use the information provided in Table 1.

|  |  |  |
| --- | --- | --- |
| **Table 1** | **Stock Price** | **Call Option Price** |
|  | 25 | 3.00 |
|  | 30 | 7.00 |
|  | 35 | 12.00 |
|  | 40 | 16.50 |
|  | 45 | 21.00 |
|  | 50 | 25.50 |

1. Consider Purcell Industries with the stock currently trading at $50. You own the call option with a strike price of $35. Complete the table below that shows (a) stock price, (b) strike price, (c) exercise value, (d) option price, and (e) time value (option price less time value).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Stock Price** | **Strike Price** | **Exercise Value of Option** | **Market Price of Option** | **Time Value** |
|  |  |  |  |  |
|  |  |  |  |  |

1. Calculate the value of the call option using the Black-Scholes model with these inputs: Stock Price=$50, Strike price=$35, Time to Expiration=6 months, Risk free rate = 6%, Stock return variance .11. N(d1) = .96131 and N(d2)=.93718;: 
2. White Sands Hotel is considering developing a new hotel in San Marino. The company estimates the hotel would require an initial investment of $50 million dollars. The firm expects the hotel to produce positive cash flows of 7.5 million a year at the end of the next 20 years. The projects cost of capital is 13%.

(a). Determine the projects net present value.

(b). Although the firm expects the cash flows to be $7.5 million per year, the cash flows could significantly higher or lower depending on whether the government imposes a large resort tax. One year from now, the firm will know whether the tax will be imposed. The probability of the tax is 50% in which case the cash flows will be only be $5 million. Obviously there is a 50% chance the tax will not be imposed, hence the yearly cash flows will be $8 million. The firm’s senior leadership is trying to decide whether to proceed with the hotel today or wait 1 year to determine the whether the resort tax will be imposed. If the firm waits one year the initial investment will remain at $50 million and the cost of capital at 13%. Using decision tree analysis on next page, should White Sands proceed with the project today or wait one year?

Wait 1 year (figures in millions):

**PV**

0 1 2 3 21 **Yr. 1**

r= 13%

Tax imposed | | | | • • • |

50% Prob. 0 -50 5.0 5.0 5.0 **35.12**

Tax not imposed | | | | • • • |

50% Prob. 0 -50 8.0 8.0 8.0 **56.20**

Tax imposed NPV:

Tax not Imposed NPV:

Expected NPV:

What’s the value of the option – that’s waiting 1 year:

50% (\_\_\_\_\_\_) + 50% (\_\_\_\_\_\_\_\_ ) =

1. You have been hired as a consultant to Kulpa Fishing Supplies (KFS), a company that is seeking to increase its value. KFS has asked you to estimate the value of two privately held companies that KFS is considering acquiring. But first, the senior management of KFS would like for you to explain how to value companies that don’t pay any dividends. **[]**
2. Describe the process and list at least one approach (i.e. formula) to calculate Free Cash Flows.

(b). The first acquisition target is a privately held company in a mature industry. The company currently has free cash flow of $20 million. Its WACC is 10% and it is expected to grow at a constant rate of 5%. The company has marketable securities of $100 million. It is financed with $200 million of debt, $50 million of preferred stock, and $210 million of book equity. What is its value of operations?



(c). What is its total corporate value? What is its value of equity? Total Corporate Value = VOP + MKT. SEC.

(d). What is its MVA (MVA = total corporate value – total book value)?

MVA = total corporate value of firm minus total book value of firm;

Total book value of firm = book value of equity + book value of debt + book value of preferred

For this problem assume the $200m in debt and $50m in preferred stock represents both its

market and book value.

**The second acquisition target** is a privately held company in a growing industry. The

target has recently borrowed $40 million to finance its expansion; it has no other debt or

preferred stock. It pays no dividends and currently has no marketable securities. KFS

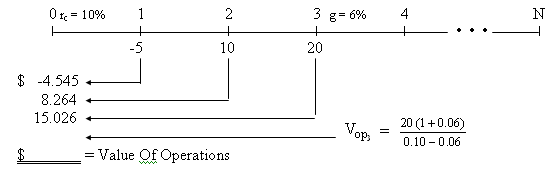
expects the company to produce free cash flows of -$5 million in one year, $10 million in

two years, and $20 million in three years. After three years, free cash flow will grow at a

rate of 6%. Its WACC is 10% and it currently has 10 million shares of stock.

**(e)**. **What is the firm’s horizon value (i.e., its value of operations at year three)?**

**(f). What is its current value of operations (i.e., at time zero)?**



**(g)**. **What is the firm’s equity value on a price per share basis?**

5. Calculate the operating break even point if a company has fixed costs of $50,000,000 a sales price of $5,500 and variables costs of $1,350.

6. MM theory implies that beta changes with leverage. bu is the beta of a firm when it

has no debt (the unlevered beta.) Hamada’s equation provides the beta of a levered firm: bL = bU [1 + (1 - T)(D/S)]. **[]**

(a). Calculate the cost of equity using CAPM when debt equals 20% of capital structure.

Input variables: Tax rate = 40%, Risk free rate = 6.0%, Market risk Premium = 6%,

Step 1 - Use Hamada’s equation to find beta:

B levered = bU [1 + (1 - T)(D/E)]

= 1.0 [1 + (1-T) (D/E%)]

=

Step 2: Use CAPM to find the cost of equity:

rs = rRF + b (RPM)

=

(b). Calculate the maximum corporate value based on the debt levels and input variables. Determine at which debt level the corporate value is maximized.

|  |  |  |
| --- | --- | --- |
| Debt as % of capital | WACC | Corporate Value |
| 0 | 12.00% |  |
| 20% | 11.28% |  |
| 30% | 11.01% |  |
| 40% | 11.04% |  |
| 50% | 11.40% |  |

V = FCF / (WACC-g)

G=5%

FCF = NOPAT = EBIT (1-T).

EBIT = $5,000,000

Tax Rate = 40%

7. Assume that SSC has an $800,000 capital budget planned for the coming year. You have determined that its present capital structure (60 percent equity and 40 percent debt) is optimal, and its net income is forecasted at $600,000.

Use the residual distribution model approach to determine SSC’s total dollar distribution. Assume for now that the distribution is in the form of a dividend. What is the payout ratio?

**[]**

8. Emerson Trading Company needs to raise capital, however neither an equity nor 100% debt offering are available options at this time. One of the firm’s alternatives is to issue a bond with warrants attached. Emerson’s current stock price is $20, and its investment banker estimates that the cost of a 20-year, annual coupon bond without warrants would be 15 percent. The bankers suggest attaching 45 warrants, each with a strike price (also called an exercise price) of $25.00, to each $1,000 bond. It is estimated that each warrant, when detached and traded separately, would have a value of $6. **[]**

(a). What coupon rate should be set on the bond with warrants if the total package is to sell for $1,000?

(b). As an alternative to the bond with warrants, Emerson’s Mr. Spencer is considering convertible bonds. The firm’s investment bankers estimate that Emerson could sell a 20-year, 8.5 percent annual coupon, callable convertible bond for its $1,000 par value, whereas a straight-debt issue would require a 10 percent coupon. The convertibles would be call protected for 5 years, the call price would be $1,100, and the company would probably call the bonds as soon as possible after their conversion value exceeds $1,200. Note, though, that the call must occur on an issue date anniversary. Emerson’s current stock price is $20, its last dividend was $1.00, and the dividend is expected to grow at a constant 8 percent rate. The convertible could be converted into 40 shares of Emerson stock at the owner’s option.

What conversion price is built into the bond?