

FIN 521: Problem Set #3

Due on Wednesday, April 11, 2018

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Question 1

- a. Since the risk is idiosyncratic, discount rate of the firm is 0. Because all the possibilities of future value is equally likely, Gladstone's current equity value is equal to $0.25 \times (150 + 135 + 95 + 80) = 115$ million dollars.
- b. If the firm earns \$150 or \$135 million in the future, debt holder would get 100% of face value. However, if the firm earns \$95 or \$80 million dollars in the future, debt holder would get \$95, \$80 million dollars, respectively. Since risk is diversifiable, current value of the debt is equal to $0.25 \times 100 + 100 + 95 + 80 = 93.75$.
- c. Yield is a discount rate affected to "promised" payoff. Expected return, in contrast, is a discount rate affected to "expected" payoff. Therefore, yield of the debt satisfies $\frac{100}{1+y} = 93.75$. Therefore $y = \frac{100-93.75}{93.75} = 6.67\%$. In order to calculate expected return, it needs to calculate expected payoff of the debt, from b. it is calculated as 93.75. Therefore, in this case, expected return is equal to 0. It is because there is no systematic risk.
- d. From a, expected present value of the future value is equal to 115. Since debt value is equal to 93.75, equity value is equal to $115 - 93.75 = 21.25$, and firm's total value is 115, which is same as a. Therefore, Modigliani & Miller I holds here.

Question 2

- a.
- b.

Question 3

- a.
- b.
- c.
- d.

Question 4

- a.

b.

c.

Question 5

a.

b.

c.

Question 6

Question 7

a.

b.

Question 8

a.

b.