Abstract - Dividend relief was proposed for economic stimulus and growth, but is unlikely to be an effective stimulus because much of the tax benefit may be saved. Nor is it likely to affect demand independently through a rise in the stock market: these values only affect pending of stockholders (through income effects). Even if there is a separate effect on consumer or business confidence, the effect on the stock market is unlikely to be large enough to be noticeable. A deficit–financed capital income tax cut would, however, ultimately reduce the capital stock.

Many economists have long argued the desirability, for reasons of economic efficiency, of integrating the corporate and individual income tax. A U.S. Treasury (1992) study of corporate tax integration found potentially significant efficiency gains from the reallocation of capital arising from corporate tax integration; in the case of dividend relief on the individual side, the efficiency gains ranged from 0.1 to 0.5 percent of consumption.1 Most of these efficiency effects would not appear as output increases, but as a more desirable allocation of consumer goods and a more efficient allocation of risk. These improvements in welfare represent the equivalents of dollar increases in output and, at 2001 income levels, would be between $8 billion and $37 billion.

Traditionally, the principal reservations about such a change, aside from practical design problems, are how to make up the revenue loss, and how to address the potential distributional effects, since taxes on dividends and capital income tend to fall on higher income individuals. The President’s dividend proposal’s cost was minimized because it was allowed as an exclusion at the individual level rather than a deduction at the firm level (over 60 percent of shareholders are not subject to the individual tax so this feature reduced the cost by more than half). Its limit on the passthrough of preferences also reduces cost. Nevertheless, the cost was projected at $396 billion over ten years.

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1 The range represents differences in model assumptions about the substitutability of capital between sectors and how revenue would be made up (through lump sum taxes or an overall increase in all capital gains taxes). These effects would be smaller if a “trapped equity” or “new view” of dividends is assumed, an issue that will be discussed separately.
The House passed a somewhat less expensive ($277 billion) proposal to reduce the tax rate on dividends and capital gains to 15 percent (5 percent for the two lowest brackets); this proposal would not contain the preference passthrough restriction and would be slightly smaller. The Senate Finance Committee also recently approved a proposal that is considerably smaller, particularly at the margin: an exclusion for the first $500 and a temporary exclusion for the remainder, beginning at 10 percent and rising to 20 percent. On the Senate floor, this temporary exclusion was increased to a total exclusion. The final bill followed the House proposal but was made temporary (through 2008) to meet budgetary objectives.

Dividend income and capital income in general is concentrated at higher income levels. According to Statistics of Income Data (1999) over 40 percent of dividends are received by the top 2 percent of the income distribution. According to data derived from Cronin (1999), while the top 1 percent of the distribution receives 11 percent of labor income, it receives 32 percent of capital income.

Although the Treasury discusses efficiency issues in their analysis, in the public debate, the arguments made for dividend relief have been different. They fall into three major categories: stimulating the economy, perhaps largely through boosting the stock market, treating investors “fairly,” and enhancing long term growth. The form of the dividend relief proposal, which provides a limit on tax benefits for tax preferred income also leads to questions of efficiency and simplicity. The Ways and Means Committee has reported a proposal that does not include this preference limit, but provides a partial exclusion.

This report, after a description of the proposal, briefly addresses the fairness issue and then turns to three major topics: effect on long run growth, effect on the stock market and short run stimulus, and issues associated with excludable dividend amounts. The analysis focuses on the President’s proposal, and quantitative results on the stock market and long run growth, in absolute value, would be slightly smaller for the proposal setting tax rates on both capital gains and dividends to 155; effects would be negligible for a truly temporary provision.

THE PROPOSAL

The President’s proposal is not just for a simple dividend exclusion. It expands the benefit to retained earnings as well as dividends, but limits it to retained earnings and dividends that are subject to a full corporate tax.

Under the President’s proposal, a corporation would compute an excludable dividend amount (EDA), which is designed to reflect after tax income that has actually been subject to the corporate tax. If dividends exceed the EDA only the amount of the EDA could be excluded from income. If dividends are less than the EDA, all dividends would be excluded and any remaining portion of the EDA would be used to increase the shareholder’s basis in the stock, thus reducing future capital gains taxes.

To calculate the EDA, corporations would convert their prior year U.S. corporate income taxes into an amount that is equivalent to the amount of prior year corporate income that was taxed at a 35 percent tax rate. For this calculation, U.S. corporate income taxes would be calculated before the foreign tax credit and the corporate alternative minimum tax, but after applying other tax credits. Mathematically, the EDA would be the U.S. tax divided by 0.35 (to obtain pretax income) and then multiplied by (1–0.35) to obtain the amount remaining after corporate tax.

A dividend account would be needed with dividend exclusions so that firms would not have an incentive to pay divi-
dividends and have shareholders reinvest them to increase basis, thereby avoiding tax on accumulated capital gains. This effect could be avoided if capital gains and dividends were taxed at lower, but identical rates, a proposal reported by the Ways and Means Committee.

FAIRNESS AND EQUITY

The “fairness” issue claims that holders of corporate stock are treated unfairly, presumably compared to holders of corporate bonds or other investments. But this equity issue hinges on the behavioral responses leading to the shifting and ultimate incidence of the corporate tax. Analyses of the corporate income tax generally suggest that the extra tax imposed on corporate equity falls on owners of corporate stock in the short run but is spread to other incomes (either other capital income or labor income) in the long run. Because returns to corporate equity are taxed at higher rates than the returns to other assets, capital should migrate out of the corporate sector (inducing higher rates of return before tax in the corporate sector as it does so) and into the non–corporate sector (inducing lower rates of return before tax in the non–corporate sector). This process should continue until after tax returns are equated in both sectors on a risk–adjusted basis.

This adjustment process means that the equity issue is not one of unfairness to holders of corporate stock because they pay taxes at two levels. Even though dividend recipients are legally obligated to pay more taxes, they are partially compensated by the higher pre–tax returns that arise from the shifting process and this partial compensation puts them on an equal footing with investors in other assets. Thus the “unfairness” problem has already been addressed by market forces. Rather the equity issue is one of vertical equity: whether the tax on capital income contributes to the progressivity of the tax system and how desirable that progressivity is. For that purpose, the crucial issue is where the tax has been shifted.

An extensive literature (summarized by Gravelle, 1995) studying the effects of the corporate tax under many different circumstances concludes that the burden of the extra tax falls on all capital and that the tax on corporate equity income can be viewed, for purposes of distributional analysis, as a tax on all capital income.

There are several caveats to the conclusion that the corporate tax is a tax on all capital, but none of them support the argument that dividend relief is needed in the interest of fair treatment to dividend recipients. Indeed, the increase in the stock market, which arises due to adjustment lags (or capitalized taxes), should be viewed as a one–time windfall gain to current dividend recipients.

LONG RUN GROWTH

In the long run, the dividend relief proposal will succeed in increasing output and growth (other than the modest effects associated with economic efficiency) only if it increases personal saving by more than the revenue cost and accumulating interest on the debt. It is theoretically possible for this effect to occur initially, but most evidence does not support a large savings response to tax rate changes. Indeed, some evidence suggests that savings can fall as the rate of return rises (due to

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2 In an open economy government borrowing may be offset by foreign net capital inflows. However, that additional capital cannot contribute to the future standard of living of Americans other than in a minor way because it and its returns are owned by foreigners. Note also that the dividend exclusion plan does not apply to foreign shareholders and thus provides no incentive for increases in foreign equity investment in the U.S; however, the provision does provide incentives for equity investment abroad by U.S. firms.
wealth effects). Even large savings responses would eventually result in a deteriorating capital stock because debt and the interest on debt would compound. Thus, the dividend relief proposal would harm long run growth as long as it is based on deficit finance.

To demonstrate the magnitude and potential direction of these growth effects, we use a neoclassical growth model with an endogenous savings rate. The details of this model are presented in the appendix. We consider the sensitivity to savings elasticities, endogenous labor and factor substitution elasticities, open economies, and model type.

Table 1 shows the projected effects of the proposal for various savings elasticities, for the first, fifth, tenth, and twentieth year, representing a reasonable span of the empirical evidence on savings elasticities (as summarized in Engen, Gravelle, and Smetters, 1997). Small and possibly negative elasticities are also theoretically consistent with offsetting income and substitution effects: greater wealth from higher rates of return increase current consumption but a cheaper price of future consumption reduces current consumption.

The estimates assume a fixed labor supply (also consistent with empirical evidence) and a Cobb–Douglas production function. Rather than considering percentage changes in GDP, a measure reflecting standard of living effects is used: income available for consumption after accounting for steady–state investment necessary to sustain the capital stock at its current level. This measure could loosely be interpreted as a change in the sustainable standard of living. The percentage change is similar to the percentage change in output. As Table 1 suggests, the plan’s projected effects would be to reduce output by a growing amount because the effect of the deficit on reducing the capital stock is larger than any induced savings response.

In none of these cases is the effect on private saving large enough to offset the contraction in capital stock due to the deficit. The effects are actually quite small, an outcome that is not surprising because the dividend relief proposal is relatively small. The negative effects continue to grow over time as deficits accumulate, and, eventually, the model “explodes” as deficits displace the entire capital stock.

Table 2 provides for sensitivity analysis, and shows the effects of allowing labor supply to respond positively to a higher wage and allowing a smaller factor substitution elasticity (and the combination). A positive labor supply elasticity magnifies a negative effect (because as the capital stock falls, the wage rate falls), while a lower factor substitution elasticity has a very small effect (although its effect increases with a positive labor supply response).

<table>
<thead>
<tr>
<th>Year</th>
<th>E = −0.4</th>
<th>E = −0.2</th>
<th>E = 0.0</th>
<th>E = 0.2</th>
<th>E = 0.4</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>−0.01</td>
<td>−0.01</td>
<td>−0.01</td>
<td>−0.01</td>
<td>−0.01</td>
</tr>
<tr>
<td>5</td>
<td>−0.08</td>
<td>−0.07</td>
<td>−0.06</td>
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<td>−0.16</td>
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<td>−0.10</td>
</tr>
<tr>
<td>20</td>
<td>−0.39</td>
<td>−0.34</td>
<td>−0.30</td>
<td>−0.26</td>
<td>−0.22</td>
</tr>
</tbody>
</table>

Source: See appendix. Calculations assume fixed labor supply and factor substitution elasticity of one.

3 This measure also prevents misleading representations from arising from a model where capital is imported. Since foreign suppliers own the rights to the capital, decreases or increases in capital stock reflecting foreign imports have limited effects on standards of living because foreigners have the claim to earnings.
Are there circumstances where the dividend relief plan can induce an increase in output? This effect is more likely to occur when elasticities are positive and large, although even with very large elasticities eventually the effect on output becomes negative. Another way to produce a positive effect is to offset the relief plan with some offsetting spending reduction. Table 3 explores these effects, with some very high savings elasticities and with assumptions that either offset the deficit immediately, or offset the deficit after ten years.

Higher elasticities can reduce the negative output effects, but only very large elasticities (clearly far out of the range of empirical estimates) produce short run positive effects (and these would also produce contractionary effects for short run stimulative purposes). Eventually the effects would turn negative (even the elasticity of three has an effect that peaks at only 7/100 of 1 percent after about 20 years and becomes negative after 50 years).

Table 3 also examines assumptions that the deficit will be offset by spending decreases, in one case immediately and in the other after ten years. Eliminating the deficit through a spending offset would increase output, although the amount is likely to be small for reasonable elasticities. Eliminating the deficit after ten years with an elasticity of 0.2, however, produces contractions in output for 36 years.

The negative effects on output could be offset if assumptions were made that foreign capital inflows would finance the deficit in excess of private saving. Although imported capital can prevent a decline in productivity, the returns to that investment are not available for domestic use. The effects are also sensitive to the level of tax on the earnings of foreign capital. Table 4 provides estimates of the effect on standard of living (where foreigners have the claim to earnings) in one case where no taxes apply to capital income from abroad and in the other case when full taxes apply. The results are the same in direction and similar in magnitude to those without capital imports.

The model used in this analysis is a simplified Solow growth model with an endogenous savings rate that relies on reduced–form empirical elasticities and assume myopia.4 There are also models that are built up from consumers who maximize utility, and are forward looking; a model that is currently in use is a life–cycle

<table>
<thead>
<tr>
<th>Year</th>
<th>λ = 0.2, S = 0.5</th>
<th>λ = 0.2, S = 0.5</th>
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</tr>
<tr>
<td>20</td>
<td>-0.34</td>
<td>-0.25</td>
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</tbody>
</table>

Source: See appendix. Calculations assume E = 0.2 and, unless otherwise noted, λ = 0, S = 1.

<table>
<thead>
<tr>
<th>Year</th>
<th>E = 1</th>
<th>E = 2</th>
<th>E = 3</th>
<th>No Deficit</th>
<th>No Deficit After 10 Years</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0.07</td>
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<td>-0.06</td>
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</tbody>
</table>

Source: See appendix. Assumes fixed labor supply and factor substitution elasticity of one. Deficit offset simulations assume E = 0.2.

4 Reduced form estimates are derived from regressions of savings rates on observed returns (and other variables)—a reduced and simplified form of supply relationships that might be derived from an approach that begins with a utility function for choosing between consumption across periods.
model.\(^5\) Forward-looking models cannot be solved at all (even for the initial years) without taking some measures to address the budget deficit. Although behavioral responses are derived from econometric studies, these models rely on many arbitrary assumptions that could greatly alter the outcome (in particular, they tend to have large income effects) and have generally not been empirically tested for reduced form effects.

It might be useful, nevertheless, to compare the long-run steady states of these models with those of the simpler growth model used above, in order to see how elasticities in these models relate and what one might expect from simulations of these types of models. The life–cycle model has an intertemporal substitution elasticity that determines the substitution (or relative price) effects in the model; offsetting income effects flow out of the model. Thus, the intertemporal substitution elasticity is always positive and could be higher than the elasticities used in the reduced–form model. Generally they are thought to range between 0.1 and one, with 0.25 being a common value (see Engen, Gravelle, and Smetters, 1997).

Table 5 reports the long–run steady state effects of the Solow growth model and the life–cycle model assuming that the deficit has been eliminated by a government spending offset. (Note, however, that life–cycle models tend to converge more quickly than Solow models). All other parameters of the economy are identical. This table suggests that the long–run effects with the assumed reduced form elasticities are actually larger than the range of the long–run effects of a life–cycle model. It suggests that the small positive and the negative growth effects of the plan estimated in Table 3 for deficit closing offsets would also appear in a life–cycle model, and indeed, may be more likely to be negative.

The estimates from these modeling simulations show that capital income tax cuts, financed by government deficits, induce negative effects on output in a full employment model, and that these nega-

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**TABLE 4**

PERCENTAGE INCREASE IN INCOME AVAILABLE FOR CONSUMPTION, ASSUMING INTERNATIONAL CAPITAL FLOWS

<table>
<thead>
<tr>
<th>Year</th>
<th>No Capital Inflow</th>
<th>Full Capital Inflow, Return Taxed</th>
<th>Full Capital Income, Return Not Taxed</th>
</tr>
</thead>
<tbody>
<tr>
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<td>-0.01</td>
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<tr>
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<td>-0.05</td>
<td>-0.05</td>
</tr>
<tr>
<td>10</td>
<td>-0.11</td>
<td>-0.10</td>
<td>-0.10</td>
</tr>
<tr>
<td>20</td>
<td>-0.26</td>
<td>-0.21</td>
<td>-0.26</td>
</tr>
</tbody>
</table>

Source: See appendix.

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**TABLE 5**

LONG RUN EFFECTS OF DIVIDEND RELIEF PROPOSAL, WITH SPENDING OFFSET TO CREATE NO DEFICIT: NEOCLASSICAL GROWTH VERSUS LIFE–CYCLE MODEL

<table>
<thead>
<tr>
<th>Solow Neoclassical Growth Model</th>
<th>Life–Cycle Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage Change in Consumption</td>
<td>Intertemporal Substitution Elasticity</td>
</tr>
<tr>
<td>-0.4</td>
<td>-0.10</td>
</tr>
<tr>
<td>-0.2</td>
<td>0.04</td>
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<tr>
<td>0.0</td>
<td>0.10</td>
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<tr>
<td>0.2</td>
<td>0.14</td>
</tr>
<tr>
<td>0.4</td>
<td>0.17</td>
</tr>
</tbody>
</table>

Source: CRS calculations, see appendix.

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\(^5\) A related model is an infinite horizon model that treats the economy as a representative, infinitely lived individual. This model would produce positive growth effects because it forces an infinite savings elasticity, but requires many restrictive assumptions.
Effects of Dividend Relief on Economic Growth

tive effects get larger over time. The initial effects in either direction are quite small, reflecting the small size of the tax cuts and the slow adjustment of the capital stock. However, even if the deficit effects are offset, under reasonable elasticities these negative growth effects appear for many years. When gains to future well-being are appropriately measured, such negative effects cannot be avoided with foreign capital inflows. Nor is the negative effect an artifact of the type of model: such effects would also occur with more sophisticated life-cycle models as well. Thus economic benefits of a debt-financed dividend relief proposal must be sought elsewhere.

SHORT RUN STIMULUS AND THE STOCK MARKET

Many economists have come to doubt the efficacy and advisability of fiscal policy, owing to the leakages in an open economy, and the difficulties of enacting policy in a timely fashion. Use of tax cuts has become even less attractive. Temporary tax cuts may not induce much spending, but permanent tax cuts eventually undermine economic growth by creating deficits.

But even if fiscal policy is to be used, a cut in individual taxes on dividends would probably rank relatively low, because a smaller share might be spent, partly because it is likely to be received by higher income individuals who may be less likely to spend. Nor is the tax cut likely to be very effective at inducing investment spending by a firm for several reasons. The incentive is provided to the individual who receives the benefit rather than the firm; this approach results in a more indirect route to investment stimul-

lus. Second, even if the firm responds quickly on behalf of its shareholders, this type of tax cut largely benefits earnings from existing capital and is one of the least effective tax cuts for encouraging investment spending. Moreover, even though reallocation effects are desirable in the long run, they could undermine the effects of the dividend relief provision as a stimulus, as discussed below.

Why, then, turn to dividend relief? The answer is that it has been linked to a boost in the stock market, which is seen, in turn, as a means to restore confidence in the economy.

Certainly the decline in the stock market has caused losses to the financial assets of many individuals, although many observers believed that stock values were overpriced and that the market would eventually have to decline. Indeed, the market’s value is an important price signal mediating between investors and firms. To undertake a permanent tax change for the purpose of influencing the stock market price is an objective not easy to justify—particularly since it cannot be done a second time. The principal justification for focusing on this value is an expectation that the rise in the stock market would spur spending in the short run.

Increases in stock market values are thought to increase spending through a wealth effect, although both theory and empirical evidence suggest the wealth effect on consumption is small (see Poterba, 2000 for a survey). In theory, however, a rise in the stock market induced by tax cuts reflects the windfall gains that accrue to investors who already hold an asset, and arise from the need for time to adjust portfolios and capital stocks in response to the tax change. The rise is simply a manifestation of part of the income effect that should

6 A permanent investment stimulus (e.g., accelerated depreciation) would be more effective than a rate cut per dollar of revenue loss because a rate reduction provides more of its benefits for returns to the existing capital stock. A temporary investment stimulus would be more effective still, but a temporary rate cut could have perverse effects because it could actually increase effective tax burdens on new investment by reducing the value of accelerated depreciation.
already be considered in evaluating any economic stimulus and therefore should not be considered as having a separate stimulative effect on the economy (unless investors are not rational). If adjustment were instantaneous, the stock market’s value would never change, at least under traditional views of dividends. The larger the stock market price effect, the smaller the economic efficiency benefits to reallocation of capital that are the principal justification for corporate tax integration.

Moreover, the rise in the stock market does not simply appear by magic—it arises out of shifts in supply and demand as do any other prices in the economy. If savings and portfolio allocations were fixed, no changes in the value of the stock market would occur, and stockholders would simply earn a higher rate of return. If the stock market does rise, it is also important to recognize the processes that lead to that rise and their consequences for short run effects on demand. Individuals may be saving more (which is contractionary) or they may be shifting out of other assets (which can be contractionary if coming from physical investment and raise interest rates if coming from bonds). The rise in interest rates will contract investment spending financed from debt. If corporate firms are to increase their equity investment, they must either retain more earnings (which reduces dividends available for other spending) or they must increase the supply of stock shares (by issuing stock or reducing repurchases). This increase in stock shares will push stock prices back down somewhat and the increase in investment will ultimately drive down returns per share.

It is possible that a rise in the stock market could result in an increase in business or consumer confidence that could separately produce an economic stimulus. Some research in this area has suggested that such an effect on consumers is not very likely, since the run up in the stock market in the 1990s seemed to primarily manifest itself in the increased spending of higher income individuals who own stock (see Dynan and Maki, 2001; and Maki and Palumbo, 2001). But, in any case, if there is a relationship it presumably would depend on the magnitude of expected effects—they should be large enough to at least attract attention. The remainder of this section attempts to quantify the expected effect on the stock market to determine whether it might be large enough to gain notice.

How Much Might the Stock Market Rise?

Perhaps the simplest way to explore the stock market effect is to assess the magnitude of potential effects that have been in the news and whether those effects are reasonable and significant. This analysis will be followed by a brief explanation and discussion of the implications of an alternative economic theory about the effect on stock market prices—the trapped equity view.

When the dividend proposal was initially introduced, potential effects on the stock market of up to 20 percent, which would be significant, were mentioned. Two other estimates of the effect: one provided by the administration at 10 percent, and one estimated by MIT economist James Poterba, of 5 to 6 percent, were reported by Davis and Ip (2003). This section examines the value of 5 to 6 percent proposed by Poterba (where underlying data are presented to support the calculation). The analysis suggests that this value is probably an upper limit to the effect, and the likely effect would be much less, perhaps no more than 1 or 2 percent. Certainly, the effect is likely to be small compared to normal fluctuations in market values.

Poterba’s calculation is a straightforward estimate of the present value of the tax cut divided by the value of the stock market. His calculation appears to be of the form:
Percentage Change in Stock Value =

\[
\frac{\text{Tax Cut}}{\text{Discount} \times 100}
\]

\[
\text{Stock Value}
\]

There are four issues that affect this percentage: the size of the tax cut, the discount factor, the current value of the stock market, and whether the formula itself, which reflects a full and permanent expected capitalization effect, is complete.

Poterba reports the first year tax cut as $26 billion. The Treasury estimate of the dividend tax proposal is $20 billion for 2003, according to an Administration document issued on January 7, 2003. This number is, however, somewhat understated for capitalizing over time because the proposal includes not only dividend relief but also a basis adjustment that will reduce tax revenue later; only a small share of this basis adjustment is included in the first year cost. There may also be some slight difference because of accruals versus collections. To correct for the first, the estimated costs would increase to about $25 billion were the full effects of basis adjustment to be taken into account. Given there is some slight discrepancy between accrual and collection basis that would also make the Treasury number slightly too small, along with a small offsetting effect from the fact that the first few years do not actually include the full effects of basis adjustment, Poterba’s $26 billion number is a reasonable one.

The annual revenue cost must be summed over all future years and then discounted at some rate of return in order to create a present value. Poterba estimates the present value of the stream of tax cuts to be $500 billion to $650 billion. In the steady state, dividends and tax payments would grow at the growth rate of the economy as well as being discounted at some after-tax equity return. Thus we can think of the discount factor as being \( R - g \), where \( R \) is the after-tax required rate of return of the investor and \( g \) is the growth rate. Thus, this discount factor is between 0.04 (26/650) and 0.052 (26/500). This range of values seems reasonable. With a 2.5 percent real growth rate, the 4 percent value implies a real return of 6.5 percent and a nominal return of 8 percent with 2.5 percent inflation. The 5.2 percent value implies a return of 7.7 percent real and 10.2 percent nominal return with 2.5 percent inflation.

Estimates are sensitive to stock market value, which, of course, fluctuates considerably. At close of business on January 15, the value was estimated at $12.2 trillion, which leads to a range of percentage ap-

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7 Based on an average five–year holding period, the current year cost for the basis adjustment’s effect on capital gains will be about a fifth of the long run effect. However, the capital gains tax is much lower than the dividend tax, so its importance is somewhat diminished. Capital gains tax rates are around 18 percent. (Gains for those in the 15 percent bracket are taxed at 10 percent if held for one year and 8 percent if held for five years; otherwise gains are taxed at 20 percent if held for one year and 18 percent if held for ten years.) If we cut the 18 percent rate in half to account for the fact that about half of gains are never realized, and assume that the average marginal tax rate on ordinary income is around 30 percent, the capital gains tax rate is about 30 percent of the individual rate. With about half of earnings paid out as dividends, based on data for the last few years, the permanent cost will bear the ratio of \((0.5 \times 0.3 + 0.5)/(0.5 \times 0.2 \times 0.3 + 0.5)\), or 1.23. This ratio suggests a cost of $24.6 billion. (Note: When calculating dividend payout shares from the National Income and Product Accounts, it is important to subtract out from earnings and from dividends the significant amount of dividends paid by Subchapter S corporations that do not pay the corporate tax.) There may also be some slight difference because of accruals versus collections.

8 This value is based on market value at the end of the 3rd quarter 2002 for the Nasdaq, New York Stock Exchange and Amex: $1.717 trillion, $9.041 trillion, and $0.094 trillion respectively, or $10.8 trillion (see http://marketdata.nasdaq.com/aspx/sec1summary.aspx). These values were updated for close of business January 15 using the Nasdaq, S&P 500 and the AMEX composite (factors of 1.215, 1.122, and 1 respectively, see http://finance.yahoo.com/m1?u; note that the NYSE composite was not used because it has been recentered).
preciation derived from the tax cut of about 4.1 percent to 5.3 percent using Poterba’s method. Slightly over a week later on January 24, it had fallen to about $11.6 trillion. Poterba appears to be using a value of around $10 trillion to $11 trillion, which is reasonable given market volatility.

A 5 to 6 percent stock market gain is a small effect. For example, for the period from the end of September 2002 to mid-January 2003, the market rose by 12 percent, an effect over twice the size of the estimated stock market effect of the dividend tax proposal. The market fell by 5 percent from January 15 to January 24, a period of slightly over a week. This effect is about the same size as Poterba’s estimated stock market effect and it suggests that if Poterba’s calculation is correct, the increased value is unlikely to have much effect on consumer or investor confidence.

The calculated effect is the equivalent of permanently capitalizing the value of the tax cut in the market. But there are two important reasons that this value is an upper limit. (This discussion sets aside for the moment the new view of dividends, discussed below).

The first, and perhaps most important, is that the higher returns in the stock market will attract money out of the bond market, and raise interest rates. (The economic stimulus itself also increases interest rates by increasing the demand for money.) This increase in interest rates will have two effects that tend to lower the effect on the stock market. The most important is that the expected after tax return that forms part of the discount factor is tied to interest rates and will rise. Even very small increases could eliminate most of the expected rise in stock prices. For example, a 10 basis point change in the interest rate, that increases it by 0.1 percentage point, would reduce market values by two to 2.5 percent, and would offset about half the estimated rise in value. The ratio of new to old market value is 

\[
\frac{R - g}{R - g + 0.1},
\]

where \( R - g \) is the discount factor. Thus the price falls by 2.5 percent at 4 percent \((1 – 0.04/0.041)\) and by 1.9 percent at 5.2 percent \((1 – 0.052/0.053)\). (This calculation assumes an additive risk premium.) A change of slightly over 20 basis points would eliminate any effect on market price completely even if this effect occurred only through the discount factor. The higher interest rates would also increase borrowing costs, reducing cash flow, which would also act to reduce stock market values.

If the supply of savings is fixed (e.g., increased private savings does no more than offset government borrowing to finance the tax cut), there is no new wealth in the economy. In that case, asset prices in the economy will quickly return to their equilibrium values. As soon as individuals make their portfolio shifts (out of bonds and into stocks), which would presumably happen very quickly, the interest rate would rise. Moreover, some effect on corporate cash flow would occur as borrowing costs rose. The offsetting of the price effect would appear more quickly if individuals are forward-looking and expect interest rates to rise. That is, if individuals have foresight and expect interest rates to rise, they will take this expectation into account and alter their own discount rates for valuing stock immediately even before portfolio shifts are complete or all debt has turned over.

If the savings rate increases, there could be a longer adjustment period but the rise in prices would be temporary, because added investment would ultimately drive down the marginal return on capital. If individuals are myopic, there could be a rise reflecting full capitalization that would simply decline over time. But if investors are rational and forward looking, the expected change itself would moderate the initial rise. The appendix shows how this adjustment process might occur when we hold the interest rate fixed. If \( h \) is the fraction of the remaining difference
between the new and old values of the marginal product of capital that is made in each period, then the ratio of the actual percentage change assuming forward looking investors to the change as calculated above is \( \frac{\text{discount}}{\text{discount} + h} \). For example, if the dividend rate equals 0.04 and the fully capitalized effect is 5.3 percent, if \( h = 0.10 \), the actual effect will be only 1.5 percent. Since the effect of this change on the desired capital stock and the desired marginal product of capital is only about 4 or 5 percent, this change is a small one that could be expected to be adjusted to quickly.

There is one offsetting factor that could lead to a small share of the market rise being permanent: the possibility of permanent excess profits from market power. If a firm is earning excess profits because it has market (or monopoly) power, that effect would have been capitalized into a higher market value for stocks. To use an extreme case, if every firm were a pure monopoly with demand characterized by a linear demand curve, only half of a change in tax is passed on in price. Therefore, one would expect that if the only adjustment that occurred was a change in the marginal product of capital, half the rise in the stock market would be permanent and, using the example in the previous paragraph, the initial effect might be a 3 percent increase rather than a 1.5 percent increase. This effect is much too large, however. Some of the adjustment is likely to take place in the discount rate in the denominator, which exerts the same proportional effect regardless of market value. Pure (unregulated) monopolies largely don’t exist in the United States, and the passthrough becomes larger as the number of firms increase. Moreover, in oligopoly models of any size, curvilinear demand curves can cause more that 100 percent of taxes to be shifted, and price competition (known as Bertrand competition) can lead to the same effects as perfect competition. Thus, while the effects of market power may slightly increase the initial price effect because some effects are permanent, this effect is probably quite small.

**What About the “New View?”**

There is a theory, referred to as the “trapped equity” or “new” view (although it is 25 years old) that suggests dividend taxes (in excess of capital gains taxes) are irrelevant to investment behavior. The present value of the stream of dividend taxes in excess of capital gains taxes under the proposal would show up as a permanent windfall to current stockholders. If one holds this view, the effects on the stock market should be larger. However, there would be little efficiency gain from the reallocation of capital for eliminating these taxes. Again, a belief in a large permanent effect on the stock market is only consistent with a belief that there is little to gain in efficiency effects from dividend tax relief. As this section suggests, however, even this analysis suggests a permanent stock market increase of only half of the fully capitalized effect, or around 3 percent in our example. For a tax that reduces both dividends and capital gains taxes, the portion that reflects the excess of dividends over capital gains would be permanently capitalized. Assuming a tax rate of 30 percent on dividends and 10 percent on capital gains, and about half of income paid in each form, about half the tax cut would be permanently capitalized. To understand how this theory developed and what it means, it helps to contrast it with the traditional view, which underlies the analysis in the previous section.

In the traditional view of dividends the cost of capital is affected by both dividend and capital gains tax rates. The double tax on dividends causes inefficiencies and misallocation of capital away from corpo-
of explaining why firms pay dividends. It is based on the notion that dividends are trapped in the firm and that earnings cannot be paid out to the shareholder in any other form, i.e., no share repurchases. The dividend tax must be paid now, or later with interest, but cannot be avoided. The idea is much like that associated with an individual retirement account. With the trapped equity view, the problem of double taxation is much less severe because the cost of capital is affected only by the accrual equivalent capital gains tax rate, which tends to be small because of lower rates, deferral of tax, and avoidance of tax if held until death.

Assuming financing via retained earnings, in the new view a dollar of equity capital has a value (referred to as \( q \)) of \((1 - \theta)/(1 - c)\), where \( \theta \) is the dividend tax rate and \( c \) is the capital gains tax rate. This ratio occurs because the shareholder is indifferent between receiving a dollar of dividends net of tax (that is the cost of retaining earnings is \( (1 - \theta) \)) and retaining it in the firm where its benefit is the increase in firm value, or \( q \), times \((1 - c)\), where \( c \) is the capital gains tax rate.

The original form of the trapped equity view was essentially an alternative way of explaining why firms pay dividends.
These estimates are, however, likely to be overstated, because a large fraction of taxpayers (more than half) are not subject to taxes on dividends. Using a conservative assumption of the non–taxed fraction, 60 percent, the tax rates would be only about 40 percent as large, so the effect on the stock market would be closer to 9 percent (rising from $(1 – 0.4 \times 0.3)/(1 – 0.4 \times 0.1)$ or $0.917$ to $0.973$), implying only a 6 percent increase. These same values would produce an 11 percent increase for permanent capitalization. Note that this calculated capitalization value is higher than the direct calculation from the revenue loss discussed above, but these values are highly sensitive to small variations in the chosen tax rates (particularly reflecting the magnitude of preference passthrough limits, which we have poor information on) and fluctuations in initial stock market value.

The trapped equity view, at least in its pure original form, has fallen out of favor somewhat for theoretical reasons. One of the requirements for this pure form is that firms not be able to repurchase their own shares, an option that has always been available in the United States, and in fact has increasingly been used by firms. Another is that firms do not issue shares and pay dividends simultaneously. The traditional view can easily accommodate the repurchase of shares along with payment of dividends, while modifications to the new view to make it consistent with observed share repurchases may succeed in maintaining the view that dividends are irrelevant to investment but tend to reduce the magnitude of the stock market effects. One such approach is to make the dividend tax rate in the valuation formula a weighted average of the dividend tax and the capital gains tax based on the ratios of dividends paid to share repurchases, although even this view requires a quite restrictive assumption of a fixed proportion of repurchases and dividends. There are some other conceptual problems that arise with the trapped equity view as well as a number of attempts to address the issue through empirical studies. An earlier survey of this issue by Zodrow (1991) suggests that empirical work has not supported the new view. Two recent papers by Harris, Hubbard, and Kemsley (1999) and Auerbach and Hassett (2003) find some support for the new view, but Hanlon, Myers, and Shevlin (2002) find some technical problems with the first of these. The latter paper also includes a review of the literature.

**TAX EXEMPT SHAREHOLDERS AND TAX PREFERENCE PASSTHROUGH LIMITS**

Two provisions limit the benefits—and the revenue loss—of the President’s approach to corporate tax integration. First, the benefits are not available to tax– exempt shareholders (e.g., pension funds) or foreign shareholders who do not pay U.S. individual income tax. Over half of stockholders fall into this position (Esenwein and Gravelle, 2003a).

There is a restriction on benefits for income that is not subject to tax because of tax preferences in the President’s proposal. We might estimate the rough magnitude of this effect by looking at tax expenditures (special deductions, exclusions, and credits that are considered to depart from a normal income tax). In 2003, tax expenditures were about 65 percent of tax liability, implying about a 40 percent reduction in cost. However, because of the stacking of dividend relief first, which is subject to higher taxes, the reduction in revenue cost could be smaller (by as much as a half). Tax expenditures are a little higher than average currently because of
temporary expensing. On the other hand, the tax expenditure list may not include all subsidies. Indeed, the preference restriction might be helpful in reducing unintended tax shelters.

These aspects introduce some uncertainty into the analysis of effects. To the extent that tax-exempt holdings are not marginal, the effect on savings would be larger because the marginal effect would be larger than the average. It is unlikely however, that this effect would reverse the conclusion that the proposal will be contractionary for growth. If a term were added for an additional marginal tax rate effect that doubles its size and a substitution elasticity of one plus the base elasticity were used in the growth model discussed above (see discussion in appendix), the effects, even for the highest value in Table 1, would be negligible in the first few years and still eventually turn negative, reducing output by 0.02 percent in year ten, and by 0.21 percent in year 20.

Since tax exempt funds can make portfolio choices, there is less reason to adjust efficiency effects discussed in the previous section or stock market effects to consider them infra-marginal.

The second provision restricts tax benefits for income that is preferentially treated (see Esenwein and Gravelle, 2003b). These provisions are designed to disallow dividend exclusions and increases in basis for income that has not been subject to a tax. There are many implications of these provisions. While these provisions would not drive a potential wedge between average and marginal tax rates as in the case of the tax exempt investors, they make the interpretation of welfare gains more problematic. To the extent that they preserve differential treatment between corporate and non-corporate investment, debt and equity, and pay-out functions compared to a provision that did not limit tax benefits, they lower the welfare gains of corporate tax integration. If they discourage activities that were desirable to encourage, the effect would also be to lower welfare gains; however, if they discourage activities that were not desirable to encourage, the effect would be to raise welfare gains. Whatever the net effect of the preference pass-through provision, a better approach if preferences were viewed as undesirable would be to repeal them outright, as this provision preserves the benefits for unincorporated business investment and debt finance, but not for corporate equity investment.

The effect of the restricting preference pass-through on marginal incentives can be quite large. If a firm pays out all of its earnings in dividends and the shareholder has the same tax rate as the firm (35 percent), then every dollar of corporate tax saving results in a 100 percent loss of the subsidy. When corporate taxes fall by a dollar, the net benefit to the shareholder (who must pay individual taxes) is \(1 - t\), where \(t\) is the individual tax rate. Under the preference pass through provision, a fall in tax by a dollar will induce an increase in taxable income of the credit divided by the tax rate, but a tax is now due on that income \(i.e.,\) the credit is worth \(1 - t/u\), where \(u\) is the corporate rate and \(t\) is the individual rate. If the tax rate is the same as the corporate rate the increased tax liability of the shareholder exactly offsets the decreased tax liability of the firm and the value of the preference disappears. (See appendix for a mathematical derivation). If the firm never paid out dividends and the capital gains tax rate is 10 percent, then the after tax value of a dollar of tax benefit would be $0.90, and the benefit under the new system would be \((1 - 0.10/0.35)\), for a 20 percent reduction. The reduction in preference is sensitive not only to tax rate but also to payout ratio and share of income subject to a preference. As the payout ratio rises, as long as the preference is still taxed under the capital gains tax (i.e., the EDA is greater than dividends)
Effects of Dividend Relief on Economic Growth

the after tax value of the preference remains fixed under new law, but the previous value (taxed under a weighted capital gains and dividend rate) is smaller, so the percentage reduction is less. As soon as the dividend payout ratio is large enough to trigger a dividend tax, the percentage reduction begins to rise. The trigger point is determined by the preference share, which is illustrated in Table 6. Thus the EDA produces a peculiar pattern of reduction in preference values.

For some types of investments, the EDA simply limits the benefit granted. For example, general investment in equipment is taxed but at a somewhat lower rate because of accelerated depreciation. (The provision does reduce the attractiveness of the temporary stimulus for investment). For investments with very large preferences the result could be to actually discourage investments, especially in cases where the pretax return is reduced substantially in return for the tax benefit (e.g., tax exempt bond interest). Ernst and Young (2003) presented a study that suggested a significant reduction in low income housing would occur.

These two aspects of the proposal—excluding tax exempt investors and limited preferences—also may interact. There are incentives for tax exempt investors to shift to firms that have a lot of preferences and taxable investors to shift to firms with few preferences, which could result in a larger tax cut and larger cost.

CONCLUSION

None of the effects of the dividend tax relief proposal is likely to be large, mainly because the tax cut itself, since it is restricted to individual taxes, does not include tax exempt investors, and restricts benefits for preferentially treated income, is not really that large. It amounts on average to about a 1 percentage point reduction in the overall tax rate on capital income and about 2 percentage points in reduction of the tax on corporate equity. As a short term stimulus, either directly or via stock market effects (which are themselves quite small), it is not clear that the dividend relief is superior to other alternatives, while its long run growth effects are negative if it is deficit financed (and may be negative even if it is not). The principal economic justification for the proposal is the economic efficiency gains from more efficient allocation of capital, but those gains may be enhanced or undermined by the preference passthrough rules.

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APPENDIX

GROWTH MODEL

The growth model used to calculate the effect of dividend relief on future output and the standard of living is composed of the following equations. The first is a production function:

\[ Q_t = A[aK_t^{(1-1/S)}+(1-a)L_t^{(1-1/S)}]^{1/(1-1/S)} \]

where \( Q_t \) is output at time \( t \), \( K_t \) is the capital stock at time \( t \), \( L_t \) is the labor supply at time \( t \), \( S \) is the factor substitution elasticity, and \( A \) and \( a \) are constants.

The second is the equation for change in the capital stock letting all variables be expressed in period one income levels:

\[ K_{t+1} - K_t = s_t (Q_t - \delta K_t - t_t R_t K_t - t(Q_t - \delta K_t - R_t K_t)) - nK_t - D_t / (1 + n) \]

where \( s \) is the savings rate out of disposable income, \( \delta \) is the economic depreciation rate, \( t_t \) is the tax rate on capital income, \( R \) is the pretax rate of return to capital, \( t \) is the tax rate on labor income, \( n \) is the growth rate of the economy, and \( D \) is the deficit which is the sum of tax change and interest on the accumulated debt (pre-existing debt and deficit are set to zero). Interest on the debt is the pretax return less a fixed 4 percent risk premium, all multiplied by \((1 - t_g)\) where \( t_g \) is the tax rate on government interest payments.

The third is the equation for the savings rate:

\[ s_t = b(R_t(1 - t_g))^E \]

where \( E \) is the savings elasticity and \( b \) is a constant.

Maximizing [1], subject to \( Q_t = (R_t + \delta)K_t + W_t L_t \), results in the first order condition:

\[ R_t = a(Q_t/K_t)^{(1-1/S)}A^{(1-1/S)} - \delta. \]

The model is calibrated to resemble the U.S. economy, with initial \( W \) and \( Q \) normalized to one, \( K \) set at 3.5, \( \delta \) set at 0.03, \( R \) set at .07, all initial tax rates set at 0.3, and \( n \) set at 0.025. The budget constraint is used to calibrate labor supply, which is thereafter set as a fixed amount (not sensitive to changes in the wage, which is a reasonable representation of the labor supply literature). We do, however, explore the effects of a labor supply response, using the additional labor supply formula:

\[ L_t = h(W_t(1 - t))^\gamma \]

where \( h \) is a constant and \( \gamma \) is the labor supply elasticity.

We simulate the effects for a change similar in size to the proposed dividend relief plan (determined by dividing initial revenue loss by output), reducing the tax rate on capital by 1 percentage point.

For the discussion of using a larger versus marginal tax rate when considering tax exempt investors, the savings equation in [2] above would be multiplied by a term that is \((1 - t_a)/(1 - t_m)E^*\), where \( a \) and \( m \) refer to average and marginal tax rates, and \( E^* \) to the substitution elasticity. The substitution elasticity would be the observed elasticity plus the income elasticity.

In the case of international capital flows, the capital stock and output are fixed. The deficit still accumulates and the effects on the standard of living are reflecting in a reduction of income available to Americans because a share of the capital stock is owned by foreigners. Where this return is subject to tax, some portion is available because it is collected by the Treasury.

The life cycle model replaces the savings rate equation in [3] with the steady state ratio of private consumption (or saving) to after-tax wage. The basic formula can be found in a study by Larry Summers (1981) (equation 7): wage rates and rates of return in his formula should be considered after tax rates. For calibrating and solving this model, the growth rate of 0.025 is divided into an increase in the population of 0.01 and a rate of productivity advance per worker of 0.015. The normal life span of a new adult is set at 55 years and the working career at 40 years.
This section discusses an approximation of the calculation of effects in the stock market by forward-looking investors. The effects do not account for the possible speedup in capital gains taxes due to the rise and then fall of the price, but this effect is likely to be small.

For investment purposes, one can solve for the marginal product of capital through an equation for the present value of earnings on a dollar of investment:

\[ 1 = \int_0^\infty \left[ (MPK(1 - \mu) - (g + \delta + \mu z(g + \delta))(1 - \theta) - cg) e^{-(R - g)t} + \mu z(1 - \theta) \right] dt \]

where \( MPK \) is the marginal product of capital, \( \mu \) is the corporate tax rate, \( \delta \) is the economic depreciation rate, \( g \) is the growth rate, \( \theta \) is the dividend tax rate, \( R \) is the after-tax discount rate, and \( c \) is the capital gains tax rate. Solving for \( MPK \), and assuming that economic depreciation is allowed, so that \( z = \delta / (R + \delta) \)

\[ MPK = \frac{R - g(\theta - c)}{(1 - \theta)(1 - \mu)} + \delta. \]

To solve for the value of the firm per dollar of capital stock:

\[ V = \int_0^\infty \left[ (MPK(1 - \mu) - (g + \delta + \mu D)(1 - \theta) - (g + \delta + \mu D) e^{-(R - g)t} \right] dt \]

where \( V \) is the value of the firm and is the annual depreciation deduction. The solution to the integral is \[ \frac{\left[ MPK(1 - \mu) - (g + \delta + \mu D)(1 - \theta) - cg \right]}{(R - g)}. \] Note, as discussed above, that an increase in \( R \) will reduce the value. In the steady state, and assuming economic depreciation \( D = \delta \) then, by substituting [7] into [8], obtain \( V = 1 \).

Eliminating the capital gains tax and the dividend tax, the value of the firm is:

\[ V = \int_0^\infty \left[ (MPK(1 - \mu) - (g + \delta))(1 - \theta) + \mu z(1 - \theta) \right] dt. \]

If the marginal product of capital never changes (permanent capitalization), then substituting [7] into [9]:

\[ V = 1 + \frac{(\theta(R - g) + cg)}{(1 - \theta)} \]

Allowing the marginal product to gradually fall to its new level:

\[ MPK^* = \frac{(R - g)}{(1 - \mu)} + \delta. \]

Suppose the gap between old and new marginal product is expected to change at the rate \( h \). Then write the value as:

\[ V = \int_0^\infty \left[ (MPK^* + MPK^* - MPK*) e^{-ht}(1 - \mu) - (g + \delta + \mu D) e^{-(R - g)t} \right] dt. \]

When \( t \) is zero, the marginal product is equal to \( MPK \); as \( t \) goes to infinity, the marginal product is equal to \( MPK^* \).

\[ V = 1 + \frac{(\theta(R - g) + cg)}{(1 - \theta)} \]

Thus the ratio of change with the expectation of adjustment to the permanent capitalization effect is \( (R - g)/(R + h - g) \). Note that we do not use [10] and [13] directly to determine stock values for two reasons. First, we don’t have enough information about the effective tax rate given that only part of dividends will be excluded because of preference allocation and only part of dividends are now subject to tax. Second, these formulas for stock market effects would be true only if the market is currently experiencing an equilibrium long run price level under current tax rules, an assumption that cannot be made. By using ratios, the estimate can be made with direct estimates of the value of taxes and the stock market.

Note also that when moving from one tax regime to another, a permanent capitalization
The effects would be to obtain a market value of \[
\frac{(1 - \theta)}{(1 - \theta)} \left( 1 + \frac{cg}{R - g} \right) + c^*g/(R - g),
\]
where the * refer to the new tax rates.

**THE TRAPPED EQUITY OR NEW VIEW OF DIVIDENDS**

Assuming financing via retained earnings, a dollar of equity capital has a value of \[
\frac{(1 - \theta)}{1 - c}.\]
This occurs because the shareholder is indifferent between receiving a dollar of dividends net of tax (that is the cost of retaining earnings is \(1 - \theta\)) and retaining it in the firm where its value is the increase in value, or \(q\), times \((1 - c)\), where \(c\) is the capital gains tax rate. That is, in equilibrium

\[
(1 - \theta) = q(1 - c), \text{ and therefore } q = \frac{(1 - \theta)}{(1 - c)}.
\]

The present value of earnings on a dollar of capital must equal \(q\). Therefore:

\[
q = \int_0^\infty \left[ \left( MPK(1 - \mu) - (g + \delta) + \mu z(g + \delta) \right) (1 - \theta) + qcg e^{(R - \delta) t} dt + \mu z(1 - \theta) \right].
\]

and substituting in for the equilibrium value of \(q\):

\[
MPK = \frac{R}{(1 - c)(1 - \mu)} + \delta.
\]

Only the capital gains tax rate appears in the marginal product of capital term.

Note that this model (as shown in equation [14]) implies perfect substitutability between receiving earnings as a dividend and as a capital gain and dividends are paid out only as a residual after all investment needs are satisfied. Note also that the model no longer works if share repurchase is allowed as an alternative, which would imply that the earnings of share repurchase, \((1 - c)\), equals the benefits of reinvestment, \(q(1 - c)\). In this case, \(q\) would have to equal one. Moreover, no dividends would be paid. To allow for simultaneous investment, share repurchase, and dividends a model that provides imperfect substitutions between these choices or some additional benefit of dividends or cost of share repurchases. One such theory consistent with a traditional view is that dividends are differentiated from capital gains so that for the marginal dollar the dividend (and its benefit) or the capital gains (and its cost) are equated. Other theories have presupposed that there is a fixed share of dividends and retained earnings (with all marginal adjustments made through share issues), which is consistent with a traditional view, while another is that share repurchases and dividends are made in fixed proportion (a theory consistent with a modified new view where dividend taxes do not matter in the cost of capital and the value of \(\theta\) is a weighted average of the dividend and capital gains tax). Why such choices should be completely imperfect substitutes is not clear, however. Theories also suppose that repurchasing shares is costly relative to paying dividends because of information asymmetries which again would permit a modified new view.

**EFFECT OF EDA ON PREFERENCES**

Under current law, after tax income, which can be either paid to shareholders as dividends or retained for reinvestment, is:

\[
Y \times (1 - u) + c
\]

where \(Y\) is economic income before tax, \(u\) is the corporate tax rate, and \(c\) is the credit.

After tax accrued income (either retained or distributed) to shareholders is:

\[
Y \times (1 - u) + c - xt(Y \times (1 - u) + c) - (1 - x)t_y(Y \times (1 - u) + c)
\]

where \(x\) is the share of earnings paid out as dividends, \(t\) is the tax rate of the shareholder and \(t_y\) is the accrual equivalent tax on capital gains (a rate that takes into account that some gains tax will never be paid because stock is held until death). For those above the 15 percent rate, the tax on capital gains is 20 percent if held for a year and 18 percent if held for five years. Typi-
cally, the tax rate is roughly halved to reflect the fraction of gain that is never taxed and the advantage of deferring the tax on that which is. In the calculations below, we use a rate of 10 percent.

If we separate out the terms associated with preferences, or $c$, we see that a credit, other things equal, increases after tax income by:

$$\text{Increase in income due to credit} = c(1 - xt - (1 - x)t_g).$$

As this formula indicates under the present law treatment individual shareholder taxes are effectively paid on the value of the tax credit, an effect that occurs because of the normal reduction in shareholder tax that occurs when the firm incurs additional costs due to paying taxes.

Under the new system, the EDA is defined as:

$$EDA = T/u - T = T(1 - u)/u$$

Since:

$$T = (uY - c),$$

one can rewrite (20) as:

$$EDA = (uY - c)(1 - u)/u = Y(1 - u) + c - c/u.$$

The EDA is after tax income reduced by the income excluded from tax due to the credit ($c/u$).

With the new system, there are two cases, one where dividends are less than the EDA and one where they are more than the EDA.

Case I: $x(Y(1 - u) + c) < Y(1 - u) + c - c/u$.

In this case,

$$\text{After tax income} = Y(1 - u) + c - xt(Y(1 - u) + c) - (1 - x)t_g(Y(1 - u) + c) + tD + t_g(EDA - D)$$

where $D$ is the level of dividends, equal to $x(Y(1 - u) + c)$.

The second and fourth terms cancel, and by recombining terms and substituting:

$$\text{After tax income} = Y(1 - u) + c - t_g c/u.$$

And the increase in income due to the credit is $c (1 - t_g/u)$.

If we compare this amount to the amount in [19] we can see that the value of the credit falls. Recall that this case only applies when the value of $x$ meets the conditions for Case I, which by some manipulation, can be expressed as:

$$x < \frac{u(1 - u) - (1 - u)c/y}{u(1 - u) + uc/y}.$$

At one extreme, if $x = 0$, the value of the credit under current law is $c(1 - t_g)$ and the value under the new system is $c(1 - t_g/u)$. With $t_g$ set at 0.1 and $u$ at 0.35, the value per dollar of additional credit is $0.90$ in the old system and the value would be $0.71$ in the new system. Note that as long as the distributions fall into case I, the after tax benefits will be constant under the new system, but it will decline under the old system as the share paid out as dividends increases. (These calculations apply only to the margin, as changes in the credit affect the cut–off point between Case I and Case II.)

Case II: $x(Y(1 - u) + c) > Y(1 - u) + c - c/u$.

In this case:

$$\text{After tax income} = Y(1 - u) + c - xt(Y(1 - u) + c - (1 - x)t_g(Y(1 - u) + c) + tEDA)$$

Note that in this case an additional credit results in an additional distribution taxed partially at the capital gains tax rate and partially at the dividend tax rate, and also reduces the EDA amount (for a dollar of credit, the account falls by $1/u$). After some manipulation, the value of $c$ can also be expressed as $c(1 + (t - t_g)(1 - x) - t/u).$