**Introduction to financial analysis**

1. What is the difference between a passive and active investing? Explain the difference between risks active and passive investors are exposed.
2. Explain why dividends are not expense and depreciation of plant and equipment is an expense in income statement.
3. General Motors ended its 2007 year with shareholders’ equity of -$37,094 million at December 31 (yes, negative equity!). Six months later, at June 30, 2008, it reported -$56,990 million in equity after paying a dividend of $283 million to shareholders. There were no other transactions with shareholders.

a. What was comprehensive income for the six months?

b. The income statement reported a loss of $18,722 million for the six months. What was “other comprehensive income”?

c. Total expense and other losses in the income statement, including taxes, were $60,895 million. What was revenue for the six months?

d. The firm reported $148,883 million of total assets at the end of 2007 and $136,046 at June 30, 2008. What were total liabilities at these two dates?

e. How can a firm have negative equity?

**Different methods of company valuation: Comparable and Asset based valuation method.**

1. Method of comparable. Disadvantages of this method.
2. ‘Asset Based Valuation. Disadvantages of Asset Based valuation
3. Weyerhaeuser, the forest products producer, traded at $42 at the beginning of 1996. Beta services typically place its beta at 1.0 with a market risk premium of 6 percent. The risk-free rate at the end of 1995 was 5.5 percent. The firm was expected to pay dividends of $1.60 per share in 1996 and 1997. Use the CAPM to calculate the required return, then answer the following. **a.** At what price do you expect Weyerhaeuser to sell at the end of 1997 if you forecast it will pay no dividends? **b.** At what price do you expect Weyerhaeuser to sell at the end of 1997 if it does pay the dividends?
4. Here are some accounting numbers and market values (in millions) for two hypothetical computer manufactures. These two computer manufactures are considered to be comparables for third computer manufacture firm.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Sales | Earnings | Book Value | Market Value |
| Company 1 | $45,220 | $620 | $13,950 | $32,960 |
| Company 2 | 6,080 | 1,290 | 1,560 | 1,90 |

a. Calculate price-to-sales, price-earnings (P/E), and price-to-book (P/B) ratios for Company1 and Company 2.

b. Company 3 reported the following number for fiscal year

|  |  |
| --- | --- |
| Sales  | $31,170 |
| Earnings | $ 1,250 |
| Book value | $ 4,690 |

Apply multiples for Company 1 and 2 to price Company 3’s 2,600 million outstanding shares.

**Discounted cash flow method of firm valuation**

1. Explain Discounted Cash Flow method of equity valuation. What is the disadvantage of this method?
2. The following summarizes the parts of a firm’s cash flow statement that have to do with operating and investing activities (in millions)

|  |  |  |
| --- | --- | --- |
| **Cash flow from operations** | **?** |  |
| Net income | $2,190 |  |
| Accruals in net income | 3,070 |  |
| **Cash in investing activities**: | **?** |  |
| Purchase of property and plant | $2,200 |  |
| Purchase of short-term investments | 4,760 |  |
| Purchase of short-term investments | (550) |  |

The firm made interest payments of $1,342 million and received $876 in interest receipts from T-bills that it held. The tax rate is 35 percent. Calculate free cash flow. (Financial statements prepared under IFRS and interest payments are reported as financing activities)

1. Microsoft Corp. reported $36.835 billion in revenues for fiscal year 2004. Accounts receivable, net of allowances, increased from $5.196 billion in 2003 to $5.890 billion. Microsoft has been criticized for underreporting revenue. Revenue from software licensed to computer manufacturers is not recognized in the income statement until the manufacturer sells the computers. Other revenues are recognized over contract periods with customers. As a result, Microsoft reported a liability, unearned revenue, of $6.514 billion in 2004, down from $7.225 billion in 2003. What was the cash generated from revenues in 2004?
2. Kimberly-Clark Corporation (KMB) manufactures and markets consumer paper products under brand names that include Kleenex, Scott, Cottonnelle, Viva, Kotex, and WypAll. For fiscal year 2004, the firm reported the following numbers (in millions):

|  |  |
| --- | --- |
| Net income (in income statement)  | $1,800.2 |
| Cash flow from operations (in cash flow statement)  | 2,969.6 |
| Interest paid (in footnote to cash flow statement) | 175.3 |
| Interest income (from income statement) | 17.9 |

The cash investment section of the 2004 cash statement was reported as follows (in millions):

|  |  |
| --- | --- |
| **Investing activities** |  |
| Capital Spending | $(535.0) |
| Investment in marketable debt securities | 11.5 |
| Proceeds from sales of investments in marketable debt securities | 38.0 |
| Net increase in time deposits | (22.9) |
| Proceeds from disposition of property | 30.7 |
| Other operating investments | 5.3 |
| **Cash used for investing activities** | **$(495.4)** |

The firm has a combined federal and state tax rate of 35.6 percent. Calculate:

a. Free cash flow generated in 2004.

b. The accrual component of 2004 net income.

1. At the end of 2009, you forecast the following cash flows (in millions) for a firm with net debt of $759 million:

|  |  |  |  |
| --- | --- | --- | --- |
|  | 2010 | 2011 | 2012 |
| Cash flow from operations | $1450 | $1576 | $1718 |
| Cash from investment | 1020 | 1124 | 1200 |

You forecast that free cash flow will grow at a rate of 4% per year after 2012. Use a required return of 10% in answering the following questions.

1. Calculate the firm’s enterprise value at the end of 2009.
2. . Calculate the value of the equity at the end of 2009.

**Residual income method of firm valuation**

1. Explain the concept behind the Residual earnings valuation method. How is firm value calculated using Residual earnings valuation method?
2. A share trades at a price-to-book ratio of 0.7. An analyst who forecasts an ROCE of 12 percent each year in the future, and sets the required equity return at 10 percent, recommends a hold position. Does his recommendation agree with his forecast?
3. A share traded at $26 at the end of 2009 with a price-to-book ratio of 2.0. Analysts are forecasting earnings per share of $2.60 for 2010. The required equity return is 10 percent. What is growth in residual earnings that the market expects beyond 2010?
4. Answer the following questions and explain your answer:
5. A firm cannot maintain an ROCE less than the required return and stay in business indefinitely. True or false? Explain your answer
6. Information indicates that a firm will earn a return on common equity above its cost of equity capital in all years in the future, but its shares trade below book value. Those shares must be mispriced. True or false?
7. A firm with a book value of $15.60 per share and 100 percent dividend payout is expected to have a return on common equity of 15 percent per year indefinitely in the future. Its cost of equity capital is 10 percent. Calculate intrinsic price to book ratio.
8. Black Hills Corporation is a diversified energy corporation and a public utility holding company. The following gives the firm’s earnings per share and dividends per share for the years 2000–2004.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **1999** | **2000** | **2001** | **2002** | **2003** | **2004** |
| EPS |  | 2.39 | 3.45 | 2.28 | 2.00 | 1.71 |
| DPS |  | 1.06 | 1.12 | 1.16 | 1.22 | 1.24 |
| BPS | 9.96 |  |  |  |  |  |

Use a required return of 11 percent for calculations below.

1. Calculate residual earnings and return of common equity (ROCE) for each year, 2000–2004.
2. Value the firm at the end of 1999 under the assumption that the ROCE in 2004 will continue at the same level subsequently.
3. An analyst presents you with the following pro forma (in millions of dollars) that gives her forecast of earnings and dividends for 2010–2014. She asks you to value the 1,380 million shares outstanding at the end of 2009, when common shareholders’ equity stood at $4,310 million. Use a required return for equity of 10 percent in your calculations.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 2010 | 2011 | 2012 | 2013 | 2014 |
| Earnings | 388 | 570 | 599 | 629 | 660 |
| Dividends | 115 | 160 | 349 | 367 | 385 |

Calculate Residual earnings for each of the years. Calculate per share value of the equity using your calculations. What is the premium over book value given by your calculation? What is the P/B ratio?

1. The following forecasts of earnings per share (EPS) and dividend per share (DPS) were made at the end of 2009 for a firm with a book value per share of $22.00:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 2010 | 2011 | 2012 | 2013 | 2014 |
| EPS | 3.90 | 3.70 | 3.31 | 3.59 | 3.90 |
| DPS | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

The firm has an equity cost of capital of 12 percent per annum.

a. Calculate the residual earnings that are forecast for each year, 2010 to 2014.

b. What is the per-share value of the equity at the end of 2009 based on the residual income valuation model?

c. What is the forecasted per-share value of the equity at the end of the year 2014?

d. What is the expected premium in 2014?

**Pricing earnings: Abnormal earning growth method of company valuation**

1. How do you interpret a PEG ratio?
2. Explain the concept behind Earnings pricing method.
3. The following forecasts of earnings per share (EPS) and dividend per share (DPS) were made at the end of 2009:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 2010 | 2011 | 2012 | 2013 | 2014 |
| EPS | 3.90 | 3.70 | 3.31 | 3.59 | 3.90 |
| DPS | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

The firm has an equity cost of capital of 12 percent per annum.

1. Calculate the abnormal earnings growth that is forecast for each year, 2011 to 2014.
2. What is the per-share value of the equity at the end of 2009 based on the abnormal earnings growth valuation model?
3. What is the forecasted per-share value of the equity at the end of the year 2014?
4. Two firms, A and B, which have very similar operations, have the same book value of 100 at the end of 2009 and their cost of capital is 11 percent. Both are forecast to have earnings of $16.60 in 2010. Firm A, which has 60 percent dividend payout, is forecast to have earnings of $17.80 in 2011. Firm B has zero payout.
5. What is your best estimate of firm B’s earnings for 2011?
6. Would you pay more, less, or the same for firm B relative to firm A in 2009?
7. In early 2008, General Electric (GE) shares were trading at $26.75 each. Analysts were forecasting $2.21 in EPS for 2008 and $2.30 for 2009. A dividend of $1.24 was indicated for 2008. Use a required return of 9 percent for the questions below.
8. What is GE’s normal forward P/E? What was the P/E at which it traded?
9. The estimated abnormal earnings growth for 2009 indicates that GE’s stock should be trading at about a normal P/E. Show this.

**Financial Statement Analysis overview**

1. The drivers of net operating assets and net indebtedness.
2. Why are financial statements reformulated in analysis? Bring examples.

 **Cash Flow Analysis**

1. How free cash flow is calculated using comparative balance sheet and income statement?
2. Explain sources and dispositions of free cash flow
3. Cash Flow Ratios: Cash Conversion Cycle, Cash flow adequacy ratio and cash reinvestment ratio.
4. You are given the following data for a ABC company:

|  |  |  |
| --- | --- | --- |
|  | **2007** | **2006** |
| Operating assets | $3 905 | $2 342 |
| Operating liabilities | 1 768 | 1 233 |
| Financial assets | 355 | 243 |
| Financial obligations | 1 890 | 1 752 |
| Operating income | 2 798 |  |
| Net financial expense | ? |  |
|  |  |  |

Net dividends to shareholders was $1 400. Calculate free cash flow and Net financial expense using Method 1 and Method 2.

1. The firm reported cash flow from operations of $2,300 million in its 2007 cash flow statement and also reported net interest payments of $140 million (interest payments are reported as operating cash). It reported $900 million in cash spent on investing activities, but this was after including a net $60 million from liquidating short-term interest-bearing securities. The firm’s statutory tax rate is 30 percent. Calculate free cash flow from these reported numbers.

**Balance Sheet and Income Statement Analysis**

1. Issues in reformulating balance sheet. Explain why assets are classified as operating and financing in analysis.
2. Issues in reformulating Income statement.
3. Common size and trend analysis of income statement.
4. Main income statement ratios.
5. In October 2015, the 45,000 thousand outstanding shares of AAA company, traded at $15,6 each. The most recent quarterly balance sheet reported $454 million in net financial assets and $876 million in common shareholders’ equity. a. What is the price-to-book ratio for the firm’s equity? What is the book value of the firm’s net operating assets? At what price is the market valuing the business operations? Give recommendation about this investment.
6. Company ZZZ reported the following income statement:

|  |  |
| --- | --- |
| Net Sales | $26,500 |
| Operating expenses | (17,500) |
| Restructuring charge | (95) |
| Operating profit | 15,905 |
| Gain on asset sales | 2,300 |
| Interest expense | (1,300) |
| Interest income | 850 |
|  | **10,755** |
| Provision for income taxes | 3275 |
| Net income | 7480 |

Reformulate this statement to distinguish operating items from financing items and operating income from sales from other operating income. Identify operating income after tax. The firm’s statutory tax rate is 36 percent.

1. From the following income statement (in millions), calculate operating income after tax, using both the top-down and bottom-up methods. Use a tax rate of 30 percent.

|  |  |
| --- | --- |
| Revenue | $7,500 |
| COGS | (3,450) |
| Operating expenses | (1,560) |
| Interest expense | (340) |
| Interest income | 180 |
| Income taxes |  |
| Net Income |  |

**Shareholder equity analysis**

1. Explain the reformulation procedures of shareholder equity statement.
2. What is the difference between clean-surplus accounting and dirty-surplus accounting? Briefly explain dirty and hidden dirty surplus items.
3. How are payout and retention ratios calculated? How is growth in common shareholder equity determined?
4. The following is a statement of common shareholders’ equity with some numbers missing (in millions of dollars):

|  |  |
| --- | --- |
| Beginning equity | ? |
| Net income | 370 |
| Common dividend | (150) |
| Preferred dividend | (60) |
| Stock issue (common) | ? |
|  Unrealized gain on securities for sale | 21 |
| Currency translation loss | (11) |
| Ending equity | ? |

* 1. Equity of the company traded at a premium of $1,500 million over the book value. Its market value was $3700 million at December 31, 2013, and $4,320 million at December 31, 2014. What was common stock issue for 2014?
	2. Find the missing numbers in the equity statement and reformulate it to identify comprehensive income for the common shareholders for 2014.
1. The following is a condensed version of the statement of shareholders’ equity for Company ABC, for fiscal year ending January 31, 2013

|  |  |
| --- | --- |
| Balance at February 1, 2012 | $6,300 |
| Net income | 3,500 |
| Unrealized gain on debt investments | 37 |
| Unrealized loss on derivative instruments | (97) |
| Foreign currency translation gain | 5 |
| **Comprehensive income** | **3445** |
| Shares issued on exercise of options,including tax benefits of $260 | 520 |
| Repurchase of 50 million shares | (2,400) |
| **Balance of January 31, 2013** | **5100** |

Tax rate is 35 percent. The share repurchase occurred when the stock traded at $28 per share.

a. What was the loss to shareholders from the exercise of stock options?

b. Prepare a reformulated statement of shareholders’ equity for 2003 for Dell, Inc. The reformulated statement should identify comprehensive income and include all hidden items.

1. In 2010, an employee was granted 300 options on the stock of a firm with an exercise price of $25 per option. In 2015, after the options had vested and when the stock was trading at $40 per share, she exercised the options. The firm’s income tax rate is 30 percent. What was the after-tax cost to shareholders of remunerating this employee with options? What would cost to shareholders be if company used exercise date accounting method?

**Profitability analysis**

1. Return on common equity: Explain the drivers of ROCE. How does financial leverage affect ROCE?
2. Return on net operating assets: Explain the drivers of RNOA. How does operating leverage affect RNOA?
3. Selected financial statement data from Texas Telecom, Inc., for Years 5 and 9 are reproduced below ($ millions):



a. Calculate return on common equity and disaggregate ROCE for Years 5 and 9 using end-of-year values for computations requiring an average (assume fixed assets and working capital are operating and a 50% tax rate).

b. Comment on Texas Telecom’s use of financial leverage.

1. Based on the relationship between rates of return and leverage, solve the next problems:
2. A firm has a return on common equity of 13.4 percent, a net after-tax borrowing cost of 4.5 percent, and a return of 11.2 percent on net operating assets of $405 million. What is the firm’s financial leverage?
3. The same firm has a short-term borrowing rate of 4.0 percent after tax and a return on operating assets of 8.5 percent. What is the firm’s operating liability leverage?
4. The firm reported total assets of $715 million. Construct a balance sheet for this firm that distinguishes operating and financial assets and liabilities.
5. A firm earns a profit margin of 4 percent on sales of $440 million and employs net operating assets of $ 250 million to do so. It considers adding another product line that will earn a 4 percent profit margin with an asset turnover of 2. What would be the effect on the firm’s return on net operating assets of adding the new product line?

**Analysis of growth and sustainable earnings**

1. Analysis of growth through profitability.
2. Analysis of growth through debt and equity investment.
3. Cell Analysis of the P/B–P/E Relationship: fill in the Cells and give explanation

|  |  |
| --- | --- |
|  | **P/B ratio** |
| **P/E ratio** | **High**$\overbar{RE}$**>0** | **Normal**$\overbar{RE}$**=0** | **Low**$\overbar{RE}$**<0** |
| **High** | **A** | **B** | **C** |
| **Normal** | **D** | **E** | **F** |
| **Low** | **G** | **H** | **I** |

1. The following numbers were calculated from the financial statements for a firm for 2009 and 2008:



Explain how much of the change in ROCE from 2008 to 2009 is due to operating activities

and how much is due to financing activities. Box 12.9 will help you.

**The Value of Operations**

1. Explain the difference between Residual income and Residual operating income; Firm value and equity value.
2. Cost of capital for operations; Cost of capital for debt; Cost of capital for equity.
3. Explain the effect of financial and operating leverage on equity return.
4. Enterprise multiples.
5. A firm with a required return of 10 percent for operations has a book value of net debt of $2,450 million with a borrowing cost of 8 percent and a tax rate of 37 percent. The firm’s equity is worth $8,280 million. What is the required return for its equity?
6. The following forecasts were made for a firm with net operating assets of $1,135 million and net financial obligations of $720 million at the end of 2005 (in millions of dollars):

 ****

The required return for operations is 10.1 percent. Forecast residual operating income for these years and, from these forecasts, value the operations and the equity.

**Forecasting and valuation**

1. Explain different scenarios of forecasting: Simple forecasting 1, Simple forecasting 2 and Simple forecasting 3.
2. An analyst prepares the following reformulated balance sheet (in millions of dollars):

 

Core operating income (after tax) for 2009 was $990 million. The required return for operations is 9 percent. For ease, use beginning-of-year balance sheet numbers where pertinent in calculations.

a. What was the core return on net operating assets for 2009?

b. Prepare an SF3 forecast of operating income and residual operating income for 2010 based on this financial statement information.

c. Value the equity based on the information.

d. What is the intrinsic enterprise price-to-book ratio?

**3.** An analyst uses the following summary balance sheet to value a firm at the end of 2009 (in millions of dollars):

 

The analyst forecasts that the firm will earn a return on net operating assets (RNOA) of 12 percent in 2010 and a residual operating income of $91.4 million.

a. What is the implied rate of required return for operations that the analyst is using in his residual operating income forecast?

b. The analyst forecasts that the residual operating income in 2010 will continue as a perpetuity. What value does this imply for the equity?

c. Calculate the forecast of residual earnings (on common equity) that is implied by these forecasts. The firm’s after-tax cost of debt is 6.0 percent.

**4.** Explain the steps of forecasting Residual operating income in full information forecasting.

**5.** The following forecasts were prepared in 2008 for a firm with a cost of capital for its operations of 12 percent. Amounts are in millions of dollars.



The common stockholders’ equity at the beginning of 2009 is 596 and there is no net debt.

a. Forecast cash flow from operations and free cash flow for each of the five years.

b. Use residual operating income techniques to value this firm.

c. Attempt to value the firm using discounted cash flow analysis. Do you get the same answer as that for part (b) of the exercise?

**6.** A firm has the following summary balance sheet (in millions of dollars):



The firm is currently earning a return on net operating assets (RNOA) of 14 percent from sales of $857 million and after-tax operating income of $60 million. Its required return on operations is 10 percent. Forecasts indicate that RNOA is likely to continue at the same level in the future with growth in sales of 3 percent per year and growth in net operating assets to support the sales of 3 percent per year.

Management is considering a plan to introduce new products that are expected to increase the sales growth rate to 4 percent a year and maintain the current profit margin of 7 percent. But the plan will require additional investment in net operating assets that will reduce the firm’s asset turnover to 1.67.

What effect will this plan have on the value of the firm?

**The Analysis of equity risk and return**

1. Diversification and Risk
2. Asset pricing models: the disadvantages of asset pricing models.
3. Explain the fundamental risk and its drivers.
4. What is Value at risk profiling?
5. Price risk.

**The analysis of credit risk and return**

1. A firm has the following balance sheet and income statement (in millions of dollars):





The long-term debt is 8 percent coupon debt maturing in five years. The statutory tax rate is 38 percent. Prepare pro forma financial statements for the next five years under the two following scenarios. Also forecast cash available for debt service and the debt service requirement under both scenarios. The firm pays no dividends.

a. Sales are expected to grow at 4 percent per year, with the current operating profit margin being maintained and with an asset turnover of 1.14.

b. Sales are expected to decline by 4 percent per year and operating profit margins are expected to decline to 2 percent. With some assets inflexible, asset turnovers are expected to decline to 0.98.

**2.** The following numbers are extracted from the financial statements for a firm for 2008 and 2009. Amounts are in millions of dollars.



At the end of 2008, the firm’s 80 million shares traded a $25 each, but by the end of 2009 they traded at $15. Commentators blamed the drop on an increase in the risk of bankruptcy. Conduct a credit scoring analysis that indicates how much the likelihood of bankruptcy increased over the year.

1. Distinguish a Type I error in predicting default from a Type II error.
2. Write the main liquidity and solvency ratios and explain the importance of these ratios in credit analysis.