

TAXES AND CAPITAL MARKET EQUILIBRIUM  
UNDER UNCERTAINTY\*

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Let us assume that real investments differ in their risk characteristics and in the extent to which their returns come in the form of taxable income or in the form of unrealized capital gains. We will assume that corporations and partnerships differ substantively only in the way they are taxed, and that corporate income is taxed at a flat rate of 50%. We will assume that corporations pay no dividends, and that holders of corporate shares never realize capital gains. Thus the effective tax rate on investment income for holders of corporate shares is 50%. This means that investors in tax brackets below 50% will hold partnership shares, while investors in tax brackets above 50% will hold corporate shares. We will assume that corporations may hold partnership shares, so a given real investment organized as a partnership may be held partly by individuals and partly by corporations.

There will be a tendency for investors in low tax brackets to hold partnership shares in ventures that give a large amount of their returns in the form of taxable income. And for investors in high tax brackets to hold corporate shares in ventures that give a large amount of their returns in the form of unrealized capital gains. Investors in each tax bracket will hold shares of investments in all tax brackets, however, because of the gains in diversification that they can achieve.

We will assume that no short selling of risky assets is allowed. We will assume that any borrowing done is at the riskless short term interest rate. Borrowing at the short term rate is made riskless because the borrower always provides collateral with a value greater than the amount borrowed. As the value of the collateral changes, the amount of the borrowing is changed so that the margin between the collateral value and the loan value does not vanish.

We will explore below the consequences of having no restrictions on borrowing or lending, and the consequences of imposing certain restrictions on corporations or individuals. For each set of restrictions, the resulting equilibrium will give a proposed real investment a cost of capital that depends on both its risk characteristics and its tax status. Since investors in different tax brackets hold different portfolios, it will not be possible to summarize the relevant risk characteristics in one number. Holding its risk characteristics constant, the more taxable a proposed investment's return is, the higher its cost of capital will be.

If corporations are allowed to lend without limit, and if individuals are allowed to borrow without limit, and if interest payments are fully tax deductible for individuals, then there will be tax arbitrage that will reduce each individual's personal tax bracket to 50%. Each individual will hold his own corporation. His corporation will choose a portfolio of partnership shares and direct investments combined with borrowing or lending that maximizes the expected utility of his after-tax return, treating his tax bracket as 50%. Then the corporation will reduce its borrowing (or increase its lending), and he will increase his borrowing by an equal amount, until his marginal personal tax bracket actually falls to 50%. So no investor will have a tax bracket in equilibrium that is higher than 50%. Note that since each investor holds his own corporation to fit his risk preferences and his tax bracket, we have the most extreme form of the "clienteles hypothesis." Every corporation has a clientele of one investor, and chooses its capital structure to fit that investor's needs.

The tax authorities may not want every investor to be able to reduce his tax bracket to a maximum of 50%, so there may be some restrictions on corporate lending, or personal borrowing. Suppose first that the restriction takes the form of a prohibition of personal borrowing. (Or equivalently, a provision that interest payments by an individual are not deductible for tax purposes.)

Again, each individual will have his own corporation. His corporation will hold a portfolio of partnership shares and real assets mixed with borrowing (or lending) that maximizes the expected utility of its after-tax return for the individual. There will be a right amount of borrowing for each corporation. Since it is held by only one individual (or by a group of individuals with the same risk preferences), it does not really make sense to ask what the effect on the price of its shares would be of changing its capital structure. If individual A's corporation changed its policies so that it was more suitable for individual B than for individual A, then presumably B's corporation would simply change its policies so that it was more suitable for A than for B. The two corporations would switch places, and neither would have any change in its stock price.

Individuals who hold corporate shares will do no lending. If an individual wants a risk position that involves lending, it is better for him to lend through his corporation than to lend personally. His corporation's tax bracket is only 50%, while his tax bracket is higher than 50%. Thus a prohibition on personal borrowing means that individuals who hold corporate shares will neither borrow nor lend. All their borrowing and lending will be done through their corporations.

Alternatively, suppose that the restriction imposed by the tax authorities takes the form of a prohibition on corporate lending. Then corporations will neither borrow nor lend. It will always be better for an individual to borrow personally than to borrow through his corporation. Individuals will hold mixtures of corporate shares with borrowing or lending. In this situation, a corporation that borrows will decrease the value of its shares.

Thus in a world where individuals are primarily concerned with maximizing the expected utility of their after-tax returns, it is not true that there is a tax subsidy associated with corporate debt. Corporate shares will be held only by those whose personal tax brackets are above (or equal to) the corporate tax bracket. Such individuals will prefer personal borrowing to corporate borrowing, and will prefer corporate lending to personal lending.

If they are allowed to, individuals in tax brackets above the corporate rate will combine personal borrowing with corporate lending until their tax brackets fall to the corporate rate. If these individuals cannot borrow, they will do all of their borrowing and lending through their corporations. If their corporations cannot lend, they will do all of their borrowing and lending personally.

If corporations are doing the borrowing and lending, a change in capital structure by one corporation will be offset by an opposite change by another corporation, and neither will have a change in the price of its stock. If individuals are doing the borrowing and lending, a corporation that borrows will cause the price of its stock to drop. This is the opposite of what we would expect if there were a tax subsidy on corporate debt.