

## Corporate Income Taxation

We have stressed that tax incidence must be traced to people, since corporations cannot bear the burden of a tax. Why then tax corporations at all? There are several possible justifications. First, there are valuable benefits, such as limited liability, to incorporation. The corporate tax could be seen as simply a tax on that value. However, the current corporate tax system does not reflect a sensible tax on this benefit since it is based on income. Limited liability is actually less valuable as profits increase, so an income-based tax does not correspond to this rationale at all. Furthermore, the infrastructure the government provides to corporations, such as the regulation of capital markets, has a marginal cost near zero. Efficiency requires that the price of these benefits be equal to their marginal cost, so using the corporate tax as a fee for those services implies a corporate tax of near zero.

A second rationale often given for taxing corporations is that they may earn some pure economic profits, profits that are in excess of the return to capital. This does not, of course, justify taxing such profits at the corporate level rather than when the individuals owning the corporation receive them. The corporate tax is also seen as a way to soak up foreign tax credits or export taxes to foreigners who own capital. Since individuals who live in other countries cannot be taxed on their income, the corporate tax is a way to get at their income from domestic assets indirectly. Such tax exportation is difficult for small countries, since taxes on domestic capital cause capital flight. A large country may be able to force investors to accept a lower return and thereby export some tax. Finally, the corporate income tax can serve as a backstop for the personal income tax. Individuals may try to avoid the personal income tax by making it difficult for the government to observe the recipients of corporate income. In this case, it may be more efficient to tax corporations instead. Each of these rationales for the corporate income tax has specific implications for how an efficient corporate tax will be structured.

### Harberger Model

The Harberger model considers the incidence and deadweight loss of the corporate income tax. It is a two-sector model, in which the corporate and noncorporate sectors each produce separate goods. There are two factors of production, capital and labor, and the total supply of each is fixed and exogenous, although they may move between sectors. Harberger modeled the corporate income tax as an additional tax on capital in the corporate sector, since a tax on individuals will apply to both sectors equally. In the model economy, there is also an existing tax on labor income.

The tax on corporate capital will have an effect through two different channels, termed the excise tax effect and the factor substitution effect. The tax increases costs to the corporate sector, thereby driving up the price of goods in that sector. The quantity of goods in the corporate sector falls, decreasing returns to both the supply and demand side. This effect is parallel to the effect

of any other excise tax on a good. Harberger assumes that people have identical preferences, so the decline in return to consumers of corporate goods is shared equally. The distribution of the decline in return on the supply side will depend on an individual's source of income. Capital and labor will both leave the corporate sector, but the effect of that flight will depend on the relative intensity of use of capital and labor in the two sectors. For example, if the corporate sector is very capital intensive relative to the noncorporate sector, the noncorporate sector will not want to absorb the capital flight from the shrinking corporate sector. The price of labor will rise, while the price of capital will fall; capital bears more of the burden of the tax. If the two sectors have equal capital intensity, labor and capital will bear the burden of the tax in proportion to their share of income. If the corporate sector is labor intensive, labor will bear more of the burden. Overall, these effects are identical to the results of an excise tax on corporate goods.

A tax on corporate capital will also have a factor substitution effect. To the extent that substitution is possible, producers will substitute away from capital toward labor. Since the total quantities of capital and labor are fixed, the price of capital must fall and the price of labor must rise. Capital will be pushed into the noncorporate sector and the price will have to fall until the noncorporate sector is willing to use it. While the burden of the excise tax effect can fall on labor, capital, or both depending on substitutability, the factor substitution effect can only be negative for capital. It also introduces a distortion that moves the economy inside the production possibilities frontier.

Under several reasonable sets of assumptions, capital bears the entire burden of the tax in the long run in the Harberger model. That is, while in the short run owners of non-corporate capital can benefit from increased product demand, in the long run, capital owners in both sectors will bear the burden of the tax as the return to capital falls. The total long run burden is allocated to the corporate and noncorporate sectors in proportion to the allocation of capital to those sectors. This is true when the elasticity of demand is equal to the elasticity of substitution in the two sectors. In this case, the two sectors have the same production function. Capital will also bear the full burden when the capital to labor ratio is the same in the two sectors. In both cases, the excise tax effect is zero, so the factor substitution effect is relatively large.

Diamond and Mirrlees extended the model and showed that, with certain assumptions, the factor substitution effect is undesirable. An excise tax on the corporate sector and a tax on corporate capital is less efficient than an excise tax on the corporate sector and a tax on all capital. This can be restated as the Production Efficiency Theorem: If it is feasible to tax capital in both sectors, it is more efficient to do so than to tax capital in just one.

The Harberger model utilizes several simplifications to create a more tractable problem. There are no pure profits, so one possible justification for the corporate income tax discussed above is immediately assumed away. Realistically, the corporate and noncorporate sectors can produce the same or similar goods, rather than the strict separation of production that exists in the model. In addition, corporate form is taken as given. The implications of the model may

change once the decision to incorporate is endogenous. However, these technical assumptions are perhaps not the most interesting. The most fundamental assumption in the model is the way it represents the corporate income tax. If the tax is not well-represented by a tax only on corporate capital, the conclusions of the analysis are irrelevant.

In the 1970's, Joseph Stiglitz developed a critique of the Harberger model that took into account the actual structure of the corporate income tax. In particular, his model incorporates the favorable tax treatment of capital gains realizations and of interest, both of which lower the tax burden on corporate capital. These two provisions also have implications for financial behavior of corporations. Modigliani and Miller had previously proved that the division between debt and equity financing was irrelevant to the value of the firm, but the theorem requires the absence of taxes. Stiglitz assumed that transferring between debt and equity was costless, so that the two were interchangeable except for their tax treatment. With these assumptions, he found that companies will prefer debt financing and, to the extent that they do issue equity, will pay no dividends. Equity is never an optimal strategy, except when capitalizing initial ideas. Since creation of this type of intangible capital is untaxed until disposition, debt finance is not advantageous because it forces realization; equity finance will be used because the tax is deferred until capital gains on the idea are realized. Of course, this result is clearly contradicted by the joint existence of equity and debt finance for well-established firms, and the fact that firms do pay dividends.

A response to this model, associated with Merton Miller, attempted to explain the coexistence of debt and equity finance in practice by noting that different investors face different tax situations. In this model, the corporation chooses how to divide the financing of investment between debt and equity. Let  $b$  be the fraction financed by debt,  $(1 - b)$  be the fraction financed by equity,  $p$  be the fraction of income paid out as dividends, and  $r$  be the before-tax return on investment. Then the total return is a weighted average of the returns to each type of finance:

$$br(1 - \theta_b) + (1 - b)r(1 - \tau)(1 - \phi)$$

The return to debt is taxed at the rate of debt taxation,  $\theta_b$ . The return to equity is taxed at the corporate rate,  $\tau$ , and some individual tax rate,  $\phi$ . This individual tax rate on equity is a weighted average of the tax rate on dividends,  $\theta_d$ , and the tax rate on capital gains,  $c$ .

$$\phi = p\theta_d + (1 - p)c$$

The relevant tax rate on capital gains is not the statutory tax rate because a large fraction of capital gains never faces tax at all, due to the step-up in basis at death and the deferral of gains. The effective tax rate can be considerably lower than the statutory rate.

For the individual investor, the relevant comparison is that one dollar of debt yields  $(1 - \theta_b)$  for every dollar in pre-tax earnings, while one dollar of

equity yields  $(1 - \tau)(1 - \phi)$  for every dollar in pre-tax earnings. Stiglitz came to his conclusion that debt was preferable by comparing the two and finding that  $(1 - \theta_b) > (1 - \tau)(1 - \phi)$  in general. The deductibility of corporate debt outweighs the favorable individual treatment of capital gains. Miller's model considers not just the typical investor, but a range of individuals with differing tax status. In Figure 23, investors are ranked along the horizontal axis by taxable income (or the marginal tax rate on debt, or the marginal tax rate on capital gains, which all rise together in the current system). A tax exempt investor will receive one dollar per pre-tax dollar on debt, but  $(1 - \tau)$  per pre-tax dollar on equity, which is still hit by the corporate income tax. As income rises, more after-tax income is lost for both equity and debt, but the rate of loss is slower for equity because the effective capital gains tax is a fraction of the statutory rate. Thus, investors below the intersection point will prefer debt to equity, and investors above it will prefer equity to debt. The firm will issue both debt and equity to appeal to these different clienteles.

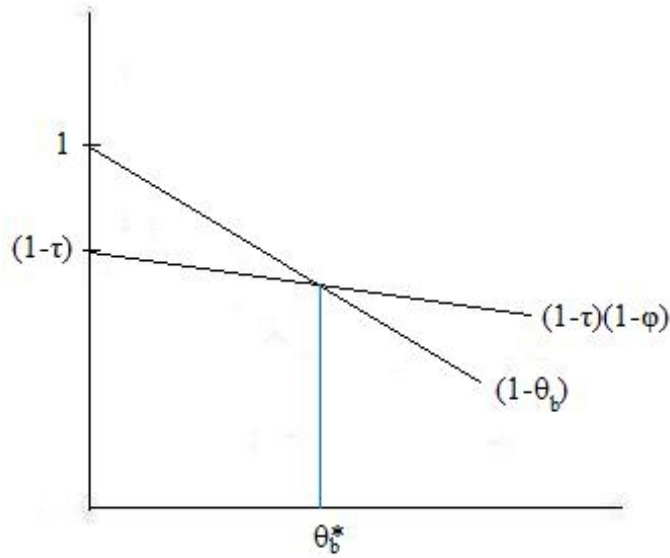


Figure 23

This analysis has implications for the incidence of the corporate tax. Suppose all income is taxed immediately at the individual level, and a corporate income tax is introduced. If corporations can issue both debt and equity, there is no burden to the corporate income tax. In fact, the tax introduces a new

opportunity to the market. It allows those with higher incomes (above  $\theta_b^*$ ) to shelter some of their income at the lower tax rate on equity.

While the model explains why both debt and equity are held, some inconsistencies with empirical evidence remain. When the corporate income tax is higher than the highest personal rate, as it was in 1988, the intersection point is so far to the right that no individuals will want to hold equity, creating the same clash with evidence that exists in Stiglitz's model. The model also cannot explain why non-profits would choose to hold equity, unless the assumption that debt and equity are perfect substitutes is dropped. While these problems are a concern, the key contribution of the model remains: the choices of all investors, not just the representative investor, are important for the incidence of the corporate income tax.

### **The "New View"**

Corporations must also decide how much, if any, of their income to pay out in dividends. After many years of thinking about this question, economists still do not have a very good answer as to why corporations choose to pay dividends. The standard answer is that firms pay dividends because some investors, particularly tax-exempt institutions, prefer them. In the past, tax-exempt institutions did not hold enough shares for this explanation to work, although it is more consistent with recent history. Another explanation, referred to as the "new view," added a new insight regarding the payment of dividends. Once a corporation has earnings, it has several choices: it can retain the earnings, distribute them, or put them into Treasury bills, but the money has to come out of the corporation at some point. The corporation could repurchase its shares, but a proportional redemption faces the same tax treatment as a dividend payment in the US. A non-proportional share repurchase in which the firm repurchases on the open market creates a problem with asymmetric information. Insiders have some information regarding future share movements, and investors, suspecting that the information is favorable, will demand a premium. The cost of paying this premium may outweigh the benefit of the share repurchase.

Another way to get cash out of the company would be to take over another firm using cash. Of course, taking over another company is a complicated transaction. Neither of these options are a perfect substitute for dividends, but the corporation must still find a way to distribute the earnings. They can either be distributed and taxed at the current time, or they can accumulate and be taxed on the entire distribution later. If investors prefer not to receive the dividends and pay the tax now, they can sell the shares. But they have to sell the shares to someone, who will face the same problem. Therefore, the burden of the dividend tax will not be a reduction in the rate of return, but rather it will be capitalized into a reduction in the value of the firm.

Consider the simple case in which there is no capital gains taxation, and the corporation is choosing a dividend policy. When the company has one dollar in earnings and pays it out as a dividend, the investor receives  $(1 - \theta_d)$ . If the company instead retains the dollar, invests it, and pays it out one year later, the

investor receives the dollar plus the after tax interest on the dollar, less the tax paid on the distribution; this is  $(1 + r(1 - \tau))(1 - \theta_d)$  in income. The investor had to forego one dollar in taxable distributions last year to receive this, so the gross rate of return on the retained dividend is

$$\frac{(1+r(1-\tau))(1-\theta_d)}{(1-\theta_d)} = 1 + r(1 - \tau)$$

The dividend tax rate does not affect the rate of return on those dividends. However, the value of the corporation is affected. To see this, consider the firm's choice of dividend policy in the presence of a capital gains tax (here again, the relevant capital gains tax rate is based on accruals, not on the statutory rate). When a dollar of earnings is distributed, the investor gets  $(1 - \theta_d + cq)$ , where  $q$  is the decline in the value of the corporation when one dollar is distributed;  $q$  may be one, but it does not have to be. This decline in the value of the corporation reduces the capital gains tax liability. If the dollar is retained and distributed in the next year, the investor gets  $(1 + r(1 - \tau)(1 - c))(1 - \theta_d + cq)$ . The rate of return is lower than it was without a capital gains tax, as the capital gains tax hits the initial increase in earnings  $r(1 - \tau)$ .

In equilibrium, the firm must be indifferent between retaining earnings and paying them out as dividends. The individual investor must be equally well-off under either system in equilibrium, and if the firm is acting on the behalf of that investor, it also must be indifferent between the two options. The value of one dollar inside the corporation in the second year, the term on the left, must be equal to the value of a dollar distributed to investors, which is the term on the right.

$$q(1 + r(1 - \tau)(1 - c)) = (1 - \theta_d + cq)(1 + r(1 - \tau)(1 - c))$$

We can use this equilibrium condition to solve for the value of  $q$ :

$$\begin{aligned} q &= 1 - \theta_d + cq \\ q &= \frac{1 - \theta_d}{1 - c} \end{aligned}$$

We can think of this dividend tax as imposing an extra tax on the value of the firm to the extent that it exceeds the capital gains tax. Instead of an accrual based capital gains tax and a dividend tax, we can arbitrarily think of the total tax being broken down differently, into a tax on all corporate income at rate  $c$ , with an additional tax on distributions at rate  $1 - \frac{1 - \theta_d}{1 - c}$ . The value of the company is going to reflect the capitalization of differential dividend taxes. One implication of the new view of dividend taxation is that firms pay dividends because they have to; the other alternatives to getting cash out of the company are not that attractive. In particular, the decision to pay dividends later instead of immediately does not allow avoidance of the tax as long as corporations are nearly infinitely lived and individuals pass in and out of corporate ownership. This is one reason that the new view differs from the Stiglitz model; Stiglitz

assumed that corporations were liquidated and distributed as capital gains at some definite point in the future. The insight of the new view is that this does not fit what we see in the market, where shares pass continually between individuals. It is because the dividend tax must be paid by one of those individuals at some point that the capitalization of the dividend tax occurs.

What are the implications of integrating corporate and personal income taxes and eliminating the double taxation of dividends? Integration could be accomplished by treating corporations like partnerships, attributing all income accrued in a given year to owners of the corporation. This is quite difficult for corporations that have complicated financial structures with many different classes of stock. It is easy to attribute dividend payments, but much more difficult to attribute retained earnings to different classes of stockholders. Because of these complications, serious proposals for full integration are rare. However, there are many proposals regarding partial integration, in particular, proposals to reduce the effective dividend tax. According to the new view, integration is very costly, because it will simply increase the value of the firm, a windfall for the corporation.

The model assumes that retaining earnings is an option for the firm, but this is not always the case in practice. New firms, for example, rarely have earnings to retain. In this case, the above analysis no longer holds. Issuing shares to obtain additional capital is not taxable; the cash is not taxable on the way in, but it is on the way out as dividends. Integration would lower the burden of the tax and increase the value of equity capital for such firms, because they are avoiding a tax.