Introduction to Financial Management

Learning Problems

Answer Keys

**Problem: Share Price Maximization**

**REQUIRED:**

1. Augusta’s share price will decline because the company’s estimated cash flows per share are expected to fall and its cost of capital is expected to rise because of increased competition from a new U.S. competitor. Both these factors will cause investors to pay less for the share. The share price should fall to approximately:

Share value = = CAD 30.00

1. RRR is the rate of return required by investors to be fairly compensated for the investment’s risk. It relates the dividends earned in perpetuity (i.e. what you get) to the current market value of the share (i.e. what you must invest to earn it). Augusta’s RRR is:

RRR = = .095 or 9.5%

Cost of capital is what companies must pay investors to raise capital. Investors expect to receive the RRR which is determined by investment risk. With efficient capital markets, the cost of capital and RRR are the same.

**Problem: Average and Marginal Tax Rates**

**REQUIRED:**

1. Average tax rate = = .3587 or 35.87%

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| --- | --- | --- | --- |
|  | **Tax Rate** | **Earnings (CAD)** | **Taxes (CAD)** |
| **Federal** | 15.00% | 48,535 − 0 | 7,380.25 |
| 20.50% | 97,069 – 48,535 | 9,949.47 |
| 26.00% | 150,473 – 97,069 | 13,885.04 |
| 29.00% | 156,000 – 150,473 | 1,602.83 |
| **Manitoba** | 10.80% | 33,389 − 0 | 3,606.01 |
| 12.75% | 72,164 – 33,389 | 4,943.81 |
| 17.40% | 156,000 – 72,164 | 14,587.46 |
|  | | | 55,954.87 |

Marginal tax rate = 29.00% + 17.40% = 46.4%

**Note:** Taxes are calculated for each of the federal and provincial tax brackets until the taxpayer’s income of CAD 155,000 is exhausted. Rates rise based on the principal of progressive income taxation. The average tax rate is the weighted average tax rate paid in the different brackets. The marginal tax rate is the tax rate paid on the last dollar earned which is the sum of the rates in the last two tax brackets.

**Problem: Effective Tax Rates on Capital Gains and Dividends**

**REQUIRED:**

1.

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| --- | --- | --- |
| **Capital Gains (CAD)** | | |
| Capital gains | 10,000 |
| Taxable capital gains (50% ×10,000) | 5,000 |
| Federal tax (33% × 5,000) | 1,650 |
| Provincial tax (17.40% × 5,000) | 870 |
| Taxes payable (1,650 + 870) | 2,520 |
| Effective tax rate (2,520 ÷10,000) | 25.20% |

|  |  |  |
| --- | --- | --- |
| **Dividends (CAD)** | | |
| Dividend income | 10,000 |
| Gross-up (38% of dividend income) | 3,800 |
| Grossed-up dividend (Dividend income + Gross-up) | 13,800 |
| Federal tax (33% of gross-up dividend) | 4,554 |
| Provincial tax (17.40% of grossed-up dividend) | 2,401 |
| Total personal income tax | 6,955 |
| Federal dividend tax credit (15.02% of grossed-up dividend) | 2,073 |
| Provincial dividend tax credit (8% of grossed-up dividend) | 1,104 |
| Total corporate tax paid | 3,177 |
| Taxes payable (Personal income tax – Corporate income paid) | 3,778 |
| Effective tax rate (Taxes payable ÷ Dividend income) | 37.78% |

When an investor receives dividend income, those profits have already been taxed in the hands of the corporation that paid them. To avoid double taxation at the personal level, the federal and provincial governments grossed-up the dividend income by 38% to add back the taxes the corporation has already paid. Personal federal and provincial income taxes are then calculated on the grossed-up dividend. Federal and provincial dividend tax credits are given that approximate the corporate taxes already paid. The taxes payable after deducting the total corporate tax already paid from the total personal tax results in an effective tax rate of 37.78% which is higher than the effective tax rate for capital gains. Most investors prefer capital gains to dividend income because of the lower tax rate.

**Problem: Capital Cost Allowance at Elmer**

**REQUIRED:**

1. CAD 1,057,050 in Year 1, CAD 821,985 in Year 2

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| --- | --- |
| **Acquisitions and Disposals (CAD)** | |
| Sales of assets | 65,000 |
| Acquisitions1 | 612,000 |
| Net acquisitions2 | 547,000 |
| CCA rate | 30% |
| **CCA Class** | |
| UCC beginning | 3,250,000 |
| Half of net acquisitions3 | 273,500 |
| Balance4 | 3,523,500 |
| **CCA – Year 15** | **1,057,050** |
| UCC ending6 | 2,466,450 |
| Half of net acquisitions7 | 273,500 |
| Balance | 2,739,950 |
| **CCA – Year** | **821,985** |
| UCC ending | 1,917,965 |

1 (550,000 + 85,000 + 45,000) x .9 = 612,000

2 612,000 – 65,000 = 547,000

3 547,000 ÷ 2 = 273,500

4 3,250,000 + 273,500 = 3,523,500

5 3,523,500 x .30 = 1,057,050

6 3,523,500 – 1,057,050 = 2,466,450

7 Other half of the net acquisitions from the previous year

**Problem: Capital Cost Allowance at Cranston**

**REQUIRED:**

1. CAD 212,500 in Year 1, CAD 414,375 in Year 2

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| --- | --- |
| **Acquisitions and Disposals (CAD)** | |
| Sales of assets | 0 |
| Acquisitions | 8,500,000 |
| Net acquisitions | 8,500,000 |
| CCA rate | 5% |
| **CCA Class** | |
| UCC beginning | 0 |
| Half of net acquisitions | 4,250,000 |
| Balance | 4,250,000 |
| **CCA – Year 1** | **(212,500)** |
| UCC ending | 4,037,500 |
| Half of net acquisitions | 4,250,000 |
| Balance | 8,287,500 |
| **CCA – Year 2** | **(414,375)** |
| UCC ending | 7,873,125 |

1. If it is sold for CAD 8,000,000, the remaining balance will be CAD -126,875 (7,873,125 – 8,000,000). A negative balance means that too much depreciation was taken in the past, so additional tax equal to CAD 31,718.75 (126,875 x .25) must be paid (**a recapture**). If it is sold for CAD 7,200,000, the remaining balance will be CAD 673,125 (7,873,125 – 7,200,000). A positive balance means that too little depreciation has been taken in the past, so a tax benefit equal to CAD 168,281.25 (673,125 x .25) will be received (**a terminal loss**).

**Problem: Loss Carrybacks and Carryforwards at Hollinger**

1. After Years 1 and 2, Hollinger accumulated loss carryforwards of 325,000 (250,000 + 75,000). These carryforwards reduced taxable income in Year 3 to zero leaving tax carryforwards of 225,000 (325,000 – 100,000). In Year 4 taxable income was reduced to 175,000 after applying the remaining loss carryforwards (400,000 – 225,000). Taxes of 43,750 (175,000 x .25) were paid at the end of Year 4.

**Problem: Loss Carrybacks and Carryforwards at Amstel**

**REQUIRED:**

1. The loss in Year 1 could not be carried back as the business did not exist so no tax refund was received in Year 1. The loss was carried forward to Years 2 and 3 to reduce future taxable income. Amstel did not pay tax in Year 2 as the loss carryforwards of 125,000 exceeded taxable income. In Year 3, the remaining loss carryforwards of 70,000 (125,000 – 55,000) from Year 2 reduced taxable income to CAD 5,000 (75,000 – 70,000), and taxes were paid at the rate of 25%. Taxes were also paid in Years 3, 4, and 5, but these amounts were all refunded in Year 6 due to the large business loss that was carried back (5,000 + 125,000 + 135,000). After Year 6, there is still a loss carryforward of 35,000 (300,000 – 5,000 – 125,000 – 135,000) which can hopefully be used as the company returns to profitability next year. If not, the losses can be carried forward up to 20 years.