

ECON 612: MONEY AND BANKING  
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EXAMPLE 8.6\*  
SOLUTIONS AND EXPLANATIONS

COLOR LEGEND

- ⌘ HEADINGS
- ⌘ GIVEN/PREVIOUSLY FOUND INFORMATION
- ⌘ CONCEPTS YOU SHOULD ALREADY KNOW
- ⌘ ANSWER
- ⌘ ANNOTATIONS AND EXTRA EXPLANATIONS

\* A COPY OF THE PROBLEMS IS ATTACHED AT THE END OF THIS DOCUMENT. THERE MAY BE SOME DIFFERENCES BETWEEN THIS VERSION AND THE ONE AVAILABLE ON CANVAS.

## GIVEN INFORMATION

$$D = \$120$$

$$C = \$5$$

$$S = \$125$$

$$P(S) = 0.9$$

$$F = \$100$$

$$P(F) = 0.1$$

$$LV = \$90$$

$$i = 0$$

- 1 FINDING  $VE$  THIS IS THE VALUE TO THE ENTREPRENEUR.

$$VE = P(S)(S - D) + P(F)(F - D) - C$$
$$= 0.9(125 - 120) + 0.1(\cancel{100} - \cancel{120}) - 5$$

$VE = -0.5 < 0 \therefore$  PREFERS NOT TO CONTINUE

- 2 FINDING  $VC$  THIS IS THE VALUE TO THE CREDITOR(S).

$$VC = P(S)D + P(F)F$$
$$= 0.9(120) + 0.1(100)$$

$VC = \$118 > 0 \therefore$  PREFER TO CONTINUE

- 3 FINDING  $D_R^*$  THIS IS THE LEVEL THE DEBT IS REDUCED TO FOR THE ENTREPRENEUR TO BE INDIFFERENT TO CONTINUING.

INDIFFERENT WHEN  $P(S)(S - D_R) - C = D$

$$0.9(125 - D_R) - 5 = 0$$

$$D_R^* = \$119.40$$

## 4 GIVEN INFORMATION

$$D_R = \$119$$
 THIS IS THE LEVEL THE DEBT HAS BEEN REDUCED TO.

- a FINDING  $VE$  THIS IS THE VALUE TO THE ENTREPRENEUR.

$$VE = P(S)(S - D_R) + P(F)(F - D_R) - C$$
$$= 0.9(125 - 119) + 0.1(\cancel{100} - \cancel{119}) - 5$$

$VE = 0.4 > 0 \therefore$  PREFERS TO CONTINUE

- b FINDING  $VC$  THIS IS THE VALUE TO THE CREDITOR(S).

$$VC = P(S)D_R + P(F)F$$
$$= 0.9(119) + 0.1(100)$$

$$VC = \$117.10$$

### **Example 8.6**

Marvelous Computers, Inc. currently owes its creditors \$120. It is run by an entrepreneur, Mr. Bill Doors, who could manage the firm for one period at a personal cost of \$5. Mr. Doors has a unique ability to manage Marvelous Computers; under his stewardship the firm's assets one period from now will be worth \$125 with probability 0.9 and \$100 with probability 0.1. Under any other management, the firm will be worth \$90 for sure, which is its current liquidation value. Assume that the riskless rate is zero and that there is universal risk neutrality. Analyze the possible strategies for the creditors.

- (1) What is the payoff to Mr. Doors if he chooses to continue?
- (2) What is the payoff to the creditors if Mr. Doors chooses to continue?
- (3) What loan repayment should the creditors offer to Mr. Doors to make him indifferent to continuing and defaulting?
- (4) Suppose the creditors reduce the debt to \$119 and Mr. Doors chooses to continue. What is the payoff to...
  - (a) Mr. Doors?
  - (b) the creditors?