
Saving and Tax Integration

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Comment

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Under present U.S. tax law, the income from debt and the income from equity are treated differently. The income from equity is taxed twice (as both corporate income and personal income) whereas the income from debt is taxed only once (as personal income). This asymmetrical treatment of debt and equity may introduce allocative inefficiencies into the economy, since agents in the economy make their economic decisions on the basis of after-tax rates of return. This paper is concerned with one particular allocative inefficiency of the current tax system: its effect on personal and total private saving. The purpose of this paper is to examine the effects on personal and total private saving if taxes were integrated so that all income was treated the same regardless of its source. Thus, this paper is not concerned with tax integration from the standpoint of tax equity. Rather, it addresses the question of what the consequences on the supply of saving available to finance investment would be if taxes were integrated.

The Effects of Integration

Under present U.S. tax law the return to equity is taxed twice. First, corporate income is taxed, typically at 48 percent. Then, if after-tax income is distributed in the form of dividends, these

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dividends are subject to the personal income tax (except for a minimal dividend exclusion). If after-tax income is retained, it is also subject to a second, although milder, tax. Although retained earnings are not directly subject to the personal income tax, the present value of the net income from retained earnings is capitalized into higher stock prices. If the stocks are subsequently sold, the capital gains are subject to the personal tax, but generally at rates that are only one-half of those for other income. The effective rate of taxation on retained earnings is further reduced by virtue of the fact that taxes are due only when capital gains are realized, so that the value of rate reduction is compounded by the value of deferral. In contrast with the treatment of equity, interest on debt is deductible from the taxable income of corporations, so that return to debt is taxed only once and is taxed at personal income rates.

Elimination of the differential treatment of equity income and debt income through corporate and personal tax integration could affect personal and total private saving in three ways: through changes in interest rates and wealth, through changes in retained earnings and dividends, and through changes in disposable labor income. We now consider these types of changes in turn.

Interest Rate and Wealth Changes

The effect of the current tax system on the prices of debt and equity is to raise the ratio of the price of debt to the price of equity above what it would be if the same tax rate applied to both. This effect occurs for several reasons. A firm can be considered as generating a stream of (before-tax) income that presumably is unaffected by the tax structure. Claims on this income stream can be purchased by investors either in the form of bonds or in the form of equities. However, investors will base the prices they will be willing to pay for debt and equity upon the after-tax income streams they will receive through these alternative types of claims. Therefore, if debt has a lower tax rate than does equity, investors will be willing to pay a higher price for debt than for equity. As a consequence, the price of debt will be bid up relative to the price of equity until the after-tax rates of return on these two instruments are equalized.

By eliminating the differential treatment of equity income and debt income, integration should increase the demand for equity and decrease the demand for debt, raising both stock prices and

interest rates.¹ Further, the prices of fixed nominal return assets should fall due to the increased interest rates. Therefore, integration could result in interest rate and wealth changes that could affect personal saving.

Based on unpublished research by Nicolaus Tideman that takes account of the debt/equity effects on risk premiums, we estimate that integration will cause a one-half percentage point increase in the Moody's Baa corporate bond yield. However, this should be regarded only as a rough guess. Nonetheless, because of the existence of substitute debt instruments such as government bonds, it is unlikely that the interest rate change would be greater than a full percentage point. In fact, even a half percentage point change would make the interest rate differential between the Moody's Baa and three to five Government securities larger than at any time since 1945.²

The magnitude of the effect of the interest changes on wealth depends upon the composition of the portfolio of households. This composition for the beginning of 1974, as given by the Board of Governors of the Federal Reserve System, is given in table 1. We neglect the effect of interest rate changes on the first item in table 1, since total financial assets is approximately equal to the value of household demand, time, and savings deposits, which will not change in value when the rate changes.

The change in value of corporate stock is determined by using Harberger's (1968) formulation as given by Reuber and Bodkin (1968, p. 218). The ratio of stock prices before and after integration is

$$\{r'_b(1-t_c)[1+\delta(t_i-t)]/[r_b(1-t)]\}^{-1}, \quad (1)$$

¹Since the supply of debt and equity should be relatively fixed in the short run, the price change should not affect the debt/equity ratio of firms in the short run. However, the debt/equity ratio may be lowered in the long run. As Tambini (1969) has noted, an increase in the debt/equity ratio increases for both the holders of debt and the holders of equity the risk of losing their investments. The higher the debt ratio, the smaller will be the fall in income, relative to investment, that would compel a firm to default on its obligations to its creditors. If the firm becomes bankrupt, stockholders lose their entire investment. Bondholders may receive partial repayment may obtain control of the firm, but they will not receive the secure income stream for which they had bargained. Therefore, integration, by lowering the debt/equity ratio, may reduce the risk premiums on both debt and equity. This may act in the long run to counter some of the short run increase in interest rates.

²In generating their estimates of the effects of tax integration in Canada, Reuber and Bodkin (1968) used estimates of the impact on interest rates of one-half a percentage point and a full percentage point. Our method of estimating the wealth effects of integration is very similar to theirs.

TABLE 1.—*Composition of household wealth, 1974 in millions of dollars*

Type of wealth	Amount	Percent of total
Financial assets	740.1	17.1
Corporate stock	882.5	20.4
Tangible inventories	87.0	2.0
Durables	696.6	16.1
Real estate & land	1923.0	44.4
Total	4329.1	

where r'_b is the after-integration yield on corporate bonds, r_b is the before-integration yield on corporate bonds, δ is the divided payout rate, t_i is the investment tax credit, t_c is the before-integration corporate tax rate, and t is the tax rate of the before-integration buyer of corporate stock. We assume a dividend payout ratio of 38 percent, an investment tax credit of 10 percent, a current corporate tax rate of 48 percent, and a marginal tax rate of the buyer of equity of 39.4 percent. These are the approximate values that held in 1974. Then if the current corporate bond yield is 9.50, a one-half percentage point increase in the corporate bond yield will increase stock prices by approximately 25 percent.

This analysis ignores, however, the effect of pension funds on stock prices. Pension funds could be expected to have a different evaluation of the prices they would pay for corporate stock after integration since they have a marginal tax rate (t) of zero. Using equation (1) and the assumptions given earlier we find that the change in stock prices would be approximately 75 percent if pension funds held all stock.

This assumption seems extreme. However, it also seems extreme to neglect completely the effects of pension funds when estimating the magnitude of the stock price changes that would result from integration. As a result, we weight the two changes by the percentage of total corporate stock held by zero and non-zero marginal-tax-rate stockholders. These percentages are 23 percent and 77 percent, respectively.³ Thus, we obtain an estimate of approximately a 36 percent stock price increase if interest rates rise by one-half percentage point.

An upper bound on the change in the value of real assets can be determined by assuming that real assets are perpetuities whose real returns are fixed. In this case, the change in price of real

³ These percentages are calculated from the flow-of-funds data of the Board of Governors of the Federal Reserve System by assuming that households pay the marginal tax rate of 39.4 percent and all other holders pay the tax rate of zero.

assets is given by r_b/r'_b . Using the corporate bond yield that prevailed in 1974 and our assumption about interest rates changes, we find the decrease in the value of real assets to be 5 percent.

Combining our assumptions concerning the effects of the interest rate changes on total wealth, and using the composition of assets that prevailed in 1974, we can obtain estimates of the effect of integration on total wealth. We estimate that integration would increase the nominal value of wealth by 4.6 percent to \$4,515.1 billion.

Retained Earnings and Dividends

The second effect of integration that could affect both personal and total private saving is that it may change retained earnings and dividends by raising the amount of income corporations have available either to retain or to pay out as dividends.

According to Brittain the corporate income tax "apparently . . . reduces the *level* of dividends but not the after-tax payout ratio" (Brittain, 1966, p. 112). This result was also found by Feldstein (1970). If this result continued to hold after integration, and if integration does not change the level of before-tax corporate profits, then the current amount of corporate taxes collected (\$49.1 billion) would be distributed between dividends and retained earnings in the same ratio as current after-tax profits are distributed between dividends and retained earnings. The dividend payout ratio in 1974 was approximately 38 percent. If this ratio continues after integration, then retained earnings will rise by \$30.3 billion, and dividends should increase by \$18.9 billion.

However, these estimates are obtained by assuming that integration's only effect is to lower the corporate tax rate to zero. It ignores the fact that because corporate income is taxed at a lower rate if it is retained, the shareholders of a corporation should presently prefer that the corporation retain earnings rather than distribute them, other things being equal. This bias toward retained earnings would be eliminated by integration and should reduce retained earnings and increase dividends. From the Feldstein (1970) study we estimate that the removal of this differential tax treatment would increase dividends and decrease retained earnings by \$5.4 billion. Thus, we estimate that integration will increase retained earnings by \$24.8 billion and dividends by \$24.3 billion.

However, that estimate of the impact of integration on retained earnings does not take into consideration the possibility that the

integration of corporate and personal income taxes could include a provision for a withholding tax on corporate income. Under such a plan a shareholder's taxable income would include the dividends he received plus his pro rata share of corporate retentions. He would be credited with paying tax equal to his pro rata share of corporate withholdings.⁴

Because corporations might treat this withholding tax as the equivalent of the corporate income tax, Break and Pechman (1975) and Surrey (1975) point out that integration would not necessarily lead to any increase in retained earnings. In fact, they predict that if the withholding rate were set close to the current maximum personal income tax rate of 70 percent, integration could lead to a substantial reduction in retained earnings.

However, as Holland (1975) correctly points out, there is no reason why the withholding rate must be at the maximum personal income tax rate. Shareholders could pay their taxes by realizing the increment in the value of their shares due to the higher retained earnings. Or they could pay the taxes out of other forms of current income. For these same reasons it is possible that integration could occur with no withholding tax on corporations which would give rise to the increase in retained earnings estimated earlier. The same result would occur if corporations ignored the withholding tax in determining their levels of retained earnings and dividends and then subtracted all of the withholding from dividends. On the other hand, we estimate that if a 40 percent (approximately the average marginal tax rate on dividends) withholding tax were placed on corporate income, and if corporations treated this tax as if it were a corporate income tax, then retained earnings would fall by approximately \$6.1 billion.

A further consideration in the discussion of retained earnings is that every dollar increase in retained earnings may not lead to a dollar increase in total saving. The reason is that households may regard all corporate income as the same regardless of its source.⁵ In such a case, an increase in retained earnings matched by an equal decrease in dividends would leave household con-

⁴ For example, the tax integration plan of the *Royal Commission on Taxation* (1966) (Carter Commission) in Canada provided for such withholding at a rate of 50 percent.

⁵ For example, David and Scadding (1974) argue that households should be viewed "as 'ultrarational' in the sense of regarding the corporate sector as an extension of themselves, an instrument of their private interests; the distinction between corporate and household sectors therefore is a legal but not an economic one. One intriguing implication of this view . . . is that corporate and personal saving are perfect substitutes" (David and Scadding, 1974, p. 266).

sumption unchanged. Consequently, households would reduce their personal saving by one dollar for each dollar increase in retained earnings, leaving the level of total saving unchanged.

Empirical evidence from studies of Feldstein and Fane (1973) and Weber (1976) does not support the conclusion that households regard personal and corporate saving as perfect substitutes. However, this evidence does suggest that some substitution of corporate saving for personal saving does take place. Basing the estimates on my previous study of the effects of retained earnings on personal saving, we estimate that households reduce their personal saving by \$0.35 for each dollar that corporations increase their retained earnings.

Finally, it is possible that changes in the dividend yield will influence personal saving. The effect of integration on the dividend yield can be determined directly from the changes in the level of stock prices and the level of dividends. In particular, we know that

$$\Delta r^d = r^d (g_e - g_d) / (1 + g_e), \quad (2)$$

where r^d and Δr^d are the current level and the change in the current level of the dividend yield, respectively, and g_e and g_d are the percentage changes in the level of stock prices and the level of dividends that result from integration, respectively. From the earlier discussion we estimate that integration will increase before-tax dividends by \$24.3 billion, or approximately 75 percent. Combining this estimate of the percentage change in dividends with the previous estimates of percentage change in stock prices, we find that the dividend yield will increase by 1.12 percentage points, based upon the 1974 dividend yield of 4.47. The taxes on dividends can be taken into account by adjusting the dividend yield by the average marginal tax rate on dividends.

Labor Income

The third effect of integration that could affect personal saving is that it may necessitate an increase in personal income tax rates. If personal tax rates were unchanged and personal and corporate taxes were integrated, the increase in personal tax payments due to taxing retained earnings and dividends as personal income might not fully offset the loss in corporate tax payments. As a result, personal income tax rates would have to be increased to keep total tax revenues constant.⁶ Since these higher

⁶ Unless tax revenues are kept constant, the evaluation of integration proposals would also have to include the impacts of financing higher Government deficits or surpluses.

tax rates would apply to all income including labor income, integration could affect personal saving through changes in disposable *labor* income.

The total yield of the corporate income tax in 1974 was \$49.1 billion. If retained earnings plus corporate taxes were paid out to individuals and taxed at the average marginal tax rate for dividends of approximately 0.4, the tax yield would be \$40.6 billion, a loss of \$8.5 billion in tax revenues. This estimate, however, does not take into account that the corporate-source income of tax-exempt organizations may not be subject to tax after integration. Taking account of zero marginal tax rate holders of corporate stock, the tax yield on corporate-source income would fall to \$30.3 billion, a reduction of \$18.8 billion. Thus, we estimate that between 17 percent and 38 percent of lost corporate income tax revenue would have to be made up by higher taxes on labor income.⁷

The Implications for Personal and Total Saving

In the previous section we presented some estimates of the effects of corporate and personal tax integration on variables that are exogenous for the households' personal saving decision. These effects are summarized in table 2. Predictions of the effects of these changes on personal and total saving are obtained by substituting the values in table 2 into the model of savings behavior given by Weber (1977).

Our model predicts that the changes presented in table 2 will lead to a decrease in personal saving of between \$5.1 billion and \$7.4 billion.⁸ The decrease is larger the larger the revenue loss that has to be made up from labor income. Since the level of personal saving in 1974 was \$77 billion, these estimates indicate that although integration would reduce personal saving, the reduction would amount to less than 10 percent.

⁷ These estimates are very similar to those of Break and Pechman (1975), who estimate the revenue losses due to integration using 1972 tax return data projected to 1976. They estimate a \$6.9 billion loss of revenue if corporate-source income of tax-exempt organizations is subject to tax and a \$19.4 billion loss of revenue if it is not.

⁸ The estimates are obtained using cases 9, 10, 11 in table 4 of Weber (1977). We should also note that the estimated effects do not change markedly from those reported in the text if no interest-rate change, a full percentage point interest-rate change, or no dividend-yield change are used as the basis for predicting the effects of integration rather than the values in table 2.

TABLE 2.—*Summary of predicted effects of integration*¹

Parameter		Result
Interest rates	0.5	percentage point increase
Wealth	\$186	billion increase
Dividend-yield	1.12	percentage point increase
Retained earnings	\$24.8	billion income (no withholding tax)
	\$6.8	billion decrease (40% withholding tax)
	\$8.5	billion (all corporate source income taxed)
Revenue loss	\$18.8	billion (tax exempt organization income excluded)

¹ Based on 1974 values.

The important saving concept, however, is total private saving rather than personal saving since this is the amount available to finance investment and the Government deficit. When the increase in retained earnings for the case of no withholding tax is added to the change in personal saving, we find that integration will increase total saving by between \$19.7 billion and \$17.4 billion, with the increase in total saving being less the greater the revenue loss that has to be made up from labor income. Further, even when the substitutability of personal saving and corporate saving is taken into account, total saving will still increase, although the increases will be smaller by \$8.9 billion ($\$0.35 \times \24.8 billion). In order to give these magnitudes some perspective, we note that total saving was \$149.4 billion in 1974.

On the other hand, if a withholding tax is coupled with integration, then the predicted effects of integration become negative and range from a decrease in total saving of \$11.9 billion to \$14.2 billion if there is no substitutability between the two forms of saving, and of \$9.5 billion to \$11.8 billion when this substitutability is taken into account.

Summary and Conclusions

In this paper we have estimated some effects of integrating corporate and personal income taxes. We estimate that integration will increase interest rates, wealth, and dividend yields and that integration will result in a loss in tax revenues which will have to be made up by increased taxes on other forms of income. The effect of integration on retained earnings depends upon the magnitude of withholding tax placed upon corporate income and the

extent to which corporations treat this tax as a corporate income tax. Our analysis suggests that retained earnings will increase more, the less is the withholding tax on retentions. With respect to personal and total private saving our major conclusions are: a) that integration will decrease personal saving, but that the reduction will most likely be less than 10 percent of the current level, and b) that even if the effect of increased retained earnings on personal saving are taken into account, the overall effect of integration will be to increase total personal and corporate saving unless the withholding rate is large.

The arguments in favor of tax integration and against the continuance of the present separate corporate income tax should be based upon issues of vertical and horizontal tax equity and upon the allocation inefficiencies introduced by the separate corporate income tax. These allocational efficiencies occur regardless of whether the burden of the corporate income tax is borne by holders of corporate stock or is shifted either to all holders of property or to consumers. These arguments are well summarized by McClure (1975).

This paper has not attempted to consider the question of tax equity; nor has it considered more than one allocational effect of the separate corporate income tax: the effect on saving. The major result of this paper is to point out that it is possible to integrate corporate and personal income taxes in such a way that total private saving will increase. Therefore, concern that integration would decrease total private saving should not stand in the way of consideration of tax integration based on its tax-equity and allocational-efficiency merits.

References

- Break, George, and Joseph A. Pechman. "Relationship Between the Corporation and Individual Income Taxes." *National Tax Journal* 28 (1975), pp. 341-352.
- Brittain, John A., *Corporate Dividend Policy*. Washington, D.C.: Brookings Institution, 1966.
- David, Paul A. and John L. Scadding. "Private Savings: Ultrarationality, Aggregation, and 'Denson's Law'." *Journal of Political Economy* (1974), pp. 225-249.
- Feldstein, Martin S. "Corporate Taxation and Dividend Behavior." *Review of Economic Studies* 39 (1970), pp. 57-72.
- Feldstein, Martin S., and George Fane. "Taxes, Corporate Dividend Policy and Personal Saving: The British Postwar Experience." *Review of Economics and Statistics* 55 (1973), pp. 399-411.

- Harberger, Arnold C. "A Landmark in the Annals of Taxation." *Canadian Journal of Economics* (supplement), I 1968, pp. 183-194.
- Holland, Daniel M. "Some Observations on Full Integration." *National Tax Journal* 28 (1975), pp. 353-357.
- McClure, Charles E., Jr. "The Case for Integrating the Income Taxes." *National Tax Journal* 28 (1975), pp. 257-264.
- Report of the Royal Commission on Taxation*. Ottawa, Ont., Can.: Queen's Printer, 1966.
- Reuber, Grant L., and Ronald G. Bodkin. "On Estimating the Effect of the Carter Commission's Recommendations on Domestic Savings." *Canadian Journal of Economics* vol. I (supplement), 1968, pp. 206-232.
- Surrey, Stanley S. "Reflections on 'Integration' of Corporation and Individual Income Taxes." *National Tax Journal* 28 (1975), pp. 335-340.
- Tambini, Luigi. "Financial Policy and the Corporation Income Tax." In Harberger and Bailey (Eds.), *The Taxation of Income from Capital*. Washington, D.C.: Brookings Institution, 1969.
- Weber, Warren E. *Life-Cycle Consumption and Corporate Savings*. Mimeo., 1976.
- Weber, Warren E. *Some Estimates of the Effects of Personal and Corporate Tax Integration on Personal and Total Private Saving*. Mimeo., 1977.

COMMENT

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Before launching into a discussion of the details of Warren Weber's numerical estimates of the effect on saving of the integration of the corporate income tax, I think it would be useful to state the general conclusions of the modern theory of saving with respect to this question. According to the life-cycle model that is the basis of most modern thought on the subject, a corporate income tax depresses the *level* of corporate capital and raises the before-tax return to corporate investments to a level high enough so that the after-tax return equals the rate of consumers' time preference.¹ Reduction of the tax through integration or any other method stimulates corporate investment in the short and medium runs so as to raise corporate capital and depress its rate of return. In the long run, no additional net investment is needed to sustain the higher stock, so the stimulus to saving and investment dies out.

Against this general view, Weber's conclusion that integration probably has a favorable effect on saving seems eminently reasonable, though I would place less emphasis than he on the likelihood of a perverse effect in the opposite direction. He makes no attempt to trace the feedback of higher corporate investment on the return to equity, and so his paper should be regarded as a short- and medium-run, rather than a long-run, analysis.

The most difficult part of Weber's work to appraise is his estimation of the effects of changes in income on saving. His estimates are based on a detailed unpublished study of his that I have not seen, but I gather he assumes that the rates of saving out of different types of income are different. This type of model has been fitted by other workers in the past with varying degrees of success. Only by heroic and highly questionable assumptions can these models be made consistent with theoretical life-cycle models. However, I know of nothing better for use today in making quantitative estimates. By far the most troublesome aspect of Weber's results for saving is how large a difference it makes

¹ Robert E. Hall, "Consumption Taxes versus Income Taxes: Implications for Economic Growth," *National Tax Journal*, Proceedings (1968), pp. 125-145.

whether or not the personal income tax on corporate income is withheld at the corporation. Part of this problem stems from the very difficult question of the effects of taxes on pension funds and other institutions not subject to the personal income tax. But, if I understand the problem correctly, the rest seems to involve a very elementary illusion on the part of taxpayers or corporations. Surely both sides of the transaction understand that the corporation is no more than the agent for the Government, and that the individual is one dollar ahead for every dollar withheld by the corporation. If economists and noneconomists have been confused on this point, there is no reason to perpetuate the confusion here.

Weber's estimates for the effect of integration on interest rates seem perfectly reasonable, though the reader should recognize that everything depends on the substitutability of equity and debt, and this is still a matter of controversy. But everyone agrees that integration is a bonanza for the owners of equity. Again, uncertainty about the role of the untaxed sector introduces wide variations in the estimates.

Weber's paper calls attention to the urgent need for a better understanding of pension funds and other nontaxpaying institutions. The convention of treating them as if they were economic entities separate from their beneficiaries is clearly inappropriate. But the alternative of treating pension funds as if they were just elements of individuals' portfolios is unpersuasive to many economists. Before the economy is completely engulfed by pension funds, it would be a good idea to have a much better understanding of how these funds fit into the economy. In the interim, we must be very cautious in making predictions about the effects of tax changes on portfolios, rates of return, and rates of saving.