = r_D\ (1-.46).$$

That is, the marginal investor should accept a return on tax-exempt securities equal to 54 percent of the return to taxable debt. However, actual yields on tax-exempt bonds have been estimated to be roughly 70 percent of yields on comparable taxable issues. If the assumption of a zero tax rate on equity income is relaxed, this empirical anomaly becomes even more serious since t_D^{i*} would then have to exceed t_c in Miller equilibrium. That is, the marginal investor would accept returns on tax-exempt securities of less than 54 percent of the return to taxable debt.

Thus, actually observed relative returns to fully taxed and tax-exempt assets are not consistent with the equilibrium depicted in Figure 1. They would, however, be consistent with an equilibrium such as that in Figure 2 where the debt supply curve slopes downward. In this case the equilibrium relation between the returns to debt and equity would satisfy the relation $r_D(1-t_c) < r_E$. The marginal investors in Figures 1 and 2 would in general, be different individuals; however, the portfolio equilibrium condition for the marginal investor is the same in both cases. It can easily be shown

Figure 2



The Market for Corporate Debt: Incomplete Capitalization

that at equilibrium in Figure 2, the tax rate of the marginal investor must be less than the corporate tax rate.

In Figure 2, corporations do not supply debt elastically at a rate $r_D = r_E/(1-t_c)$. Instead, the interest rate that corporations are willing to pay falls as the quantity of debt supplied increases. This is economically rational only if there are economic disadvantages to issuing debt which offset the tax advantages of debt finance, and which increase as supply of debt increases.

The potential costs from increased exposure to bankruptcy have traditionally been cited as one disadvantage of debt finance. The effect of potential bankruptcy costs on corporate investment behavior and debt-equity decisions have recently been examined by Gordon and Malkiel (1980). DeAngelo and Masulis (1980) have argued further that excessive debt in a firm's capital structure may lower taxable income sufficiently so as to reduce the ability of the firm to take advantage of non-debt tax shields such as depreciation deductions and tax credits.

The possibility of increased exposure to bankruptcy or loss of non-debt tax shields implies that the after-tax cost of debt falls short of the cost of equity or $r_D(1-t_c) < r_E$. When this is true, the corporate income tax misallocates capital between the corporate and non-cporporate sector.

The reason for this misallocation is that corporate firms will be financing at least some fraction of their investments with equity which is a more costly source of funds than debt. The extent of the misallocation depends on both the gap between the after-tax costs of debt and equity finance and the fraction of the investment financed by debt. The misallocation increases with the gap between the after-tax costs of debt and equity and with the fraction of equity finance. Letting S denote the ratio of the cost of equity to the after-tax cost of debt $\left(S = \frac{r_E}{r_D(1-t_c)} \right)$ and j the fraction of the investment financed by debt, we show in the Appendix that the misallocation is an increasing function of the difference between the expression [S(1-j) + j] and one.

Taxation and Capital Market Equilibrium

The extent of capital misallocation clearly depends on the values of S and j. The term (S (1-j) + j) increases with S, the relative cost of equity finance; and decreases with j, the fraction of investment financed by debt. These parameters are affected by the interaction between interest deductions and other non-debt tax shields which consist of depreciation deductions and tax credits. The ability of any given firm to take full advantage of such tax shields depends

on: (1) the magnitude of non-interest tax shields relative to taxable corporate income, (2) the maximum fraction of gross tax liability which can be offset by tax credits, and (3) the availability of loss carrybacks and carryforwards. Other things equal, a firm's taxable income, and therefore its tax liability will be lower the greater the magnitude of its interest deductions. Firms with low taxable incomes and corporate tax liabilties will be less able to take full advantage of other non-interest tax shields. Thus, above some threshhold level of debt, the marginal tax benefit of debt would be partially offset by the marginal opportunity cost of foregone non-interest tax shields. Above this threshhold, the debt supply schedule would be downward sloping, S would be greater than 1, $j < 1$, and capital would be misallocated.

There is considerable evidence that U.S. corporations are above this threshhold debt level. Table 2 presents data on utilization of investment tax credits by different sectors in 1976. The ratios in column (3) indicate that firms are unable to fully use tax credits to offset current tax liabilities. That is, the ability to fully utilize their investment tax credits appears to be a binding constraint facing firms in their financing decisions.

More direct evidence is provided by a simple experiment performed using the U.S. Treasury Department Corporate Tax

Model described in Nester (1977). Specifically, we simulated the impact on corporate tax liabilities of increasing debt interest deductions by a small amount, holding other factors constant. If there were no opportunity costs to debt finance, each additional dollar of interest would reduce corporate tax liabilities by the marginal corporate tax rate. However, we estimate that each additional dollar of interest deductions reduces corporate tax liabilities by the smaller amount of approximately 34 cents. The reason is that each additional dollar of debt deductions results in a loss of other non-interest deductions and tax credits.

Table 2
Utilization of Tax Credits
(Dollar Amounts in Thousands)

Industry	Total Credits Earned in 1976	Total Credit Used Against 1976 Tax Liabilities	Ratio of "Used" to Total Credits Earned: (2)/(1)
	(1)	(2)	(3)
Manufacturing			
Food Manufacturing	$ 375,456	$ 305,373	.82
Tobacco Manufacturing	45,312	44,863	.99
Textile Mill Products	85,687	69,438	.81
Textile Apparel	27,386	22,514	.82
Lumber and Wood	156,560	118,782	.76
Furniture & Fixtures	19,038	13,561	.71
Paper Products	243,936	182,035	.75
Printing & Publishing	109,931	91,917	.84
Chemicals	725,850	576,829	.79
Petroleum & Refining	1,101,309	673,536	.61
Rubber & Plastic	77,390	57,746	.75
Leather Products	10,091	8,190	.81
Stone, Clay, & Glass	113,810	83,735	.74
Metal (Primary)	511,636	129,127	.25
Metal (Fabricated)	166,685	128,672	.77
Machinery	345,774	267,773	.77
Electrical Equipment	344,290	259,249	.75
Motor Vehicles	284,450	259,069	.91
Transportation Equipment	129,817	74,066	.57
Instruments, Etc.	91,586	83,853	.91
Other Manufactuirng	33,025	25,361	.77
Total	$4,999,020	$3,476,690	.70
Utilities			
Rail Transportation	$ 355,524	$ 83,971	.24
Air Transportation	100,156	23,690	.24
Other Transportation	308,992	138,540	.45
Electric Utility	824,722	514,173	.62
Gas Utility	270,971	251,193	.93
Other Utility	595,909	414,315	.93
Total	$2,456,274	$1,425,952	.58
All Other Sectors	$3,744,633	$2,600,456	.69

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November 4, 1980

Source: U.S. Treasury, Office of Tax Analysis

Measures such as making tax credits refundable and lengthening carry-back and, carry-forward periods, would lower the opportunity costs of debt finance. This in turn would cause j to rise and S to move toward 1. That is, the debt-equity ratio would increase and the relative returns to debt and equity would more fully reflect the statutory tax advantage to debt finance. Both of these effects would cause the term (S (1-j) + j) to move closer to 1, thereby reducing the size of the distortion between corporate and non-corporate capital. Conversely, increasing the level of allowable tax credits and non-interest deductions without simultaneously increasing the ability of firms to utilize such non-interest tax shields will decrease j and cause S to increase, thereby potentially increasing the tax distortion between corporate and non-corporate capital.

This view of corporate financial decisions and sectoral allocations of capital adds another perspective to the debate over whether the investment tax credit should be made refundable. Currently, the argument in favor of refundability is that desirable investment opportunities are foregone because some firms do not have sufficient tax liabilities to utilize the credit fully. The counter-argument is that refundability would simply subsidize "losers". We suggest that refundability would lead to more debt finance, and thereby improve the allocation of capital between the corporate and non-corporate sectors.

It should be emphasized that the two explanations offered for the observed divergence from Miller equilibrium have quite distinct policy implications. If the primary disadvantage to debt finance is increased exposure to bankruptcy, policies which encourage debt finance will impose increases in real bankruptcy costs which may offset any gains in allocative efficiency. If the primary disadvantage to debt finance is potential loss of non-interest tax shields and bankruptcy costs are negligible, encouraging debt finance must lead to a reduction in deadweight losses.

V. SUMMARY AND CONCLUSIONS

Since the work of Harberger, it has been widely believed that the current structure of corporate and personal income taxation in the U.S. has caused capital to be misallocated among sectors. Reducing or removing such distortions has often been identified as a desirable consequence of integrating the corporate and personal income taxes. This prevailing view has, however, been challenged in recent years by a number of authors who, for differing reasons, have argued that the corporate tax does not distort the relative returns to corporate and non-corporate investments.

However, the view that the tax system does not affect the sectoral allocation of capital rests on two specific

assumptions. The first is that corporate earnings retention is the only means of systematically earning capital income which is tax-preferred. The second is that the tax advantage to debt is fully capitalized into relative prices of debt and equity. We have shown that the evidence supports neither assumption. Natural deferral activities provide investors with the opportunity to earn tax-preferred income without also requiring incorporation. The abundance of non-interest tax shields makes debt finance less attractive, thereby preventing complete capitalization of the statutory corporate tax advantage to debt.

However, the analysis also demonstrates that integration of the corporate and personal income taxes is neither necessary nor sufficient for achieving an efficient sectoral allocation of capital. Tax policy changes which enhance the ability of firms to utilize available tax credits and non-interest deductions will induce the same reallocations of capital as those predicted to result from integration. Moreover, corporate/personal income tax integration would not remove tax preferences currently granted to natural tax deferral industries.

Appendix

If the cost of equity exceeds the after tax cost of debt, capital will be misallocated between the corporate and non-corporate sectors. Letting S denote the ratio of of the after-tax costs of equity to debt $\left(S = \frac{r^E}{r_D(1-t_c)} \right)$ and j the fractionn of investment financed by debt, the distortion depends on the difference between the expression [S (1-j) + j].

To demonstrate this point, note that investments in the non-corporate sector will be undertaken to the point where $(1-t_D)\ F_k = (1-t_D^i) r_D$, or where $F_k^u = r_D$. In the corporate sector, investment will be undertaken until:

$$\text{(A1)} \quad (1-t_c)\ F_k^c = r_E(1-j) + j\ r_D(1-t_c)$$

Recalling the definition of S, equation A1 may be rewritten as:

$$\text{(A2)} \quad (1-t_c)\ F_k^c = S\ r_D(1-t_c)\ (1-j) + j\ r_D\ (1-t_c), \text{ or}$$

$$\text{(A3)} \quad F_k^c = r_D\ (S\ (1-j) + j\ ).$$

So long as S > 1, and j < 1, F_k^c will exceed r_D. That is, the pre-tax marginal product of corporate capital exceeds the

return to debt, and hence, the pre-tax marginal product of capital in the non-corporate sector. The ratio of the pre-tax marginal products of the corporate to the noncorporate sector equals [S (1-j) + j]. The misallocation, therefore, depends on the extent to which the value of this expression exceeds one.

Footnotes

1/ The critical factor in the theoretical analysis is the relative personal taxation of debt and equity income. For a given inflation rate, equity income will still be taxed more favorably than debt income. Hence we abstract from inflation in the analysis.

2/ For some empirical evidence on the extent to which capital income is actually taxed, see Steuerle (1980).

3/ Miller's equilibrium requires restrictions on transactions between investors at different tax brackets. In particular, there are incentives for high-bracket individuals to borrow from low-bracket individuals to purchase equity and for low-bracket individuals to sell-short equity and purchase bonds. In principle, this profitable "tax arbitrage" can continue until all taxpayers face the same marginal rate. Auerbach and King (1980) provide a thorough discussion of the role of restrictions necessary for Miller's equilibrium.

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