Chapter 5: Capital structure and dividends

Exercises

1. Flotsam and Jetsam are two marine salvage companies. Both companies have the same assets that produce the same perpetual cash flow of €10 million. Both companies have 10 million shares outstanding. Flotsam has outstanding debt with a value of €20 million. Its shares are currently priced at €8 to give an annual return of 11.25%. Jetsam has outstanding debt with a value of €80 million. All debt is risk free and the risk free interest rate is 5%. Assume a Modigliani-Miller world without taxes.

   (a) Calculate the value of Flotsam's assets. Use an alternative calculation to check your results.

   (b) Calculate the price and return of Jetsam's shares. Check your results.

   (c) Mrs. Grange owns 1 million shares of Flotsam. Mr. Skelton wants to replicate Mrs. Grange's investment, but he only wants to invest in Jetsam's shares and risk free borrowing or lending. What portfolio of Jetsam's shares and risk free borrowing or lending should Mr. Skelton choose? Show that the portfolio requires the same investment amount and generates the same cash flow as Mrs. Grange's 1 million shares of Flotsam.

2. Below is a list of characteristics that a stock can have or not have. State for each characteristic whether this will increase or decrease the value of the stock, other things equal.

   (a) voting rights

   (b) priority claim on profits

   (c) priority voting rights in merger and take-over decisions

   (d) a clause that gives the issuer of the stock the right to repay the amount received for the stock and redeem the share

   (e) a clause that gives the issuer the right to convert a priority share to a common share

3. Below is a list of characteristics that a bond can have or not have. State for each characteristic whether this will increase or decrease the value of the bond, other things equal.

   (a) a clause that makes the interest payments dependent on the income earned by the issuer

   (b) a *call provision*, i.e. a clause that gives the issuer the right to buy back the bond before maturity at a pre-specified price (callable bond)

   (c) a clause that gives the investor the right to sell the bond back to the issuer before maturity at a pre-specified price (putable bond)

   (d) a clause that gives the investor the right to convert the bond into a common share

(e) a seniority ('me first') clause

4. Explain briefly what the advantages and dangers of securitization are (securitization is transforming internally held capital categories into securities that can be traded).

5. ZXco is financed with 80% equity and the β of its equity is 1.2. The risk free rate is 4% and the market risk premium, i.e. $r_m - r_f$, is 6%. All debt can be considered risk free and there are no taxes.

   (a) Calculate ZXco's WACC.

   ZXco decides to change its capital structure and increase debt to 60%. Assuming that debt remains risk free:

   (b) calculate ZXco's equity β, the required return on its equity and its WACC after the refinancing.

6. AG Goldmünzen & Verschuldung has plans to open a new mine. The plan is to finance the mine with 80% debt. Other mining companies are more conservative and finance their operations with, on average, 40% debt. The shares of these companies are priced such that they generate an expected return of, on average, 11.4%. Since the mining industry is very safe (at least, for investors) all debt can be considered risk free. The risk free interest rate is 7%. All mining firms use the same technology and generate the same return on assets. The tax rate is 30% and all the assumptions of the Modigliani-Miller tax case apply.

   (a) What is the required return on AG Goldmünzen & Verschuldung's equity investment in the planned mine?

7. TechCon is a technical construction company run by engineers. It is financed entirely with equity because, as the leading engineers put it, construction is a risky business. A newly employed engineer, who followed a course in finance for science and technology students, suggests to finance the company partly with debt because that would increase its value. TechCon has earnings before interest and taxes (EBIT) of 100 per year. Its equity is priced to give an expected return of 10% and the corporate tax rate is 20%. The company can borrow at the risk free rate of 4%. Its earnings can be treated as a perpetuity and all the assumptions of the Modigliani-Miller tax case apply.

   (a) With how much will the value of TechCon change if it refinances of 50% of its current value with a perpetual loan?

8. A consequence of the so-called clientele effect is that dividends are 'sticky' i.e. that dividend payments tend to be stable over time.

   (a) Explain what the clientele effect is and why it leads to sticky dividends.
   (b) What is the effect of sticky dividends on the payout ratio (fraction of earnings paid out as dividends) of firms with very volatile earnings?
   (c) To what erroneous conclusion can that lead?
   (d) What is the effect of sticky dividends on the payout ratio of firms that were hit by a strike and had an occasional year of low earnings?
   (e) To what erroneous conclusion can that lead?

9. MacroHard is a successful software company that has been generating cash at a phenomenal rate over the past few years. Now it has decided to pay out \$250 million of it as cash dividend to its shareholders. The total market value of MacroHard is \$1250 million, including \$550 million of debt. The company has 2.5 million shares outstanding.

   (a) Calculate the change in MacroHard's stock price due to the dividend payment. Assume perfect markets.

   (b) State the changes in investment policy and financial policy due to the dividend payment.

   (c) How can MacroHard pay out the same amount in dividends without changing its investment and financial policy? Be precise in number of shares and price per share.

   (d) Now suppose that MacroHard uses the money to buy back shares instead of paying dividends. Calculate the effects of the buyback on the firms total market value, the share price and the number of shares outstanding.

10. Exodus Biofuel N.V. converts agricultural waste into diesel fuel. The market value of its equity is €200 million and since investors regard the biofuel business (or its managers) as very risky, it is priced to give a return of 16.5%. To strengthen investor confidence, Biofuel pays out all its earnings as dividends to its shareholders, no earnings are retained for new investments. For next year, Biofuel announced a dividend of €2.50 per share and the expectation is that earnings and dividends will grow at the inflation rate of 4%.

    (a) Explain why paying out all earnings as dividends may strengthen confidence in a firm (or a firm's management).

    (b) Calculate the price per share based on the expected return and growth rate.