

# A REPORT OF THE HERITAGE CENTER FOR DATA ANALYSIS

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DIVIDEND PLAN WOULD  
INCREASE CORPORATE INVESTMENT

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# HOW THE PRESIDENT'S DIVIDEND PLAN WOULD INCREASE CORPORATE INVESTMENT

NORBERT J. MICHEL, RALPH A. RECTOR, PH.D., AND ALFREDO GOYBURU

President George W. Bush's proposal to end the double tax on dividends has met with considerable controversy. Opponents claim that dividend tax relief would benefit only the wealthiest taxpayers, while supporters claim that it would spur new corporate investment, leading to additional jobs and higher incomes.

This *CDA Report* provides specific examples of cost of capital calculations based on an analysis of corporations in Maine. Furthermore, it describes the mechanisms through which additional corporate investment and subsequent economic growth could be realized by implementing the President's plan. We find, for example, that under the Bush plan:

- **Corporations' weighted average cost of capital would fall.** The estimated weighted average cost of capital for a sample of publicly traded companies in Maine, for example, would fall by about 2.5 percent. Estimates by analysts with the Center for Data Analysis (CDA) indicate that even non-dividend-paying companies would see their cost of capital fall under the Bush proposal.
- **Investors in non-dividend-paying firms would see tax relief under the Bush plan.** Assuming a five-year holding period from 1997 to 2001, a typical investor with shares in Idexx (a publicly traded, non-dividend-paying company in Maine), for

example, would have been eligible for a basis adjustment of nearly \$4 per share. This adjustment would have lowered the investor's effective capital gains tax rate by about 35 percent.

- **Investors would realize significantly lower effective dividend tax rates.** Married-joint filer taxpayers in the 10 percent tax bracket, with taxable income of \$6,050, would see their effective tax rate on dividends drop from 32.5 percent under current law to 25 percent under the President's plan (a decrease of 23.08 percent). For a couple in the 27 percent tax bracket, with taxable income of \$81,078, the effective tax rate on dividends would fall from 45.25 percent to 25 percent (a decrease of nearly 45 percent).<sup>1</sup>

## WHY THE WEIGHTED AVERAGE COST OF CAPITAL IS IMPORTANT TO INVESTMENT DECISIONS

The economic reasoning behind the President's proposal is that it would increase corporate investment by lowering firms' cost of capital.<sup>2</sup> This concept is somewhat technical, but its underlying logic is quite straightforward. The key is that corporate managers increase their investments because the cost of the funds (the capital) needed to invest in projects falls. In other words, the proposal

1. These levels of income are approximately equal to the taxable income midpoints of the respective tax brackets and assume a corporate tax rate of 25 percent.

would lower firms' cost of capital. Investment opportunities that currently are expected to lose money would instead be viewed as profitable.

When deciding whether to undertake capital projects, such as investing in buildings, equipment, and machinery, corporate managers estimate expected profits. To estimate a project's profit (or return), managers compare the amount of money they expect the project to bring in to the cost of the funds needed to undertake it. To be profitable, therefore, the project's rate of return must be at a level at least as great as the firm's cost of capital. Any project below that level would be expected to lose money and, as a result, would not be undertaken.

For this reason, the level that determines whether a project is profitable is sometimes referred to as the "hurdle rate."<sup>3</sup> Any project with an expected return that clears the hurdle has a return that is greater than the firm's cost of capital, meaning that it will be undertaken because it is expected to be profitable. Although there are several possible approaches, a widely accepted method for estimating a firm's cost of capital is to estimate its weighted average cost of capital (WACC).<sup>4</sup>

Since most companies finance their operations with a mixture of debt and equity, this method has the advantage of accounting for the cost of *all* the firm's capital. An example of the calculation for the WACC is<sup>5</sup>

$$\text{WACC} = w_d k_d (1 - t_c) + w_s k_s$$

where  $w_d$  is the weight of the debt capital (the proportion of debt to total assets);  $k_d(1 - t_c)$  is the after-tax cost of the debt capital (the interest cost);  $t_c$  is the corporate tax rate;  $w_s$  is the weight of the equity capital (the proportion of the equity to total assets); and  $k_s$  is the after-tax cost of the equity capital.<sup>6</sup>

The WACC is an estimate of the return that corporate managers must provide to their capital suppliers. One component of the WACC—the cost of the firm's equity capital, or  $k_s$ —is the return that must be provided to shareholders (equity suppliers). This component is the key to examining why the double taxation of corporate income leads to lower levels of investment than would otherwise exist.

When shareholders buy stock, they expect to receive a return on their investment by receiving dividends and/or capital gains. Dividends are cash distributions paid directly to investors, and capital gains are realized when shares of stock are sold (provided the share price is higher than when purchased). Capital gains arise, in part, as a result of the firm's retaining cash and using it to fund its operations.

Cash retained by the firm, as well as cash distributed as dividends, comes from after-tax dollars. In other words, companies have to pay corporate taxes *before* they can retain and/or distribute cash dividends. Furthermore, once shareholders receive dividends or sell their shares, they are taxed at the personal level.<sup>7</sup> Consequently, both corporate and personal taxes reduce the amount of cash that is

2. Despite providing shareholders with a basis adjustment for retained funds, the personal dividend exclusion component of the President's plan has garnered most of the media attention. From an economic standpoint, however, the basis adjustment, which lowers shareholders' effective capital gains tax rates, is also important. Combined, the two components eliminate distortions from having various tax rate structures for corporate income while also eliminating a major source of double taxation.
3. For more on the hurdle rate, see Norbert J. Michel, "Everyone Profits from Hurdling Dividends," Heritage Foundation *Web Memo* No. 248, April 3, 2003, at [www.heritage.org/Research/Taxes/wm248.cfm](http://www.heritage.org/Research/Taxes/wm248.cfm).
4. According to a 1993 study of *Fortune* 500 companies by Howard Bierman, 93 percent of these companies calculate a WACC as part of their capital budgeting process. See Eugene F. Brigham and Joel F. Houston, *Fundamentals of Financial Management* (Fort Worth, Tex.: The Dryden Press, 1999), 2nd ed., p. 394.
5. Although not specified here, a more general version of this equation could include the weight and cost of preferred equity and other financing instruments as well.
6. The corporate tax rate is applied only to the debt rate and only because interest is tax-deductible at the corporate level (providing a tax subsidy to debt), while equity payouts are not.
7. Dividends are taxed as ordinary income while most capital gains are taxed at either 10 percent or 20 percent, depending on an individual's taxable income.

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### Estimated Weighted Average Cost of Capital (WACC) for Publicly Traded Companies in Maine; Before and After the Bush Proposal\*

Company Name	WACC Under Current Law	WACC Under Bush Proposal
American Skiing Co	6.79%	6.79%
Bar Harbor Bankshares	2.74%	2.64%
Baycorp Holdings Corp	2.92%	2.91%
Camden National Corp	2.42%	2.37%
Fairchild Semiconductor Intl	6.57%	6.56%
Idexx Labs Inc	5.86%	5.62%
Immucell Corp	5.70%	5.64%
Intelligent Controls Inc	5.67%	5.67%
Maine Public Service	6.00%	5.08%
Northeast Bancrp	2.34%	2.29%
Nyer Medical Group Inc	4.22%	4.22%
Phoenix Footwear Group Inc	6.61%	6.61%
<hr/>		
<b>Average Cost of Capital:</b>	4.82%	4.70%
<hr/>		
<b>Projected Decline Under Bush Proposal:</b>		-2.49%

**Note:** \*The WACC was calculated using data from 1997 through 2001, and represents the degree to which the WACC for the sample could have fallen over this time period. The four companies for which the estimated cost of capital did not change paid no dividends during this period and had a lower average share price in 2001 than 1997. The WACC was calculated for this sample of publicly traded firms using the following formula:  $WACC = w_d k_d (1 - t_c) + w_d k_d * t_d + w_s k_s + [w_s (D_1 * t_{div} / P_0 + g * t_{effc})]$ . The sample firms, and their corresponding financial data, were extracted from the Standard and Poor's Compustat database. For more details on the methodology, see the Appendix of this paper.

**Source:** Center for Data Analysis calculations using data from the Standard and Poor's Compustat database.

actually returned to shareholders, thus increasing the firm's cost of equity capital.

Although there are several methods for estimating the firm's cost of equity capital ( $k_s$  in the previous equation), one acceptable method uses the following formula:

$$k_s = D_1 / P_0 + g$$

where  $D_1$  is the after-tax amount of the dividend that shareholders expect to receive,  $P_0$  is the price of the shares purchased, and  $g$  is the firm's after-tax equity growth rate (a substitute for the expected

rise in the stock price).<sup>8</sup> Just as individual investors can use this method to estimate their return on an investment, corporate managers can use it to estimate the after-tax return (the cost of capital) they have to provide to investors.

### ESTIMATED COST OF CAPITAL FOR COMPANIES BASED IN MAINE

To demonstrate how these concepts can be utilized, we estimated the cost of capital for a sample of 12 publicly traded companies in Maine under both current law and the President's proposal.<sup>9</sup>

8. This formula for a stock's expected return is known as the "constant growth" or Gordon model. The assumption is that both dividends and equity will grow at constant rates for the period in question. See Brigham and Houston, *Fundamentals of Financial Management*, and Stephen Ross, R. Westerfield, and Jeffrey Jaffe, *Corporate Finance* (Boston: Irwin/McGraw-Hill, 1999).

**Effective Personal Dividend Tax Rates for Married-Joint Taxpayers; Before and After the Bush Proposal**

Adjusted Gross Income	Taxable Income	Top Marginal Tax Rate	Current Law Effective Tax Rate on Dividends	Proposed Effective Tax Rate on Dividends	Percentage Decline
\$20,100	\$6,050	10%	32.50%	25.00%	23.08%
\$43,800	\$29,750	15%	36.25%	25.00%	31.03%
\$107,500	\$81,078	27%	45.25%	25.00%	44.75%
\$184,300	\$144,705	30%	47.50%	25.00%	47.37%
\$296,500	\$243,331	35%	51.25%	25.00%	51.22%

**Note:** These effective tax rates are calculated for a childless married-joint couple. Taxable income is calculated using Heritage's Individual Income Tax Model, and effective tax rates are calculated by considering both corporate and personal taxes for both current law and under the President's proposal. For more details, see the Appendix of this paper.  
**Source:** Center for Data Analysis calculations using data from the Standard and Poor's Compustat database.

(See Table 1.) As shown on the last row of Table 1, the average reduction for these firms' WACC was 2.49 percent.<sup>10</sup> One reason that the President's proposal lowers firms' WACC can be seen by examining individual investors' effective tax rates on dividends.

We used Heritage's Individual Income Tax Micro-Simulation Model to calculate effective personal tax rates under current law and under the President's proposal for a set of hypothetical investors. Using the midpoint taxable income levels of each bracket, these estimates show effective tax rates<sup>11</sup> on dividends for married joint filers (without children) in the first five federal income tax brackets. (See Table 2.) For a couple in the 10 percent tax bracket with a taxable income of \$6,050, the effective tax rate on dividends drops from 32.5

percent under current law to 25 percent under the Bush proposal (a decrease of 23.08 percent). For a couple in the 27 percent tax bracket with a taxable income of \$81,078, the effective tax rate on dividends falls from 45.25 percent to 25 percent (a decrease of nearly 45 percent).

Given such a decrease in effective tax rates, it is reasonable to assume that implementing the President's plan would cause corporate managers to reassess their cost of equity capital. In addition, it would lower firms' cost of capital by giving shareholders a basis adjustment for cash retained in the firm, thus lowering effective personal capital gains tax rates.<sup>12</sup> The mechanics of this basis adjustment are illustrated below using Idexx Labs, Inc., a non-dividend-paying company based in Maine.<sup>13</sup>

9. The final sample of 12 firms represented 61.26 percent of the full sample's (18 firms) total asset value and 90.82 percent of the full sample's reported market value. (Market value was not reported in the Compustat database for three companies in the full sample. For details, see the Appendix.) See Table 4.
10. Economy-wide estimates of the user cost of capital using the method developed by Alan Auerbach predict that the President's plan would lower the cost of capital by about 5.6 percent. For the Auerbach method, see Alan J. Auerbach, "Taxation, Corporate Financial Policy and the Cost of Capital," *Journal of Economic Literature*, Vol. 21, Issue 3 (September 1983), pp. 905-940. For the methodology used for the WACC estimates in this paper, see the Appendix.
11. The effective tax rate is the combined rate of tax, both corporate and personal, that the taxpayer pays on dividends. For details on how the corporate tax rate and effective rates were estimated, see the Appendix.
12. The term "basis" refers to the purchase price of the stock. For example, when investors calculate their capital gains tax liability, they subtract the purchase price of their stock from the selling price. Providing a basis adjustment means that, for tax purposes, investors can increase their purchase price (the basis), thus lowering their effective capital gains tax.
13. At the end of its FY 2002, Idexx Labs, Inc., had a market value of roughly \$1.17 billion, net sales of about \$413 million, and total assets of approximately \$417 million. At the end of its FY 2001, Idexx had more than 2,000 employees. (This figure was not reported in the Compustat database for 2002.)

Using average prices for 1997 and 2001, we can assume that an individual buying Idexx shares in 1997 and selling them in 2001 would have paid about \$14 per share and sold at a share price of roughly \$26.<sup>14</sup> Under current law, assuming this investor was in the 27 percent individual income tax bracket, buying and selling Idexx shares at these prices would have resulted in an effective capital gains tax rate of approximately 17 percent  $[(26 - 14) * 0.20]/14$ .

Under the Bush plan, however, this individual would have been eligible for a basis adjustment of nearly \$4 per share, lowering the effective capital gains tax rate to about 11 percent  $[(26 - 18) * 0.20]/14$ , a decrease of 35.29 percent.<sup>15</sup> If, for example, this investor had purchased 1,000 shares of Idexx, a tax savings of \$800 would have been realized  $[(26,000 - 18,000) * 0.20] = 1,600$  compared to  $[(26,000 - 14,000) * 0.20] = 2,400$ .

## PRIVATE INVESTORS MATTER TOO

Despite these reductions in both effective dividend and capital gains tax rates, many critics have argued that the President's plan would not lead to higher investment. One reason used to justify this argument has been that many corporate shares are held by tax-exempt institutional investors, such as pension and mutual fund companies, which these critics presume would not reap tax benefits directly if the double taxation of corporate income were ended. However, research indicates that most shares are held by private investors, not institutional investors.

For instance, in a sample of 7,158 publicly traded U.S. firms, as of January 2003 the mean percentage of shares held by private investors was about 70 percent.<sup>16</sup> Given this level of private ownership in such a large sample of publicly traded companies, it is reasonable to conclude that

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### Selected Financial Characteristics of the Sample of Maine Companies

Company Name	Total Asset Value (\$Millions)	Market Value (\$Millions)	Percentage of Shares Held By Institutional Investors	Percentage of Shares Held By Private Investors
American Skiing Co	\$796.23	\$31.42	0.48%	99.52%
Bar Harbor Bankshares	\$487.20	\$58.86	10.13%	89.88%
Baycorp Holdings Corp	\$174.27	\$78.34	71.39%	28.61%
Camden National Corp	\$1,089.36	\$151.10	15.65%	84.35%
Fairchild Semiconductor Intl	\$2,149.20	\$2,812.70	81.88%	18.13%
Idexx Labs Inc	\$416.65	\$1,094.82	86.86%	13.14%
ImmuCell Corp	\$7.12	\$9.95	0.11%	99.89%
Intelligent Controls Inc	\$9.39	\$4.17	0.21%	99.79%
Maine Public Service	\$143.34	\$46.50	32.89%	67.11%
Northeast Bancorp	\$442.22	\$39.46	21.70%	78.30%
Nyer Medical Group Inc	\$13.57	\$7.44	0.85%	99.15%
Phoenix Footwear Group Inc	\$27.58	\$8.86	4.53%	95.47%
<b>Total:</b>	<b>\$5,756.11</b>	<b>\$4,343.61</b>		

**Note:** Total Asset Value is the book value of total assets, in millions of dollars, as reported in Standard & Poor's Compustat database as of January 2003. Market Value is the "monthly close price multiplied by the quarterly common shares outstanding," as reported in the Compustat database (data item MKVAL) as of January 2003. The percentage of shares held by institutional investors is the percentage of shares held by institutions as reported in the Compustat database as of January 2003 (data item IOSTHR0).

**Source:** Center for Data Analysis calculations using data from the Standard and Poor's Compustat database.

14. For complete details on the methodology, see the Appendix.

15. For details on the mechanics of the basis adjustment, see the Appendix.

16. This sample includes all firms in the Standard and Poor's (S&P) Compustat database for which the measures IOTSHR0 (percentage of shares held by institutions), CSHO (common shares outstanding), and CEQ (common equity) are reported (about 70 percent of all the firms). See Norbert J. Michel, "Most Stocks Are Held by Private Investors," Heritage Foundation *Web Memo* No. 265, April 18, 2003, at [www.heritage.org/Research/Taxes/wm265.cfm](http://www.heritage.org/Research/Taxes/wm265.cfm).

most shares are held by private investors, thus rendering the critics' argument ineffective. This sample also showed variation in institutional ownership by size and industry, providing more evidence that, overall, most corporate equity shares are not held by tax-exempt institutional investors.

The sample of publicly traded companies in Maine that was used in this *CDA Report* also exhibits variation in institutional ownership. (See Table 3.) Combined with the fact that all returns eventually have to be passed through to individuals, these institutional ownership data demonstrate that corporate managers cannot ignore tax consequences when estimating their firms' cost of capital.

### **“DEFICIT FINANCING” THE DIVIDEND TAX CUT**

Some opponents of the President's Economic Growth Package argue that projected budget deficits render tax cuts irresponsible. For instance, an aide to Senator Olympia J. Snowe (R-ME) recently stated that the Senator “disagrees with deficit-financing long-term changes like the dividends plan.”<sup>17</sup> This sort of objection, however, does not consider the economic growth that projections indicate would be provided by eliminating the double tax on dividends.

In fact, the CDA projects that the economic growth spurred from implementing the President's plan would achieve a unified budget surplus of \$300 million by fiscal year (FY) 2007 and produce

even larger surpluses through the end of the budget window, reaching \$800 billion by FY 2013.<sup>18</sup> Furthermore, CDA's analysis of the President's Economic Growth Package suggests that implementing the plan would raise national saving compared to the baseline forecast during each of the next 10 years. Overall, the economic benefits of implementing the plan seem to outweigh the costs by a considerable extent.

### **CONCLUSION**

The President's plan would increase investment by lowering the effective tax on corporate income, thus making the cost of doing business and undertaking new investment projects less expensive.<sup>19</sup> Given the size of the reduction in effective personal tax rates, it is likely that corporate managers would respond to the tax consequences of the President's plan.

Consequently, higher corporate investment is likely under the President's plan since it would provide incentives for corporate managers to re-estimate their hurdle rates, whereas small reductions in the double tax on corporate income may not provide such incentives. Over time, lowering the cost of capital by ending the double tax on corporate income would lead to higher economic growth and widespread economic benefits.

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17. Jonathan Weisman, “White House Eases Stand on Dividend Tax,” *The Washington Post*, April 22, 2003, p. E1.

18. The CDA also projects that implementing the plan would maintain an off-budget surplus throughout the 10-year window. See William W. Beach, Ralph A. Rector, Alfredo Goyburu, and Norbert J. Michel, “The Economic and Fiscal Effects of the President's Growth Package,” Heritage Foundation *Center for Data Analysis Report* No. 03-05, April 16, 2003, at [www.heritage.org/Research/Budget/cda03\\_05.cfm](http://www.heritage.org/Research/Budget/cda03_05.cfm).

19. As long as the managers act in the best interest of their shareholders, this relationship holds for all firms with existing equity capital that either pay or have the potential to pay dividends.



# APPENDIX

## WEIGHTED AVERAGE COST OF CAPITAL

To estimate the weighted average cost of capital (WACC) for the sample of publicly traded companies in Maine that was used in this report, we employed the following equation:

$$WACC = w_d k_d (1 - t_c) + w_d k_d * t_d + w_s k_s + [w_s (D_1 * t_{div}/P_0 + g * t_{effcg})]$$

where  $w_d$  is the ratio of total debt to total assets,  $k_d$  is the interest rate paid on debt,  $t_c$  is the firm's average marginal tax rate,  $t_d$  is the debtholders' personal tax rate,  $w_s$  is the ratio of total equity to total assets, and  $k_s$  is the cost of equity. The last term in the WACC equation,  $[w_s (D_1 * t_{div}/P_0 + g * t_{effcg})]$ , is an expanded version of the cost of equity capital,  $k_s$ .

The cost of equity capital,  $k_s$ , was estimated using the "constant growth" model (or Gordon model):

$$k_s = D_1/P_0 + g$$

where  $D_1$  is the after-tax dividend shareholders expect to receive,  $P_0$  is the price of the shares purchased, and  $g$  is the firm's after-tax equity growth rate (a substitute for the expected rise in the stock price). This formula assumes that both dividends and equity grow at constant rates for the period in question, and it is also expanded into the form  $[w_s (D_1 * t_{div}/P_0 + g * t_{effcg})]$  to account for personal taxes on corporate equity. The term  $t_{div}$  is the statutory personal tax rate on dividends, and  $t_{effcg}$  is the effective personal tax rate on capital gains.<sup>20</sup>

Most of the parameters for the WACC equation were estimated using publicly disclosed financial data as reported in Standard and Poor's Compustat database.<sup>21</sup> First, all publicly traded companies with a home office in Maine were pulled from the database, providing a sample of 18 corporations. Next, based on several key data items during the period of 1997 to 2001, any firm missing data items for more than two years was excluded, paring the sample from 18 to 12 companies.

The weights for the WACC,  $w_d$  and  $w_s$ , were calculated by averaging the companies' total-debt-to-asset and total-common-equity-to-asset ratios, respectively, from 1997 to 2001. The cost of debt,  $k_d$ , was estimated by averaging the firms' interest-expense-to-debt ratio from 1997 to 2001. When a company's interest-expense-to-debt ratio was not reported, an average of the 3-Month AA Financial Commercial Paper rate from June 2001 through March 2003, as published by the Federal Reserve, was used instead.<sup>22</sup>

The average marginal corporate tax rate was estimated using, where available, the average (from 1997 to 2001) ratio of the firm's cash paid in taxes to net operating cash flow. When these data were unavailable, a corporate tax rate of 35 percent was used. This method resulted in a mean average marginal tax rate for the 12-firm sample of 38 percent and a median rate of 35 percent. Since the corporate tax rate is used only for the debt component of the WACC—a component which does not change under the Bush proposal—the difference between the current-law WACC and the

20. Taken together,  $D_1 * t_{div}/P_0$  represents the effective personal tax rate on the dividend yield. The calculation for estimating the effective personal tax rate on capital gains is explained below.

21. The Standard and Poor's Compustat (North America) Database is published by McGraw-Hill Companies, Inc, and contains financial data on over 10,000 publicly traded United States corporations. For more than 35 years, S&P Compustat data have been recognized as one of the financial information industry's leading resources for in-depth financial information on publicly traded companies. Compustat (North America) data are collected and standardized according to detailed guidelines aligned with the regulations and standards of the Financial Accounting Standards Board (FASB), Securities and Exchange Commission (SEC), and U.S. Generally Accepted Accounting Principles and Procedures (GAAP).

22. The commercial paper rate was used for four companies because their interest expense was not reported in the Compustat database. Since the difference between debt components for the current-law WACC and the WACC under the Bush proposal would be zero, these assumptions do not affect the overall change in the companies' WACC. To access the commercial paper rate series, see Federal Reserve at [research.stlouisfed.org/fred/data/irates/cpf3m](http://research.stlouisfed.org/fred/data/irates/cpf3m).

Table 4 CDA 03-07

### Comparison of Full Sample and Final Sample

Full Sample: 18 Companies			Final Sample: 12 Companies		
Company Name	Total Asset Value (\$Millions)	Market Value (\$Millions)	Company Name	Total Asset Value (\$Millions)	Market Value (\$Millions)
Advantage Payroll Svcs -Redh	\$167.05	@NA	American Skiing Co	\$796.23	\$31.42
American Skiing Co	\$796.23	\$31.42	Bar Harbor Bankshares	\$487.20	\$58.86
Bar Harbor Bankshares	\$487.20	\$58.86	Baycorp Holdings Corp	\$174.27	\$78.34
Baycorp Holdings Corp	\$174.27	\$78.34	Camden National Corp	\$1,089.36	\$151.10
Camden National Corp	\$1,089.36	\$151.10	Fairchild Semiconductor Intl	\$2,149.20	\$2,812.70
Central Maine Power Co	\$1,865.80	@NA	Idexx Labs Inc	\$416.65	\$1,094.82
Fairchild Semiconductor Intl	\$2,149.20	\$2,812.70	Immucell Corp	\$7.12	\$9.95
First Natl Lincoln Corp/Me	\$434.47	\$52.78	Intelligent Controls Inc	\$9.39	\$4.17
I-Many Inc	\$91.97	\$356.27	Maine Public Service	\$143.34	\$46.50
Idexx Labs Inc	\$416.65	\$1,094.82	Northeast Bancrp	\$442.22	\$39.46
Immucell Corp	\$7.12	\$9.95	Nyer Medical Group Inc	\$13.57	\$7.44
Intelligent Controls Inc	\$9.39	\$4.17	Phoenix Footwear Group Inc	\$27.58	\$8.86
Maine Public Service	\$143.34	\$46.50			
Maine Yankee Atomic Power Cp	\$802.12	@NA	<b>Total:</b>	<b>\$5,756.11</b>	<b>\$4,343.61</b>
Merrill Merchants Bancshares	\$278.20	\$29.86			
Northeast Bancrp	\$442.22	\$39.46	<b>Percentage of Full Sample:</b>	<b>61.26%</b>	<b>90.82%</b>
Nyer Medical Group Inc	\$13.57	\$7.44			
Phoenix Footwear Group Inc	\$27.58	\$8.86			
<b>Total:</b>	<b>\$9,395.71</b>	<b>\$4,782.51</b>			

**Note:** The full sample consisted of all the publicly traded companies in Maine (18) as listed in the Standard and Poor's Compustat database. Firms were eliminated if they were missing data items needed to calculate the weighted average cost of capital (WACC) for more than two years (from the period 1997 to 2001). In the full sample, the expression "@NA" indicates that S&P did not report this value.

**Source:** Center for Data Analysis calculations using data from the Standard and Poor's Compustat database.

post-Bush plan WACC is unaffected by this estimate.

To estimate the dividend component,  $D_1$ , of the cost of equity capital,  $k_s$ , an average dividend was calculated using the mean cash dividend paid during the period 1997 to 2001. The purchase price of the stock,  $P_0$ , was estimated as the 1997 average quarterly price and was calculated by dividing the firms' quarterly market value by its quarterly number of common shares outstanding. The equity growth rate,  $g$ , was estimated as the mean of the monthly Moody's Seasoned Aaa Corporate Bond Yield as published by the Federal Reserve.<sup>23</sup>

Both the statutory personal tax rate for debt-holders,  $t_d$ , and the statutory personal tax rate on dividends,  $t_{div}$ , were assumed to be 27 percent.

The effective personal tax rate on capital gains,  $t_{effcg}$ , was estimated as follows:

$$t_{effcg} = t_{scg}(P_1 - P_0)/P_0$$

where  $t_{scg}$  is the statutory tax rate on capital gains,  $P_1$  is the 2001 average share price, and  $P_0$  is the 1997 average share price. The statutory tax rate on capital gains,  $t_{scg}$ , was assumed to be 20 percent. The 2001 share price,  $P_1$ , was calculated in the same manner as the 1997 average share price (see above). To estimate the cost of equity capital,  $k_s$ , under the Bush plan, the excludable distribution amount (EDA) was estimated for each company.

The amount of the EDA determines the amount of cash that can be distributed to shareholders as

23. To estimate a minimum long-term growth rate for all firms, the average of the Moody's Seasoned Aaa Corporate Bond Yield was taken from 1919 through 2003. While S&P does provide an equity growth rate for companies in its database, the mnemonic for which is EQGROW, this measurement was available only for a small number of the firms in the sample. To access the corporate bond yield series, see Federal Reserve at [research.stlouisfed.org/fred/data/irates/aaa](http://research.stlouisfed.org/fred/data/irates/aaa).

dividends that can be excluded from their adjusted gross income. The amount of the EDA also determines the amount of retained cash that can be used to provide shareholders with a basis adjustment. (Any amount of cash less than or equal to the EDA that is retained in the firm can be used to provide a basis adjustment.) Based on proposed U.S. Treasury rules, all companies would assume a corporate tax rate of 35 percent and would calculate their EDA as follows:<sup>24</sup>

$$\text{EDA} = (\text{U.S. income taxes} / 0.35) - \text{U.S. income taxes}$$

where U.S. income taxes paid the prior year are used to calculate the EDA for the current year.

To estimate the EDA for the 12 companies in the sample, income tax expense as reported on the income statement was used as an estimate for U.S. income taxes.<sup>25</sup> The amount of the excludable dividend was then estimated as the EDA divided by the average number of common shares outstanding for the given year. The average number of shares outstanding was estimated by averaging the number of shares outstanding for each fiscal quarter. The basis adjustment was then estimated by subtracting the per-share excludable cash dividend from the per-share EDA (the EDA divided by the average number of shares outstanding).

Using these EDA calculations, the cost of equity capital,  $k_s$ , was estimated for all the companies in the sample. For those dividend-paying companies distributing less than their EDA, the term  $[w_s(D_1 * t_{div}/P_0 + g * t_{effcg})]$  in the WACC equation simplifies to  $[w_s(g * t_{effcg})]$ , signifying the Bush plan's per-

sonal dividend exclusion. For non-dividend-paying firms, as well as those firms with an EDA greater than their cash dividends paid, the cost of equity capital was lowered to reflect a basis adjustment.

The basis adjustment is estimated as the EDA, less total cash dividends paid, divided by the number of shares outstanding for a given fiscal year. Under the Bush proposal, the annual basis adjustment can be carried over to subsequent years. This cumulative total, or Cumulative Retained Earnings Basis Adjustment (CREBA), can be added to the basis of a stock when it is sold, thus lowering the effective capital gains tax rate.<sup>26</sup>

To estimate the effect of the basis adjustment, the effective tax rate on capital gains,  $t_{effcg} = t_{scg}(P_1 - P_0)/P_0$ , was calculated by adding the per-share CREBA to the purchase price of the stock,  $P_0$ . All investors were assumed to buy their shares in 1997 and hold them through the end of 2001.

## EFFECTIVE PERSONAL DIVIDEND TAX RATES

We used Heritage's Individual Income Tax Micro-Simulation Model to estimate the effective personal dividend tax rates for childless married-joint filer taxpayers in the first five income tax brackets (the current-law tax brackets for 2003). The results highlighted in this *CDA Report* are the effective dividend tax rates for married couples with taxable income near the midpoint of the first five brackets.<sup>27</sup> To estimate the effective personal tax rates, an average corporate income tax rate was

24. According to U.S. Treasury documents, all firms calculating their EDA will use a corporate tax rate of 35 percent. For more on the mechanics of the EDA, see U.S. Department of the Treasury, "Fact Sheet: Ending the Double Tax on Corporate Earnings," January 14, 2003, at [www.treas.gov/press/releases/kd3761.htm](http://www.treas.gov/press/releases/kd3761.htm).

25. For any companies in the sample with zero, negative, or a missing value for income tax expense, the EDA was assumed to be zero. Cash used to pay taxes was not used to calculate the EDA because the measure was not available for all years for all the firms in the sample. However, as a sensitivity test, EDA was calculated for those firms with the item "TXPD" (cash paid in taxes) reported in Compustat. In some cases, the amount of the EDA was higher using the cash paid in taxes rather than using the income tax expense.

26. According to proposed rules, "the sum of excludable dividends and basis increases cannot exceed the lesser of EDA or current and accumulated earnings and profits. If the corporation's earnings and profits is less than EDA, then basis increases are limited to the excess of earnings and profits over excludable dividends." Also, if a corporation's EDA is less than its cash distributions, these excess distributions offset prior years' CREBA. This situation did not occur for any of the firms in the sample. For more on the proposed rules, see U.S. Department of the Treasury at [www.ustreas.gov](http://www.ustreas.gov).

27. CDA analysts examined married-joint filer taxpayers with adjusted gross income ranging from \$10,000 to \$299,900 in \$100 increments. For the highlighted results, taxable incomes as close as possible to the actual bracket midpoints were selected. For the 10 percent tax bracket, a family with an adjusted gross income of \$10,000 was used.

estimated using Standard and Poor's (S&P) Compustat data.

A sample of approximately 5,300 firms was screened on the basis of all active companies in the database with the data item TXPD, which represents "cash payments for income taxes to federal, state, local, and foreign governments as reported by a company that has adopted FASB #95."<sup>28</sup> The tax rate was then estimated by taking the ratio of TXPD to the firms' net operating cash flow, S&P data item OANCF.<sup>29</sup> This measure was calculated for each fiscal year from 1990 through 2001. (See Table 5.) Since the average ratio for the 11-year period was 24.75 percent, an estimated corporate tax rate of 25 percent was used to calculate the effective personal tax rates.

The total dividends received by taxpayers, *D*, was grossed up to a pre-corporate tax amount by dividing the dividends received by the complement of the estimated corporate tax rate ( $D/1 - 0.25$ ). The amount of the corporate tax paid on the dividends was then calculated as the corporate tax rate (0.25) multiplied by the pre-tax corporate dividend ( $D/1 - 0.25$ ).

The personal tax on dividend income was calculated by multiplying *D* by the statutory tax rate corresponding to the taxpayer's taxable income. The effective personal tax rate on dividends was then calculated by dividing the

combined tax (corporate plus personal) on the dividend income by the pre-tax corporate dividend ( $D/1 - 0.25$ ).

Table 5		CDA 03-07	
Estimated Average Corporate Tax Rates			
Year	Number of companies	Annual Mean Tax Rate	Annual Median Tax Rate
1990	2,302	30.68%	17.09%
1991	2,475	3.41%	16.34%
1992	2,706	70.72%	15.03%
1993	2,918	6.38%	15.02%
1994	3,196	31.24%	15.68%
1995	3,654	16.72%	14.70%
1996	3,917	36.06%	14.35%
1997	4,097	61.22%	15.05%
1998	4,434	21.05%	14.26%
1999	4,831	20.22%	10.71%
2000	5,100	-22.20%	8.68%
2001	4,764	21.50%	7.52%
		Annual Mean Tax Rate from 1990 through 2001:	24.75%
		Annual Median Tax Rate from 1990 through 2001:	13.70%
<p><b>Note:</b> The tax rate was estimated by taking the ratio of Compustat data items TXPD (cash payments for income taxes to federal, state, local and foreign governments as reported by a company that has adopted FASB #95) to OANCF (the net change in cash from all items classified in the Operating Activities section on a Statement of Cash Flows) for each fiscal year, and then averaged for the period 1990 to 2001. All firms in the Compustat database for which the data item TXPD was reported, as of January 2001, were included in the sample.</p> <p><b>Source:</b> Center for Data Analysis calculations using data from the Standard and Poor's Compustat database.</p>			

28. Since the TXPD item was reported for very few firms in years before 1990, data for the years 1990 through 2001 were used.

29. The S&P definition for OANCF is "the net change in cash from all items classified in the Operating Activities section on a Statement of Cash Flows."