FIN 521: Problem Set #1

Due on Wednesday, February 7, 2018

Wanbae Park

Question 1

Ratios stated on the problem set are calculated as follows.

a. Market/Book = Market Capitalization / Book value of equity

b. Interest coverage = Some measure of income(operating income, EBIT, EBITDA ...) / Interest payments

c. EV/EBITDA = Enterprise value / EBITDA = Market value of equity + Debt - Cash / EBITDA

d. Market leverage = Debt / Equity

e. Current ratio = Current assets / Current liabilities

Table 1 shows numerical values of ratios calculated by using data from Global Corp's financial statement.

	Definition		Numerical Values		
Name of Ratio	Numerator	Denominator	Numerator	Denominator	Ratio
Market/Book	Market Cap.	Book value of equity	36	22.2	1.62
Interest Coverage	Operating income	Interest payments	10.4	7.7	1.35
EV/EBITDA	Enterprise value	EBITDA	131.5	11.6	11.34
Market Leverage	Debt	Equity	147.9	170.1	0.87
Current Ratio	Current assets	Current liabilities	57	34.7	1.64

Table 1: Financial ratios of Global Corp. (Unit: million dollars)

Question 2

a. In this case, $20 million of cash would be credited, and same amount of long-term debt would be debited. Since the same amount of account in balance sheet have been offset, there is no change in Global's book value of equity.

b. Inventory would decrease by $5 million, and there would be also a decrease of book value of equity by $5 million.

c. Since the firm used cash and long-term debt to purchase building, cash amount of $5 million would be credited, long-term debt amount of $5 million would be credited, and $10 million amount of PP&E would be debited. Since the amount of credited and debited balance sheet account is exactly equal, there is no change in Global's book value of equity.

Question 2 continued on next page...

d. Because there is no possibility that Global would ever receive payment, there would be a decrease of accounts receivable by $3 million dollars, as would the book value of equity.

e. Reduction of cost might affect income statement. It might reduce cost of good sold. However, balance sheet of the firm does not change due to this event.

f. The balance sheet does not change since the announcement of key competitor is not an economic event.

Question 3

Question 4

According to the question, expected cash flow stream of the project is as follows. The payback period of this

Year	*year 0*	*year 1*	*year 2*	*year 3*	*year 4*	*year 5*
Cash flows	-10	5	2	2	2	2

Table 2: Expected Cash Flows

project is 4 years because cumulative cash flow from year 1 to year 4 is 11, and that from year 1 to year 3 is 10. That means it takes four years to retake the initial investment. If the required payback period is two years, the project is not accepted since the payback period is larger than required period. Since the cost of capital is given as 10%, NPV of project is calculated as follows.

$$\begin{aligned} NPV &= -10 + \frac{5}{(1+0.1)} + \frac{2}{(1+0.1)^2} + \frac{2}{(1+0.1)^3} + \frac{2}{(1+0.1)^4} + \frac{2}{(1+0.1)^5} \\ &= 0.309 \end{aligned}$$

Therefore, the project has a positive NPV, and it means that the project is accepted if we use NPV rule.

Question 5

a. By using NPV formula, we can plot (cost of capital, NPV) on 2-D space. Figure 1 represents plot a function of NPV on r of the project. Decreasing curve on figure 1 represent the NPV curve, and the horizontal line represents NPV = 0, and the vertical line represents cost of capital which makes NPV equals to 0. Therefore, the x-point in which the vertical and horizontal line cross is IRR of the project.

b. By some numerical procedures, IRR is calculated as 12.72%. It is consistent to figure 1 since the x-value of the point in which the vertical and horizontal line cross is larger than 0.1.

Question 5 continued on next page...

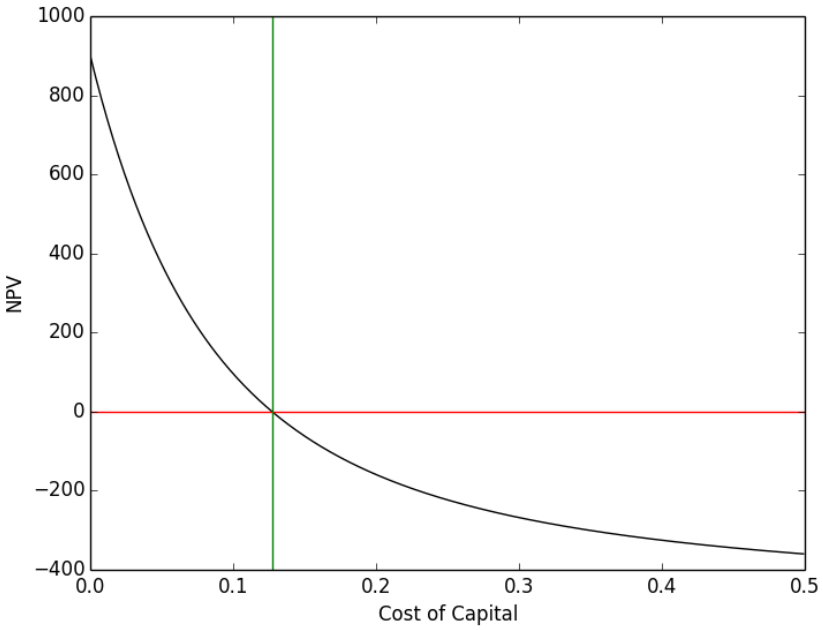

Figure 1: Plot of NPV

c. Since IRR of the project is larger than cost of capital, the purchase is attractive based on IRR decision rule.

d. The decision would change if cost of capital of the project becomes larger than 12.72%. Regarding figure 1, we can find that if cost of capital of the project becomes larger than IRR(12.72%), NPV of the project would less than 0. It means that it is acceptable to purchase a new cruise ship unless cost of capital of this project becomes greater than 12.72%.