The Economic Effects of Dividend Taxation

Kenneth J. McKenzie
University of Calgary

Aileen J. Thompson
Carleton University

December 1996

The Economic Effects
of Dividend Taxation

Kenneth J. McKenzie
University of Calgary

Aileen J. Thompson
Carleton University

December 1996

WORKING PAPER 96-7

Prepared for the
Technical Committee on Business Taxation

Kenneth McKenzie
Department of Economics
University of Calgary
2500 University Drive N.W.
Calgary, Alberta
N6A 3K7

Fax: (403) 282-5262
e-mail: kjmckenz@acs.ucalgary.ca

Abstract

In this paper we investigate the theoretical rationale for and implications of dividend taxation in a Canadian context. We focus in particular on the implications of dividend taxation for real investment. Three views of dividend taxation are described, each of which has different implications for investment and firm financial policy. Some of the literature which investigates the empirical relevance of these three views is reviewed. We tentatively conclude that there is some support for the "traditional" view that dividend taxes dampen investment. Accepting this as the relevant view, we perform some rough calculations of the impact of eliminating integration in Canada on the cost of capital, and speculate upon the possible investment effects of this hypothetical policy.

Table of Contents

1. Introduction

The purpose of this paper is to briefly survey some issues related to the taxation of dividends and the integration of the personal and corporate income tax systems. It will focus on the general economic rationale for integration, and in particular on the implications of dividend taxation for stock values, dividend policy and real investment. While some of the relevant theoretical and empirical results found in the literature will be discussed, this paper is not meant to be an exhaustive survey; rather our intent is to highlight what we think are some of the key issues related to the taxation of dividends.[1]

The following section lays out these issues more formally. This includes a theoretical presentation of the rationale for and the effects of dividend taxation. Section 3 discusses some of the empirical findings in this literature, focussing on the response of stock market prices, dividend-payout ratios and investment-to-dividend taxation. Section 4 provides concluding remarks and presents some illustrative calculations that show how dividend taxes may affect the user cost of capital, and therefore real investment, in Canada.

An understanding of the impact of dividend taxes on investment and firm financial policy is a critical step in the evaluation of existing and proposed integration schemes. Unfortunately, opinions differ regarding the economic impact of dividend taxation. In particular, three "views" dominate the literature, each implying that dividend taxes affect investment, financial policy and equity prices in different ways. While some tentative conclusions are possible, a solid consensus has not emerged on which of these three views provides the best description of the economy. In our judgment, the current "state of the art" gives a slight edge to the view that dividend taxes act to dampen both investment and dividend payouts, at least for some firms, although the results are by no means conclusive. More empirical investigation, particularly in a Canadian context, is badly needed.

2. Dividend Taxation: A Discussion of the Issues

In this section, we lay out the key issues relating to the taxation of dividends. In the following subsection, we summarize the arguments for integrating corporate and personal taxes. We then turn our attention to the main focus of the paper: the implications of dividend taxation for investment.

2.1 Why Integration?

In order to avoid a discussion of the merits of consumption vs. income taxation, we take as our starting point the maintained assumption that the objective of the tax system is to tax comprehensive income, and that separate taxes are levied on individuals and corporations.

---

[1]Devereux (1996) examines some of the issues not dealt with here, particularly those related to loss companies and the role of minimum taxes on dividend payments, in a review of the integration of personal and corporate taxes in Europe.

While it is by no means obvious that either of these features would characterize a "socially optimal" tax system, or that tax policy in Canada has been dominated by an effort to achieve this objective, these assumptions help to limit the scope of the discussion, and have the merit of accepting the basic structure of the Canadian tax system as given. Modifying the current tax system to tax consumption rather than income would involve exempting capital income, including dividends, from taxation altogether.

From the perspective of a comprehensive income tax, the separate taxation of individuals and corporations presents a problem because income derived from the corporate sector and subsequently passed on to individuals will be subject to "double taxation" – having been taxed initially at the corporate level and again at the personal level. Under a comprehensive income tax, all income should be taxed as it accrues, and at the same rate (or according to the same rate schedule), no matter how it is earned. In particular, capital income arising from saving should be taxed at the same rate as non-capital income, and all capital income – dividends, capital gains, interest, rent, etc. – should be taxed at the same rate. It is within this context that the integration of the personal and corporate tax systems is most commonly discussed.

Viewed in this light, corporate income tax can be thought of as performing an important withholding function, with the corporation paying taxes on behalf of its shareholders.[2] Without a corporate tax, individuals could accumulate income tax-free within the corporation, unless capital-gains taxes could be levied on an accrual basis. While some have argued that the difficulties with taxing capital gains on accrual can be overcome, at present most countries that tax capital gains, including Canada, do so on realization.[3] In the absence of an accrual-based capital-gains tax, the corporate tax thus plays a withholding role.[4] But if corporate taxes are viewed as a withholding tax, at least in part, then when income is distributed to shareholders as dividends, they should be given credit for the taxes that have been paid on their behalf at the corporate level. If this credit is not given, the income distributed as dividends is taxed twice, bearing a higher tax rate than other income. This is the basic motivation for the dividend tax-credit system as it is employed in Canada.

The Canadian integration system provides a *notional* credit for taxes paid at the corporate level on dividends distributed to individuals. In theory, the so-called "gross-up and credit" system works as follows. Say that after the payment of corporate taxes at the rate u, a firm pays out $1 in dividends. These dividends are then grossed-up by a factor of $1/(1-d)$, where d is the notional dividend tax-credit rate, giving taxable dividends of $\$1/(1-d)$, which are taxed at the personal tax rate m, for a gross (before tax credit) tax liability on the $1 dividend of $\$m/(1-d)$. The individual is then given credit for taxes paid on the grossed-up dividends at the corporate level at the notional rate of d; this credit is $\$d/(1-d)$. The individual's final tax liability, net of the dividend tax credit, is then $\$m/(1-d)-d/(1-d)$, which, remembering that this all started with a $1 dividend payment to the individual, suggests an effective personal tax *rate* on dividends of,

---

[2]For other views of the corporate income tax, see Mintz (1995).

[3]For more on the taxation of capital gains on accrual, see Auerbach (1991).

[4]Moreover, to the extent that there are foreign shareholders, the corporate tax generates revenue from foreign direct investment. Without a corporate tax, this revenue would be transferred to foreign treasuries.

$$\theta = \frac{m - d}{1 - d} \qquad (1)$$

Full, or complete, integration, requires that the notional dividend tax-credit rate equal the corporate tax rate u (that is, d=u), in which case θ=(m-u)/(1-u). When this is the case, the $1 dividend is grossed-up to its corporate taxable income equivalent, the personal tax rate is applied to this income, and then full credit is given for the corporate taxes already paid on this income. To see this, note that given a corporate tax rate of u, in order to pay out $1 to the shareholder after the payment of corporate taxes, the corporation must generate taxable income of $1/(1-u) (i.e. with taxable income of $1/(1-u), corporate taxes levied at the rate u leave $(1/(1-u))(1-u)=$1 after tax). Corporate taxes on this taxable income are $u/(1-u), which is exactly the amount of the dividend tax credit when d=u. Total taxes paid on the taxable income generated within the corporation and distributed to individuals as dividends then amount to $θ+u/(1-u), which is the sum of personal plus corporate taxes. Remembering that these are total taxes paid out of taxable corporate income of $1/(1-u), the *total effective tax rate* on this income is [θ+u/(1-u)]/[1/(1-u)], or,

$$\tau = \theta (1 - u) + u \qquad (2)$$

Under full integration θ=(m-u)/(1-u), in which case the total effective tax rate is τ=m, the full personal tax rate. Without the dividend tax credit, i.e. if the individual were not given credit for taxes paid on his/her behalf at the corporate level, d=0 and the effective total tax rate on income derived in the corporation is τ= m+u(1-m), which exceeds m – the income is "double taxed."[5]

Thus, we see that under full integration, the total effective tax rate on income derived in the corporation and distributed as dividends is simply the individual's personal tax rate, m, which (in principle) is applied to all income, and the basic principle behind comprehensive income taxation – that all income be taxed at the same rate – is preserved. Or is it? Two complications were ignored in the above discussion. Both of them have to do with the fact that the integration approach outlined above, and followed in Canada, grants a *notional* credit for taxes paid at the corporate level. This credit may bear no relationship to the taxes *actually paid* by the corporation. The notional credit and the actual taxes paid may differ for two reasons. First, it is possible that the corporation did not pay any taxes at all in the year in which the dividends were paid. This could occur, for example, if the firm is in a tax-loss position. When this is the case, the granting of the notional credit results in *over integration* – the total effective tax rate on dividends is less than the personal tax rate m. To see this, consider the extreme case where the dividend-paying firm never pays corporate taxes, perhaps because of generous corporate tax provisions, in which case u is effectively equal to 0. Then the granting of a notional dividend tax credit at rate d gives rise to a total effective tax rate of (m-d)/(1-d) that is less than m, and dividends are taxed at a lower rate than other income. While there are ways of dealing with the

---

[5]Tax systems that provide no integration are called "classical" tax systems. This is the approach, for example, taken in the United States.

problems caused by dividend-paying tax loss firms, Canada currently has no such provisions in place.[6]

A second complication that arises due to the use of the notional dividend tax credit occurs when the corporate tax system imposes different *statutory* tax rates on different firms. In Canada, for example, Canadian-controlled private corporations (CCPCs) are eligible for a small business deduction (SBD), which effectively lowers the tax rate on the first $200,000 of income from the full corporate rate of 28 percent (federal) to 12 percent (federal).[7] Also, manufacturing companies in Canada are taxed at a rate of 21 percent on their manufacturing and processing income rather than 28 percent.[8] Clearly, in the presence of multiple statutory corporate tax rates, there is no *common* notional dividend tax-credit rate that provides full integration for dividends received from all companies. Full integration would require *different* notional rates for dividends received from CCPCs and non-CCPCs, manufacturing and non-manufacturing, loss and non-loss companies, etc.[9]

The Canadian approach has been to set a common dividend tax-credit rate to ensure (approximately) full integration for small businesses. Thus, d=u (approximately) for small CCPCs, and d<u for non-CCPCs. If a common dividend tax-credit rate is imposed, it probably makes sense to set it to fully integrate CCPCs, because they face the lower tax rate. To see why, consider the implications of setting d to fully integrate large non-CCPCs instead. In this case, CCPCs would be over-integrated, suggesting that dividends paid by them would be tax preferred. Since CCPCs are privately controlled, this gives rise to obvious tax planning possibilities – owner/managers of CCPCs could lower their salaries, which are taxed at the full rate m, and "pay" themselves in dividends instead, which would be taxed at an effective rate that is less than m if the dividend tax-credit rate is greater than the CCPC tax rate. Integration policy in Canada seems to have been dominated by attempts to prevent this type of tax planning. The inevitable "side effect" of this preoccupation is the *under-integration* of non-CCPCs, whereby – ignoring the presence of tax-loss firms – income derived in these firms is taxed at a total effective rate that is greater than the personal tax rate m (i.e. $[(m-d)/(1-d)]+u/(1-u)>m$ for $d<u$).

The notional gross-up and credit approach outlined above roughly describes the approach followed in Canada. The Canadian system deviates slightly from the "theoretical ideal" due to the presence of differential personal and corporate tax rates, surtaxes, and flat taxes at the provincial level. Currently, the dividend tax-credit rate is 20 percent of grossed-up dividends presuming a provincial tax rate of 50 percent of the federal rate, therefore d=.2 and 1/(1-d)=1.25.[10] In Alberta, for example, this means that a top-bracket investor would face an effective marginal *personal* tax

---

[6]See Devereux (1996) for a discussion of the Advance Corporation Tax (ACT), which is designed to deal with this problem.

[7]These rates do not include the 4% federal surtax, which increases the rates to 29.12% and 13.12% respectively (note that the surtax is applied to the full corporate tax rate facing non-CCPCs).

[8]The full surtax inclusive tax rate on manufacturing is 22.12%, as the 4% surtax is applied to the full tax rate before the manufacturing and processing deduction.

[9]A further complicating factor is that many companies are taxed at the manufacturing rate on only some of their income, implying a "blended" statutory rate somewhere in between the full rate and the lower manufacturing rate.

[10]See footnote 11.

rate on dividends of θ=31.4 percent.[11] The *total* effective tax rate on dividends would then depend upon the tax characteristics of the company paying the dividends. Again using the example of an Alberta corporation, if the dividends were paid by a fully taxpaying non-manufacturing, non-CCPC, the total effective tax rate would be τ=62.01 percent; if the dividends were paid by a fully taxpaying non-manufacturing CCPC taxed at the small business rate, the total effective tax rate would be τ=44.52 percent.[12] The full marginal tax rate facing a high-bracket Albertan on ordinary (non-dividend) income is 46.07 percent.[13] We thus see that the total tax rate on dividends distributed by a (fully taxpaying) CCPC is similar to the tax rate on ordinary income, while the total tax rate on dividends distributed by a (fully taxpaying) non-CCPC is substantially higher – dividends from CCPCs are fully integrated, those from non-CCPCs are under-integrated.

2.2 Taxes and Investment

With the above background in hand, we are now in a position to consider the issue of the potential impact of dividend taxes on real investment. More precisely, in terms of the Canadian policy environment, does the (partial) relief of double taxation in Canada act to encourage investment; or, conversely, would the elimination (or reduction) of integration discourage investment? Put yet another way, does the under-integration of tax paying non-CCPCs discourage investment by these corporations, or does the (possible) over-integration of tax-loss firms encourage investment? It is to these very difficult and somewhat contentious questions that we now turn.

Neo-classical investment theory provides the key link between the taxation of dividends and real investment. As is well-known, standard neo-classical investment theory posits that value-maximizing firms will employ capital up to the point where the rate of return on the marginal unit of capital is just equal to the user cost of capital.[14] Ignoring taxes for the moment, the user cost of capital is equal to the price of a unit of capital (relative to the price of output), q,

---

[11]Various nuances in the tax code make the calculation somewhat more complicated than suggested above. The top federal marginal rate is 29%. High-bracket taxpayers also face a federal surtax of 8%. The basic tax rate in Alberta in 1995 is 45.5% of the federal rate, before the surtax. Alberta also imposes an 8% surtax on high-bracket taxpayers, and a 0.5% flat tax on taxable income measured before the dividend tax credit. The dividend tax credit rate for federal purposes is 13.33%, which gives a combined federal and provincial value for d of 20%, assuming a provincial tax rate of 50% of the federal rate. The effective marginal tax rate on dividends is then calculated as follows:

federal=1.25*.29=.3625-(.1333*1.25)=.1959*1.08=.2116

provincial=.1959*.455=.0891*1.08=.0962+(.005*1.25)=.1024

Therefore the combined federal plus provincial marginal effective personal tax rate on dividends is 31.4%.

[12]The Alberta tax rate on non-manufacturing, non-CCPCs is 15.5%; the tax rate on manufacturing non-CCPCs is 14.5%; manufacturing and non-manufacturing CCPCs are taxed at a 6% rate. Including the federal 4% surtax, the combined federal plus provincial tax rate (u) is thus 44.62% for non-CCPC non-manufacturing companies; 36.62% for non-CCPC manufacturing companies ; and 19.12% for manufacturing and non-manufacturing CCPCs.

[13]This is calculated as follows:

federal=.29*1.08=.3132

provincial=.29*.455=.1319*1.08=.1425+.005=.1475

For a combined rate of 46.07%.

[14] See, for example, Auerbach (1983), Poterba and Summers (1985) and Boadway (1987).

multiplied by the sum of two terms: the opportunity cost of the funds tied up in the capital, which we denote by r, and the economic rate of depreciation of the asset, which we denote by δ.[15] Letting R(K) represent the return on an *incremental* unit of capital employed, which is presumed to be a declining function of the total amount of capital K, a value-maximizing firm will increase K until R(K)=q(r+δ). The opportunity cost of finance to the firm, r, is the rate of return the firm's stakeholders (debt and equity holders) could earn by investing elsewhere. Thus, if 100b percent of the marginal investment is finance by debt and 100(1-b) percent is financed by equity (either retained earnings or new share issues), the opportunity cost of finance is a weighted average r=bi+(1-b)ρ, where i is the rate of return required by debt holders and ρ the rate of return required by equity holders. Thus, the marginal unit of capital "breaks even" in the sense that it generates a return just high enough to cover the decline in the economic value of the capital (its economic depreciation) and satisfy debt and equity holders.

Taxes levied both on the firm directly and on its shareholders can, in principle, affect investment through their impact on the user cost of capital. To begin, consider the imposition of a very simple corporate income tax, assuming for the moment that no taxes are levied on the dividends or capital gains received by shareholders.[16] The tax lowers the return on an incremental investment to R(K)(1-u), where u is the corporate income tax rate. The tax also lowers the cost of capital due to the presence of various deductions. For example, debt interest is deductible for corporate tax purposes, while the required rate of return on equity is not; this lowers the firm's opportunity cost of finance to r_f=bi(1-u)+(1-b)ρ .[17] Also, the firm can claim a stream of tax depreciation, or capital cost allowances (CCA), over time, which can be viewed as lowering the effective after-tax price of a unit of capital from q to q(1-uZ), where Z is the present value of the CCA deductions.[18] In the presence of this very simple corporate tax, a firm will invest in capital up to the point where the after-tax return on the marginal unit of capital is equal to the after-tax cost of the capital, or R(K)(1-u)=q(r_f+δ)(1-uZ), which can be written as

$$R(K)=q(r_f+\delta)\left[\frac{1-uZ}{1-u}\right] \tag{3}$$

---

[15]The economic rate of depreciation is the proportionate change in the market value of the capital, due to either physical depreciation or a changes in market conditions. For simplicity, we ignore risk and inflation in the descriptive analysis. They are straightforward to include. For example, it is straightforward to introduce uncertainty by way of some equilibrium asset-pricing model. For instance, if we employed the Capital Asset Pricing Model (CAPM) we would replace r with R_f+(R_m-R_f)B_i, where R_f is the after-tax risk free interest rate and B_i is the security's "beta."

[16]Federal and provincial taxes on capital, sales taxes on capital, investment tax credits, etc., are ignored for simplicity. They are included in the calculations presented in Section 4.

[17]In the absence of other capital market imperfections, the granting of debt interest deductibility would suggest that firms should completely debt finance all investments (i.e. set b=1). Several theories have been postulated to explain why firms still use equity finance despite its tax disadvantage. For example, if one presumes that the risk of bankruptcy or financial distress increases as the debt/asset ratio (b) increases, and that the interest rate on the firm's debt therefore increases with b, the firm will trade off the bankruptcy cost of additional debt against the tax benefits and arrive at an optimal "interior" financial policy whereby some portion of the marginal investment is financed by debt and some portion by equity. See Auerbach (1983).

[18]Under a very simple declining balance system with a CCA rate of α, Z=α/(r_f+α).

The right-hand side of equation (3) is called the *tax adjusted user cost of capital*. If the proportionate decline in the return on the marginal investment due to the tax is greater than the decline in the user cost of capital due to the various deductions (i.e. the tax-adjusted user cost of capital in (3) is greater than $q(r+\delta)$), then the imposition of the corporate tax discourages investment.[19]

In equation (3), the imposition of the corporate income tax affects the user cost of capital directly. Personal taxes levied on the dividends and capital gains received by shareholders can affect the user cost of capital "indirectly" via their impact on the opportunity cost of finance, r_f.[20] It turns out that the impact of personal taxes on the cost of finance depends upon the assumptions one makes regarding the marginal source of funds and the characteristics of financial markets. Unfortunately, there is no widely accepted model of corporate financial behaviour, and there are many unanswered questions. Indeed, economists do not have a fully satisfactory explanation for why some firms pay dividends at all, much less how taxes imposed on those dividends may affect investment.

2.2.1   Three Views of Dividend Taxation

There are three prevailing views of how dividend taxes levied on shareholders may affect corporate investment, financial policy and equity values.[21] These three views are commonly known as: 1) the "new" view; 2) the "traditional" view; and 3) the "tax irrelevance" view. Both the new and the traditional views of dividend taxation begin with the premise that dividends are taxed at a higher *effective* rate than are capital gains. It is important to emphasize the word "effective" here, because capital gains may not only face a lower statutory rate than dividends, but also are typically taxed upon realization, not on accrual. Thus, the *effective accrual equivalent* capital-gains rate, which takes account of the fact that the present value of capital-gains taxes can be lowered by postponing realization, can, in principle, be quite low; indeed many researchers presume that it is very close to zero.[22] The key distinction between the new and the traditional views, then, concerns the marginal source of equity funds used to finance incremental investment, in particular whether the marginal source of equity is retained earnings (as presumed under the new view), new share issues, or some combination of both (as presumed under the traditional view).

The tax irrelevance view, on the other hand, concerns the tax characteristics of the marginal investors. It rejects the presumption of the new and the traditional views that the effective tax rate on dividends need be higher than the effective tax rate on capital gains for the marginal investor.

---

[19]Remember that R(K) is declining in K, so that an increase in the user cost of capital due to the tax means that K must decline so that R(K) may increase until the marginal unit of capital generates a rate of return that just covers its (now higher) user cost.

[20]The imposition of dividend taxes may have another "indirect" effect as well. By taxing the return to capital (in this case in the form of dividends), taxes may lower domestic savings and affect the domestic interest rate. The discussion that follows is a partial equilibrium one, which treats the interest rate as fixed.

[21]See Poterba (1987), Poterba and Summers (1983 and 1985), and Zodrow (1991) for a discussion.

[22]McKenzie and Thompson (1995a) suggest the accrual equivalent rate in Canada is anywhere from zero to 10%.

The "New" View of Dividend Taxation

Since both the new and the traditional views of dividend taxation begin with the presumption that dividends are taxed at a higher effective rate than are capital gains, an important challenge for both views is to explain the so-called "dividend puzzle" – why do corporations choose to distribute earnings as dividends despite their tax disadvantage? Why don't firms distribute earnings in less tax-penalized ways, such as share repurchases where the proceeds are taxed at the preferential capital-gains rate? The explanation that is offered by proponents of the new view is that many firms pay dividends simply because they have no choice – after financing all of their investment opportunities, and exhausting all other outlets for their funds, they have excess cash flows that can only be distributed in the form of dividends. Thus, under the new view, dividends are essentially a residual – funds that are left over after the company has satisfied all of its other obligations. This means that retained earnings are the marginal source of finance for these firms and, lacking tax preferred channels for distributing income to shareholders, the equity in these firms is "trapped" – the only way to channel income to shareholders is by dividends. Thus, the new view of dividend taxation is often referred to as the "trapped equity" view.

To see why the marginal source of funds is important, consider the following extension of the neo-classical investment model presented above. For simplicity, we now assume that there is no debt finance and that the economic rate of depreciation (δ) is zero. We also assume that the relative price of a unit of capital, q, is one. Imagine a firm that relies on new share issues as the marginal source of funds. Specifically, suppose that a firm issues \$1 in new shares, uses the funds to invest in new capital and then pays the resulting return to the shareholders in the form of dividends that are taxed at the personal rate θ; in Canada, θ would be given by equation (1) above. Taking account of the present value of the tax depreciation deductions, the firm effectively has \$1/(1-uZ) to invest in capital, which generates a return of (1-u)[1/(1-uZ)]R(K), after the payment of corporate taxes at the rate u. This return is distributed as dividends, and taxed at the rate θ, yielding an after-tax return of (1-θ)(1-u)[1/(1-uZ)]R(K). The shareholders are better off if this rate of return exceeds their required after-tax rate of return on equity (ρ). Since R(K) is decreasing in the amount of capital employed, K, the firm will continue to issue new shares to finance additions to its capital stock up to the point where (1-θ)(1-u)[1/(1-uZ)]R(K)=ρ, or

$$R(K) = \frac{\rho}{1-\theta} \frac{(1-uZ)}{(1-u)} \tag{4}$$

Comparing this to equation (3), and recalling that we have set δ=0, q=1, and presumed all equity financing for simplicity, we see that when the marginal source of funds is new share issues, the taxation of dividends raises the opportunity cost of finance to the firm (r_f), and increases the tax-adjusted user cost of capital, thereby lowering investment. Thus, we see that when new share issues are the marginal source of equity finance, dividend taxes levied on individuals discourage corporate investment.

But, as indicated above, the new view presumes that for many firms, retained earnings are the marginal source of equity finance. To see the implications of this, suppose that instead of distributing the returns from a $1 new share issue as taxable dividends, the firm retains the funds within the corporation, and reinvests them in new capital. The shareholders would thereby avoid paying taxes on the dividends at rate θ. Ignoring for the moment the present value of the CCA deductions, this leaves the corporation with $1/(1-\theta)$ to invest. However, retaining earnings of this amount generates a capital gain, which is taxed at the effective rate c. Thus, the firm is effectively left with $(1-c)/(1-\theta)$ to invest, or $(1-c)/((1-\theta)(1-uZ))$ after accounting for the present value of the CCA deductions. Investing this amount in capital, generates a return of $[(1-c)/((1-\theta)(1-uZ))](1-u)R(K)$ after the payment of corporate taxes, or $(1-\theta)[(1-c)/((1-\theta)(1-uZ))](1-u)$ after these returns are paid out as dividends and taxed at the rate θ. Note that the terms $(1-\theta)$ cancel out, leaving a return of $[(1-c)(1-u)/(1-uZ)]R(K)$ on an incremental investment. As before, with R(K) declining in K, the firm will continue to finance capital additions with retained earnings until this rate of return is equal to the required after-tax rate of return on equity, ρ, or $[(1-c)(1-u)/(1-uZ)]R(K)=\rho$, which can be rewritten as:

$$R(K) = \frac{\rho}{1-c} \frac{(1-uZ)}{(1-u)} \qquad (5)$$

This is the new view result that investment financed with retained earnings at the margin is unaffected by the taxation of dividends (note, however, that investment is discouraged by the taxation of capital gains). Because it is presumed under the new view that the effective tax rate on capital gains is less than the effective tax rate on dividends ($c<\theta$), the opportunity cost of finance is lower under retained-earnings finance, and corporations will choose this form of equity finance when possible.

If we now reintroduce the possibility of debt finance and allow for $\delta>0$, under the new view the user cost of capital is as stated in equation (3), with the opportunity cost of finance given by,

$$r_f = bi(1-u) \; + \; (1-b)\frac{\rho}{1-c} \qquad (6)$$

Again, the important implication here is that a (permanent) change in the effective tax rate on dividends will have no impact on investment, so long as retained earnings remain the marginal source of equity finance.[23]

Although changes in the taxation of dividends are not expected to affect investment under the new view, they may still have distributional implications through their impact on equity prices. Because under the new view it is presumed that capital gains are taxed at a preferential rate relative to dividends (i.e. $\theta>c$), changes in the tax rate on dividends will affect equity prices. To

---

[23]As pointed out by Poterba and Summers (1985), changes in dividend taxes that are expected to be temporary can, however, affect investment.

see this, consider that in equilibrium the after-tax rate of return on an investment – obtained through dividends and capital gains – must equal the rate of return required by shareholders:

$$\rho = \lambda(1-\theta) + g(1-c) \tag{7}$$

where λ is the dividend yield on the security and g is the expected rate of capital gain. The effective dividend and capital-gains tax rates are those of the *marginal* investor. Rearranging this allows us to write the required expected rate of capital gain as follows:

$$g \equiv \frac{P^e - P}{P} = \frac{\rho}{1-c} - \lambda\left[\frac{1-\theta}{1-c}\right] \tag{8}$$

where P is the current price of the stock and P^e is the expected price next period. Totally differentiating equation (8) with respect to θ gives an expression for the proportional change in the current price of the stock due to the change in the tax rate on dividends:

$$\frac{dP}{P} = -\left[\frac{P}{P^e}\right]\frac{\lambda}{1-c}d\theta \tag{9}$$

An increase in the effective tax rate on dividends for marginal investors in the security ($d\theta > 0$) will thus lead to a decrease in the price. Moreover, the magnitude of the price decrease is positively related to the dividend yield (λ) – the higher the dividend yield the greater the drop in price. Thus, although the new view suggests that investment will be unaffected by the taxation of dividends, it still predicts an impact on stock prices. This suggests that changes in the taxation of dividends can result in windfall gains or losses for current equity holders.

Finally, since under the new view dividends are essentially determined residually, dividend taxes should have no impact on firm financial policy. In particular, dividend-payout rates should be independent of the level of dividend taxation.

The "Traditional" View of Dividend Taxation

The new view of dividend taxation discussed above explains the "dividend puzzle" – the fact that firms pay dividends despite the tax penalty – by arguing that firms have excess cash flows and that equity is therefore "trapped" within the corporation and can only be distributed as dividends. Thus, under the new view, dividends are simply a way of distributing income, and are not seen to be intrinsically valuable in their own right. The "traditional" view of dividend taxation also accepts the presumption that dividends are tax penalized, but resolves the dividend puzzle in a different way – by claiming that, for some reason, shareholders value dividends independently of their role as a distribution mechanism. Thus, firms trade off the intrinsic benefits of paying dividends against the tax costs.

Proponents of the traditional view vary in the assumptions they make about the source of the intrinsic value of dividends. As pointed out by Poterba (1987), explanations typically focus on three things. First, dividends may play a signalling role in the presence of asymmetric information

regarding the firm's prospects. By paying tax penalized dividends, the firm's managers may signal to shareholders their confidence in the company's prospects.[24] Second, dividends may help alleviate agency problems arising from the inability of shareholders to costlessly monitor managers. By paying out dividends, the "free cash flow" within the company is reduced, which reduces the scope for managerial discretion, and therefore, it is argued, for the consumption of perquisites.[25] Third, the distribution of dividends may aid shareholders in consumption planning.[26]

The traditional view argues that firms pay out dividends despite the availability of tax-preferred ways of distributing income in order to obtain some of these benefits, whatever the source. At the margin, the benefits of paying out dividends should exactly equal the tax cost of issuing dividends instead of repurchasing shares.

Once the trade-off involved under the traditional view is understood, the implications for the opportunity cost of finance facing the firm are straightforward. Following Poterba (1987), to represent the intrinsic value of dividends, write the required return on equity (ρ) as a function of the dividend-payout ratio (α) – with $\rho'(\alpha)<0$ representing the fact that as dividend payouts increase the required rate of return on equity falls, which captures the idea that dividends have intrinsic value to shareholders. The firm then chooses to minimize the opportunity cost of equity finance, which generates the following pre-tax return required to provide shareholders with an after-tax rate of return of ρ:

$$\frac{\rho\left(\alpha^{*}\right)}{(1-\theta\alpha^{*}-c(1-\alpha^{*}))} \tag{10}$$

where $\alpha^{*}=\alpha(\theta,c)$ is the firm's optimal choice of the dividend-payout ratio expressed as a function of the tax rate on dividends and the tax rate on capital gains. Under the traditional view, the firm trades off the tax cost of dividends against the intrinsic benefits by choosing the dividend-payout ratio (α) until it is indifferent at the margin between new-share issues and retained earnings as a source of finance. This suggests that, unlike the new view, dividend-payout ratios will depend upon the tax rates on both dividends and capital gains. In particular, an increase in the tax rate on dividends should lead to a reduction in the dividend-payout rate, as the tax cost of achieving the intrinsic benefits of dividend payments rises.

From (10) it is apparent that under the traditional view, the opportunity cost of equity finance to the firm reflects a weighted average of the effective tax rates on dividends and capital gains ($\theta\alpha^{*}+c(1-\alpha^{*})$). Thus, (ignoring debt) marginal investments are financed by a combination of

---

[24]For an early example of the signalling model see Miller and Rock (1985).
[25]Easterbrook (1984) provides a summary of some agency models.
[26]See Shefrin and Statman (1984) and Shleifer and Vishny (1986).

retained earnings and new-share issues. Allowing for the possibility of debt finance, under the traditional view the tax-adjusted user cost of capital is as stated in equation (3), with the opportunity cost of finance given by:

$$r_f = bi(1-u) + (1-b)\frac{\rho(\alpha^*)}{1-\theta\alpha^* - c(1-\alpha)} \tag{11}$$

Referring to equation (11), consider the implications of an increase in θ n the opportunity cost of finance. Unlike the new view, the traditional view predicts that an increase in the tax rate on dividends will depress investment by increasing the opportunity cost of finance, and therefore increasing the tax adjusted user cost of capital.

Finally, because the traditional view presumes that dividends are taxed at a higher effective rate than are capital gains, like the new view it predicts that equity prices will reflect the tax penalty imposed on dividend-paying stocks. As such, the analysis in the previous section on the implications of dividend taxes for stock prices applies for the traditional view as well. In particular, changes in the effective tax rate on dividends will generate windfall gains or losses for shareholders.

The Tax Irrelevance View of Dividend Taxation

Both the new view and the old view accept the idea that dividends are taxed at a higher rate than capital gains for marginal investors, and are therefore penalized in the stock market. They differ, however, in their explanation of the dividend puzzle. The difference hinges on whether or not dividends have an intrinsic benefit against which the tax cost may be traded off. The tax irrelevance view offers yet another explanation. Proponents of this view reject the notion that dividends are in fact taxed at a higher rate than dividends for marginal investors, and therefore that they are tax-penalized in the equity market. Indeed, a common version of the tax irrelevance view suggests that both capital gains and dividends are effectively taxed at a zero rate for marginal investors, and therefore that dividend taxes are completely irrelevant, with respect to both investment and the determination of equity prices.

To see the reasoning behind this view, note first that tax rates can vary substantially across individual investors. This gives rise to the possibility of *tax clienteles*, where investors with certain tax characteristics are more likely to hold certain types of assets than investors with other tax characteristics – i.e. individuals or institutions facing low tax rates on dividends will specialize in stocks with high-dividend yields, and individuals facing high-dividend tax rates will specialize in low-yield (growth) stocks. Indeed, under perfect certainty, investors "should" completely specialize in assets according to their tax rates (see Miller (1977). When uncertainty is introduced, investors may no longer completely specialize. Instead, they may hold assets that are not tax favoured (from their perspective) but that provide some diversification benefits. In this environment, if tax rates, risk preferences and transaction costs differ among investors, a group of investors may emerge as the "marginal investor clientele," who are just indifferent between holding the firm's equity vs. some other financial asset that is taxed differently. It is the dividend

tax rate faced by the marginal investor clientele that enters the user cost of capital expression and determines the price of equity in the stock market.

Particularly important in this regard is the fact that there are a number of tax clienteles that do not pay taxes on dividends or capital gains at all; for investors in these clienteles, $c=\theta=0$. Examples of such investors include pension funds, universities, charities and individuals investing in stocks through their RRSPs.[27] Moreover, for institutional investors such as brokerage firms, both capital gains and dividends are taxed at the full corporate rate. If any of these groups form the marginal clientele, or play an important role in determining the value of the firm, changes in things like the dividend tax credit will not have an appreciable impact on either the price of equity or on the user cost of capital, because the effective tax rate on dividends for the marginal clientele is zero – dividend taxes are irrelevant.

Particularly important for a small open economy like Canada is the fact that foreign non-resident investors are taxed differently than resident shareholders – in particular, they are not eligible for the dividend tax credit (and therefore their dividend income is not integrated with the corporate tax). Boadway and Bruce (1992) show that when this is the case in a small open economy setting with perfectly mobile capital, efforts to eliminate the double taxation of domestic shareholders via a dividend tax credit may have no impact on investment, regardless of how it is financed. This is because non-resident shareholders may be the marginal investors.

The analysis of Boadway and Bruce has special significance for Canada, as it suggests that the elimination of the dividend tax credit for domestic firms may have no impact on investment at all. While the model used to derive this result is a very simple one, it does emphasize the important role played by marginal investors. Devereux and Freeman (1995) examine other assumptions regarding the characteristics of marginal investors in a small open economy, and show that the Boadway and Bruce results are a special case of a more general model. In particular, in a "not so small" open economy, dividend taxes on domestic investors can affect investment.

Whether foreign investors or tax-sheltered institutions form the marginal clientele, if the effective tax rate on dividends for this clientele does not differ from the effective tax rate on capital gains, the opportunity cost of finance that enters the user cost of capital expression is simply,

$$r_f = bi(1-u) + (1-b)\rho \tag{12}$$

and it is clear that dividend taxes have no impact on the user cost of capital and therefore no impact on investment.

Finally, from equation (8) above, it is obvious that if $c=\theta$ the price of equity is not determined by the tax rate on dividends, and changes in this rate will have no impact on stock prices under the

---

[27]See Miller and Scholes (1978) with respect to the United States, and Amoako-Adu, Rashid, and Stebbins (1992) with respect to Canada.

tax irrelevance view. Moreover, dividend-payout ratios will be chosen independently of the tax rate on dividends.

3.   Assessing the Three Views: The Evidence

As discussed in the previous section, the three views predict very different responses to dividend taxation. These are summarized in Table 1: both the new and the traditional views predict that dividend taxes depress equity values, while the tax irrelevance view suggests that they do not; moreover, the traditional view suggests that dividend taxes discourage investment, while the new and the tax irrelevance views suggest that there will be no impact on investment. Finally, the traditional view predicts that firms will lower dividend payouts in response to increases in the dividend tax rate, while the new and tax irrelevance views predict no impact at all.

Each of the three views can be criticized along different dimensions. Indeed, an examination of the evidence suggests that all three views seem to offer an incomplete description of the economic effects of dividend taxation. The challenge at this point seems to be to determine which view is the least flawed.

3.1 Indirect Evidence

There is some "indirect" evidence that calls into question the applicability of all three views. For example, perhaps the greatest weakness of the new view is its *assumption* that firms do not have access to tax-preferred methods for distributing dividends, such as share repurchases. This assumption is no doubt motivated by the fact that under United States tax law, the Internal Revenue Service (IRS) can reclassify share repurchases as dividends, and tax them accordingly. Even more stringent share repurchase provisions exist in the United Kingdom. This suggests that the assumption that share repurchases are not possible may be quite reasonable in jurisdictions such as the United States and the United Kingdom, but is less reasonable for other jurisdictions, such as Canada, where such restrictions do not exist, at least to the same extent. Yet there are reasons to question the applicability of the assumption even in jurisdictions that ostensibly rule out share repurchases. Even if companies are prohibited from repurchasing their own shares (or, rather, such repurchases as treated as equivalent to divided distributions for tax purposes), they can distribute value to their shareholders by using cash to engage in corporate buy-outs or simply purchasing shares in other corporations, which have tax implications similar to share repurchases. Moreover, despite the scope for an IRS reclassification, United States firms have repurchased their own shares in large quantities in any event – Poterba (1987) reports than in 1985, firms in the COMPUSTAT database paid $85.8 billion in dividends, but spent $43.0 billion on share repurchases and $74.5 billion on cash acquisitions of other firms. Similarly, Bagwell and Shoven (1989) show that share repurchases have become increasingly important in the United States. For example, in 1977 dividends accounted for about 80 percent of total cash distributions in the United States, but by 1986 accounted for only 40 percent. This suggests that firms have been able to find ways around share repurchase restrictions in the United States, which has prompted

some to argue that the new view does not constitute a very useful theory because it effectively assumes these alternatives away.[28]

Another problem with the new view is that by treating dividends as a residual over and above the firm's investment needs, it presumes that firms can generate sufficient funds internally to finance their investments. This is clearly not the case for many firms. Young and start-up firms may not be in a position to generate enough retained earnings to finance their investments. For these firms, new share issues are the only source of marginal equity finance and, as explained above, when this is the case dividend taxes will dampen investment. On the other hand, the assumption that retained earnings are the marginal source of finance may be more defensible for more established firms. Thus, even absent an intrinsic value for dividends, perhaps a more appropriate way to view the new view is that it applies to only some firms some of the time.

Finally, the residual nature of dividends under the new view suggests that dividend payments should be more volatile than investment expenditures. Poterba (1987) cites evidence that exactly the opposite has tended to be true in the United States.

The traditional view is not without its critics. Perhaps its major weakness is that it assumes that dividends have some intrinsic value for shareholders, but provides only weak motivation for this assumption. As discussed above, signalling and agency arguments are often invoked to justify this assumption. While attractive on the surface, upon further consideration these arguments lose some of their lustre. Some have argued, for example, that paying dividends is a very expensive way of signalling or limiting managerial discretion, and that cheaper ways of solving these problems exist.[29]

Another problem with the traditional view is its prediction that marginal investments are financed by a combination of retained earnings and new share issues. Yet new share issues account for a relatively small proportion of total corporate equity funds raised. This may suggest that the traditional view does not provide an accurate description of the impact of dividend taxes on investment. As pointed out by Zodrow (1991), however, just because new share issues do not constitute a large share of aggregate equity finance does not mean that it is not an important source of marginal funds. Moreover, new share issues can be interpreted more broadly to include *reductions* in share repurchases, *reductions* in buy-outs, and *reductions* in the purchase of the equity of other firms.

A key difference between the tax irrelevance view of dividend taxation and the other two views, is that the former suggests that the effective tax rate on dividends is equal to the effective tax rate on capital gains for marginal investors, both of which may in turn be very close to zero. In the following section, some empirical studies that address this issue are discussed.

---

[28]See also Shoven (1990).
[29]See Black (1976), Edwards (1984), or Fazzari, Hubbard and Peterson (1987).

3.2 Dividend Taxation and Stock Prices

To assess the applicability of the tax irrelevance view, we must determine the tax characteristics of the marginal investor. Of course this cannot be done directly. The most common approach is to infer the effective tax rate on marginal investors by examining the impact of dividend taxes on security prices. Recall that under the tax irrelevance view, dividend taxes should have no impact on stock prices.

The literature has followed three basic approaches. The first is to examine the relationship between (risk adjusted) before-tax rates of return and dividend yields. If the effective tax rate on dividends exceeds the effective tax rate on capital gains for the marginal investor, then, all else equal, the before-tax rate of return should be positively correlated with the dividend yield – before-tax rates of return must be higher to compensate for the higher tax rate on dividends relative to capital gains.

The empirical evidence based on this approach has been mixed. For example, using United States data, Black and Scholes (1974), Gordon and Bradford (1980), Miller and Scholes (1982), and Chen, Grundy and Stambaugh (1990) find support for the notion that the dividend/capital-gains tax differential does *not* affect before-tax returns, while Litzenberger and Ramaswamy (1979, 1980, 1982) find evidence to the contrary. Morgan (1980), in a study of Canadian stock prices, finds that the introduction of capital-gains taxation in 1971 altered prices in a way that suggests that tax differentials are important.

The second approach is to examine the ex-dividend behaviour of stock prices. Without personal taxes on equity, arbitrage arguments imply that the value of a stock should fall by the full amount of the dividend on the ex-dividend day. If the effective tax rate on dividends exceeds that on capital gains, similar arguments suggest that the reduction in the price should be less than the amount of the dividend.[30] Elton and Gruber (1970) find evidence that the dividend/capital-gains tax differential was important for the marginal investor in the United States – stock prices did indeed fall by less than the amount of the dividend. This implies that the dividend/capital-gains tax differential was positive for the marginal investor. More recently, however, Hearth and Rimbey (1993) find no evidence that ex-dividend day behaviour in the United States is related to differences in the tax treatment of dividends and capital gains. Poterba and Summers (1985) analyse the impact of British tax reforms, and find that changes in dividend taxation had a significant impact on ex-dividend price movements while changes in capital-gains taxes did not, suggesting that while the effective capital-gains tax rate is close to zero, the effective tax rate on dividends is not.

Two Canadian studies that employ the ex-dividend day approach obtain contradictory results. Lakonishok and Vermaelen (1983) investigate whether the introduction of capital-gains taxes in 1971 resulted in a change in the ex-dividend behaviour of stock prices and volumes. They find no evidence of such a change. Booth and Johnston (1984), on the other hand, find that ex-dividend behaviour is indeed sensitive to the tax differential. In particular, their analysis suggests that the

---

[30]See Scholes and Wolfson (1992), pages 359-68 for a discussion of this approach and its shortcomings.

"response of the ex-dividend day price ratio to tax changes is consistent with a marginal investor who is an individual with a very low effective tax rate on capital gains."[31]

A possible criticism of the ex-dividend day studies that claim to find the presence of a tax differential is that they imply the existence of arbitrage opportunities for "short-term traders," such as institutional investors, who are taxed at the same rate on dividends and capital gains. These traders may enter the market around ex-dividend days in response to these arbitrage opportunities, effectively becoming the marginal, or price-setting, investors around those days by virtue of their lower transaction costs. In the presence of these traders, it may be difficult to infer the effective tax rate on dividends by observing price drops, which could just represent transaction costs.[32] Moreover, if such traders are the price setters around ex-dividend days, the absence of a tax effect may not mean that dividend taxes are irrelevant to dividend policy and investment decisions, as a different group of investors, with different tax characteristics, may form the company's usual marginal investor clientele.

The third approach to examining the relationship between taxes and equity values is to employ event study analysis. Changes in the tax law provide natural experiments for investigating the impact of taxes on stock market prices. If taxes are relevant to the marginal investor, changes in the differential tax treatment of dividends and capital gains should be reflected in security prices as soon as the tax changes are announced (or anticipated). Poterba and Summers (1985) use this approach to analyse various tax changes in the United Kingdom. They find that the impact of announcements of dividend tax reductions on stock prices is positively (although not statistically significantly) related to dividend yields, as suggested by the tax relevance hypothesis.

In McKenzie and Thompson (1995b) we analyse the impact of the Canadian dividend tax increase in 1986. The budget increased the effective personal tax rate on dividends for a high-bracket investor (θ from equation (1)) from approximately 25.5 percent to 34.67 percent.[33] Using a data set consisting of high-yield preferred and lower-yield common shares issued by the same companies, in order to control for company specific effects, we find strong evidence that the increased tax rate on dividends depressed prices for the higher-yield preferred shares significantly more than their lower-yield common share counterparts. In particular, our estimates suggest that the stock price changes that followed this 9 percentage point increase in the effective tax rate on dividends lowered the after-tax value of dividends by about 13 percent, which is consistent with a marginal clientele consisting of high-bracket domestic investors.

Two other Canadian studies are also worth noting. Amoako-Adu (1983) investigates changes in the differential taxation of dividends and capital gains accompanying tax changes in 1971 and 1977, and finds significant pricing effects correlated with dividend yields. Amoako-Adu, Rashid and Stebbins (1992) undertake a similar analysis of changes to the taxation of capital gains in 1985 and 1987 and find similar effects.

---

[31]Booth and Johnston (1984), page 475.
[32]Many studies, such as Booth and Johnston (1984), try to account for this by using estimates of "reasonable" transaction costs.
[33]This ignores surtaxes and assumes a 50% provincial tax rate.

Although the evidence is somewhat mixed, in our judgment the advantage goes to the studies that suggest that dividend taxes do affect equity prices. This seems to be particularly true for the studies based upon Canadian data, since of the six studies reviewed here, only Lakonishok and Vermaelan (1983) fail to reject the tax irrelevance view. Although some might consider the jury still out on this issue, our position is that there is relatively strong evidence in favour of the existence of a tax differential between dividends and capital gains, which suggests that the tax irrelevance view is not an adequate description of the impact of dividend taxation.

While an examination of dividend taxes and equity values allows us to (tentatively) rule out the tax irrelevance view, it does not allow us to distinguish between the new and the traditional views of dividend taxation, as both predict that equity prices will be affected by dividend taxes. Two approaches have been taken to determine which of these views is supported evidence. The first is to look at the impact of taxes on dividend-payout rates, and the second examines the impact of dividend taxation on investment directly.

3.4 Dividend Taxes, Dividend Payouts and Investment

We are aware of only one study that looks specifically at the impact of dividends on investment. Poterba and Summers (1985) examine the effects of dividend tax changes in the United Kingdom on the level of investment, over the period 1950-81. Their results indicate that investment equations based on the traditional view perform better than those based on the new view. They conclude that "most" investment decisions in the United Kingdom are "better" explained by the traditional view. Sinn (1985, 1991) has questioned some of Poterba and Summers' findings. His main point seems to be that their results may apply to only a subset of "new" firms in their sample, and may not apply more broadly to "mature" firms.

A few other studies have looked at the impact of taxes on dividend policy, as measured by the dividend-payout ratio. The new view predicts that dividend payouts will be unaffected by changes in the taxation of dividends, while the traditional view predicts that increases (decreases) in dividend taxes will decrease (increase) dividend-payout rates. In their study of dividend taxes in the United Kingdom, Poterba and Summers (1985) also examined the impacts of changes in the dividend tax rate on payout ratios. They found a very strong negative relationship, which is consistent with the traditional view, and contrary to the new view. Poterba (1987) extends the analysis to the United States and also finds support for the traditional view. Finally, Nadeau (1988), also using United States data, finds dividend payouts to be very sensitive to taxes.[34]

The basic approach followed by Poterba and Summers (1985) and Poterba (1987) was to regress the percentage change in dividends on the percentage change in a "tax preference parameter," which they define as $\Theta=(1-\theta)/(1-c)$.[35] In his United States study, Poterba (1987) found that the long run effect of a 1-percent increase in Θ, associated with a reduction in the tax rate on dividends relative to capital gains, was a 2 to 3 percent increase in the dividend-payout rate.

---

[34]Nadeau's model is not designed to test the validity of the two views, as he essentially imposes the traditional view on his model. Nonetheless, his results are suggestive.

[35]This is actually somewhat different than their tax preference parameter, but the basic idea is the same.

Nadeau (1988), following a different approach, found a much higher impact – about 10 times greater than Poterba.

4. Some Conclusions and Illustrative Calculations

Based upon a perusal of the literature on dividend taxation and its effects on investment, firm financial policy and equity values, we find ourselves in general agreement with Gerardi, Graetz and Rosen (1990, page 312), who conclude that "the current state of empirical knowledge gives the edge to the traditional . . . view of dividend taxation." We would stress, however, that this conclusion is very much a tentative one, and that additional research is required to increase our comfort level.

If one accepts the traditional view of dividend taxation, what does it imply from a policy perspective for Canada? First and foremost, of course, it suggests that changes to the integration system that alter the effective tax rate on dividends will have repercussions for firm financial policy, investment and stock prices. For example, if Canada were to increase the effective tax rate on dividends, accepting the predictions of the traditional view, we would anticipate that equity prices and dividend payouts would fall, the user cost of capital would increase, and therefore investment would decline.

An important question concerns the magnitude of these changes. As indicated above, without more extensive empirical work it is very difficult to arrive at strong conclusions in this regard. However, we can make some educated guesses as to the potential effects by undertaking some simple calculations. It must be stressed that these calculations are illustrative only, as there is still a great deal of uncertainty regarding the impact of dividend taxes.

Nonetheless, consider a hypothetical policy change that eliminated integration altogether, moving Canada to a classical system similar to that used in the United States. If we assume, as is suggested by the empirical results of McKenzie and Thompson (1995b), that the marginal investor in Canadian equity is a high-bracket domestic investor, then, assuming an Alberta resident investor for illustrative purposes, eliminating integration would increase the effective *personal* tax rate on dividends by about 15 percentage points, from 31.4 percent to 46.07 percent. This suggests about a 21 percent decline in the after tax value of dividends. The impact on the *total* effective tax rate would depend upon the tax rate faced by the corporation issuing the dividends; Table 2 provides the relevant calculations for fully taxpaying CCPCs and non-CCPCs.

Consider first the implications of a tax change of this magnitude for firm dividend policy. Recall that we motivated the traditional view by conjecturing that dividends played a signalling role, or served to reduce agency problems within the firm. This suggests that the required (after-tax) return to equity is a declining function of the dividend-payout ratio – i.e. $\rho(\alpha)$, with $\rho'(\alpha)<0$ – and that a decline in that ratio due to a rise in the tax rate on dividends would therefore increase the opportunity cost of equity. As suggested above, there is some question regarding the sensitivity of payout rates to changes in dividend taxes. Poterba's (1987) study found that for the United States, a 1-percent decline in the tax preference parameter $\Theta=(1-\theta)/(1-c)$ led to about a 2 percent decline in dividend-payout rates. Using the above calculations for θ both before and

after the hypothetical tax change, and presuming an effective tax rate on capital gains of c=.10, as suggested by McKenzie and Thompson (1995a), the tax preference parameter is about .76 under the current system, and would drop by 21 percent to about .60 if integration was eliminated. If we assume that Poterba's estimates are applicable to Canada, and that his point estimate also applies to large discrete changes such as that considered here – both somewhat heroic assumptions – then we would conjecture about a 42 percent decline in dividend-payouts due to this policy change.

We now consider the implications of this hypothetical tax change on the user cost of capital. A key component of the user cost of capital is the opportunity cost of finance, r_f, the characterization of which depends upon which view of dividend taxation one adopts; only under the traditional view is r_f affected by changes in the dividend tax rate. The approach we take is to determine r_f both before and after the hypothetical dividend tax increase using equation (11), and then determine the impact on the cost of capital using a formula similar to equation (3).[36] While this seems simple enough, there are some difficulties. When determining the impact of a discrete tax change of the magnitude considered here, it is important to take account of the resulting change to the dividend-payout ratio.[37] In terms of equation (11), while θ increases, suggesting an increase in r_f, the dividend-payout ratio α falls, dampening this increase somewhat. The fall in α then causes $\rho(\alpha)$ to rise, which exacerbates the impact of the increase in θ. Unfortunately, it is impossible to determine the net magnitude of the change without a much more complete model of financial markets, and in particular without knowledge of the functional form of $\rho(\alpha)$. The approach we take here is to ignore changes in both the dividend-payout ratio and the required after-tax return to equity due to the tax change, and determine r_f using existing data on ρ and α. Recalling that changes in these variables have opposing effects on the opportunity cost of finance, our hope is that we are not missing too much by holding them constant.

Our user costs of capital calculations are presented in Tables 3 and 4. We calculate the weighted average risk-free user cost of capital for seven selected sectors, aggregated across four asset classes – buildings, equipment, inventories, and land. In Table 3 user costs are presented for both the new and the traditional views of dividend taxation, under the current gross-up and credit system, whereby the effective personal tax rate on dividends is 31.4 percent. Under the traditional view, r_f reflects a weighted average of the effective tax rate on dividends and capital gains, as in equation (11), while under the new view, r_f reflects only the effective capital-gains tax rate, as in equation (6).

We see that for industries with low dividend-payout ratios the difference in the user cost of capital under the two views is not very great, with the user cost of capital under the traditional view only slightly higher. This, of course, is not surprising as the weighted average opportunity cost of capital is similar under the two views if the proportion of investment financed by retained earnings is high (and therefore the dividend-payout rate is low). However, for sectors with high

---

[36]We augment the user cost of capital expression by incorporating many features of the corporate tax system in Canada that were not considered in the "intuitive" derivation of equation (3).

[37]While the envelope theorem allows us to ignore these effects for small (marginal) changes in θ, for large (discrete) changes this is no longer the case.

dividend-payout rates, such as communications, utilities and services, the differences are more pronounced, with the user cost of capital under the traditional view substantially higher – as much as 1.5 percentage points for non-CCPC utilities, and 1.1 percentage points for CCPC utilities.

In Table 4 we present user cost calculations under the traditional view for a hypothetical tax system that eliminated integration all together, thereby increasing the effective personal tax rate on dividends from 31.4 percent to 46.01 percent; for convenience we also reproduce the figures for the current system. Of course, eliminating integration would have no impact on the user cost of capital under the new view. The increases in the user cost of capital are quite modest for the low-payout industries, but substantially higher for the high-payout industries. For example, for non-CCPC utilities, eliminating integration would increase the user cost of capital by as much as 1.75 percentage points, while for non-CCPC wholesale trade the user cost of capital increases by only .15 percentage points.

We have argued that if the traditional view of dividend taxation is correct, and we feel that there is some empirical support for this position, then the elimination of integration in the Canadian tax system would lower dividend payouts and increase the user cost of capital. If we accept the changes in the user cost of capital shown in Table 4 as being roughly indicative of what would happen if integration were eliminated, then an important question that we have not addressed is the magnitude of the resulting decline in investment. This too is a difficult issue. Like the other literature cited here, empirical studies of the relationship between the user cost of capital and investment have been somewhat inconclusive. Early studies tended to show that the relationship was very weak, if not non-existent.[38] More recent work has suggested that the user cost of capital is a very important determinant of investment. For example, work by Auerbach and Hassett (1991), Cummins and Hassett (1993), and Cummins, Hassett and Hubbard (1995) uncovers a very strong price effect. The latter work undertakes a multi-country study, including Canada, of the impact of tax reforms on investment using a unique firm level data set. They find that the investment response to the 1987 tax reform in Canada was very similar to the response to the 1986 tax reform in the United States, and in both cases consistent with the idea that tax-induced changes to the cost of capital significantly affect investment. Cummins and Hassett (1993) determine on the basis of United States data that a one percentage point increase in the user cost of capital could lower the investment *rate* (investment as a percentage of the capital stock) by as much one percentage point. If we assume that the reaction in Canada would be similar, then the increases in the user cost of capital due to the elimination of integration reported in Table 4 would translate into point-for-point decreases in the investment rates. For example, the investment rate for non-CCPC utilities may decline by as much as 1.75 percentage points in response to a 1.75 percentage point increase in the user cost of capital; similarly, the 1.5 percentage point increase in the user cost of capital for services would decrease the investment rate in that sector by 1.5 percentage point. Recall that these are investment *rates*, thus small changes can reflect fairly large movements in investment *levels*. Also, it is important to stress that given the lack of empirical studies, particularly in a Canadian context, these should be considered nothing more than educated guesses; actual investment responses may be substantially different. Further to this point, the above calculations have ignored potential supply side effects

---

[38]See Chirinko (1993) for a survey of the empirical investment literature.

on credit markets due to a reduction in domestic saving in response to the increase in the tax rate on dividends. To the extent that domestic interest rates also rise due to the resulting constriction in savings, investment may be dampened even more than suggested by the above analysis.

TABLE 1

Implications of an Increase in the
Dividend Tax Rate Under the Three Views

	Investment	Dividend Payout	Equity Prices
Traditional View	decrease	decrease	decrease
New View	no change	no change	decrease
Tax Irrel. View	no change	no change	no change

TABLE 2

Effective Tax Rates on Dividends,
Alberta Corporations and Investors

	Current System	No Integration
	(percent)	
Personal	31.4	46.07
Total		
Manuf. non-CCPC	56.52	65.82
Non-manuf. non-CCPC	62.01	70.13
CCPC	44.52	56.38

TABLE 3

User Cost of Capital, Traditional vs. New View, Current System

	Payout Ratios	Traditional Non-CCPCs	New Non-CCPCs	Traditional CCPCs	New CCPCs
		(percent)			
Forest Products	13.6	6.61	6.44	6.12	5.98
Manufacturing	15.1	6.54	6.36	5.83	5.67
Communications	58.6	8.41	7.50	7.35	6.65
Utilities	88.3	9.19	7.70	7.32	6.19
Wholesale Trade	13.2	8.03	7.85	6.58	6.44
Retail Trade	38.2	7.76	7.58	6.61	6.48
Services	80.9	9.05	7.75	7.21	6.16

TABLE 4

User cost of capital, Alberta Investors and Corporations Traditional View, Current System and Hypothetical Elimination of Integration

	Current Non-CCPCs	No Integration Non-CCPCs	Current CCPCs	No Integration CCPCs
		(percent)		
Forest Products	6.61	6.75	6.12	6.23
Manufacturing	6.54	6.69	5.83	5.96
Communications	8.41	9.33	7.35	8.04
Utilities	9.19	10.94	7.32	8.63
Wholesale Trade	8.03	8.18	6.58	6.71
Retail Trade	7.76	7.91	6.61	6.73
Services	9.05	10.52	7.21	8.32

References

Amoako-Adu, B. (1983), "The Canadian tax reform and its effect on stock prices: A note," *Journal of Finance*, Vol. 38, 1669-76.

Amoako-Adu, B., M. Rashid, and M. Stebbins (1992), "Capital-gains tax and equity values: Empirical test of stock price reaction to the introduction and reduction of capital-gains tax exemption," *Journal of Banking and Finance,* Vol. 16, 275-87.

Auerbach, A. (1979), "Wealth maximization and the cost of capital," *Quarterly Journal of Economics,* Vol. 21, 107-27.

Auerbach, A. (1983), "Taxation, corporate financial policy and the cost of capital," *Journal of Economic Literature,* Vol. 21, 905-40.

Auerbach, A. (1991), "Retrospective capital-gains taxation," *American Economic Review,* Vol. 81(1), 167-78.

Auerbach, A. and K. Hassett (1991), "Recent United States investment behavior and the Tax Reform Act of 1986: A disaggregate view," *Carnegie-Rochester Conference Series on Public Policy,* Vol. 35, 185-215.

Bagwell, L. and J. Shoven (1989), "Cash distributions to shareholders," *Journal of Economic Perspectives 3,* 129-40.

Black, F. (1976), "The dividend puzzle," *Journal of Portfolio Management,* Winter, 5-8.

Black, F. and M. Scholes (1974), "The effects of dividend policy and dividend yield on common stock prices and returns," *Journal of Financial Economics,* Vol. 1, 1-22.

Boadway, R. (1987), "The theory and measurement of effective tax rates," in *The Impact of Taxation on Economic Activity,* J. Mintz and D. Purvis ed., (John Deutsch Institute for the Study of Economic Policy, Kingston, Ontario).

Boadway, R. and N. Bruce (1991), "Problems with integrating corporate and personal taxes in an open economy," *Journal of Public Economics,* Vol. 48, 39-66.

Booth, L. D. and D. J. Johnston (1984), "The ex-dividend day behaviour of Canadian stock prices: Tax changes and clientele effects," *Journal of Finance,* Vol. 39, 457-76.

Bradford, D. (1981), "The incidence and allocation effects of a tax on corporate distributions," *Journal of Public Economics,* Vol. 1, 1-22.

Brennan, M. (1970), "Taxes, market valuation, and corporate financial policy," *National Tax Journal,* December, 417-27.

Chen, N., B. Grundy and R. Stambaugh (1990), "Changing Risk, Changing Risk Premiums, and Dividend Yield Effects," *Journal of Business,* Vol. 63, S51-S70.

Chirinko, R. (1993) "Business fixed investment spending: A critical survey of modelling strategies, empirical results, and policy implications," *Journal of Economic Literature,* Vol. XXXI, No. 4, 1875-1911.

Cummins, J. and K. Hassett (1993), "The effects of taxation on investment: New evidence from firm level panel data," *National Tax Journal,* Vol. 45, 243-51.

Cummins, J., K. Hassett and G. Hubbard (1995), "Tax reforms and investment: A cross country comparison," NBER Working Paper #5232.

Devereux, M. (1996), "The integration of corporate and personal taxes in Europe: The role of minimum taxes on dividend payments," prepared for the Technical Committee on Business Taxation, Department of Finance, Canada, Working Paper 96-5.

Devereux, M. and H. Freeman (1995), "The impact of tax on foreign direct investment: Empirical evidence and the implications for tax integration schemes," *International Tax and Public Finance,* Vol. 2, 85-106.

Easterbrook , F. (1984), "Two agency-cost explanations of dividends," *American Economic Review,* Vol. 74, No. 4, pp. 650-59.

Edwards, J. (1984), "Does dividend policy matter?," *Fiscal Studies* 5, 1-17.

Elton, E. and M. Gruber (1970), "Marginal stockholders' tax rates and the clientele effect," *Review of Economics and Statistics,* Vol. 52, 68-74.

Fazzari, S., G. Hubbard and B. Peterson (1987), "Financing constraints and corporate investment," NBER Working Paper No. 2389.

Gerardi, G., M. Graetz, and H. Rosen (1990), "Corporate integration puzzles," *National Tax Journal* 43, 307-14.

Gordon, R. and D. Bradford (1980), "Taxation and the Stock Market Valuation of Capital Gains and Dividends: Theory and Empirical Results," *Journal of Public Economics,* Vol. 14, 109-36.

Hearth, D. and J. Rimbey (1993), "The dividend-clientele Controversy and the Tax Reform Act of 1986," *Quarterly Journal of Business and Economics,* Vol. 32, 68-77.

Lakonishok, J. and T. Vermaelen (1983), "Tax reform and ex-dividend day behaviour," *Journal of Finance,* Vol. 38, 1157-79.

Litzenberger, R. and K. Ramaswamy (1979), "The effects of personal taxes and dividends on capital asset prices: Theory and empirical evidence," *Journal of Financial Economics,* Vol. 7, pp. 163-95.

Litzenberger, R. and K. Ramaswamy (1980), "Dividends, short-selling restrictions, tax-induced investor clienteles and market equilibrium," *Journal of Finance,* Vol. 35, 469-82.

Litzenberger, R. and K. Ramaswamy (1982), "The effects of dividends on common stock prices: Tax effects or information effects?," *Journal of Finance,* Vol. 37, 429-43.

McKenzie, K. and A. Thompson (1995a), "The impact of the capital-gains exemption on capital markets," *Canadian Public Policy,* Winter Supplement, 100-15.

McKenzie, K. and A. Thompson (1995b), "Dividend taxation and equity value: The Canadian tax changes of 1986," *Canadian Journal of Economics,* Vol. 28, 463-72.

Miller, M. (1977), "Debt and taxes," *Journal of Finance*, Vol. 31, 261-75.

Miller, M. and M. Scholes (1978), "Dividends and taxes," *Journal of Financial Economics,* Vol. 6, 333-64.

Miller, M. and M. Scholes (1982), "Dividends and taxes: Some empirical evidence," *Journal of Political Economy,* Vol. 90, 1182-42.

Miller, M. and K. Rock (1985), "Dividend policy under asymmetric information," *Journal of Finance,* September, 1031-51.

Mintz, J. (1995), "The corporation tax: A survey," *Fiscal Studies,* Vol. 16(4), 23-68.

Morgan, I. G. (1980), "Dividends and Stock Price Behaviour in Canada," *Journal of Business Administration,* Vol. 12, 91-106.

Nadeau, S. (1988), "A model to measure the effects of taxes on real and financial decisions of the firm," *National Tax Journal* 41, 467-81.

Poterba, J. (1987), "Tax policy and corporate saving," *Brookings Papers on Economic Activity,* 2, 455-515.

Poterba, J. and L. Summers (1985), "The Economic Effects of Dividend Taxation," in *Recent Advances in Corporate Finance,* Edward Altman and Marti Subrahmanyam, ed., (Dow-Jones Irwin, Homewood, Ill).

Scholes, M. and M. Wolfson, "Taxes and Business Strategy: A Planning Approach," (New Jersey: Prentice-Hall Inc.).

Shefrin, J. and M. Statman (1984), "Explaining investor preferences for cash dividends," *Journal of Financial Economics,* 253-82.

Shleifer, A. and R. Vishny (1986), "Large shareholders and corporate control," *Journal of Political Economy,* Vol. 94, No. 3, 461-88.

Shoven, J. (1990), "Alternative tax policies to lower the cost of capital," in *Business Taxes, Capital Costs and Competitiveness* (Washington: American Council for Capital Formation Centre for Policy Research).

Sinn, H-W. (1985), "Capital Income Taxation and Resource Allocation," (Amsterdam: North Holland Publishing Company).

Sinn, H-W. (1991), "Taxation and the Cost of Capital: The 'Old' View, the 'New' View and Another View," in D. Bradford ed., Tax Policy and the Economy, Vol. 5, 25-54.

Zodrow, G. (1991), "On the 'traditional' and 'new' views of dividend taxation," *National Tax Journal,* Vol. 44, 497-509.

Technical Committee on Business Taxation

The Technical Committee was established by the Minister of Finance, at the time of the March 1996 federal budget, to consider ways of:

- improving the business tax system to promote job creation and economic growth,
- simplifying the taxation of businesses to facilitate compliance and administration, and
- enhancing fairness to ensure that all businesses share the cost of providing government services.

The Technical Committee will report before the end of 1997; consultations with the public will follow the release of the report.

The Technical Committee is composed of a panel with legal, accounting and economic expertise in the tax field. The members are:

Mr. Robert Brown
Price Waterhouse
Toronto, Ontario

Mr. James Cowan
Stewart McKelvey Stirling Scales
Halifax, Nova Scotia

Mr. Wilfrid Lefebvre
Ogilvy Renault
Montreal, Quebec

Professor Nancy Olewiler
Department of Economics
Simon Fraser University
Burnaby, British Columbia

Mr. Stephen Richardson
Tory, Tory, Deslauriers & Binnington
Toronto, Ontario

Professor Bev Dahlby
Department of Economics
University of Alberta
Edmonton, Alberta

Mr. Allan Lanthier
Ernst & Young
Montreal, Quebec

Professor Jack Mintz (Chair)
Faculty of Management,
University of Toronto (on leave)
Clifford Clark Visiting Economist
Department of Finance
Ottawa, Ontario

Mr. Norm Promislow
Buchwald Asper Gallagher Henteleff
Winnipeg, Manitoba

The Technical Committee has commissioned a number of studies from outside experts to provide analysis of many of the issues being considered as part of its mandate. These studies are being released as working papers to make the analysis available for information and comment. The papers have received only limited evaluation; views expressed are those of the authors and do not necessarily reflect the views of the Technical Committee.

A list of completed research studies follows. They may be requested from:

Distribution Centre
Department of Finance
300 Laurier Avenue West
Ottawa, Ontario K1A 0G5
Telephone: (613) 995-2855
Facsimile: (613) 996-0518

They are also available on the Internet at http://www.fin.gc.ca/

Technical Committee on Business Taxation
Completed Research Studies

☐ **WORKING PAPER 96-1**
Comparison and Assessment of the Tax Treatment of Foreign-Source
Income in Canada, Australia, France, Germany and the United States
Brian Arnold (Goodman Phillips & Vineberg)
Jinyan Li and *David Sandler* (University of Western Ontario)

☐ **WORKING PAPER 96-2**
Why Tax Corporations
Richard Bird (University of Toronto)

☐ **WORKING PAPER 96-3**
Tax Policy and Job Creation: Specific Employment Incentive Programs
Ben Cherniavsky (Technical Committee Research Analyst)

☐ **WORKING PAPER 96-4**
The Effects of Taxation on U.S. Multinationals
and Their Canadian Affiliates
Jason Cummins (New York University)

☐ **WORKING PAPER 96-5**
The Integration of Corporate and Personal Taxes in Europe:
The Role of Minimum Taxes on Dividend Payments
Michael Devereux (Keele University)

☐ **WORKING PAPER 96-6**
International Implications of U.S. Business Tax Reform
Andrew Lyon (University of Maryland)

☑ **WORKING PAPER 96-7**
The Economic Effects of Dividend Taxation
Ken McKenzie (University of Calgary)
Aileen Thompson (Carleton University)

☐ **WORKING PAPER 96-8**
Capital Tax Issues
Peter McQuillan and *Cal Cochrane* (KPMG Toronto)

☐ **WORKING PAPER 96-9**
Compliance Issues: Small Business and the Corporate Income Tax System
Robert Plamondon (Ottawa)

☐ **WORKING PAPER 96-10**
Study on Transfer Pricing
Robert Turner (Ernst & Young, Toronto)

☐ **WORKING PAPER 96-11**
The Interaction of Federal and Provincial Taxes on Businesses
Marianne Vigneault (Bishop's University)
Robin Boadway (Queen's University)

☐ **WORKING PAPER 96-12**
Taxation of Inbound Investment
Gordon Williamson (Arthur Andersen, Toronto)