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Capital Gains Taxation and Corporate Investment

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Abstract

This study examines the interaction of dividend taxes and capital gains taxes on the sale of stock. Using a model of the new view of dividend taxation modified to incorporate realization-based capital gains and losses on stock, it shows that there are two interactions that effect the timing of dividend payments. First, there is an incentive to distribute dividends prior to realizing gain on a stock sale. Second, the timing of dividends is affected by considerations parallel to the standard lock-in effects for sales. Finally the paper shows that if there are tax clienteles, the new view no longer holds. The conclusions have a number of policy implications and also may affect empirical strategies used to identify the new view.

Keywords: dividend taxation, capital gains, new view, lock-in

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This paper examines the interaction of dividend taxation, capital gains taxation, and corporate investment. To motivate the problem, consider the sale of the stock of a corporation. Suppose the stock is worth \$100, the seller has a basis of \$40, and the corporation has dividend paying capacity of \$60. It will eventually pay \$60 (or the future value of \$60) as a dividend. Compare what happens if the dividend is paid after the sale of the stock to what happens if the dividend is paid before the sale.

Suppose the dividend is paid after the sale. If the buyer pays \$100 for the stock, the seller will recognize \$60 of gain. Sometime after the sale, the corporation will pay a dividend with a present value of \$60. Because of the distribution, the value of the corporation will go down from \$100 to \$40. The buyer paid \$100 for the company which is now worth \$40, which means that the buyer will have a \$60 capital loss that he will get when he sells the company. The overall result is a capital gain of \$60, a dividend with a present value of \$60, and a capital loss of \$60, with the gain and loss separated by time. The capital loss may also be subject to loss restrictions.

Suppose instead that the corporation pays the dividend immediately before the sale. The seller will have a \$60 dividend and no further gain or loss when he sells the company for \$40. The buyer will own a corporation worth \$40 which he purchased for \$40 with no further gain or loss. The overall result is just the \$60 dividend without the imperfectly offsetting capital gains and losses.

Because paying the dividend before the sale eliminates the capital gain and loss, which do not perfectly offset, the after-tax value of the stock is higher if the dividend is paid prior to the sale, all else equal. That is, the interaction of the dividend and capital gains tax rules generates an incentive to accelerate dividends under these circumstances.

Note also that if the dividend is paid after a sale, the capital gain is taxed to one taxpayer and the dividend and loss to another. This raises the possibility of clientele effects. For example, if the buyer can exclude dividend income but claim the capital loss, there may be incentives to pay the dividend after the sale rather than before. The seller would have gain of \$60, the buyer would have no dividend income, and a loss of \$60, which means that there would be no net tax on the sale.

Alternative tax treatments of the buyer and seller may create yet different incentives.

The incentive to accelerate (or possibly defer due to clientele effects) dividends arises because of the interaction of dividends and capital gains. Dividends reduce capital gains. Under a realization-based system, the timing of both capital gains and dividends are a choice, which means that we have to consider both together to understand the incentives they create.

There are a large number of studies of the effects of dividend taxation, such as new view models based on King (1974), Auerbach (1979), and Bradford (1981), and traditional view models such as Poterba and Summers (1985). These models, however, either impose continuous mark-to-market taxation on stock or ignore the taxation of stock gains altogether. With continuous mark-to-market, there is no point in time after corporate gains are created and before shareholders are taxed on the increase in the value of their stock, and, therefore, the incentive to pay dividends early to eliminate the gain is eliminated. With no taxation of stock gains, the incentives are eliminated by assumption.

To study this problem, I add realization-based capital gains taxation to a pre-existing model of dividend taxation from Chetty and Saez (2010), and solve for the optimal timing of dividend payments and stock sales. The model embeds the new view in that in the absence of clienteles and with no issuances of new equity, the dividend tax rate does not affect the timing of dividends. It extends the new view, however, to show that the interaction of dividends and capital gains taxes do. I establish three propositions.

1. Assuming stock will be sold, and if there are no clientele effects, there is an incentive to pay dividends prior to the sale.

2. There is a lock-in effect for dividends that is parallel to the lock-in effect for sales generally. The differences in the two cases are that the basis recovery rules for dividends are less favorable than for sales (increasing the relative extent of lock-in) but corporate investments are subject to the corporate tax (decreasing the relative lock-in). The net effect depends on parameters.

3. Clientele effects with realization-based capital gains may give rise to incentives to accelerate or delay dividends, depending on the treatment of gains, losses and dividends of various shareholders. In particular, when there are tax clienteles, the new view no longer holds: the dividend tax rate may create incentives to accelerate or defer dividends.

After expanding on the motivations for this study in part 1, the first two propositions are developed in separate models in parts 2 and 3 respectively. Part 4 combines them into a single model where the owner of stock can receive a dividend, sell a portion of his stock, and retain a portion. This model shows the trade-off between dividends and sales as well as the optimal timing of dividends. The two effects – the incentive to pay a dividend before a sale and the incentive to defer dividends because of the lock-in effect – work in opposite directions. Reducing the capital gains rate reduces the lock-in effect, so it may increase dividends. At the same time, reducing the capital gains rate reduces the incentive to pay dividends prior to sales. Part 5 considers how these results may change when there are clientele effects.

Part 6 considers implications. A key implication is that attempts to test whether the new view holds based on dividend tax cuts may not be well identified if capital gains rates are changed at the same time. For example, the 2003 dividend tax cut was accompanied by a change in the capital gains tax rate as well as a complicated set of anti-arbitrage rules to minimize clientele effects. Because changes to the capital gains rates alter the incentives to pay dividends, identifying the effects of just the dividend tax cut alone may be more difficult than previously understood. Part 6 discusses this issue as well as the implications for corporate tax integration, dividend tax reforms, and the limits on the results.

1. Motivations

I have two motivations for this study. The first was briefly described in the introduction, which is that if dividends are paid after a sale, the net result is a capital gain, a dividend, and an offsetting capital loss, while if dividends are paid before a sale, the offsetting capital gains and losses can be eliminated. I illustrate this with a canonical legal case. The problem is quite general and is subject to a

large amount of transactional planning. And, not surprisingly, there is a substantial body of law aimed at reducing the planning.

The canonical case is known as *Waterman Steamship v. Commissioner*.¹ It is found in essentially every corporate tax textbook, and it is taught in standard introductory corporate tax classes in law schools. In *Waterman*, a company known as Waterman Steamship, owned a subsidiary, Pan-Atlantic Steamship (PAS). PAS had retained earnings which it could pay as a dividend although it did not have readily available cash to distribute. Waterman had a basis in the stock of the PAS well below its value and wanted to sell it, minimizing the tax cost while doing so. Using the numbers from the introduction, suppose that Waterman had a basis in PAS of \$40 when its value was \$100.

Waterman agreed to sell the stock of PAS to a company called MacLean Trucking. Rather than a straight cash purchase of stock, however, Waterman and Trucking arranged for PAS to distribute a note with a face value of \$60 as a dividend immediately before the sale. (Think of PAS as taking a piece of paper, drawing mermaids and dragons in the corners, writing “IOU \$60” in the middle, signing it and distributing it to Waterman.) Under the tax rules applicable at the time, the dividend was tax-free to Waterman. The dividend reduced the value of PAS to \$40. Half an hour later, Waterman then sold the company to Trucking for \$40. Waterman had no further gain or loss because its basis was also \$40. After waiting another half hour, Trucking lent \$60 to PAS which it used to pay off its obligation to Waterman.

The Internal Revenue Service argued that the initial distribution of the note was a sham because Trucking ultimately provided all of the consideration. Therefore, the Service argued, Waterman had sold PAS to Trucking for \$100, which is equal to the \$40 cash received from Trucking as sales proceeds and the \$60 cash received from Trucking indirectly via the note. If Waterman had sold PAS for \$100, it would have had gain of \$60 on the sale rather than a tax-free dividend of \$60. The court held for the government, treating the transaction as a sale of PAS for \$100.

¹ 430 F.2d 1185 (5th Cir. 1970).

Note, however, that PAS is only worth \$40 after all is said and done because it has \$100 of assets and owes Trucking \$60. It started with a value of \$100. It must have distributed \$60 to someone. The court held that it did not distribute anything to Waterman because Waterman received the \$100 consideration from Trucking. PAS therefore must have distributed \$60 to the only other shareholder, Trucking, which makes sense because Trucking holds a \$60 PAS note. (Recall that the form of the transaction was a loan by Trucking of \$60 to PAS which means Trucking got back a note.)

Therefore, under the government's and the court's version of events, Trucking paid \$100 for PAS and gets a \$100 basis in the PAS stock. It immediately received a dividend of \$60, reducing the value of PAS \$40. Because Trucking has a basis of \$100 in stock worth \$40, it will eventually have a capital loss of \$60 but only when it sells PAS. Because it bought PAS to operate it as part of its business, the sale could be a long time in the future. Adding it up, there are three taxes under this version of events: the \$60 capital gain to Waterman, the \$60 dividend to Trucking, and the \$60 capital loss to Trucking. The capital gains and losses, however, will not offset because the capital loss to Trucking will be in the future and possibly subject to loss limitations.² The taxpayers would have been better off if the dividend came before the sale rather than after, and it is clear that they understood this because that is what they unsuccessfully tried to do.

I am by no means the first to note this problem. Not only have tax planners and the government long understood the value of pre-sale dividends, as evidenced by the *Waterman* case, at least a dozen similar cases, and numerous tax rules addressing these circumstances, but there is a line of literature (as far as I know, exclusively in law journals) discussing the problem (for example, Kingson (1976; Lang (1986); Levmore (1988)). Moreover, corporate tax reform proposals often include provisions to mitigate the problem. For example, the Treasury

² If PAS liquidates into Trucking, the loss will be eliminated. Even if PAS is sold and the usual capital loss limitations do not apply, there are a number of other rules that may limit Trucking's ability to claim a loss on the sale of PAS (under current law, not under the law of the time). Most centrally, the loss disallowance rules found in Treasury regulation 1.1502-36 may entirely disallow Trucking's loss.

Department, in its integration study (Department of the Treasury 1992), suggested allowing corporations to declare “dividend reinvestment plans” which are effectively a fictional dividend and automatic reinvestment of the dividend in new shares. Under the Treasury proposal Waterman could simply have declared a DRIP prior to the sale to get its desired result. The American Law Institute in its integration study, made essential the same suggestion. American Law Institute (1993)

Beyond *Waterman* and related transactions, my second motivation is to better understand the difference, if any, between the normal lock-in effect of capital gains taxation and the effects of dividend taxation. The new view of dividend taxation says that a constant dividend tax rate does not affect the timing of dividend payments. It does not, however, necessarily say that the rules for dividend taxation, such as the basis recovery rules for dividends or the interaction of dividends with the capital gains rules do not generate an equivalent to the lock-in effect for dividends. Because new view models use either mark-to-market taxation, or no taxation, of stock gains, they cannot, by construction, capture potential lock-in effects.

The standard intuition for why the timing of dividends is unaffected by the dividend tax rate is that dividends grow with time because the corporation will invest retained earnings. Therefore, the present value of dividends is constant, eliminating any incentive to defer or accelerate dividend payments. But the same thing happens with cash left in any productive asset. Cash left in a productive asset is invested and will be expected to grow at the market rate of return. Why is it thought that the present value of the after-tax proceeds is constant in the case of dividends but not for capital gains?

To illustrate, suppose that a taxpayer holds an asset with a value of \$100 and basis of \$0. If the taxpayer sells the asset and reinvests the proceeds, he must pay tax on the gain and can only reinvest the after-tax amount, while if he retains the asset, he can invest the full \$100. The investment of the tax that would be due on a sale is what generates the lock-in effect. But the same is true if the asset is stock and the choice is whether to receive a \$100 dividend now and reinvest the after-tax proceeds or to leave the \$100 in the corporation. In both cases, the current realization means that the taxpayer can only invest the after-tax amount and the

deferred realization means that the taxpayer can invest the pre-tax amount. Thus, my second motivation for this study is to understand whether dividend taxation is in fact different than the taxation of other realizations of gain.

2. Dividend policy conditional on realization of stock gain

To study the interaction of dividends and capital gains, I modify the model of dividend taxation found in Chetty and Saez (2010). To isolate the problem, I ignore the possibility of new equity, and, therefore, consider a pure “new view” model. Chetty and Saez have no taxes on capital gains or losses in their model. I start with their presentation before adding these taxes.

Consider a firm that has after-tax profits of X at time 0. The firm can distribute D now, and will invest the remainder, $X-D$, distributing the after-corporate-tax future value at time n . The firm can invest at a pre-tax n -period return of f_n , $f_n'(x) > 0$, $f_n''(x) < 0$. If the firm invests $X-D$, the after-tax amount held by the firm in period n is $FV_n(X-D) = (1-t_c)f_n(X-D) + X-D$, where t_c is the corporate tax rate.

Following Chetty and Saez, let r be the required rate of return on corporate investments. Chetty and Saez are not explicit about whether this is a pre-tax or after-tax rate of return, treating it instead as a market-determined hurdle rate set by an unspecified marginal investor. In the next section, where I consider the lock-in effect, r will be a pre-tax return because I will be explicitly modeling capital gains taxes. For now, we can follow Chetty and Saez and view it as an unspecified hurdle rate.

The present value of the firm, V_0 , is the sum of current distributions, after-dividend taxes, and the present value of the after-tax future distributions:

$$(1) \quad V_0 = (1-t_d)D + (1-t_d) \frac{FV_n(X-D)}{(1+r)^n}.$$

where t_d is the dividend tax rate. Note that because $(1-t_d)$ appears in both terms on the right hand side, we can divide it through, and think of the value of the

corporation as the present value of the pre-tax cash flows grossed up by the dividend tax.

Taking the first order condition with respect to D gives us the optimal dividend policy. The firm should retain earnings so that its marginal after-corporate-tax return equals the required hurdle rate:

$$(2) \quad FV_n'(X - D) = (1 + r)^n.$$

The dividend tax does not affect the firm's investment decision, which is the essence of the new view.

To modify the model to include capital gains taxes, suppose that there is a sale immediately following the period 0 dividend. The seller will have a capital gain equal to the sales price (the seller's basis in the model is 0). The buyer gets a basis in the stock equal to the purchase price. When earnings are distributed in period n , the buyer has a loss in an equal amount. The loss is realized at time $m \geq n$, when the buyer sells the stock to yet another party.³

Letting Q be the sales price of the stock, t_g be the capital gains rate, and t_L be the tax rate applicable to capital losses, expression (1) becomes:

$$(3) \quad V_0 = (1 - t_d)D - t_g Q + (1 - t_d) \frac{FV_n(X - D)}{(1 + r)^n} + \frac{t_L Q}{(1 + r)^m}.$$

³ In the simple model used here, a distribution of $FV_n(X - D)$ effectively means that the corporation has liquidated. Under current rules, the buyer would be treated as having the loss at that time (in period n). If the corporation has activities or investments other than X , the corporation can continue and the buyer would not be given the loss until he sells the stock in period m .

The value of Q is the value of the corporation immediately after the dividend payment: the after-tax present discounted value of future cash flows and the present discounted value of the future capital loss:⁴

$$(4) \quad Q = (1-t_d) \frac{FV_n(X-D)}{(1+r)^n} + \frac{t_L Q}{(1+r)^m}.$$

Solving, we get:

$$(5) \quad Q = (1-t_d) \left(\frac{FV_n(X-D)}{(1+r)^n} \right) \left[\frac{1}{1 - \frac{t_L}{(1+r)^m}} \right].$$

Substituting (5) into (3), the value of the corporation is:

$$(6) \quad V_0 = (1-t_d)D + \frac{(1-t_d)FV_n(X-D)}{(1+r)^n} \left[\frac{1-t_g}{1 - \frac{t_L}{(1+r)^m}} \right].$$

Comparing equation (6) to equation (1), we can see that the benefit of retaining earnings is reduced by the term in the brackets on the right hand side. Its value goes down as m , (the time until the loss is realized), goes up and as the effective tax rate on losses goes down.

To determine the optimal dividend policy, take the first order condition with respect to D to get:

$$(7) \quad FV_n'(X-D) = (1+r)^n \left[\frac{1 - \frac{t_L}{(1+r)^m}}{1-t_g} \right].$$

⁴ Note that because of the tax disadvantages of a sale, the buyer will have to value the corporation more than the seller. There are a variety of reasons this might be so. For example, the seller might need liquidity, might want to rebalance his portfolio, or might have a different expectation of the value of FV_n than the buyer.

Equation (7) differs from equation (2) by the last term in brackets. This term is due to the present value difference between the tax on the gain and the offsetting loss when earnings are retained. Unless $m = 0$ and $t_L = t_g$, its value is greater than one, which means that the marginal rate of return for retained earnings has to be higher than otherwise. As a result, the corporation distributes more in the first time period. Distributions go up as the tax rate on losses, t_L , goes down and as the time until the loss, m , gets longer.

The higher the capital gains tax rate, the greater the effect. To see this, differentiate (7) with respect to the capital gains rate. Let the capital gains and loss rates be the same, (denoting both t_g) to get:

$$(8) \quad \frac{\partial FV(X - D)}{\partial t_g} = (1+r)^{n-m} \left(\frac{(1+r)^m - 1}{(1-t_g)^2} \right).$$

This is positive (and in fact increasing with t_g): As the capital gains tax gets higher, the required marginal return for a corporation to retain earnings goes up.

Note that the dividend tax rate does not appear in (7). Consistent with the new view, the dividend tax rate does not matter. Instead, what generates the incentive to accelerate dividends is the set of rules governing interaction between dividends and capital gains.

One way understand (7) is to note that the capital loss tax rate that produces efficient corporate investment (marginal returns equal to $(1+r)^n$) is $t_l = t_g (1+r)^m$. Tax losses would have to appreciate with time, which would effectively create a cash flow tax. That is, we can, in part, think of the timing effect in (7) is a generic feature of income taxation as compared to cash flow taxation. What is new here is that size of the offsetting gains and losses and the timing of the loss depend on the timing of dividend payments, generating an incentive to accelerate dividends.

Finally, note that allowing the original shareholder to have basis in his stock does not change the results. To see this, suppose that the original shareholder has a basis B in the stock. In equation (3), his gain becomes $t_g(Q-B)$, so the only

change is an additional term, $t_g B$. This term falls out of the first order condition, so there are no changes to the corporation's dividend policy.

The reason basis does not matter in the model is that the taxpayer has been given no choices that affect when basis is recovered due to the assumption that immediately after the initial dividend, there is a sale. The dividend does not affect basis and the assumed sale uses up all of the basis. With these assumptions, the only behavioral effect would be if the dividend were large enough to create a loss and the tax rate on losses was less than the tax rate on gains. In that event, the taxpayer and corporation would have an incentive to reduce dividends to avoid generating losses. The next two sections relax the assumption that the stock will be sold.

3. Dividend policy and lock-in

The discussion above considered the timing of dividend payments conditional on realization. In the next two sections, I consider the choice of when shareholders realize income, comparing sales to dividends. The lock-in effect of capital gains taxes on sales is widely acknowledged. If there is no parallel incentive to alter the timing of dividends, there is a puzzle as to why the tax system has different effects on different methods of realizing what is effectively the same economic income.

It is helpful to have a simple model of the lock-in effect to compare to the model of dividend taxation. Suppose an investor owns an asset with a value of X and a basis of $B \leq X$ (so that there is gain, potentially generating lock-in). If he holds the asset, he will get a return of $FV_n(X)$ in n years. The asset might have some taxes on interim returns, which I will assume are embedded in FV_n in the same way that the term includes the corporate tax in the corporate context. In particular, the asset might be stock, in which case the return is net of corporate taxes. I will explicitly consider only the capital gains tax on any remaining returns, imposed when there is a sale.

At time 0, the investor can sell a fraction of his holdings $s \leq 1$ and reinvest the after-tax proceeds in asset 2 which earns a pretax return of r . Asset 2, I will assume (but relax later) is subject to capital gains tax on the return as of period n but is not subject to taxes on increases in value during the period it is held. It

could, for example, be a share of stock, undeveloped land, minerals left in the ground, or a collectible.

If the investor sells a fraction s , he will have $sX(1-t_g)+t_g sB$ after paying tax on capital gains on the sale and recovering a fraction of basis sB . In n periods, this will be worth the pre-tax return less capital gains taxes on that return:

$$(9) \quad \left(sX(1-t_g)+t_g sB \right) \left((1+r)^n - t_g \left((1+r)^n - 1 \right) \right).$$

The fraction $(1-s)X$ which is held will be worth $FV_n \left((1-s)X \right) (1-t_g) + t_g (1-s)B$ in period n after paying capital gains taxes. The total value is the sum of these two amounts. It is convenient to work with the future value of the portfolio, which I denote by V_n .

(10)

$$V_n = \left(sX(1-t_g)+t_g sB \right) \left((1+r)^n - t_g \left((1+r)^n - 1 \right) \right) + FV_n \left((1-s)X \right) (1-t_g) + t_g (1-s)B.$$

The individual should sell a fraction to maximize the after-tax future value. Setting the first order condition with respect to s to zero, we get:

$$(11) \quad FV_n' \left((1-s)X \right) = (1+r)^n - t_g \underbrace{\left(1 - \frac{B}{X} \right) \left((1+r)^n - 1 \right)}_{\text{Benefit of deferral}}.$$

The first term on the right hand side is the pre-tax return. This is reduced by the second term, which represents the benefit of deferring the tax on built-in gains.

If $B = X$, there are no built-in gains and there is no deferral benefit. The investor compares the return on the original asset (adjusted for taxes, if any, on that return embedded in FV_n) to the pre-tax return on the alternative investment. In particular, if the both assets are pure capital gains assets, the investor simply compares pre-tax returns. As B goes down so that there is built-in gain, the benefit of deferral goes up, which means that the required marginal return for retaining

the original asset goes down. The investor will therefore retain more and sell less when there is more built-in gain, which is the essence of the lock-in effect.

Apply this setup to a corporation that has X in after-tax proceeds and can pay a dividend of D . Like above, assume that the shareholder has basis B in his stock and that the shareholder reinvests any dividends in an asset that has a pre-tax return of r which is subject only to capital gains taxes.

An important difference between the taxation of dividends and asset sales is that when a shareholder receives a dividend, the shareholder may not recover basis even though he has realized a fraction of his value. The taxable portion of a dividend is measured by corporate earnings, not shareholder gain. This means that even if the shareholder has basis B in the stock, the entire distribution D is taxed. To write down an expression for the after-tax value, we need to set a time for basis recovery. For simplicity, assume that immediately following the final distribution of the future value of retained earnings, the shareholder sells his stock and uses all of this basis, thereby gaining value of $t_L B$ in period n . With this assumption, the value as of time n is:

$$(12) \quad V_n = D(1-t_d)\left((1+r)^n - t_g\left((1+r)^n - 1\right)\right) + (1-t_d)FV_n(X-D) + t_L B.$$

Setting the first order condition with respect to D to zero, we get

$$(13) \quad FV_n'(X-D) = (1+r)^n - t_g\left((1+r)^n - 1\right).$$

There are two differences between equation (13) for dividends and equation (11) for sales. First, the dividend expression does not include a term for basis recovery. It is the same as (11) setting $B = 0$. This is because of the unfavorable basis rules for dividends as compared to sales. The unfavorable basis rule lowers the required marginal return for a dividend, creating an incentive to defer dividends.

Second, $FV_n'(X-D)$ includes corporate taxes in equation (13) but need not in equation (11) depending on what the original asset is. The higher the corporate tax, the lower this return (holding the investment fixed), increasing the incentive

to pay dividends early. The net effect could go either way, depending on the size of the parameters. Note that if the asset is a share of stock, the tax on inside build-up would be the same in both cases.

Several comments are in order. First, the conclusions here are consistent with the new view because the dividend tax *rate* does not affect the timing of dividend payments. One must be cautious in interpreting the new view, however, in that other aspects of dividend taxation (as well as the corporate tax rate), do. In particular, the rules governing basis recovery for dividends will affect the timing of dividend payments so we cannot say that dividend taxation as a whole has no effect on the timing of dividends.

An alternative basis rule for dividends, explored in Yale (2009), would treat all dividends as partial redemptions of stock, allowing taxpayers to recover a pro rata portion of their basis. This rule might be an improvement to current law, although given the uncertain direction of equation (13), whether it is an improvement might depend on the relevant parameters.

Second, that a low corporate tax rate creates an incentive to retain earnings is familiar. If the corporate rate is well below the individual rate, a corporation acts as a sort of IRA by allowing low-tax inside build-up. The personal holding company tax is designed to limit this. On the other hand, if we compare an investment in a pure capital gains asset which gets tax-free inside-build up to investing in a corporation with a zero corporate tax rate, we can see from the difference between (13) to (11) that the corporate investment is worse due to the lack of basis recovery on any interim returns.

Finally, the assumption that sale or dividend proceeds are reinvested in an asset subject only to capital gains taxation was restrictive. Suppose that the proceeds are reinvested in an asset subject to annual taxes on returns at the ordinary income tax rate t_i . Using the same analysis as above, consider an investor with an asset valued at X and basis B . The first order condition for selling a fraction s is

$$(14) \quad FV_n'((1-s)X) = \underbrace{(1+r(1-t_i))^n}_{\text{after-tax return}} + \underbrace{\frac{t_g}{1-t_g} \frac{B}{X} \left((1+r(1-t_i))^n - 1 \right)}_{\text{value of basis recovery}}.$$

The first term on the right hand side is an after-tax return, not counting basis recovery. That is, if the basis in the original asset were zero, the hurdle rate for the investor would be the after-tax return on the new asset. The second term on the right hand side represents the benefit of basis recovery for the time period of the investment, which reduces the lock-in.

If we instead consider dividend distributions (and like above, basis is recovered in period n), the first order condition becomes

$$(15) \quad FV_n'((1-D)X) = (1+r(1-t_i))^n$$

The differences in these two expressions is again the benefit of earlier basis recovery for a sale relative to a dividend and the corporate tax on proceeds left in the corporation. Again, there could be an incentive to distribute or to retain earnings relative to the lock-in effect on sales, depending on parameters. If the corporate rate and the individual rate were the same, equation (15) tells us to invest where there is the highest after-tax return, which indicates that if reinvestments are in assets subject to taxation on all interim returns, the basis recover rules for dividends do not generate inefficiencies.

One way to summarize this discussion is that the required rate of return on alternative investments – the hurdle rate – varies depending on how the alternative investment is taxed, the investor's basis in the original investment, how that basis is taxed, and how interim returns are taxed on the original investment. The new view shows that the dividend tax rate does not affect the hurdle rate but dividend payments on stock are otherwise subject to the same forces that generate lock-in or lock-out for other investments or ways of realizing income.

4. Combined model

The above sections establish first two results of this paper:

- (1) To reduce imperfectly offsetting capital gains and losses that result from a sale, there is an incentive to distribute earlier; and
- (2) Effects parallel to the lock-in effect on sales apply to the dividends. The lock-in may be greater than or less than for sales, depending on parameters.

We can combine these two into a single model that shows the overall set of trade-offs. Suppose a shareholder owns stock with after-tax corporate earnings of X . For simplicity, assume the shareholder has a zero basis in the stock. The shareholder can get a dividend of D , sell a fraction s after the dividend, and retain the rest. The future value is:

$$(16) \quad \frac{V_n}{(1-t_d)} = \underbrace{D(1+r^*)^n}_{\text{reinvested dividend}} + \underbrace{(1-s)FV_n(X-D)}_{\text{retained stock}} + \underbrace{s \frac{FV_n(X-D)}{(1+r)^n} \left[\frac{1-t_g}{1-\frac{t_L}{(1+r)^m}} \right]}_{\text{sales proceeds}} \underbrace{(1+r^*)^n}_{\text{reinvested}}.$$

where r^* is the after-tax rate of return available to the investor. If the investment produces only capital gains, the value of r^* will produce a result that solves $(1+r^*)^n = (1+r)^n - t_g((1+r)^n - 1)$. If the investment produces ordinary income, the value of r^* is $(1+r^*)^n = (1+r(1-t_i))^n$. If the asset produces a mix, the after-tax return will reflect that mix. Following Chetty and Saez, I use an unspecified r (not the after-tax return r^*) as the return used to value the stock because the stock value is based on what a third party will pay. This will be an equilibrium rate which might be at or close to the pre-tax rate or the after-tax rate, depending on the identity of the marginal investor.

To determine the shareholder's desired choices, take first order conditions with respect to D and s . For D we have:

$$(17) \quad \frac{\partial V_n}{\partial D} = (1+r^*)^n - FV_n'(X-D)(1-s) - s \frac{(1+r^*)^n}{(1+r)^n} \left[\frac{1-t_g}{1-\frac{t_L}{(1+r)^m}} \right] FV'(X-D).$$

Setting this equal to zero and rearranging gives:

$$(18) \quad FV_n'(X - D) \left((1-s) + s \frac{(1+r^*)^n}{(1+r)^n} \left[\frac{1-t_g}{1 - \frac{t_L}{(1+r)^m}} \right] \right) = (1+r^*)^n.$$

If $s = 0$, then (18) is just the lock-in rule, (equation (13)). If $s = 1$, then (18) is the dividend rule, (equation (7)), but using the after-tax discount rate applicable to capital gains. For $0 < s < 1$, the term in the brackets will be less than one unless r^* is substantially greater than r , which means the shareholder will want the corporation to distribute more and have higher marginal returns to corporate investment. Said another way, if you are going to sell some stock ($s > 0$), you want to increase distributions. The reason is due to the timing and rate differentials for capital gains and losses.

The key then is determining the optimal fraction s to sell. Within this model, however, the taxpayer will want to sell all of his stock or none. To see this, take the first order condition with respect to s :

$$(19) \quad \frac{\partial V_n}{\partial s} = (1-t_d) FV_n'(X - D) \left[\frac{1-t_g}{1 - \frac{t_L}{(1+r)^m}} \right] \frac{(1+r^*)^n}{(1+r)^n} - (1-t_d) FV_n'(X - D).$$

Setting this equal to zero, and cancelling, we get:

$$(20) \quad 1 \stackrel{?}{\leq} \left[\frac{1-t_g}{1 - \frac{t_L}{(1+r)^m}} \right] \frac{(1+r^*)^n}{(1+r)^n}.$$

This will be either less than or greater than zero depending on the available after-tax returns to the investor, the values of n , m , t_g , and t_L . He will, at each point in time, either sell all or sell none because the alternative asset will have either a higher return or a lower return than the stock.⁵ The first term in the square

⁵ To avoid this corner solution, we could allow the investor to have declining marginal returns to investing elsewhere. Introducing this complication, however, requires much stronger

brackets represents the not perfectly-offsetting capital gains and losses that arise from a sale. The second term, in the rounded brackets, is the lock-in effect, represented by r^* .

5. Clienteles

Neither standard models of the new view nor the models presented above include clientele effects. Dividends and capital gains tax rates, however, vary widely depending on the type of taxpayer. In practice, we see transactions designed to take advantage of these effects. For example, in a transaction known as dividend stripping, individuals sell stock to corporations cum dividend and the corporation sells the stock back ex dividend. The individual will have capital gain, the corporation excludes the dividend (because of the dividends received deduction) and gets a capital loss. The net result is to eliminate the tax on the dividend that the individual shareholder would otherwise pay. There are rules to prevent this simple version of the transaction but more sophisticated versions may still occur (and there are yet more rules to prevent the more sophisticated versions and ways to avoid these rules, and so forth and so on.)

To understand how clienteles change the conclusions, we can modify the equations to allow the buyer or seller to be subject to separate tax rates. There are at least three important clienteles within the set of domestic investors: individuals (taxed on dividends, gains and losses), corporations (dividends are tax free but taxed on gains and losses) and tax-exempts (no taxes). Considering just three clienteles, there are nine possible patterns. Adding foreign investors (dividends are taxed, sales are exempt), financial institutions (everything marked to market

assumptions regarding investment decisions. It would, in addition, mean that the new view no longer holds. To see this, suppose that in the basic model from part 2, alternative investments have declining marginal returns. This might occur because alternative investments are used to diversify the shareholder's portfolio and the marginal value of diversification goes down rapidly with the size of the portfolio. We would then replace the fixed return in equation 1 with a variable return $h((1-t_d)D)$ with $h > 0$, $h < 0$. The first order conditions of equation 1 becomes $h((1-t_d)D) = FV_n'(X-D)$. The new view does not hold in this case because the dividend tax rate affects the timing of dividends. As the dividend tax rate goes up, the corporation will retain more.

and taxed as ordinary income) or other clienteles would create yet more possibilities. To keep the presentation manageable, I will show the results for just three of the many combinations. What is clear from just these examples is that adding clienteles to the model can substantially alter the conclusions.

Individual to corporation (dividend capture case): The dividend capture strategy discussed above involved an individual owning the stock, selling it a corporation, a dividend payment, and the corporation then selling it back to realize a capital loss. The individual and corporation are taxed on the stock sales but the corporation is not taxed on the dividend. Because the individual gain and corporate loss are realized at effectively the same time, we can take these out of the equation (under the simplifying assumption that they are taxed at the same rate). The value in this case becomes:

$$(21) \quad V_0 = (1 - t_d)D + \frac{FV_n(X - D)}{(1 + r)^n}.$$

Setting the first order condition to zero produces:

$$(22) \quad FV_n'(X - D) = (1 - t_d)(1 + r)^n$$

Contrary to the new view results, the desired corporation return is reduced by the dividend tax rate: as dividend taxes go up, marginal corporate returns go down, which translates to increased retentions and lower dividends.

Individual to tax-exempt: Suppose instead that the individual sells the stock to a tax exempt. In this case, the individual is taxed on the gains but the tax exempt will not be able to claim the future offsetting loss, and is also not taxed on the dividend. If the tax-exempt is the marginal investor, the value of the corporation at the time of the sale, Q , is simply the present value of the cash flows, not reduced by taxes (other than the internal corporate income tax). Therefore:

$$(23) \quad V_0 = (1 - t_d)D + (1 - t_g) \frac{FV_n(X - D)}{(1 + r)^n}.$$

The first order condition gives us:

$$(24) \quad FV_n'(X - D) = \frac{(1 - t_d)}{(1 - t_g)}(1 + r)^n.$$

The dividend tax rate again affects dividend payments but the advantage of retaining earnings is now offset by the cost of the resulting capital gains taxes. If the dividend tax rate equals the capital gains rate, the two cancel, but only under the assumption that they come at effectively the same time (as assumed in (23)).

Tax-exempt seller to individual buyer. As a final case, suppose that the original holder of the stock is tax-exempt and it sells the stock to an individual. The tax-exempt pays neither a dividend tax nor a capital gains tax while the individual buyer pays tax on the dividend and can claim the capital loss. The resulting value is:

$$(25) \quad V_0 = D + \frac{(1 - t_d)FV_n(X - D)}{(1 + r)^n} \left[\frac{1}{1 - \frac{t_L}{(1 + r)^m}} \right].$$

First order conditions give:

$$(26) \quad FV_n'(X - D) = \frac{(1 + r)^n}{(1 - t_d)} \left(1 - \frac{t_L}{(1 + r)^m} \right).$$

Unlike in the dividend capture case, dividend taxes here increase the required marginal rate of return and, therefore, reduce retentions. The reason is that dividends are tax-free if paid while the tax-exempt holds the stock. This effect is offset, however, by the capital loss that the individual buyer can claim.

As can be seen by examining just these three cases, the presence of tax clienteles can significantly change the results and can do so in a variety of directions depending on what types of taxpayers are involved. I should, however, stress that the results presented in this section do not account for the wide variety of tax rules that govern transactions designed to prevent transactions structured to take advantage of clientele effects.

6. Remarks

1. Identification of tax effects of dividend tax cuts.

There have been numerous attempts to examine the extent to which the new view of dividend taxation holds. The new view, unmodified by the considerations analyzed here, is thought to have two implications for dividend tax policy. First, a permanent reduction in the dividend tax rate should have no effect on dividend payments, and second, the dividend tax rate should be capitalized into firm value. Studies often use changes in the dividend tax rate, such as the 2003 tax cuts in the Jobs Growth and Tax Relief Reconciliation Act, to examine these effects. Blouin, Raedy, and Shackelford (2011); Chetty and Saez (2005); Brown, Liang, and Weisbenner (2007); Auerbach and Hassett (2006); Auerbach and Hassett (2007).

If the capital gains rate is changed simultaneously with the dividend tax rate, the considerations analyzed here may alter both effects. With respect to the timing of dividend payments, lowering the capital gains rate (and implicitly the capital loss rate) will reduce the incentive to accelerate dividends seen in Part 2. Paying a dividend before a capital gain has less value if the tax cost of the capital gain is lower. Lowering the capital gains rate will also reduce the lock-in effect on dividends seen in Part 3. Depending on the situation of shareholders, either one could dominate.

With respect to firm valuation, the second prediction, in the models used here, the dividend tax is still capitalized into firm value, as seen in equation (6) but firm value is also effected by the capital gains rate (the right hand bracketed term in that equation). Lowering the capital gains rate will make that fraction closer to one. Therefore, firm value would be increased by both the reduction in the dividend tax rate and by the reduction in the capital gains tax rate, potentially confounding a measurement of the effect of dividend tax cuts.

Finally, the clientele effects seen in part 5 may strongly affect the incentive to pay dividends and may change with the dividend tax rate. Any identification strategy has to make an assumption about the extent of these effects.

The extent that these effects undermine the identification strategy in any individual study will depend on the particular strategy used, the size of the capital

gains tax rate changes relative to the dividend tax rate changes, assumptions about the tax treatment of the marginal investor, and which of the effects is estimated. Nevertheless, because capital gains rates are often changed at the same time as dividend tax rates, caution must be exercised.

2. Corporate Tax Integration

The major policy implication of the new view regards corporate integration, which is generally interpreted to mean reducing the tax rate on dividends to zero or near zero. To the extent the new view holds, so that firms finance themselves with retained earnings, corporate integration acts as a lump sum subsidy. Lowering the dividend tax rate would still, however, have efficiency effects for new equity. One possibility, therefore, is to limit integration to new equity, as explored in American Law Institute (1982). Integration for all equity would be premised on the view that distinguishing new equity from existing equity is too difficult and that the efficiency gains for new equity outweigh the costs of the lump sum subsidy for existing equity. Auerbach (2002, 1261–62)

The considerations analyzed here do not address corporate integration generally. By not including the possibility of new equity, I restricted the model to the new view, and, therefore, did not address the key consideration for corporate integration. Nevertheless, as noted in Part 1, a number of integration studies, including Department of the Treasury (1992) and American Law Institute (1993) include proposals to address the interaction of dividends and capital gains. Both the Treasury and ALI would allow corporations to elect to be treated as paying a dividend that is immediately reinvested by the shareholder (which the Treasury calls a dividend reinvestment plan or DRIP). The effect is an immediate dividend (and any resulting tax) and a basis increase in the shareholder's stock, thereby eliminating the non-offsetting capital gains and losses analyzed in Part 2.

The analysis here suggests that proposals to allow DRIPs may be worth consideration, but that they are largely unrelated to cuts in the dividend tax rate or corporate tax integration. The incentive to distribute prior to a sale is based on the relative capital gain and loss tax rates and the timing difference between when the gains and losses will be realized. It arises regardless of the dividend tax rate, as can be seen in equation (7). That is, it seems apparent that the inclusion of DRIPs

in integration plans is at least partially premised on the idea that the zero tax rate on dividends is what makes DRIPs attractive to shareholders. In fact, the benefit of a DRIP is unrelated to the dividend tax rate.

3. Public Trading

A substantial portion of the stock of US companies is publicly traded. To the extent that shares change hands rapidly, some of the considerations here may be muted. In particular, to the extent shares are traded rapidly, it may not be possible to distribute dividends prior to the realization of significant capital gains. Moreover, the time until the corresponding losses are realized may be relatively short.

Nevertheless, public trading will not eliminate, and may not even substantially reduce, the incentives explored here. Publicly-held companies tend to have large block shareholders. For example, Holderness (2009) reports that of a representative sample of publicly traded firms, block shareholders on average own 39% of the common stock. And even smaller shareholders may invest in public companies over long periods of time. As a result, the incentives modeled here may well apply to a large number of shareholders of public firms. To the extent these shareholders are the marginal shareholders, the incentives considered here apply fully.

7. Conclusions

The analysis suggests care is needed when interpreting the new view of dividend taxation. The new view holds that the dividend tax rate itself does not affect the timing of dividends. Within the basic model considered here (without tax clienteles), this is true but there is nevertheless, there may be incentives to defer or accelerate dividends because of taxes, including the basis recovery rules for dividend. As a result, care is also needed in identifying the effects of the new view if changes to the dividend tax rules are accompanied by changes to the capital gains tax rules. Clientele effects confound the analysis further. Depending on the tax treatment of the buyer and seller of stock, the dividend tax rate may affect the timing of dividends, sometimes creating an incentive to accelerate dividends and sometimes creating an incentive to defer them.

The analysis here points in a number of directions. One is more careful consideration of how tax clienteles affect dividend policy. If dividend taxes are minimized by trading among clienteles around dividend dates, perhaps the timing of dividends matters less than their predictability so that trades can be planned. Corporations often pay dividends regularly. Some have suggested that the reason could be signaling. An alternative explanation could be tax effects. More generally, more detailed analysis of clientele effects on dividends seems warranted given the preliminary remarks in part 5.

Another direction is to consider how the dividend tax rules might be reformed (including but not limited to the applicable tax rate). The dividend tax rules right now are in a state of flux because they were designed at a time when dividends were taxed as ordinary income but share repurchases were taxed as capital gains. Their core feature is a set of rules that distinguish dividends from share repurchases. With dividends now taxed at the capital gains rate, these rules are less necessary. And as noted, treating dividends as partial repurchases reduces the lock-in effect to the extent of basis. Therefore, reconsideration of the rules governing dividend taxation may be warranted.

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