Gabarito P1

1 – 2.11

**11.** *a.* The accounting statement of cash flows explains the change in cash during the year. The accounting statement of cash flows will be:

|  |  |  |
| --- | --- | --- |
|  | Statement of cash flows | |
|  | *Operations* |  |
|  | Net income | $95 |
|  | Depreciation | 90 |
|  | Changes in other current assets | (5) |
|  | Accounts payable | 10 |
|  | Total cash flow from operations | $190 |
|  |  |  |
|  | *Investing activities* |  |
|  | Acquisition of fixed assets | $(110) |
|  | Total cash flow from investing activities | $(110) |
|  |  |  |
|  | *Financing activities* |  |
|  | Proceeds of long-term debt | $5 |
|  | Dividends | (75) |
|  | Total cash flow from financing activities | ($70) |
|  |  |  |
|  | Change in cash (on balance sheet) | $10 |

*b.* Change in NWC = NWCend – NWCbeg

= (CAend – CLend) – (CAbeg – CLbeg)

= [($65 + 170) – 125] – [($55 + 165) – 115)

= $110 – 105

= $5

*c.* To find the cash flow generated by the firm’s assets, we need the operating cash flow, and the capital spending. So, calculating each of these, we find:

|  |  |  |
| --- | --- | --- |
|  | *Operating cash flow* |  |
|  | Net income | $95 |
|  | Depreciation | 90 |
|  | Operating cash flow | $185 |

Note that we can calculate OCF in this manner since there are no taxes.

|  |  |  |
| --- | --- | --- |
|  | *Capital spending* |  |
|  | Ending fixed assets | $390 |
|  | Beginning fixed assets | (370) |
|  | Depreciation | 90 |
|  | Capital spending | $110 |

Now we can calculate the cash flow generated by the firm’s assets, which is:

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | *Cash flow from assets* |  |
|  | Operating cash flow | $185 |
|  | Capital spending | (110) |
|  | Change in NWC | (5) |
|  | Cash flow from assets | $ 70 |

2 – 4.9 e 4.10

**9.** The Treasury security would have a somewhat higher price because the Treasury is the strongest of all borrowers.

**10.** The price would be higher because, as time passes, the price of the security will tend to rise toward $100,000. This rise is just a reflection of the time value of money. As time passes, the time until receipt of the $100,000 grows shorter, and the present value rises. In 2019, the price will probably be higher for the same reason. We cannot be sure, however, because interest rates could be much higher, or TMCC’s financial position could deteriorate. Either event would tend to depress the security’s price.

3 – 4.69

Vc tem que igualar o VP das duas e calcular a Taxa do fluxo relevante.

4 – 5.11

Project B’s NPV would be more sensitive to changes in the discount rate. The reason is the time value of money. Cash flows that occur further out in the future are always more sensitive to changes in the interest rate. This sensitivity is similar to the interest rate risk of a bond.

5 – 8.25

The coupon bonds have a 6 percent coupon which matches the 6 perent required return, so they will sell at par. The number of bonds that must be sold is the amount needed divided by the bond price, so:

Number of coupon bonds to sell = $45,000,000 / $1,000 = 45,000

The number of zero coupon bonds to sell would be:

Price of zero coupon bonds = $1,000/1.0360 = $169.73

Number of zero coupon bonds to sell = $45,000,000 / $169.73 = 265,122

*b*. The repayment of the coupon bond will be the par value plus the last coupon payment times the number of bonds issued. So:

Coupon bonds repayment = 45,000($1,030) = $46,350,000

The repayment of the zero coupon bond will be the par value times the number of bonds issued, so:

Zeroes: repayment = 265,122($1,000) = $265,122,140

*c*. The total coupon payment for the coupon bonds will be the number bonds times the coupon payment. For the cash flow of the coupon bonds, we need to account for the tax deductibility of the interest payments. To do this, we will multiply the total coupon payment times one minus the tax rate. So:

Coupon bonds: (45,000)($60)(1–.35) = $1,755,000 cash outflow

Note that this is cash outflow since the company is making the interest payment.

For the zero coupon bonds, the first year interest payment is the difference in the price of the zero at the end of the year and the beginning of the year. The price of the zeroes in one year will be:

P1 = $1,000/1.0358 = $180.07

The year 1 interest deduction per bond will be this price minus the price at the beginning of the year, which we found in part *b*, so:

Year 1 interest deduction per bond = $180.07 – 169.73 = $10.34

The total cash flow for the zeroes will be the interest deduction for the year times the number of zeroes sold, times the tax rate. The cash flow for the zeroes in year 1 will be:

Cash flows for zeroes in Year 1 = (265,122)($10.34)(.35) = $959,175.00

Notice the cash flow for the zeroes is a cash inflow. This is because of the tax deductibility of the imputed interest expense. That is, the company gets to write off the interest expense for the year even though the company did not have a cash flow for the interest expense. This reduces the company’s tax liability, which is a cash inflow.

During the life of the bond, the zero generates cash inflows to the firm in the form of the interest tax shield of debt. We should note an important point here: If you find the PV of the cash flows from the coupon bond and the zero coupon bond, they will be the same. This is because of the much larger repayment amount for the zeroes.

6 – 8.27

The rate of return you expect to earn if you purchase a bond and hold it until maturity is the YTM. The bond price equation for this bond is:

P0 = $930 = $56(PVIFA*R%*,10) + $1,000(PVIF *R%*,10)

Using a spreadsheet, financial calculator, or trial and error we find:

*R* = YTM = 6.58%

*b*. To find our HPY, we need to find the price of the bond in two years. The price of the bond in two years, at the new interest rate, will be:

P2 = $56(PVIFA5.58%,8) + $1,000(PVIF5.58%,8) = $1,001.44

To calculate the HPY, we need to find the interest rate that equates the price we paid for the bond with the cash flows we received. The cash flows we received were $90 each year for two years, and the price of the bond when we sold it. The equation to find our HPY is:

P0 = $930 = $56(PVIFA*R%*,2) + $1,001.44(PVIF*R%*,2)

Solving for *R*, we get:

*R* = HPY = 9.68%

The realized HPY is greater than the expected YTM when the bond was bought because interest rates dropped by 1 percent; bond prices rise when yields fall.