Sample problems—discounted cash flow*

1. A common stock pays an annual dividend per share of $2.10. The risk-free rate is 7% and the risk premium for this stock is 4%. If the annual dividend is expected to remain at $2.10, what is the value of the stock?

2. Computer stocks currently provide an expected rate of return of 16%. MBI, a large computer company, will pay a year-end dividend of $2 per share. If the stock is selling at $50 per share, what must be the market's expectation of the growth rate of MBI dividends?

   If dividend growth forecasts for MBI are revised downward to 5% per year, what will happen to the price of MBI stock?

3. MF Corp. has an ROE of 16% and a dividend payout ratio of 50%. If the coming year's earnings are expected to be $2 per share, at what price will the stock sell? The required rate of return for this stock is 12 %.
   What price do you expect MF shares to sell for in three years?

4. The market consensus is that Analog Electronic Corporation has an ROE=9%, has a beta of 1.25, and plans to maintain indefinitely its traditional retention ratio of 2/3. This year's earning were $3 per share. The annual dividend was just paid. The consensus estimate of the coming year's market return is 14%, and T-bills currently offer a 6% return.
   What is the value of Analog stock?
   Calculate the present value of growth opportunities.

5. The FI Corporation's dividends per share are expected to grow indefinitely by 5% per year. If this year's year-end dividend is $8 and the required rate of return is 10% per year, what is the current value of FI's stock?

6. The risk-free rate of return is 10%, the required rate of return on the market is 15%, and High-Flyer stock has a beta coefficient of 1.5. If the dividend per share expected during the coming year, D_1, is $2.50 and g=5%, what is the value of a share of stock?

7. Your preliminary analysis of two stocks has yielded the information set forth below. The required rate of return for both Stock A and Stock B is 10% per year.

	Stock A	**Stock B**
Expected return on equity, ROE	14%	12%
Estimated earnings per share, E_1	$2.00	$1.65
Estimated dividends per share, D_1	$1.00	$1.00
Current market price per share, P_0	$27.00	$25.00

   What is the intrinsic value of each stock?

8. The stock of Nogro Corporation is currently selling for $10 per share. EPS in the coming year are expected to be $2. The company has a policy of paying ut 50% of its earnings each year in dividends. The rest is retained and invested in projects that earn a 20% rate of return per year. This situation is expected to continue indefinitely. Assuming the current market price of the stock reflects its intrinsic value as computed using the constant-growth dividend discount model, what rate of return do Nogro's investors require?

9. The risk-free rate of return is 8%, the expected rate of return on the market portfolio is 15%, and the stock of Xyrong Corporation has a beta coefficient of 1.2. Xyrong pays out 40% of its earnings in dividends, and the latest earnings announced were $10 per share. Dividends were just paid and are expected to be paid annually. You expect that Xyrong will earn an ROE of 20% per year on all reinvested earning forever. What is the intrinsic value of a share of Xyrong stock?
   If the market price of a share is currently $100, and you expect the market price to be equal to the intrinsic value one year from now (that is, you expect the market price to be equal to V_{s1} in one year), what is your expected one-year return on Xyrong stock?

10. The Digital Electronic Quotation System (DEQS) Corporation pays no cash dividends currently and is not expected to for the next five years. Its latest EPS was $10, all of which was reinvested in the company. The firm's expected ROE for the next five years is 20% per year, and during this time it is expected to continue to reinvest all of its earnings. Starting six years from now the firm's ROE on new investments is expected to fall to 15%, and the company is expected to start paying out 40% of its earnings in cash dividends, which it will continue to do forever after. DEQS's required rate of return is 15% per year. What is your estimate of DEQS's intrinsic value per share?

11. The Duo Growth Company just paid a dividend of $1 per share. The dividend is expected to grow at a rate of 25% per year for the next three years and then to level off to 5% per year forever. You think the appropriate required rate of return is 20% per year. What is your estimate of the instrinsic value of a share of the stock?

12. Boston Chicken went public in 1993 and pays no dividends to its stockholders. An analyst forecasts its EOS to equal $2.60 in three years with a P/E of 25 times. The market risk premium equals 0.086, the Treasury bill yields 5%, and the analyst estimates Boston Chicken's beta to be 1.55. What is Boston Chicken's intrinsic value?

13. ZAP Inc's expected dividends are $2.50 per share, and its expected EPS are $10.00. The required rate of return for ZAP equals 18% and the expected ROE is 20%. Calculate the intrinsic value of the stock.

14. HPT's current dividends are $1.00 per share, and it is expected to increase to $3.7072 in 10 years. The required rate of return for the stock equals 16%, and the expected dividend payout ratio equals 20%. Calculate the intrinsic value of HPT.

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* The sample problems come from Investments by Bodie, Kane, and Marcus, 5th edition and Contemporary Investments: Security and Portfolio Analysis by Hearth and Zaima, 4th edition.