

Sample Problems—Cost of Capital

Use the following information to answer the following 4 questions.

Rollins Corporation's target capital structure is 20 percent debt, 20 percent preferred stock, and 60 percent common equity. Its before-tax cost of debt is 12%. The firm could sell, at \$100, preferred stock that pays a \$12 annual dividend, but flotation costs of 5 percent would be incurred. Rollins' beta is 1.2, the risk-free rate is 10%, and the market rate of return is 15%. The firm's net income is expected to be \$1 million, and its dividend payout ratio is 40 percent. The firm's marginal tax rate is 40 percent.

1. What is Rollins' cost of preferred stock?
2. What is Rollins' cost of retained earnings using the CAPM approach?
3. What is Rollins' WACC?
4. What is Rollins' retained earnings break point?
5. Kottinger's Kamp Supplies is considering an investment in new manufacturing equipment. The firm finances projects with 50% debt and 50% equity capital. Its cost of equity is 14% and its pre-tax cost of debt, k_d , is 8%. The firm's tax rate is 40%. What is Kottinger's weighted average cost of capital?
6. Martin Corporation's common stock is currently selling for \$50 per share. The company just paid a dividend of \$2.00 per share. If dividends are expected to grow at 6 percent per year and if flotation costs are 10 percent, then what is the firm's cost of retained earnings and what is its cost of new common stock?
7. J. Ross and Sons Inc. has a target capital structure that calls for 40 percent debt, 10 percent preferred stock, and 50 percent common equity. The firm's component costs are as follows: $k_{d,T} = 6%$; $k_P = 12.5%$; and $k_S = 15.5%$. Ross expects to retain \$15,000 in earnings over the next year. Where is the retained earnings breakpoint?

Use the following information to answer the next three questions.

Byron corporation's present capital structure, which is also its target capital structure, is 40 percent debt and 60 percent common equity. Next year's net income is projected to be \$21,000, and Byron's dividend payout ratio is 30 percent. The company's earnings and dividends are growing at a constant rate of 5 percent; the last dividend (D_0) was \$2.00; and the stock is currently selling for \$21.88. Byron can raise all the debt financing it needs at 14 percent. If Byron issues new common stock, a 20 percent flotation cost will be incurred. The firm's marginal tax rate is 40 percent.

8. What is the maximum amount of new capital that can be raised at the lowest component cost of equity? (In other words, what is the retained earnings break point?)
9. What is the component cost of new common stock?
10. Ignore the answer to # 12 and assume the component cost of equity is 18 percent. What is the weighted average cost of capital (WACC)?
11. Greene Co. bonds sell for \$845.89. The coupon rate is 6.5 percent and the bonds mature in 22 years. Assume interest is paid semiannually and the firm's tax rate is 35 percent. What is Greene's after-tax cost of debt?
12. The weighted average cost of capital for firm X is currently 12%. Firm X is considering a new project but must raise new debt to finance the project. Debt represents 25% of the capital structure. If the after tax cost of debt will rise from 6% to 7%, what will be the new cost of capital?

Use the following information to answer the next three questions

J. Ross and Sons Inc. has a target capital structure that calls for 40 percent debt, 10 percent preferred stock, and 50 percent common equity. The firm's current after-tax cost of debt is 6 percent, and it can sell as much debt as it wishes at that rate. The firm's preferred stock currently sells for \$90 a share and pays a dividend of \$10 per share; however, the firm will net only \$80 per share from the sale of new preferred stock. Ross's common stock currently sells for \$40 per share, but the firm will net only \$34 per share from the sale of new common stock. The firm just paid a dividend of \$2 per share on its common stock, and investors expect the dividend to grow indefinitely at a constant rate of 10 percent per year.

13. What is the firm's cost of equity, if the firm uses retained earnings rather than issuing new common stock?
14. What is the firm's cost of newly issued preferred stock?
15. What is the firm's weighted average cost of capital, assuming that the firm has sufficient retained earnings to fund the equity portion of its capital budget?
16. Your company's stock sells for \$50 per share, its last dividend was \$2.00, its growth rate is a constant 5 percent, and the company will incur a flotation cost of 15 percent if it sells new common stock. What is the firm's cost of new equity?
17. Jackson Corporation is evaluating the following four independent investment opportunities:

Project	Cost	Expected Rate of Return
A	\$300,000	14%
B	\$150,000	10%
C	\$200,000	13%
D	\$400,000	11%

- Jackson's target capital structure is 60 percent debt and 40 percent equity. $K_d=10\%$. Jackson's cost of equity capital is 15.75%. If the company's tax rate is 30 percent, then which of the projects will be accepted?
18. Helms Aircraft has a capital structure which consists of 60 percent debt and 40 percent common stock. The firm will be able to use retained earnings to fund the equity portion of its capital budget. The company recently issued bonds with a yield to maturity of 9 percent. The risk-free rate is 6 percent, the market risk premium is 6 percent, and Helms' beta is equal to 1.5. If the company's tax rate is 35 percent, what is the company's weighted average cost of capital (WACC)?
 19. If a company's stock beta is 1.25, the expected risk-free rate of return is 5%, and the expected return on the market is 12%, what is the cost of equity according to the CAPM?
 20. Greene Co. is planning a project for which it will issue new bonds. \$1,000 par value bonds in the same risk class issued by another firm are currently priced at 954.90, have 25 years remaining to maturity, and pay coupons of \$75 every year. If Greene's marginal tax rate is 34%, what is the pre-tax cost of debt for the project?

Use the following information to answer the next two questions.

The Global Advertising Company has a marginal tax rate of 40 percent. The company can raise debt at a 12 percent interest rate and the last dividend paid by Global was \$0.90. Global's common stock is selling for \$8.59 per share, and its expected growth rate in earnings and dividends is 5 percent. If Global issues new common stock, the flotation cost incurred will be 10 percent of the market price. Global plans to finance all capital expenditures with 30 percent debt and 70 percent equity.

21. Assuming that Global expects to have \$20 million of retained earnings available this year, what is the maximum amount of new capital that can be raised at the lowest component cost of equity? (In other words, what is the retained earnings break point?)
22. What is the firm's weighted average cost of capital if the firm has sufficient retained earnings to fund the equity portion of its capital budget?
23. Ewing Distribution is planning an expansion of its chain of discount service stations. This expansion will be financed, in part, with debt issued with a coupon interest rate of 10 percent. The bonds have a 10-year maturity and a \$1,000 face value, and they can be sold for \$890. What is Ewing's after-tax cost of debt, assuming a tax rate of 40 percent?
24. Your company has three million shares of common stock outstanding with a current market price of \$28. $R_E = 14.5\%$. There are also 50,000 bonds outstanding with an 8 percent annual coupon, 18 years to maturity, and a current price of \$940 per bond. What is the WACC for your company assuming a tax rate of 35%.
25. A firm is expected to pay a dividend of \$4.50 per share in one year. This dividend, along with the firm's earnings, is expected to grow at a rate of 7% forever. If the current market price for a share is \$67, what is the cost of equity?
26. Your company has three million shares of common stock outstanding with a current market price of \$18. The market risk premium is 7.5%, and Treasury bills are yielding 6.25 percent. There are also 32,000 bonds outstanding with an 8 percent annual coupon, 18 years to maturity, and currently sell for \$940. If the stock has a beta of 1.20 and the applicable tax rate is 40%, what is the WACC for your company?
27. Use the following information to calculate the weighted average cost of capital (WACC) for Reading Foods:
 - The optimal capital structure consists of 75% common equity and 25% debt.
 - The component cost of equity is 12.20%
 - Reading has 20-year bonds outstanding with an annual coupon rate of 12 percent and a face value of \$1,000. The bonds sell today for \$1,200.
 - The company's tax rate is 40%.
28. The risk free rate is 5 percent, the return on the market is expected to be 9 percent. The company has a beta of 0.8. What is Allison's cost of retained earnings using the CAPM?
29. Adams Corporation estimates that it can issue debt at a before-tax cost of 10 percent, and preferred stock at a cost of 10.2 percent. The company's tax rate is 30 percent. The company's common stock currently sells at \$36 per share. The year-end dividend is expected to be \$3.50, and the dividend is expected to grow at a constant rate of 6 percent per year. The company's capital structure consists of 75 percent common stock, 15 percent debt, and 10 percent preferred stock. What is the WACC?