Business Valuation

Learning Problems

**Suitability of Income Approach (DDM) at Quesnel**

Cathy Parsons is an equity analyst for Quesnel Investments. She was asked to evaluate Little Fort and Clearwater for possible inclusion in the company’s value fund. The following data was collected:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Year** | **Little Fort** | | | **Clearwater** | | |
| **EPS (CAD)** | **DPS (CAD)** | **Payout Ratio** | **EPS (CAD)** | **DPS (CAD)** | **Payout Ratio** |
| 2016 | 2.60 | 1.35 | 0.52 | 5.67 | 2.00 | 0.35 |
| 2015 | 2.39 | 1.25 | 0.52 | 2.27 | 2.00 | 0.88 |
| 2014 | 2.11 | 1.12 | 0.53 | 2.56 | 2.00 | 0.78 |
| 2013 | 1.93 | 0.99 | 0.51 | 4.94 | 2.00 | 0.40 |
| 2012 | 1.86 | 0.95 | 0.51 | 4.03 | 2.00 | 0.50 |
| 2011 | 1.81 | 0.89 | 0.49 | 3.35 | 2.00 | 0.60 |
| 2010 | 1.69 | 0.82 | 0.49 | 1.77 | 2.00 | 1.13 |
| 2009 | 1.52 | 0.75 | 0.49 | 5.58 | 2.00 | 0.36 |

**REQUIRED:**

1. Is the income approach (DDM) suitable for valuing these two companies?

**Income Approach (DDM) at Rebel**

Rebel Company plans to issue new equity to finance an expansion. The market price of its common share is CAD 110, but the company wants to verify this price to determine if it is a suitable time to sell shares. The following data was collected:

|  |  |
| --- | --- |
| Beta | 2.1 |
| 20-year risk-free rate | 4.0% |
| S&P 500 return | 9.5% |
| 3-year analyst consensus dividend growth forecast | 7.0% |
| Current dividend | CAD 10.00 |

Rebel assumes a long-term dividend growth rate of 3.0%.

**REQUIRED:**

1. Estimate the intrinsic value of Rebel’s shares using a 2-stage income approach (DDM). Should Rebel issue new shares now?
2. Rebel is uncertain of some of its inputs and decides to do the best and worst-case scenario analysis using the data below:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Best** | **Baseline** | **Worst** |
| Return in the high-growth period | 9.0% | 7.0% | 5.0% |
| Length of the high-growth period | 4 years | 3 years | 2 years |
| Return in the mature-growth period | 4.0% | 3.0% | 2.0% |

Will this analysis change Rebel’s decision?

**Income Approach (DDM) With No Growth at Roanoke**

Roanoke Ltd. recently issued 3.5%, cumulative preferred shares with a par value of CAD 100.00. Its cost of preferred share financing is 9.22%.

**REQUIRED:**

1. What is the intrinsic value of Roanoke’s preferred shares using a 1-stage income approach (DDM)?

**Income Approach (DDM) With Negative Growth at Klondike**

Klondike Ltd. operates a gold mine in British Columbia. Its common shares currently pay an annual dividend of CAD 2.50 per share, which is expected to decline in perpetuity by 5.0% annually based on historical data as the mine property is depleted.

Klondike has a beta of 1.3, the market risk premium is 5.5%, and the 20-year government bond rate is 4.0%.

**REQUIRED:**

1. What is the intrinsic value of Klondike’s shares using a 1-stage income approach (DDM)?

**Estimating Historical Growth Rates**

Kevin Simpson is an equity analyst considering Shamrock Systems for inclusion in his firm’s large-cap fund. To estimate the growth rate of dividends, Simpson has collected the following historical earnings per share data for the last two business cycles:

|  |  |
| --- | --- |
| **Year** | **EPS (CAD)** |
| 2005 | 0.46 |
| 2006 | 0.72 |
| 2007 | 0.78 |
| 2008 | 0.96 |
| 2009 | 0.87 |
| 2010 | 1.05 |
| 2011 | 0.76 |
| 2012 | 0.90 |
| 2013 | 0.91 |
| 2014 | 1.27 |
| 2015 | 1.13 |
| 2016 | 1.27 |

**REQUIRED:**

1. Calculate the arithmetic and geometric mean growth rate of EPS from 2005 to 2016. Why should the geometric mean growth rate be used?
2. Recalculate the geometric mean growth rate using regression smoothing. Describe two advantages of this approach.

**Income Approach (DDM) at Amsterdam**

Amsterdam Company is preparing a fairness opinion in response to an offer it has received to buy the company. The following information was collected:

|  |  |  |
| --- | --- | --- |
|  | **High-Growth Stage** | **Stable-Growth Stage** |
| Beta | 1.2 | 1.0 |
| Return on assets | 15.0% | 5.0% |
| Payout ratio | 25.0% | 75.0% |
| Debt ratio | 0.50 | 0.60 |
| Length | 3 years | Infinite |

EPS was CAD 4.50 in the previous year. The risk-free rate is 4.5%, and the market risk premium is 5.5%.

**REQUIRED:**

1. Estimate the intrinsic value of Amsterdam’s shares using the 2-stage income approach (DDM).
2. What percentage of Amsterdam’s intrinsic value is accounted for by its terminal value? Does this create any problems for the valuation?

**Income Approach (DDM) at Samantha**

Hal Wipley owns Samantha Company and has hired Jenna Walters, CBV, to value his firm as he is retiring. Walters made the following estimates:

|  |  |  |
| --- | --- | --- |
|  | **High-Growth Stage** | **Stable-Growth Stage** |
| Return on assets | 18.0% | 9.0% |
| Payout ratio | 25.0% | 75.0% |
| Debt ratio | 20.0% | 40.0% |
| Length | 2 years | Indefinite |
| Beta | 1.36 | 1.00 |

Walters expects the high-growth stage to phase into the stable-growth stage evenly over two years before it reaches stable growth in Year 5. Dividends per share are currently CAD 6.40. The risk-free rate is 4.0%, and the market risk premium is 5.0%.

**REQUIRED:**

1. Estimate the intrinsic value of Samantha Company’s shares using the 3-stage income approach (DDM).

**Income Approach (DDM) at ABC**

Cathy Evert was assigned to value ABC Ltd. She collected the following information:

|  |  |  |
| --- | --- | --- |
|  | **High-Growth Stage** | **Stable-Growth Stage** |
| Return on assets | 19.0% | 4.0% |
| Payout | 35.0% | 59.0% |
| Debt ratio | 0.20 | 0.65 |
| Length | 2 Years | Indefinite |
| Beta | 1.05 | .90 |

Evert expects the high-growth period to phase into the stable-growth period evenly over two years before reaching stable growth in Year 5. The 20-year government bond rate is 5.0%, and the market risk premium is 4.5%. Dividends per share were CAD 3.52 at the end of the last period.

**REQUIRED:**

1. Estimate the intrinsic value of ABC’s shares using the 3-stage income approach (DDM).

**Implied Growth Rate of Dividends**

Nancy Wong is an equity analyst. She is researching Calibre Company, a manufacturer of ketchup and other condiments.

Calibre’s common shares currently trade at CAD 45.00 and pay an annual dividend of CAD 1.35. Wong cannot determine a historical growth rate for the company’s dividends and does not feel the consensus 3-year industry estimate is accurate. Wong calculates Calibre’s implied gd to help make her buy, sell, or hold recommendation.

Calibre has a beta of 1.2, the market risk premium is 5.5%, and the 20-year treasury bond rate is 4.0%. Inflation is expected to average 2.0%, and the consensus forecast for the real long-term growth rate of the Canadian economy is 1.75%.

**REQUIRED:**

1. Should Wong recommend Calibre as a buy, sell or hold?

**Income Approach (FCFE) at Shelton**

Shelton Industries had earnings per share of CAD 3.15 in 2013 and paid dividends per share of CAD 1.65. Its depreciation expense was CAD 305 million, capital expenditures were CAD 465 million, and working capital increased by CAD 25 million.

Shelton is a mature company whose earnings are expected to grow at a constant rate of 3.0% per year. It has a beta of 1.25, the 20-year treasury bond rate is 4.0%, and the market risk premium is 5.0%. The debt ratio is expected to remain constant at 20.0%. There are 155 million outstanding common shares.

**REQUIRED:**

1. Estimate the intrinsic value of Shelton’s shares using the 1-stage income approach (DDM).
2. Estimate the intrinsic value of Shelton’s shares using the 1-stage income approach (FCFE).
3. Why is the intrinsic value in Part 1 lower than in Part 2?

**Income Approach (FCFE) at Global**

Global Ltd.’s CFO is valuing the company as the first step in an initial public offering. Sales were forecasted for the next three years based on a consensus estimate of industry analysts. The percentage of sales method was used to prepare pro forma financial statements. After three years, the company is expected to grow at the long-term growth rate of the economy.

**Global Ltd.**

**Income Statement (in CAD thousands)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **2010** | **2011** | **2012** |
| Sales | 200,000 | 210,000 | 220,500 |
| Cost of sales | 120,000 | 126,000 | 132,300 |
| Gross margin | 80,000 | 84,000 | 88,200 |
| Operating expenses | 52,000 | 54,600 | 57,330 |
| Depreciation | 9,000 | 9,450 | 9,922 |
| Earnings before interest and taxes | 19,000 | 19,950 | 20,948 |
| Interest | 4,000 | 4,200 | 4,410 |
| Earnings before taxes | 15,000 | 15,750 | 16,538 |
| Income taxes | 6,000 | 6,300 | 6,615 |
| Net income | 9,000 | 9,450 | 9,923 |

**Global Ltd.**

**Balance Sheet (in CAD thousands)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Actual** | **Projected** | | |
|  | **2009** | **2010** | **2011** | **2012** |
| Current assets | 30,000 | 31,500 | 33,075 | 34,728 |
| Plant and equipment | 90,000 | 101,000 | 112,550 | 124,677 |
| Less: Accumulated depreciation | 60,000 | 69,000 | 78,450 | 88,372 |
| Net plant and equipment | 30,000 | 32,000 | 34,100 | 36,305 |
| Total assets | 60,000 | 63,500 | 67,175 | 71,033 |
|  |  |  |  |  |
| Current liabilities | 10,000 | 10,500 | 11,025 | 11,576 |
| Long-term debt | 40,000 | 42,000 | 44,100 | 46,305 |
| Equities | 10,000 | 11,000 | 12,050 | 13,152 |
| Total liabilities and equities | 60,000 | 63,500 | 67,175 | 71,033 |

**Other Information**

Global has a beta of 1.3. The 20-year U.S. treasury bond rate is 4.0%, the market risk premium is 5.0%, and the estimated long-term growth rate of the economy is 3.0%.

**REQUIRED:**

1. Estimate the intrinsic value of Global using the 2-stage income approach (FCFE).

**Income Approach (FCFE) at Ricco**

Jackie Jolson, CFA, is the manager of a private equity fund. The fund is considering buying Ricco Ltd., a major supplier of electronic components for the aircraft industry. Jolson collected the following information in early 2015:

**Current Information**

Revenues per share 2014 – CAD 15.70 per share

EPS 2014 – CAD 3.20 per share

Capital expenditure – CAD 1.25 per share

Depreciation per share 2014 - CAD .70 per share

**High-Growth Period** – 2 Years

ROA – 20%

Debt ratio – 30%

Retention ratio – 90%

Beta – 1.45

Working capital – 15% of sales

**Stable-Growth Period**

ROA – 4%

Debt ratio – 50%

Retention ratio – 40%

Beta – 1.10

Working capital – 15% of Sales

Capital expenditures are offset by depreciation

The sustainable growth rate is used to estimate Ricco’s growth rate. The risk-free rate is 4.0%, and the market risk premium is 5.0%.

**REQUIRED:**

1. Estimate the intrinsic value of Ricco shares using the 2-stage income approach (FCFE).

**Income Approach (FCFE) at Quazar**

Heather Johnson, CFA, is an equity analyst with a leading mutual fund company. She values Quazar Ltd. to determine if it is a suitable investment and has collected the following information:

**Current Information**

Revenues per share 2004 – CAD 21.23

EPS 2004 – CAD 4.32

Capital expenditures per share 2004 – CAD 3.56

Depreciation per share 2004 - CAD 1.10

**High-Growth Period** – 3 Years

ROA – 15%

Debt ratio – 25%

Retention ratio – 100%

Beta – 1.35

Working capital – 10% of sales

**Stable-Growth Period**

ROA – 6%

Debt ratio – 40%

Retention ratio – 30%

Beta – 1.10

Working capital – 10% of sales

Capital expenditures are offset by depreciation

The risk-free rate is 4.0%, and the market risk premium is 5.0%.

**REQUIRED:**

1. Estimate the intrinsic value of Pulsar’s shares using the 2-stage income approach (FCFE).

**Income Approach (FCFF) at Pulsar**

Heather Johnson is valuing Pulsar Ltd. to determine if it is a suitable take-over target for the investment fund she manages. She has projected Pulsar’s performance for the next three years, beginning in 2015, after which she expects the company to grow at the long-term growth rate of the economy. The following data was collected:

**Pulsar Ltd.**

**Income Statement (in CAD thousands)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Projected** | | |
| **2015** | **2016** | **2017** |
| Sales | 200,000 | 215,000 | 225,500 |
| Cost of sales | 120,000 | 129,000 | 135,300 |
| Gross margin | 80,000 | 86,000 | 90,200 |
| Operating expenses | 50,000 | 53,750 | 56,375 |
| Depreciation | 10,000 | 10,750 | 11,275 |
| Earnings before interest and taxes | 20,000 | 21,500 | 22,550 |
| Interest | 4,267 | 4,587 | 4,811 |
| Earnings before taxes | 15,733 | 16,913 | 17,739 |
| Income taxes | 3,933 | 4,228 | 4,435 |
| Net income | 11,800 | 12,685 | 13,304 |

**Pulsar Ltd.**

**Income Statement (in CAD thousands)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Actual** | **Projected** | | |
| **2014** | **2015** | **2016** | **2017** |
| Current assets | 30,800 | 34,223 | 36,789 | 38,586 |
| Land, plant and equipment | 136,900 | 155,283 | 172,321 | 187,997 |
| Less: Accumulative depreciation | 61,450 | 71,450 | 82,200 | 93,475 |
| Net plant and equipment | 75,450 | 83,833 | 90,121 | 94,522 |
| Long-term investments | 0 | 7,533 | 17,018 | 28,083 |
| Total assets | 106,250 | 125,589 | 143,928 | 161,191 |
| Current liabilities | 19,850 | 22,056 | 23,710 | 24,867 |
| Long-term debt | 48,000 | 53,333 | 57,333 | 60,133 |
| Common equity | 38,400 | 50,200 | 62,885 | 76,190 |
| Total liabilities and equities | 106,250 | 125,589 | 143,928 | 161,190 |

Currently, the market value of Pulsar’s debt is estimated to be CAD 54,250,000, and it has no preferred shares. Its long-term investments consist of idle land with a fair value of CAD 34,750,000 that is not used in operations and does not generate income. Pulsar’s weighted average cost of capital is 10.2%, and its corporate tax rate is 25.0%. The estimated long-term growth rate of the economy is 3.0%.

**REQUIRED:**

1. Estimate the value of Pulsar’s shares using the 2-stage income approach (FCFF).
2. Why was the value of the long-term investment (i.e., idle land) included in the valuation?
3. What is the advantage of using FCFF instead of FCFE?

**Income Approach (FCFF) at Wellington**

Joe Washington, CPA, CBV, is a partner at a public accounting firm specializing in business valuations, who was asked to value Wellington Ltd. as a potential divestiture.

**Current Information**

EBIT in 2004 - CAD 532 million

Capital expenditures - CAD 310 million

Depreciation - CAD 207 million

Revenues - CAD 7,230 million

Working capital as a percentage of revenue – 25%

Tax rate – 36%

**High-Growth Period – 5 Years**

Growth rate in EBIT, revenue, capital expenditures, and depreciation – 8%

Beta – 1.25

Cost of debt – 9.5% (before tax)

Debt ratio – 50%

**Stable-Growth Period**

Growth rate of EBIT, revenue, capital expenditures, and depreciation – 5%

Beta – 1.00

Cost of debt – 8.5% (before tax)

Debt ratio – 25%

Capital expenditures offset by depreciation

Wellington’s assets include CAD 45 million in short-term investments and CAD 10 million in idle land that is not needed for operations. It also has a CAD 20 million pension plan surplus.

The market value of its debt is estimated to be CAD 2,740.58 million. The risk-free rate is 7.5%, and the market risk premium is 5.5%.

**REQUIRED:**

1. Estimate the intrinsic value of Wellington using the 2-stage income approach (FCFF).

**Percentage of Sales Method**

The following are the financial statements of QuickSilver Ltd. for the previous year.

|  |  |
| --- | --- |
|  | **2013** |
| Net sales | 4,377,432 |
| Expenses |  |
| Cost of sales | 3,185,784 |
| Marketing and sales | 496,786 |
| Administration and research | 285,475 |
| Interest | 34,563 |
| Depreciation | 126,777 |
| Earnings before taxes | 248,047 |
| Income taxes | 74,414 |
| Net income | 173,633 |

|  |  |
| --- | --- |
|  | **2013** |
| Current assets |  |
| Cash | 34,756 |
| Temporary investments | 305,815 |
| Accounts receivables | 550,345 |
| Inventories | 394,356 |
| Prepaid expenses | 30,345 |
| Total current assets | 1,315,617 |
| Property, plant, equipment | 1,320,334 |
| Other assets | 257,654 |
| Total assets | 2,893,605 |
| Current liabilities |  |
| Accounts payable | 532,902 |
| Accrued payroll payables | 243,826 |
| Income taxes payable | 6,201 |
| Total current liabilities | 782,929 |
| Long-term liabilities | 597,853 |
| Shareholders’ equity | 1,512,824 |
| Total liabilities and equity | 2,893,605 |

QuickSilver estimates that sales will increase by 5.0% over each of the next three years. The company has a target long-term debt-to-total capitalization ratio of 30.0%.

**REQUIRED:**

1. Prepare proforma income statements, cash budgets, and balance sheets for the next three years.

**Adjusting Working Capital**

Sandy Bay Ltd. forecasted its sales to be CAD 6,500,000 next year with a 55.0% gross profit margin. The company plans to change the credit terms it offers customers to net 30 from 2/10, net 30. It also negotiated longer payment terms of net 60 with its suppliers. The inventory turnover ratio should increase to 10.3.

**REQUIRED:**

1. What should the forecasted cost of sales, accounts receivable, inventory, and accounts payable be next year?

**Adjusting Capital Expenditures**

Meta Industries’ sales were CAD 150 million in the current year but are expected to increase by 10.0% next year. The company’s fixed assets are currently underutilized and could support sales of approximately CAD 170 million. Capacity can be added in increments of CAD 20 million in sales for CAD 8 million.

**REQUIRED:**

1. What is Meta’s capacity utilization?
2. How many additional fixed assets will be required next year?
3. How would the answer to Part 2 change if sales were expected to increase by 20.0% next year?

**Normalizing EBIT (1-t) and Net Income**

**Case 1 – Average Company Ratios**

Allison Ltd. is a cyclical company whose ROA averaged 7.5% over the last business cycle. It currently has CAD 25 million in total assets and a debt ratio of 50%. Its debt has an average interest rate of 9%, and its marginal tax rate is 25%. Allison feels its operations have not changed significantly since the beginning of the last business cycle, but it has grown considerably and experienced inflation of 2%.

**REQUIRED:**

1. Calculate Allison’s normalized EBIT (1-t) and net income.

**Case 2 – Average Industry Ratios**

Travers Inc. is a cyclical company. It currently has CAD 60 million in total assets and a debt ratio of 50%. Its debt has an average interest rate of 8%, and its marginal tax rate is 25%. It has experienced some company-specific problems during the last business cycle that influenced its financial ratios. The industry average ROE averaged 8.5% while Travers’ ROE was 7.8%. Since the beginning of the last business cycle, the company has grown considerably and experienced inflation of 2%.

**REQUIRED:**

1. Calculate Travers’ normalized EBIT (1-t) and net income.

**Case 3 – Rating Firms**

Harrison Co. has a bond rating of BBB. Companies with this rating had an average times interest earned ratio of 3.15 over the last business cycle. Harrison had CAD 85 million in interest expense last year and a marginal tax rate of 25%.

**REQUIRED:**

1. Calculate Harrison’s normalized EBIT (1-t) and net income.

**Income Approach (FCFF) for a Distressed Firm**

Duckworth Industries is a mature manufacturing company that has experienced heavy losses over the last two years due to excessive borrowing, poor operational performance, and several mishandled product launches. Early in 2017, Duckworth’s board of directors hired a new CEO who prepared a 3-year plan to restore the company’s financial health.

Angie Wilson is an analyst with Vulture Capital Inc., which invests in companies experiencing financial difficulties. After attending a presentation by Duckworth’s new CEO and reviewing the 3-year plan, she prepared the following data:

**Current Information in 2016**

Sales – CAD 3,200 million

Operating profit margin – 8.5%

Capital expenditures – CAD 1,235 million

Depreciation - CAD 1,078 million

Working capital as a percentage of sales – 25%

Beta – 1.75

Cost of debt – 9.5% (before tax)

Debt ratio – 50%

Tax rate – 25%

**Transition Period – 3 Years**

**Year 1**

Growth rate in sales – 15%

Operating profit margin – 9.0%

Growth rate in capital expenditures and depreciation – 5%

Working capital as a percentage of sales – 20%

Beta – 1.61

Cost of debt – 9.0% (before tax)

Debt ratio – 45%

**Year 2**

Growth rate in sales – 10%

Operating profit margin – 9.5%

Growth rate in capital expenditures and depreciation – 5%

Working capital as a percentage of sales – 19%

Beta – 1.40

Cost of debt – 7.5% (before tax)

Debt ratio – 35%

**Year 3**

Growth rate in sales – 10%

Operating profit margin – 10.5%

Growth rate in capital expenditures and depreciation – 5%

Working capital as a percentage of sales – 17%

Beta – 1.32

Cost of debt – 7% (before tax)

Debt ratio – 30%

**Stable-Growth Period**

Growth rate of sales – 5%

Operating profit margin – 10.5%

Capital expenditures offset by depreciation

Working capital as a percentage of sales – 15%

Beta – 1.25

Cost of debt – 6% (before tax)

Debt ratio – 25%

Currently, the market value of its debt is estimated to be CAD 4,096.39 million. The risk-free rate is 4.0%, and the market risk premium is 5.5%.

**REQUIRED:**

1. Estimated the intrinsic value of Duckworth using the 2-stage income approach (FCFF).

**Trailing and Leading P/E Ratios**

Goldeye Ltd.’s share price was CAD 39.45 on January 10, 2013. The following quarterly EPS data in CAD is available:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **2011** | | | | **2012** | | | | **2013** | | | | **2014** | | | | |
| **Q1** | **Q2** | **Q3** | **Q4** | **Q1** | **Q2** | **Q3** | **Q4** | **Q1** | **Q2** | **Q3** | **Q4** | **Q1** | **Q2** | **Q3** | **Q4** |
| 0.56 | 0.43 | 0.32 | 0.53 | 0.36 | 0.74 | 0.45 | 0.24 | 0.56 | 0.67 | 0.23 | 0.32 | 0.43 | 0.56 | 0.23 | 0.15 |

Goldeye’s accounting period is from July 1 to June 30. Earnings have not yet been reported for Q4, 2012.

**REQUIRED:**

1. Calculate the 12-month trailing P/E ratio using two different industry methods:

Last four quarters for which earnings have been reported

Last complete fiscal period

1. Calculate the 12-month leading P/E ratio using three different industry methods:

Next 4 quarters, including the current quarter

Next 4 quarters, not including the current quarter

Next fiscal year

**Normalizing EPS**

Allison Ltd. is a cyclical company that experienced a significant loss in 2016. The CFO decided to normalize EPS to measure the company’s performance. The period 2010-2015 matches the last business cycle. The following information was collected:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **2016** | **2015** | **2014** | **2013** | **2012** | **2011** | **2010** |
| EPS (CAD) | (2.00) | 2.17 | 1.18 | 0.90 | 1.19 | 0.57 | 1.17 |
| BVPS (CAD) | 14.29 | 17.12 | 10.27 | 12.03 | 6.77 | 6.62 | 6.51 |
| ROE (%) |  | 12.70 | 11.53 | 7.45 | 17.66 | 8.55 | 18.04 |

Allison Ltd.’s share closed at CAD 27.45 on January 2, 2017.

**REQUIRED:**

1. Calculate the normalized trailing P/E for Allison based on the average historical EPS during the last business cycle.
2. Redo Part 1 based on the average historical ROE.
3. Which method is more accurate?

**Justified Benchmark Multiples (P/E, P/S, P/BV) at Irwin**

Irwin Industries is valuing a potential acquisition. It collected the following information:

|  |  |
| --- | --- |
| Dividend growth rate | 3.5% |
| kc | 8.1% |
| Dividend payout ratio | 75.0% |
| Net profit margin | 6.3% |
| ROE | 15.1% |
| Trailing EPS | CAD 5.67 |
| Trailing SPS | CAD 86.32 |
| Trailing BVPS | CAD 36.54 |

The target company has 100,000 common shares outstanding.

**REQUIRED:**

1. Estimate the intrinsic value of the acquisition using the justified trailing P/E, P/S, and P/BV multiples.
2. How could the trailing EPS, SPS, and BVPS values be improved?
3. Which multiple is likely preferable for valuing the acquisition? Explain.

**Justified Benchmark Multiple (P/E) at Hector**

Hector Ltd. manufactures condiments that grocery stores resell as private brands. EPS was CAD 3.98 and DPS was CAD 2.56 last year. Its shares currently trade at CAD 55.45. EPS is forecasted to grow at a modest 3.5% in the long term, and the company is expected to maintain a constant dividend payout ratio. The company’s beta is 1.1. The risk-free rate is 4.0%, and the market risk premium is 5.0%. Shares are considered fairly valued if the current P/E ratio is between ±5.0% of the justified P/E multiple.

**REQUIRED:**

1. Determine if Hector’s shares are undervalued, fairly valued, or overvalued based on its justified trailing P/E multiple.
2. Discuss two significant limitations of this approach.

**Justified Benchmark Multiple (P/E) for an Industry**

FinTech Investments initiated coverage of a new industry and collected the following historical information:

|  |  |
| --- | --- |
| Industry retention ratio | 40.0% |
| Industry return on equity | 15.0% |
| Industry beta | 1.2 |
| Risk-free rate | 4.0% |
| Market risk premium | 5.0% |
| Industry trailing P/E ratio | 24.0 |

The industry is considered fairly valued if its P/E ratio is between ±5.0% of the justified P/E multiple.

**REQUIRED:**

1. Determine if the industry is overvalued, fairly valued, or undervalued.
2. Explain how the information in Part 1 could be used.
3. How was the industry trailing P/E ratio calculated?
4. How were the industry beta, retention ratio, and return on equity calculated?
5. What is a major limitation of this approach?

**Justified Benchmark Multiple (P/E) Using a 2-Stage Model at Dixon**

Dixon Enterprises is valuing one of its subsidiaries, which it plans to divest in the coming year. The following information was collected:

|  |  |  |
| --- | --- | --- |
|  | **High-Growth Stage** | **Stable-Growth Stage** |
| Beta | 1.3 | 1.1 |
| Return on assets | 16.0% | 5.0% |
| Payout ratio | 40.0% | 70.0% |
| Debt ratio | 0.40 | 0.60 |
| Length | 3 years | Infinite |

Normalized EPS is CAD 5.10. The risk-free rate is 4.0%, and the market risk premium is 5.0%.

**REQUIRED:**

1. Estimate the intrinsic value of Dixon using the 2-stage justified P/E multiple approach.

**Comparable Market Multiples Approach (P/E) at Hi-tech**

Alexa Jackson is attempting to value the shares of Hi-Tech Ltd. in early 2016 to determine if they are currently overvalued, fairly valued, or undervalued. Hi-tech’s share price is currently CAD 56.48. Jackson was able to collect the following data for a group of comparable companies from Hi-Tech’s sub-industry:

|  |  |  |  |
| --- | --- | --- | --- |
| **Company** | **Current**  **Share Price (CAD)** | **12-Month Trailing EPS**  **(CAD)** | **P/E** |
| ABC | 85 | 5.95 | 14.29 |
| ACME | 135 | 8.35 | 16.17 |
| Bloggins | 50 | 3.11 | 16.08 |
| Logos | 254 | 17.20 | 14.77 |
| Ventura | 124 | 8.01 | 15.48 |
| Reflex | 69 | 3.80 | 18.16 |

Hi-tech’s 12-month trailing EPS was CAD 4.51 in 2015, but Jackson expects its 12-month leading EPS to fall to CAD 3.51 in 2016 due to new product delays.

**REQUIRED:**

1. Determine whether the shares of Hi-tech are overvalued, fairly valued, or undervalued.
2. What could be done to improve the accuracy of the valuation?

**Comparable Market Multiples Approach (P/BV) at Ballantyne**

Ballantyne Petroleum is a privately held company trying to determine the fair value of its shares. These shares do not trade publicly, so data for the following comparable companies in Ballantyne’s sub-industry were collected:

|  |  |
| --- | --- |
| **Company** | **P/BV** |
| Wild Cat | 1.28 |
| Gusher | 1.44 |
| Black Gold | 1.54 |
| C.C. Ryder | 1.57 |
| Ewing | 1.67 |
| Barnes | 1.84 |
| Odessa | 1.90 |
| Midland | 1.92 |
| Rio Grand | 2.00 |
| Leduc | 2.00 |
| Slave Lake | 2.07 |
| Foot Hills | 2.14 |
| Edston | 2.29 |
| Clayton Doakes | 2.49 |
| Riddle | 2.50 |
| Bison | 2.77 |
| **Comparable mean** | **1.96** |

Ballantyne’s BVPS is CAD 25 based on 10,000,000 shares.

**REQUIRED:**

1. Estimate the intrinsic value of Ballantyne’s shares using the market multiples P/BV approach.
2. What actions could Ballantyne take to improve the accuracy of its estimate?

**Comparable Market Multiples Approach (P/E) at Regal**

Kathleen Johnson is an equity analyst. She plans to use the average P/E ratio from a group of comparable companies in Regal’s sub-industry to determine whether the company is undervalued, fairly valued, or overvalued. The following data was collected:

|  |  |  |
| --- | --- | --- |
| **Company** | **Price (CAD)** | **Normalized Trailing EPS (CAD)** |
| ABC | 56.67 | 3.14 |
| ACME | 45.91 | 2.09 |
| Widgets | 23.56 | 1.68 |
| Bloggins | 44.78 | 2.99 |

The following earnings data for Regal were available over the last business cycle:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **2014** | **2013** | **2012** | **2011** | **2010** | **2009** |
| EPS (CAD) | 5.10 | 4.21 | 2.34 | 1.67 | 2.55 | 3.21 |
| BVPS (CAD) | 18.56 | 20.95 | 16.07 | 29.82 | 20.48 | 19.26 |
| ROE (%) | 27.50 | 20.10 | 14.56 | 5.60 | 12.45 | 16.67 |

In early January 2015, Regal’s share price was CAD 35.56 per share.

**REQUIRED:**

1. Determine whether the shares of Hi-tech are overvalued, fairly valued, or undervalued.
2. Why was normalized EPS used?

3. Indicate two limitations of the analysis based on sub-industry data.

**Comparable Market Multiples Approach (P/E) at Horizon**

Alexa Jackson is a junior equity analyst with Horizon Investments. Senior management has asked her to recommend a share from several new technology companies in the same sub-industry for inclusion in the firm’s value fund. Jackson collected the following data:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Company** | **Share Price (CAD)** | **EPS**  **(CAD)** | **P/E Ratio** | **5-Year Historical EPS Growth Rate (%)** |
| Gaggle | 85 | 0.44 | 193.18 | 24 |
| Cosmos | 135 | 0.37 | 364.86 | 35 |
| Navigator | 50 | 0.55 | 90.91 | 15 |
| Laurentian | 254 | 2.48 | 102.42 | 18 |
| Tech Smart | 124 | 0.18 | 688.89 | 45 |
| Dream Quest | 69 | 6.57 | 10.50 | 9 |

These start-up companies have minimal earnings but are trading at very high P/E multiples compared to other companies. Jackson was confused by these results.

**REQUIRED:**

1. What stock should Jackson recommend to senior management? Explain.

**Comparable Market Multiples Approach (P/E) at Maple Leaf**

Halley Jones is an equity analyst at Maple Leaf Investments and has been asked to research a new sub-industry for the firm. The following information was collected for a group of comparable companies:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Company Ticker** | **Trailing P/E** | **Leading P/E** | **5-Year Expected EPS Growth Rate (%)** | **Leading PEG Ratio** | **Beta** |
| CGR | 14.15 | 14.47 | 7.10 | 2.04 | 1.10 |
| FGT | 17.98 | 16.58 | 6.46 | 2.57 | 1.47 |
| KOB | 16.20 | 16.02 | 6.37 | 2.51 | 1.52 |
| VKY | 15.37 | 16.40 | 6.37 | 2.57 | 1.05 |
| CRE | 16.56 | 17.17 | 6.05 | 2.84 | 1.26 |
| MFF | 11.05 | 13.34 | 6.23 | 2.14 | 1.10 |
| VOO | 15.08 | 17.46 | 5.37 | 3.25 | 1.26 |
| NRM | 13.37 | 13.68 | 5.32 | 2.57 | 1.30 |
| Comparable mean | 14.97 | 15.64 | 6.16 | 2.56 | 1.26 |
| Comparable median | 15.08 | 16.02 | 6.23 | 2.57 | 1.26 |

**REQUIRED:**

1. What share(s) should Jones recommend as the best value investment based on trailing and leading P/E only?
2. Why might the median value be used instead of the mean?
3. What are the problems with this approach?
4. Redo Part 1 using all the information provided.

**Comparable Market Multiples Approach (P/S) at RRJ**

Bob Marley, CFA, is an equity analyst with RRJ Investments and is responsible for covering a specific sub-industry. He collected the following information for three comparable companies in that sub-industry:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Company** | **P/S Ratio** | | | **Profit Margin (%)** | **Forecasted Profit Margin (%)** | **Forecasted EPS Growth (%)** | **Beta** |
| **Current Close** | **YTD High** | **YTD Low** |
| Evert Enterprises | 0.20 | 0.26 | 0.15 | 3.60 | 3.00 | 6.00 | 1.13 |
| Divers Consolidated | 0.40 | 0.46 | 0.23 | 2.64 | 3.12 | 8.40 | 1.28 |
| Canmore Industries | 0.24 | 0.36 | 0.20 | 3.50 | 3.75 | 6.25 | 0.93 |

**REQUIRED:**

1. What company should Marley recommend as the best value investment? Explain.

**Comparable Market Multiples Approach (P/BV) at Surefire**

Robert Wilson is an equity analyst with Surefire Investments and is trying to recommend a company in a specific sub-industry. Wilson found four companies with low P/BV ratios compared to the industry. The following data was collected:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **P/BV** | | | | | | | | **Beta** | **Historical ROE (%)** |
| **Company** | **2011** | **2012** | **2013** | **2014** | **2015** | **5-Year Average** | **Current**  **P/BV** |
| Pearle | 2.87 | 2.77 | 2.65 | 2.31 | 2.10 | 2.54 | 2.34 | 1.1 | 14.5 |
| Jasmin | 1.93 | 2.11 | 2.35 | 2.01 | 2.22 | 2.12 | 2.45 | 1.2 | 11.5 |
| Diamond | 1.73 | 1.76 | 1.85 | 1.90 | 1.93 | 1.83 | 1.60 | 1.4 | 9.8 |
| Gold | 2.21 | 2.10 | 2.05 | 1.80 | 1.81 | 1.99 | 2.10 | 1.2 | 12.2 |
| **Industry mean** | | | | | | | **3.01** | **1.2** | **15.0** |

**REQUIRED:**

1. Which share should Wilson recommend?
2. Why was the industry mean used instead of a comparable company mean?
3. What improvements could be made to Wilson’s methods?

**Comparable Market Multiples Approach (P/E) at Astro**

Dexter Manley is an equity analyst with Astro Financial. He is considering three companies for inclusion in its value fund. Manley has decided to compare their P/E ratio to the P/E of the market.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Random Ltd.** | **Housley Inc.** | **Backtrack Corp.** | **S&P 500** |
| Current P/E | 14.67 | 27.33 | 15.31 | 19.20 |
| 5-year average ratio of company P/E to S&P 500 P/E | .95 | 1.23 | 1.11 |  |

**REQUIRED:**

1. Which company(s) are undervalued and should be recommended for inclusion in the value fund?
2. What is the advantage of using the market P/E as a benchmark?

**Market Multiples Approach (P/E) using Multi-Regression at Timmins**

Ranson Witherspoon is an equity analyst with a large pension fund, and she is researching Timmins Industries to determine whether the fund should invest. Timmins has a dividend payout ratio of 0.50, a beta of 1.1, and an earnings growth rate of 7.0%. Witherspoon developed a multiple regression model with a high R2 based on eight comparable companies in Timmins’ sub-industry.

P/E multiple = 13.05 + 2.34 (Dividend payout ratio) – 0.31 (Beta) + 15.23 (Earning growth rate)

R2 = .89

Dividend payout ratio – Historical dividend payout ratio

Beta – Stock’s current beta

Earnings growth rate – Historical earnings growth rate

The company currently has a trailing P/E ratio of 17.5.

**REQUIRED:**

1. Make a recommendation to the manager of the pension fund.
2. What is the main advantage of the multiple regression approach?
3. Describe potential statistical problems associated with the multiple regression approach.

**Market Multiples Approach (P/E) using Multi-Regression at Shamrock**

Cynthia McLeod is an equity analyst with Shamrock Investments and has been asked to prepare a list of undervalued shares in a sub-industry the firm is covering. She collected the following data:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Company** | **P/E** | **Payout (%)** | **Expected EPS Growth (%)** | **Beta** |
| Harrison Industries | 18.1 | 29.3 | 3.7 | 1.1 |
| Churchill Ltd. | 16.2 | 41.8 | 12.0 | 1.3 |
| Emerson Consolidated | 17.2 | 42.8 | 13.6 | 0.9 |
| Osgood Enterprises | 11.9 | 38.7 | 11.0 | 0.8 |
| Hanson Inc. | 10.7 | 38.7 | 9.9 | 0.9 |
| Smithson Ltd. | 13.0 | 11.5 | 14.6 | 0.9 |
| Donner Sisters | 13.9 | 24.0 | 17.2 | 0.8 |
| Flagstaff Enterprises | 11.5 | 23.0 | 8.4 | 0.9 |
| Jenkins Brothers | 23.6 | 38.7 | 13.6 | 1.2 |
| Hinton Park Industries | 9.9 | 49.1 | 9.4 | 1.1 |
| Killarney Inc. | 12.6 | 29.3 | 9.9 | 0.8 |
| Emerson Group | 14.5 | 39.7 | 12.0 | 1.0 |
| Stinson Ltd. | 9.1 | 15.7 | 5.7 | 1.0 |
| Lively Inc. | 10.9 | 52.3 | 4.7 | 0.7 |
| **Median** | 12.8 | 38.7 | 10.5 | 0.9 |

**REQUIRED:**

1. Provide a list of undervalued companies based on the median sub-industry P/E ratio.
2. Describe a weakness of the approach in Part 1.
3. Develop a multiple regression model to predict the sub-industry P/E ratio.
4. Describe any statistical concerns with the multiple regression model.
5. Provide a revised list of undervalued companies based on the model in Part 3.

**Market Multiples Approach (P/E) using Multi-Regression at Wainwright**

Krysta Emerson, CPA, was asked by a client to value Wainwright Electronics. The company has been operating for eight years and has been very successful, but the owner needs to sell due to illness. Emerson’s accounting firm has developed a multiple regression model for the electronics component sub-industry, which she has been instructed to use in valuing the firm.

P/E = 17.45 + .0654 (Expected earnings growth rate) -.612 (Beta) + .512 (Dividend payout)

The R2 is 0.76, all coefficients are statistically significant, and the coefficient signs are correct.

The expected earnings growth rate was 15.0% over the last five years, which is expected to continue over the next five years. The average beta for companies in the electronics component sub-industry is 1.21. These companies have an average debt ratio of 30.0%, but the client has no debt. The client also does not pay a dividend, but it had net income of CAD 15 million last year. Capital expenditures were CAD 18 million, depreciation was CAD 7 million, and net working capital increased by CAD 1 million. The tax rate is 25.0%.

**REQUIRED:**

1. Estimate the intrinsic value of Wainwright with the market multiples P/E approach using multiple regression.

**Historical Average Multiples Approach (P/E) at Lancaster**

On January 20, 2016, an equity analyst was studying Lancaster Enterprises. Its share price is currently CAD 52.44, and its 2015 12-month trailing EPS was CAD 4.10. The analyst collected a historical record of its 12-month trailing P/E ratios for the previous business cycle.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **2011** | **2012** | **2013** | **2014** | **2015** |
| P/E ratio | 14.00 | 15.40 | 17.92 | 15.54 | 13.58 |

The consensus analyst estimate is that Lancaster’s 12-month leading EPS will be CAD 4.35 in 2016.

**REQUIRED:**

1. Are the shares of Lancaster overvalued, fairly valued, or undervalued?
2. Why was this valuation approach used?

**Market Multiples Approach (EV/FCFF) at Sunshine**

Jan Wesley is an equity analyst with Sunshine Investments. She is analyzing three companies in the footwear sub-industry to determine if any are candidates for Sunshine’s value fund. The following information was collected (in CAD thousands):

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Soul Shoes** | **Bulldog** | **Trail Rider** |
| Market value of common equity | 9,560 | 16,560 | 43,230 |
| Market value of debt | 7,030 | 9,030 | 18,670 |
| Cash and marketable securities | 3,850 | 1,890 | 1,210 |
| EBIT | 4,252 | 4,745 | 11,749 |
| Depreciation and amortization | 2,950 | 3,163 | 7,230 |
| Capital expenditures | 3,370 | 3,954 | 9,038 |
| Change in working capital | 1,080 | 1,340 | 2,860 |
| Beta | 1.2 | 1.3 | 1.1 |
| Growth rate | 5.2% | 6.1% | 5.2% |

The tax rate is 25.0%.

**REQUIRED:**

1. Which company should Wesley recommend?
2. Why might Wesley have chosen the EV/FCFF multiple to analyze these three companies?

**Market Multiples Approach (EV/FCFF) at Ashton**

Ashton Ltd. is a privately held company in the forest products sub-industry. The owner wants to sell 40% of the company in an IPO to diversify her holdings. An analysis of other publicly held forestry companies indicates an average EV/FCFF ratio of 12.3. Ashton also collected the following information for last year:

|  |  |
| --- | --- |
| **CAD millions** | |
| EBIT | 25.3 |
| Interest expense | 3.55 |
| Depreciation and amortization | 5.30 |
| Capital expenditures | 7.40 |
| Change in working capital | 0.85 |
| Total debt obligations at fair market value | 59.20 |

Ashton’s tax rate is 25.0%.

**REQUIRED:**

1. Estimate Ashton’s intrinsic value.
2. How might this estimate be improved?

**Asset-Based Approach at Willington**

Willington Ltd.'s balance sheet (in CAD thousands) on December 31, 2015, was:

|  |  |
| --- | --- |
| **Current Assets** | |
| Cash | 17,780 |
| Temporary investments | 64,828 |
| Accounts receivable, net | 58,500 |
| Notes receivable | 33,250 |
| Inventory | 200,000 |
| **Total current assets** | 374,358 |
| **Fixed assets** |  |
| Equipment, net | 701,500 |
| **Total assets** | 1,075,858 |
| **Current liabilities** | |
| Accounts payable | 208,500 |
| Line of credit | 100,000 |
| Current portion of long-term debt | 28,000 |
| **Total current liabilities** | 336,500 |
| **Long-term liabilities** |  |
| Term loan | 363,000 |
| **Shareholders’ equity** |  |
| Common shares | 200,000 |
| Retained earnings | 176,358 |
| **Total liabilities and equities** | 1,075,858 |

**Other Information**

* Temporary investments consist of a deposit sold at a discount. It matures in two months and has a coupon rate of 2.5%, compounded monthly. The current market rate is 2.75%, compounded monthly.
* Accounts receivable are due in 90 days, but the net realizable value is estimated to be only CAD 48,000 due to higher bad debts. The current market rate is 3.25%, compounded monthly.
* Notes receivable are with the government, so they are not subject to bad debts. The coupon rate is 3.25%, compounded monthly, which approximates the market rate.
* It is estimated that the inventory can be sold for CAD 350,000 in the next few months, but additional costs equal to approximately 10.0% of the selling price would have to be incurred for storage, shipping, and installation.
* It is estimated that equipment in similar condition could be purchased for CAD 950,000.
* No building asset is recorded as it is fully depreciated, but it is estimated to have a market value of CAD 210,000.
* The land is being leased from a First Nations band for CAD 10,000 a year. Fifty years remain on the lease, and payments are made at the end of the year. The current market rate on a mortgage loan of similar risk is 7.5%, compounded yearly.
* Willington has a government license with a current market value of CAD 58,000.
* The accounts payable are due in 60 days, and the current market rate is 3.25%, compounded monthly.
* The line of credit financing is currently at 4.5%, which approximates the market rate.
* A product liability lawsuit is likely to be settled for CAD 50,000 in the next few weeks.
* The term loan is being paid in equal monthly payments of CAD 4,540 per month over the next 10 years. The market rate is 6.5%, compounded monthly.
* FCFF is CAD 162,944. WACC is currently 9.5%, and the estimated growth rate is 3.0%. It is estimated that excess profits will be earned indefinitely.

**REQUIRED:**

1. Estimate the intrinsic value of Willington using the asset-based approach.

**Asset-Based Approach at Ambrose**

Ambrose Ltd. had the following balance sheet (in CAD thousands) on December 31, 2015:

|  |  |
| --- | --- |
| **Current assets** | |
| Cash | 9,980 |
| Accounts receivable | 44,390 |
| Inventory | 16,940 |
| **Total current assets** | 71,310 |
| Building, net | 30,000 |
| Equipment, net | 24,690 |
| Other assets | 1,780 |
| **Total assets** | 127,780 |
| **Current liabilities** | |
| Accounts payable | 53,740 |
| Current portion of long-term debt | 2,930 |
| **Total current liabilities** | 56,670 |
| Long-term debt | 51,470 |
| Shareholders' equity | 19,640 |
| **Total liabilities and equities** | 127,780 |

**Other Information**

* Accounts receivable are due in 120 days, but the net realizable value after allowing for bad debts is CAD 35,000,000. The current market rate is 3.25%, compounded monthly.
* The inventory can currently be sold for CAD 19,500,000, but additional storage and handling costs equal to 5.00% of the selling price will be incurred.
* The building is estimated to have a market value of CAD 65,000,000 based on recently appraised values in the area, while similar equipment in an equal state of repair could be purchased for CAD 32,500,000.
* Land is being leased for CAD 2,300,000 a year. Twenty-five years remain on the lease, and the payments are at the end of the year. The current market rate on a mortgage loan of similar risk is 7.0%, compounded monthly.
* The other assets consist of deferred research and development costs with an estimated market value of CAD 57,500,000.
* The accounts payable are due in 60 days, and the current market rate is 3.35%, compounded monthly.
* The long-term debt is being paid in monthly instalments over the next five years at an interest rate of 6.5%, compounded monthly, which approximates the market rate.
* FCFF is CAD 25,000,000. WACC is currently 10.5%, and the estimated growth rate is 3.0%. It is estimated that excess profits will be earned for five years.

**REQUIRED:**

1. Estimate the intrinsic value of Ambrose using the asset-based approach.

**Residual Income Approach at High Mountain**

High Mountain Industries (HMI) is considering acquiring another company. The company trades at CAD 53.42 and has a book value of CAD 47.98. The firm’s long-term return on equity and long-term growth rate are estimated to be 10.2% and 3.5%. It has a required rate of return of 8.2%.

**REQUIRED:**

1. Estimate the intrinsic value of the company’s shares using the 1-stage residual income approach. Is it a good investment?
2. Describe a significant limitation of this approach and how it should be addressed.

**Residual Income Approach at Majestic**

Mary Rankin owned the Majestic Group and hired Elizabeth Gowan, CFA, to value the firm. Gowan made the following estimates:

|  |  |  |
| --- | --- | --- |
|  | **High-Growth Stage** | **Stable-Growth Stage** |
| Return on assets | 17.0% | 5.5% |
| Payout ratio | 30.0% | 75.0% |
| Debt ratio | 20.0% | 40.0% |
| Beta | 1.30 | 1.10 |

Gowan expects the high-growth stage to last for five years and then phase into the stable-growth stage evenly over five years before reaching stable growth in 11 years when the rate of return on equity and required rate of return are equal. Majestic’s book value per share is currently CAD 8.45. The risk-free rate is 4.0%, and the market risk premium is 5.0%.

**REQUIRED:**

1. Estimate the intrinsic value of the Majestic Group’s shares using the 3-stage residual income approach.

**Marketability Discounts at Adirondack**

Adirondack Ltd. is a manufacturer of patio furniture made from recycled plastic containers. The privately held company was founded 10 years ago by Kayley Phillips, P. Eng, who owns 60% of Adirondack, with the remainder owned by several individual investors. Phillips has been considering taking Adirondack public for several years, but has hesitated to do so. The minority investors are very concerned about their lack of rights under the current shareholder agreement and have hired a financial analyst to value the company under the two forms of ownership.

Although Adirondack has been successful in terms of sales, the analyst feels it would be worth considerably more as a public corporation. Phillips is receiving an above-market salary, and the company also employs a number of her family members who contribute little to business operations. The company also pays for a lake resort used for entertaining clients, but the Phillips family also uses it on weekends and holidays. Adirondack’s financial leverage is sub-optimal, and its inventory levels are excessive.

By addressing these concerns, the analyst thinks the investment value of Adirondack will rise from CAD 85,000,000 to CAD 105,000,000. Based on his research, the analyst feels minority investors experience a marketability discount of 40%, which should fall to 5% if Phillips commits to going public.

**REQUIRED:**

1. Estimate Adirondack’s intrinsic value if Phillips decides to remain a private company from the perspective of the minority investors. Explain.
2. Estimate Adirondack’s intrinsic value if Phillips commits to becoming a public company from the perspective of minority investors. Explain.
3. What actions could minority investors take to reduce the size of the marketability discount?

**Valuing a Private Company at Adams River**

Adams River Inc. is a privately held manufacturer of fishing boats that sells to outdoor goods retailers across Canada and the U.S. A minority investor in the company has hired Janice Hallson, CBV, to estimate the value of the company.

Adams River had revenues of CAD 210.0 million and a net income of CAD 11.8 million in the last year. Capital expenditures equal 25% of incremental revenues, and depreciation is 90% of capital expenditures. Additional investments in working capital equal 20% of the incremental revenue. The company’s debt ratio is 25%, which is considered optimal. The company has been growing constantly at 3.4% per year over the last 10 years and has a tax rate of 25%.

After carefully reviewing Adams River's operations, Hallson felt that net income should be normalized by making the following adjustments:

* Founder and CEO’s salary is CAD 1,800,000, but it averages CAD 800,000 at similar firms.
* Personal expenses of CAD 300,000 were charged to the company.

Hallson decided to use the build-up method to determine its cost of equity instead of CAPM. Calculating a beta without reliable public information was thought to be too uncertain. The risk-free rate is 4.0%, and the market risk premium is 5.0%. An information services company provided a size premium of 3.0% and an industry premium of 1.0%. Hallson added another 1.0% to the cost equity to allow for the above sub-industry average operating and financial leverage.

Due to Adams River’s strong shareholder agreement from the perspective of the minority investors, Hallson applied a marketability discount of only 20%.

**REQUIRED:**

1. Estimate the intrinsic value of Adams River from the perspective of the minority interest.
2. Estimate the intrinsic value of Adams River as a public company from the perspective of the minority interest.

**Valuing a Private Company at Dawson Falls**

Dawson Falls Inc. is a privately held company that manufactures canned vegetables. Archie Davies is exploring acquiring 100% of the company or a minority interest if the owner is unwilling to sell. Davies does not want to take the company public.

Dawson had sales of CAD 190 million in the last year. The gross profit margin averaged 45% of sales, and selling and administration expenses averaged 20%. Depreciation is 5% of sales, and capital expenditures equal 110% of the depreciation needed to support current operations. Additional capital expenditures equal to 12% of incremental revenue are needed to support new growth. Working capital is 10% of incremental revenue. Dawson Falls’ annual growth rate is 3.5%, and it has a tax rate of 25%.

Recent guideline private transactions have an average P/FCFF multiple of 10.32. Dawson Falls’ debt has a market value of CAD 105.30 million. A marketability discount of 25% and a non-control discount of 20% apply when valuing minority interests.

**REQUIRED:**

1. Estimate the intrinsic value of Davies’ proposed 100% interest in Dawson Falls.
2. Estimate the intrinsic value of a 40% minority interest in Dawson Falls.
3. Identify potential problems using recent guideline private transactions to calculate the market multiple.

**Online Research Reports**

**REQUIRED:**

1. Access free online stock analysis for a Canadian public corporation using VectorVest ([www.vectorvest](http://www.vectorvests)) or another free online research provider.
2. Study the information provided.
3. Prepare an approximately 200-word submission describing what the company does, the research provider’s investment recommendation, and its rationale.
4. Respond to the posts of at least three classmates.