chapter are the same rates that were introduced in Chapters 6–8. For this reason, we thought it might be a good idea to summarize these rates here. Table 11.2 shows the rates of return discussed in Chapters 6–8 and compares them to the component costs of capital discussed in this chapter. Note that the equations shown in the column labeled "Return to Investors" are the same as those shown in the column labeled "Cost to Firms," except for adjustments for taxes and flotation costs.

KEY COST OF CAPITAL CONCEPTS

To conclude this chapter, we summarize some cost of capital concepts (rules) that were discussed.

- To make appropriate capital budgeting decisions, the firm must know its required rate of return, which is defined as the average rate of return that the firm pays to attract investors' funds. Because the firm pays the average rate of return to investors, the firm's required rate of return is also referred to as its cost of capital.
- To determine its required rate of return, the firm must compute the cost of each source of funds or capital that investors provide; that is, the firm must compute the cost of debt, the cost of preferred stock, the cost of retained earnings, and the cost of new common equity. These costs are then combined by weighting each component by the proportion or weight that it contributes to the total capital of the firm. The result is the weighted average cost of capital, or WACC, which is the required rate of return that the firm should use when making capital budgeting decisions.
- Investors who participate in the financial markets determine firms' WACCs. Investors only provide funds to firms if they expect to earn sufficient returns on their investments; thus, firms must pay investors' demands (required returns) to attract funds.
- When investing in capital budgeting projects, a firm should follow the economics principle that asserts products should continue to be manufactured until marginal costs equal marginal revenues. That is, the firm should invest until the marginal cost of capital (marginal costs) equals the internal rate of return on the last project that is purchased (marginal revenues).

PROBLEMS

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11-1 Global Products plans to issue long-term bonds to raise funds to finance its growth. The company has existing bonds outstanding that are similar to the new bonds it expects to issue. The existing bonds have a face value equal to $1,000, mature in 10 years, pay $60 interest annually, and are currently selling for $1,077 each. Global's marginal tax rate is 40 percent. (a) What should be the coupon rate on the new bond issue? (a) What is Global's after-tax cost of debt?

11-2 Notable Nothings plans to issue new bonds with the same yield as its existing bonds. The existing bonds have a coupon rate of interest equal to 5.6 percent (semiannual interest payments), 12 years remaining until maturity, and a $1,000 maturity value; they are currently selling for $918 each. (a) If Notable issues new bonds today, what will be its before-tax cost of debt? (b) What will be its before-tax cost of debt if the price of its existing bonds is $730 when Notable issues the new bonds?

11-3 Buoyant Cruises plans to issue preferred stock with a $120 par value and a 5 percent dividend. Even though the current market value of its preferred stock is $80 per share, Buoyant expects to net only $75 for each share issued. What is its cost of issuing preferred stock? The firm's marginal tax rate is 34 percent.

11-4 Jumbo Juice's preferred stock pays a constant dividend equal to $4.75 per share. The firm's marginal tax rate is 40 percent. Jumbo Juice incurs a 5 percent flotation cost each time it issues preferred stock. (a) If the firm issues 10,000 shares of preferred stock at $50 per share, how much of the total value of the issue will the firm be able to use (receive)? (b) What is Jumbo Juice's cost of preferred stock?

11-5 Suppose the current risk-free rate of return is 3.5 percent and the expected market return is 9 percent. Fashion Faux-Pas' common stock has a beta coefficient equal to 1.4. Using the CAPM approach, compute the firm's cost of retained earnings.

is needed, its WACC is 17 percent. Lazy's capital structure consists of 40 percent debt. If Lazy has no preferred stock and expects to generate $24,000 in retained earnings this year, which project(s) should be purchased?

11-18 Over-the-Top Canopies (OTC) is evaluating two independent investments. Project S costs $150,000 and has an IRR equal to 12 percent, and Project L costs $140,000 and has an IRR equal to 10 percent. OTC's capital structure consists of 20 percent debt and 80 percent common equity, and its component costs of capital are r_{dT} = 4%, r_s = 10%, and r_e = 12.5%. If OTC expects to generate $230,000 in retained earnings this year, which project(s) should be purchased?

11-19 Peter Piper's Pies (P^3) is evaluating four independent investments. The cost of each project is $214,000. The internal rates of return (IRRs) for the projects are IRR_1 = 19%, IRR_2 = 15%, IRR_3 = 18%, and IRR_4 = 14%. P^3's investment banker has provided the following WACC table:

Total Amount Raised	WACC
$1–$520,000	11.0%
520,001– 745,000	12.5
Over 745,000	15.2

Which project(s) should P^3 purchase?

11-20 Tri-Q Supply Company is considering an expansion project to increase sales. The project, which costs $2.6 million, has an IRR equal to 9.2 percent. Any portion of the project can be purchased. Tri-Q expects to retain $1.3 million of earnings this year. It can raise up to $420,000 in new debt with a before-tax cost equal to 5 percent; any additional debt will cost 7 percent before taxes. Tri-Q's cost of retained earnings is 12 percent, and its cost of new common equity is 14 percent. Its target capital structure consists of 35 percent debt and 65 percent common equity. If Tri-Q's marginal tax rate is 40 percent, what is the optimal capital budget?

PROBLEMS For more problems, login to CourseMate for CFIN at CengageBrain.com

13-1 Desert A/C plans to invest $50 million to expand operations. The firm wants to maintain a 60 percent debt/assets ratio in its capital structure. If net income is expected to be $25 million this year and Desert follows the residual dividend policy, what amount of dividends will be paid this year?

13-2 Open Door Manufacturer earned $100,000 this year. The company follows the residual dividend policy when paying dividends. Open Door has determined that it needs a total of $120,000 for investment in capital budgeting projects this year. If the company's debt-to-asset ratio is 50 percent, what will its dividend payout ratio be this year?

13-3 The Hawaiian Corporation expects this year's net income to be $12 million. The firm's target debt/assets ratio is 30 percent. This year, Hawaiian has $20 million profitable investment opportunities. According to the residual dividend policy, what should be Hawaiian's dividend payout ratio this year?

13-4 In 2015, Seaworthy Dingy's earnings are expected to be $14.4 million, and the firm expects to have profitable investment opportunities of $8.4 million. Last year, the company paid dividends equal to $9 million. It is predicted that Seaworthy will grow at a constant 5 percent in the future. What will be Seaworthy's total dividends for 2015 if it follows (a) a policy that requires dividends to grow at the long-run growth rate in earnings and (b) a pure residual dividend policy. Seaworthy's target debt/assets ratio is 40 percent.

13-5 Baker Island Tours (BIT) expects to grow at a constant rate of 4 percent forever. Its target debt/assets ratio is 40 percent, and it expects to have profitable investments of $1.3 million this year. BIT plans to continue paying the same dividend that has been paid the past 10 years, $2.25 per share, long into the future. The firm has 500,000 shares of stock outstanding. If net income is expected to be $2 million, what should be BIT's dividend payout ratio this year?

13-6 Darling's Dry Cleaning has been growing at a constant 6 percent rate for more than 20 years, and this growth is epxected to continue forever. Last year, Darling's paid a dividend equal to $3.50 per share. If dividends grow at the same rate as the company's growth rate, what should be the per share dividend that Darling's pays this year?

13-7 Texas Tea's dividend policy calls for the dividend to be increased each year by the same rate. Last year, the company paid a dividend equal to $2.50 per share. This year, after the company initiates a 5-for-1 stock split, Texas Tea expects to pay a dividend equal to $0.54 per share. At what rate does Texas Tea increse its dividend each year?

13-8 Last year, the Creative Artists retained $100,000 of the $250,000 net income it generated. This year, Creative generated net income equal to $275,000. If Creative follows the constant dividend payout ratio dividend policy, how much should be paid in dividends this year?

13-9 Last year, Headline News Corporation paid $600,000 in dividends and retained $360,000 of the earnings it generated. The company follows a constant payout ratio dividend policy. If Headline generates $1.25 millon in income this years, how much will be paid in dividends?

13-10 Rapid Auto Transport (RAT) follows a constant payout ratio dividend policy, which requires the company to pay out 30 percent of income as dividends each year. If it wants to pay $840,000 in dividends next year, how much must RAT earn?

13-11 Ortinau's Office Products and Supplies (OOPS) follows the constant payout ratio dividend policy by paying out 40 percent of earnings each year. This year, OOPS expects the dividend payment to be 7 percent higher than last year's payment, which was $130,000. (a) What is the amount of net income that OOPS expects to generate this year? (b) If its target capital structure calls for 50 percent common equity, what will be the total funds the company can invest in capital budgeting projects this year before new common stock must be issued to raise new funds?

13-12 Universal Utilities (U2) applies the low regular dividend plus extras policy when determining how much of its income will be paid out as dividends each year. U2's policy states that the minimum dividend that will be paid each year is $0.50 per share. But, when net income is greater than $600,000, the total dividend will be increased by 25 percent of the amount that exceeds $600,000. The firm currently has 100,000 shares of stock outstanding. What will be the dividend per share if U2 earns (a) $760,000 and (b) $580,000?

13-13 Last year, Absolute Zero Freezers paid a dividend equal to $0.95 per share. Absolute follows the low-regular-dividend-plus-extras policy to determine its annual dividend. The policy requires the minimum dividend to be increased by 30 percent of the amount of earnings that is exceeds $30,000. Last year's earnings were $50,000. If Absolute has 40,000 shares outstanding, how much is the minimum (low regular) dividend that the firm pays each year?

13-14 Dirty Dogs Grooming's optimal capital structure calls for 40 percent debt and 60 percent common equity. The company's weighted average cost of capital (WACC) is 10 percent if the amount of retained earnings generated during the year is sufficient to fund the equity portion of its capital budgeting requirements, whereas its WACC is 14 percent if new common stock must be issued. Dirty Dogs has the following independent investment opportunities:

Project A: Cost = $684,000; IRR = 16%
Project B: Cost = $640,000; IRR = 13%
Project C: Cost = $660,000; IRR = 9%

If Dirty Dogs expects to generate net income of $720,000 and it pays dividends according to the residual policy, what will its dividend payout ratio be?

13-15 Aunt Bea's Barbeque (ABB) has two independent investment opportunities this year: Project S costs $45,000, and it has an IRR equal to 11 percent; Project T costs $52,000 and its IRR is 8 percent. The firm's weighted average cost of capital (WACC) is 9 percent as long as new common stock is not needed to finance capital budgeting projects, but its WACC is 12 percent if new common stock must be issued. ABB's target capital structure is 70 percent debt and 30 percent common equity. The firm expects to generate net income of $39,000 this year. ABB follows stable, predictable dividend policy by increasing its dividend payment by 5 percent each year. If ABB paid $20,000 in dividends last year, and it continues to follow the stable, predictable dividend policy, which capital budgeting project(s) should it purchase?

13-16 BKP plans to initiate a 10-for-1 stock split. BKP's stock currently sells for $225 per share. What will be the stock price immediately after the split takes place?

13-17 Coldwater Fishery is considering a 1-for-4 reverse stock split. Its stock is currently selling for $15 per share. Coldwater plans to pay a dividend equal to $0.15 per share after the split. But it would like to pay an equivalent dividend per share even if the split does not take place. (a) What will the price of the stock be immediately after the stock split? (b) What should the per share dividend be if Coldwater doesn't split the stock?

13-18 One week after Granddad's Kitchen split its stock 3-for-1, it paid a dividend of $0.55 per new share. The dividend payment was 10 percent greater than last year's presplit dividend. What was last year's dividend per share?

13-19 Kitty Hawk Airlines recently declared a 10 percent stock dividend. Prior to the stock dividend, the equity section on Kitty Hawk's balance sheet was:

Common stock (12,000 shares outstanding, $2 par value)	$24,000
Additional paid-in capital	16,000
Retained earnings	10,000
Total common shareholders' equity	$50,000

Kitty Hawk's stock currently sells for $5 per share. Show what the equity section of the balance sheet will look like after the stock dividend is initiated.

13-20 Suppose that Kitty Hawk Airlines (see Problem 13-19) decided to initiate a 5-for-1 stock split rather than the stock dividend described in the problem. Show what the equity section of the balance sheet will look like after the stock split takes place.