

# Taxes and Corporate Financial Policy

## I. Introduction

The purpose of this paper is to provide a brief overview of recent theoretical and empirical developments in finance regarding the effects of personal and corporate taxes on corporate financial policy. Specifically, we examine the effect of taxation on dividend policy and capital structure decisions. Since tax laws vary from country to country, it would be an impossible task to discuss the impact of each specific law on these financial decisions. Therefore, we focus on the impact of taxation on financial policy in one major country: the U.S. Although this approach reduces the generality of our conclusions, it allows us to concentrate on the economic principles behind the theoretical developments. These principles can then be easily applied to other tax environments.

This paper is organised as follows. In Section II we discuss the impact of differential personal taxes on dividend policy and security prices. In Section III the effect of both corporate and personal taxes on corporate financing decisions are examined. Finally, Section IV summarizes our conclusions.

## II. Taxation and dividend policy

### 1. Dividend policy in perfect capital markets

In their seminal article, MODIGLIANI and MILLER (1961) show that, *given the firm's investment decisions*, and given perfect capital markets (no taxes, no transactions costs), the value of the firm is independent of its dividend policy.

When MERTON MILLER was asked by a local Chicago radio station to explain his theory in a

simple way to the listeners, he described it as follows: 'When you take a dollar from your left pocket and put it in your right pocket, you are not better off.' Or, there is a dollar-for-dollar trade-off between dividends (the left pocket) and capital gains (the right pocket). What really matters are the cash flows of the corporation, which are determined by the firm's investment decisions. These investment decisions should be independent of the dividend decision: if, after paying dividends, a firm has not enough internally generated funds to finance all its investment projects, it should raise outside capital (issuing debt or equity). And, as long as the dividend policy is made independently of the investment decisions, 'dividend policy does not matter'. MODIGLIANI and MILLER assume that firms should be indifferent between raising outside equity and using internal funds to finance new investment projects. This indifference is a result of the 'perfect capital market' assumption: transactions costs (such as floatation costs) are assumed to be zero.

### 2. The effect of personal taxes on dividend policy and stock prices: theoretical considerations

The MODIGLIANI-MILLER irrelevance proposition is based on the perfect capital market assumption that personal taxes are zero. However, in a world with differential personal taxes on capital gains and dividends, the dollar-for-dollar trade-off between dividends and capital gains does no longer hold. Specifically, in many countries, dividends are taxed higher than capital gains, at least for individual investors. Hence, (1) the average individual investor should, *ceteris paribus*, prefer capital gains to

dividends and (2) the value of the firm may not be independent of the firm's dividend policy.

Note that both implications are independent: the fact that the *average* investor prefers capital gains to dividends does not necessarily imply that high yield stocks should sell at lower prices than low yield stocks. Prices are set by the *marginal*, not the average investor and many institutional investors are either indifferent (e.g. U.S. pension funds) between dividends and capital gains or they actually prefer dividends to capital gains (e.g. U.S. incorporated ex-dividend day traders; see LAKONISHOK and VERMAELEN, 1986). If these institutions have a significant impact on security prices, then stock returns may well be independent of dividend policy even if individual investors prefer capital gains to dividends.

A second reason why stock prices could be independent of dividend policy is pointed out by BLACK and SCHOLLES (1974): if firms supply the dividend policies that different investors (with their different tax and consumption preferences) want, stock returns will be independent of dividend policy. Highly taxed individuals with low preference for current consumption (accumulators) will buy low yield stocks; corporations and pension funds will stick to high yield stocks, etc. If, for one reason or another, firms do not supply the dividends that investors want, price differentials between high and low yield stocks will emerge, which in turn induces firms to change their dividend policies until such differentials disappear. Thus, whether stock prices reflect the differential taxation of dividends and capital gains is an important empirical issue which has to be addressed before any prescriptions for an 'optimal' dividend policy can be made.

### 3. *The effect of dividend policy on security prices: empirical evidence*

Empirical research on the effect of personal taxes on common stock prices can be classified in two categories. A first set of studies tests for the relation between expected security returns and a measure of expected dividend yield. If dividends are taxed higher than capital gains for the marginal investor, investors should require a premium for holding high yield stocks (i.e. the relation between expected returns and expected dividend yield should be positive). Or,

equivalently, high yield stocks should sell, *ceteris paribus*, at lower prices than low yield stocks (BRENNAN, 1970). However many of the studies (e.g. BLACK and SCHOLLES, 1974; BRADFORD and GORDON, 1980; MORGAN, 1980; HESS, 1983; LITZENBERGER and RAMASWAMY, 1979, 1982; MILLER and SCHOLLES, 1982; BLUME, 1980) find conflicting results employing U.S. data: the strength of the 'tax effect' depends on the methodology employed, the time period considered and the chosen measure of 'expected' dividend yield. In the most recent study, CHEN, GRUNDY and STAMBAUGH (1986) conclude that there exists no statistically reliable relation between security returns and expected dividend yield. The most damaging evidence against the 'tax effect hypothesis' is reported by KEIM (1986) who finds that *only in January* is there a significant positive relation between security returns and a measure of expected dividend yield. This result suggests that the dividend yield variable is possibly proxying for some omitted risk variable.

A second set of studies focusses on the price behavior of stocks around ex-dividend days. If dividends are taxed higher than capital gains, on ex-days stock prices should fall by a smaller amount than the dividend per share. Consistent with this hypothesis, the studies employing U.S. data before 1975 (ELTON and GRUBER, 1970; KALAY, 1982) report that on average, stock prices tend to fall by an amount smaller than the dividend per share. Also consistent with a tax interpretation of ex-dividend day price behavior is BARCLAY'S (1984) finding that prior to the establishment of the federal tax system, stock prices fell by the full amount of the dividend on the ex-dividend day. Some recent evidence, however (BARONE-ADESI and WHALEY, 1986; EADES, HESS and KIM, 1984; LAKONISHOK and VERMAELEN, 1986), shows that, after brokerage commissions became negotiable in the U.S. (i.e. after May 1975) stock prices fell also by the full dividend per share on the ex-day. This suggests that *currently* (at least in the U.S.) tax effects may be arbitrated away by short-term traders (corporations) who buy before the ex-dividend day and sell afterwards: they are almost not taxed on the dividend received and they can realize a loss for tax purposes. The reduction in brokerage commissions made these trading strategies profitable. This may explain why in countries with similar differential taxation of

dividends and capital gains (U.S., Canada, U.K., Belgium) ex-dividend behavior is nevertheless different: POTERBA and SUMMERS (1982, 1984), LAKONISHOK and VERMAELEN (1983) and VANTHIENEN and VERMAELEN (1987) find significant personal tax effects in the U.K., Canada and Belgium, respectively. Thus, before making any predictions about the effect of dividend yield on security prices, one should also investigate carefully the trading opportunities for short-term traders (tax treatment, transactions costs, possibilities to hedge against market risk, etc.).

#### 4. Implications for an 'optimal' dividend policy

The focus on the 'average individual investor' has led many researchers to argue for a 'zero dividend policy'. The empirical fact that the vast majority of firms don't follow such policies has created the so called 'Dividend Puzzle' (see BLACK, 1976). The lack of strong empirical support for personal tax effects in security prices (at least in the U.S. equity markets) may both explain or worsen the puzzle. If firms don't get signals from the market place that high yield policies are penalized, it is not surprising that firms don't follow 'zero payout' policies. On the other hand, if individual taxable investors can't buy dividend paying stocks at lower prices than non-dividend paying stocks, they should be even less interested in high yield policies.

The 'zero dividend policy' prescription implicitly assumes that the firm can get rid of 'excess cash' balances without lowering the value of the firm. Or, there should be enough zero net present value projects in which the firm's excess cash can be employed. Candidates for zero net present value projects are (1) buying bonds or stocks of other corporations or the government, (2) buying back the firm's own stock. AS MILLER (1986) points out, corporations are taxed on the income from bonds at the regular corporate tax rate; thus the tax-exempt shareholders of a firm (pension funds) will prefer to invest directly rather than indirectly (through the corporation) in corporate bonds. The same is true but to a lesser extent (in the U.S. 85% of intercorporate dividends are tax exempt) for investment in stocks of other corporations. Thus, saving money for individual investors may impose costs on other shareholders. The second alternative, buying back the

firm's own stock, is also not a costless activity: if the repurchase occurs in the open market, brokerage commissions have to be paid; in a repurchase tender offer premiums (above the true value of the shares) may have to be paid to tendering shareholders (see e.g. DANN, 1981; MASULIS, 1980; VERMAELEN, 1981). In addition, in many European countries special tax provisions (e.g. Belgium) or regulations restrict the use of stock repurchase.

Summarizing, converting taxable dividends to capital gains is not a costless activity. If, at the same time, tax effects don't show up significantly in common stock prices, firms don't get a clear signal from the market place to adapt their dividend policies. In such circumstances, the optimal strategy may well be to follow a *stable dividend policy* so that firms can attract a clientele that 'likes' its dividend policy. As any clientele is as good as any other one the specific chosen (stable) policy is irrelevant. Only when e.g. a major tax change is announced which should alter the vast majority of the shareholder's preferences for dividends relative to capital gains, an argument could be made to alter the firm's dividend policy.

### III. Taxes and Corporate Financing Decisions

#### 1. Capital structure decisions in perfect capital markets

In their other seminal article, MODIGLIANI and MILLER (1958) argue that, in perfect capital markets, capital structure decisions do not matter. As in the case of dividend policy, it is the size of the pie (which is determined by the firm's investment decisions) that matters, not how the pie is split up between different claimholders. Although the 'cost of equity' is always larger than the 'cost of debt' (because equity is riskier than debt), the firm cannot reduce its overall cost of capital by substituting equity for debt: increasing the debt equity ratio (e.g. by buying back stock and issuing debt) increases the risk of the equity holders so that the weighted average cost of capital is independent of the firm's capital structure. Hence, financing decisions are irrelevant.

#### 2. Capital structure and corporate taxes

Tax authorities generally allow firms to deduct

interest expenses (the 'cost of debt') from their taxable income, but rarely (for an exception, see VANTHIENEN and VERMAELEN, 1986, 1987) allow firms to deduct the 'cost of equity'. Thus, as MODIGLIANI-MILLER (1963) point out, the tax system (at least in the U.S.) creates a bias in favour of borrowing. The value of a leveraged firm is equal to the value of an (otherwise identical) all equity financed firm plus the present value of the interest tax shield. Hence, the message: borrow as much as possible! Of course, as MODIGLIANI and MILLER point out, at extremely high debt-equity ratios the marginal tax benefits of an additional dollar of debt may be offset by the marginal cost of financial distress (bankruptcy costs). Hence the firm should balance these costs to arrive at its optimal capital structure.

The problem with the MODIGLIANI-MILLER plus-corporate tax model is that it does not explain why firms such as IBM or Eastman Kodak hardly issue any debt at all. It seems far-fetched to argue that these firms (whose combined market values exceed the total stock market capitalization of many European countries) are on the verge of bankruptcy, or that their financial managers do not understand the simple calculus of the MODIGLIANI-MILLER argument. Moreover, U.S. corporate debt-equity ratios were only marginally higher in the seventies (with a corporate tax rate of 50%) than in the low taxed twenties. Why did firms not take advantage of the huge tax subsidy of debt?

### 3. MILLER's Debt and Taxes

Imagine the government would pass legislation which made domestically produced machines tax deductible at the corporate level, but foreign-made machines not. Should everyone then buy domestic machines? Of course, the answer depends on the relative prices of domestic and foreign machines: only if the after tax cost of domestic machines is lower than the price of foreign machines, would it pay to go domestic. Hence, the value of a subsidy on a commodity depends largely on the subsidy-induced relative price changes of the commodity. Moreover, the elasticity of demand and supply will determine to what extent the suppliers (domestic producers of machines) of the subsidized commodity receive the benefit of the subsidy through higher product prices.

MERTON MILLER (1977) was the first to realize that such potential macro-economic effects (in the corporate bond market) could significantly alter the conclusions of the original MODIGLIANI-MILLER corporate tax model. Actually, he shows that (1) when there are 'enough' firms with sufficient taxable income to fully use the tax shields from debt financing, (2) when the personal income tax on income from debt is higher than the personal income tax on equity and (3) costs of financial distress are trivial, the value of an *individual* firm is independent of its capital structure.

His argument goes as follows. Assume that the after-tax risk-adjusted cost of equity is equal to  $R_0$ . Thus,  $R_0$  is the minimum after personal and corporate tax rate of return that shareholders require if they invest in a riskless project. Assume that the personal tax rate on equity is zero, but the personal tax rate on interest income from corporate debt,  $t_d$ , is positive and 'progressive': investors with larger incomes are subject to higher marginal tax rates. The assumption that the personal tax rate on equity is zero is a convenient, but unnecessary condition: MILLER's argument holds as long as the marginal tax rate on income from equity is lower than the marginal tax rate on income from debt. Note that the empirical evidence discussed above (at least for the U.S. after May 1975) is also consistent with a marginal tax rate on equity equal to zero. The argument of a gradually 'progressive' tax system for bond income is also not necessary, as long as there are a number of investors (in corporate bonds) with tax rates comparable to the corporate tax rate. HAMADA and SCHOLLES (1985) point at one such investor: commercial banks.

When a firm faces a choice between debt and equity, it will issue debt (with an interest rate  $R_d$ , again adjusted for risk) as long as the after tax cost is lower than the cost of equity, or as long as

$$R_d (1 - t_c) < R_0$$

or 
$$R_d < R_0 / (1 - t_c)$$

where  $t_c$  is the firm's marginal tax rate. If  $t_c$  is identical for all firms the aggregate supply function of corporate debt (i.e. the quantity supplied at different interest rates) corresponds to the horizontal line in Figure 1. No firm would be willing to pay a higher interest rate on

corporate debt than  $R_0/(1 - t_c)$  because then issuing equity becomes cheaper than issuing debt.

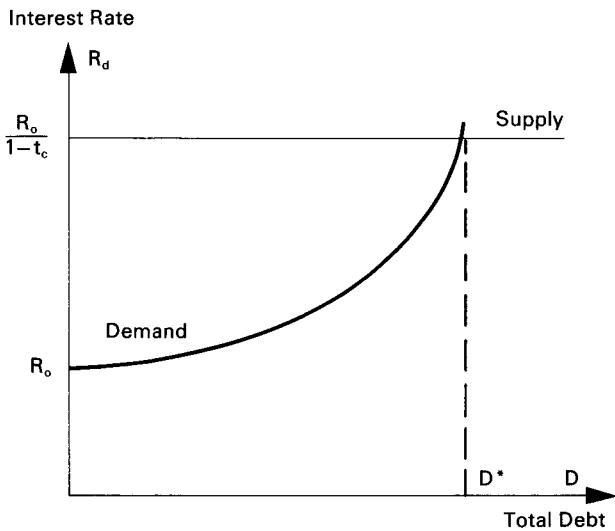


Figure 1: Market equilibrium with horizontal supply curve.

When firms supply debt, someone has to be willing to buy it; and, interest income is taxed at  $t_d$ , while income from equity (dividends and capital gains) is not. Thus, an investor who can obtain an after tax rate of return on equity of  $R_0$  will only buy taxable corporate debt if

$$R_d (1 - t_d) \geq R_0,$$

or

$$R_d \geq R_0 / (1 - t_d)$$

This 'demand function' corresponds to the upward sloping curve in Figure 1. The curve slopes upwards because as the aggregate amount of corporate debt increases, firms have to attract investors in higher marginal tax brackets which require higher pre-tax rates of return on debt. Equilibrium will exist where demand is equal to supply, or where

$$R_d = R_0 / (1 - t_c) = R_0 / (1 - t_d)$$

Or, in equilibrium, the marginal tax bracket of the marginal bondholder  $t_d$  is equal to the corporate tax rate  $t_c$ . Thus, the tax advantage of debt at the corporate level is exactly offset by a disadvantage at the personal level. As a result, for an *ordinary taxable corporation* (with a tax rate  $t_c$ ) capital structure decisions don't matter even if there exists an aggregate equilibrium amount of corporate debt ( $D$  in Figure 1). On the other hand, corporations that can't fully use the tax shield (for example, because they don't

have any taxable profits) should issue equity: because interest rates reflect the tax advantage, issuing debt would mean paying for something that you can't use. Others, such as partnerships which may be taxed higher than corporations, may want to issue debt: because the tax advantage is only reflected in interest rates up to the 'normal' corporate tax rate  $t_c$  there still remains a net tax benefit of  $t_p - t_c$  per dollar of debt, where  $t_p$  is the tax rate on partnership income.

#### 4. The empirical evidence

The appealing thing about MILLER's theory is that it explains 'a lot'. For example, the fact that aggregate debt-equity ratios did not increase when U.S. corporate tax rates were increased can easily be explained by MILLER's model: when corporate tax rates increased (which shifts the supply function in Figure 1 upwards), the government usually also increased personal tax rates (which shifts the demand curve for corporate debt also upwards). Hence, MILLER's model predicts that the intersection point between supply and demand schedules would not change very much. The model also explains why well-established firms (such as IBM) would not be highly levered.

Some evidence against MILLER's irrelevance hypothesis seems to be the empirical finding that stock prices are influenced by capital structure changes. The most extensive study of a 'pure' capital structure change is MASULIS' (1980) work on debt-equity exchange offers. MASULIS finds that leverage increasing exchange offers increase share value and vice versa for leverage decreasing offers. These results suggest that there is still a net tax advantage of issuing debt. However, as VERMAELEN (1981) points out, in exchange offers the retired security is always bought back at a premium (or, equivalently, the issued security is sold at a discount). The fact that in leverage increasing exchange offers the firm is buying back shares at a premium and in leverage decreasing offers it is issuing shares at a discount, may well reveal some information about managerial beliefs about the firm's prospects. This information effect, rather than a tax effect, may explain the observed stock price reaction. In short, the almost inevitable fact that all managerial decisions (such as capital structure changes) may reveal inside information about the firm's pros-

pects, makes it difficult to use event studies to test for tax-related theories.

Some indirect evidence seems inconsistent with MILLER's model: the relative pricing of taxable and tax-exempt debt. Note that, if equity is not taxed at the personal level, tax exempt (municipal) debt and (risk-adjusted) equity are perfect substitutes so that  $R_0$  in Figure 1 is the interest rate on municipal debt. MILLER's model predicts that  $R_0/R_d$  is equal to  $(1 - t_c)$ . Several researchers have pointed out that the empirically observed values of this ratio imply an implicit corporate bond tax rate often below or above the corporate tax rate (see e.g. BUSER and HESS, 1986). TRCZINKA (1982) argues that these comparisons are irrelevant because they don't allow for risk differentials between municipals and corporate bonds. BUSER and HESS (1986) argue that the evidence is consistent with more generalized versions of MILLER's model, to which we now turn.

### 5. Extensions of MILLER's model

The extensions of MILLER's model (see e.g. BARNEA, HAUGEN and SENBET, 1984; DE ANGELO and MASULIS, 1981) all involve theoretical arguments for modifying the supply schedule in Figure 1. The supply functions may start falling before the intersection point with the demand function (as in Figure 2) because as more debt is issued (1) agency costs of debt and bankrupt-

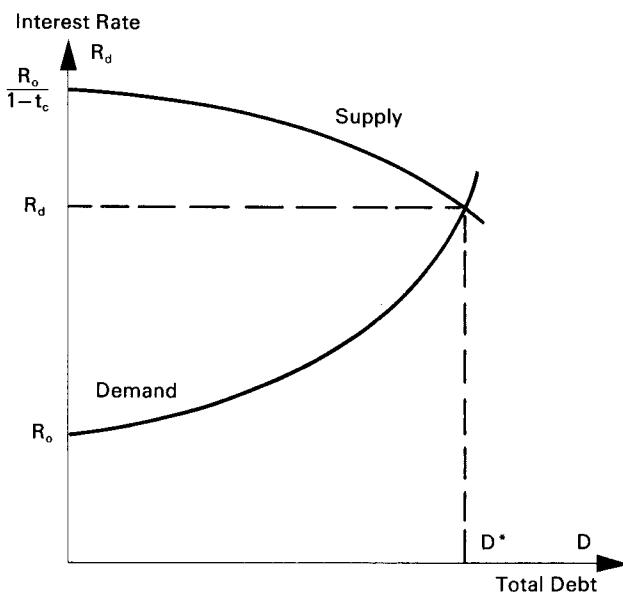


Figure 2: Market equilibrium with downward sloping supply curve.

cy costs start to offset the corporate tax benefit of debt, (2) firms with non-debt related tax shields (investment tax credits, depreciation tax deductions) are entering the market: for these firms, interest tax shields have less value. The resulting intersection point between demand and supply will imply a lower equilibrium  $R_d$  and an implied marginal tax rate below the (maximum) rate  $t_c$ . In such a world, capital structure becomes relevant again: profitable firms for which direct and indirect bankruptcy costs are not very large should issue debt and others should issue equity. It seems that the prescription of the 'old' MODIGLIANI-MILLER-with-corporate-tax story has been revived. With one important difference, however: also in Figure 2 the value of the corporate tax benefit is significantly less than  $t_c$  per dollar of debt. Thus, the crux of MILLER's argument remains: one cannot evaluate the desirability of a specific financing instrument without incorporating the effect of this desirability on the price of the instrument.

One could, of course, also propose modifications of the demand function. If, as may be the case in Europe, many investors do not pay progressive income taxes on income from bonds, the demand function may become horizontal and the intersection between demand and supply may occur at an even lower level of interest. Thus, if one considers the European capital markets in *isolation*, it may seem that the classic advantage of debt issuance still exists. If, on the other hand, one views the corporate bond market as one *integrated* world capital market, the personal tax system faced by U.S. investors (individuals, commercial banks) may have a significant impact on the interest rates that, say, Belgian firms have to pay.

### IV. Conclusion

At the end of this paper it should have become obvious that the effect of personal and corporate taxes on corporate financial policy is a complex and therefore unsolved issue. This complexity does not result from the complexity of tax laws but the *macro-economic price effects* which result from the differential treatment of dividends and capital gains at the personal level, and of debt and equity at the corporate level. Hence, corporate financial management

should involve assessing these macro-economic effects, rather than only focusing on the tax laws themselves. At this time, the available body of evidence suggests that, at least in the U.S., the tax advantage of debt is, to a large extent, being priced in the corporate bond market. On the other hand, since brokerage commissions became negotiable, there is no reliable evidence that personal tax effects are reflected in the prices of common stock. Of course, more research is needed to extend these conclusions applying to a more international capital marketing setting.

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