

Hill Software System

Balance sheet (December, 2001)

Current Assets	\$500.000	Debt	\$0
Fixed Assets	<u>\$500.000</u>	Common stock (1 million shares)	<u>\$1.000.000</u>
Total Assets	<u>\$1.000.000</u>	Total Liabilities and Equity	<u>\$1.000.000</u>

Income Statement (2001)

Sales	20.000.000
Fixed operating cost	4.000.000
Variable operating costs	<u>12.000.000</u>
Earnings before interest and taxes (EBIT)	4.000.000
Interests	0
Earnings before taxes (EBT)	4.000.000
Taxes (40% federal and state tax)	<u>1.600.000</u>
Net Income	<u>2.400.000</u>

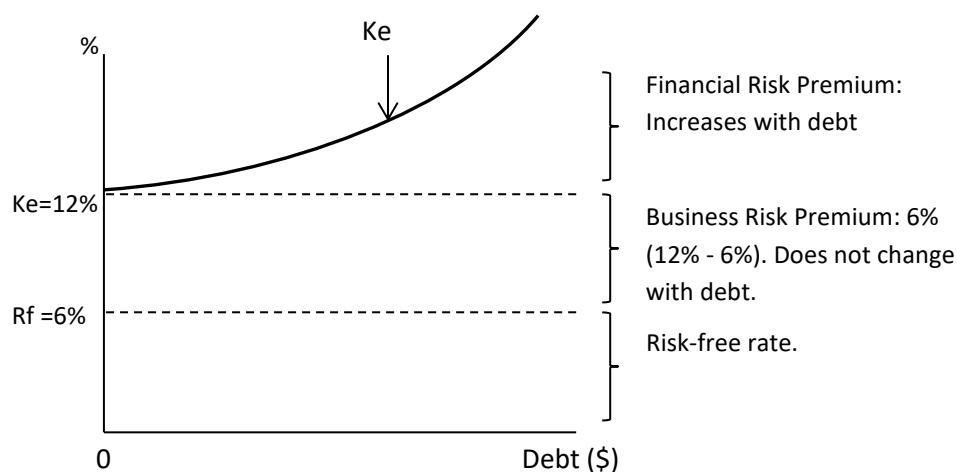
Other information

1. Earnings per share (EPS): $\$2.400.000 / 1.000.000 \text{ shares} = \2.40
 2. Dividends per share (DPS): $\$2.400.000 / 1.000.000 \text{ shares} = \2.40 . The firm distributes 100% of the Net Income.
 3. Book value per share: $\$1.000.000 / 1.000.000 \text{ shares} = \1
 4. Market price per share: $P_o = \$20$. Thus, the shares are quoted at 20 times the book value.
 5. Price Earning Ratio (P/EPS): $\$20 / 2.40 = 8.33$.
 6. Dividend yield (DPS/ P_o) = $\$2.40 / \$20 = 12\%$
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Hill Software Systems (HSS) was founded in 1985 to produce a new type of operating system for personal computers. The basic program was developed and patented by Mark Hill, the founder of HSS. Mr. Hill owns the majority of shares, although a significant portion belongs to other shareholders. The company has no debts, and the main financial data are shown in the table. Assets are accounted for \$1 million at book value. However, the balance sheet does not include the value of the goodwill of the firm and some fixed assets were bought a few years ago at lower prices than are valued today in the Balance sheet.

Mark Hill will be retiring soon, and he is planning to sell most of his stake to the public, and use the proceeds from the sale to diversify his personal portfolio. He is wondering whether the market value of the share will not be higher if the firm changed its capital structure (currently it is an all equity firm), including some debt in its capital structure. In all this sort of decisions the correct answer would be: *you have to choose the capital structure which maximizes the value of the firm*. If the market value of the firm is maximized, so will be the price of the shares, and the cost of capital will be minimized.

Cost of Equity



HSS has hired an investment bank for advice on the recapitalization strategy. The bank has provided the firm with the following information about the cost of debt and the Beta of the share for every level of debt. The risk-free rate of the economy is 6% and the stock market risk premium is 4%.

Level of Debt (\$)	Cost of Debt (Kd)	Beta	Cost of Equity (Ke)	Equity (MV) (\$)	Value of the firm (D+E) (\$)	Cost of Capital (Ko)
0	0.00%	1.5	12.00%	20,000,000	20,000,000	12.00%
2,000,000	8.00%	1.55				
4,000,000	8.30%	1.65				
6,000,000	9.00%	1.8				
8,000,000	10.00%	2				
10,000,000	12.00%	2.3				
12,000,000	15.00%	2.7				
14,000,000	18.00%	3.25				

To simplify the analysis, we assume that in the long term, demand for HSS products should not grow, therefore it is expected that the EBIT will remain constant at \$4 million. Besides, because the company does not need new capital, all the net income will be paid as dividends.

Which level of debt should the firm choose?