Numerical Problem: Market Value Added (MVA) and Economic Value Added (EVA)

Question

A company has the following financial data:

Year	Net Operating Income (Rs. million)	Taxes (Rs. million)	Working Capital Investment (Rs. million)	Fixed Capital Investment (Rs. million)	Capital Employed (Rs. million)	Cost of Capital
1	120	30	10	40	500	10%
2	150	40	15	30	520	10%
3	160	42	12	25	540	10%

The company has 10 million shares issued, and its current market price per share is Rs. 75. The book value of total capital invested is Rs. 600 million.

Tasks:

1. 1. Calculate the After-Tax Free Cash Flow (FCF) for each year using the formula:
   FCF = Net Operating Income - Taxes - Working Capital Investment - Fixed Capital Investment
2. 2. Compute the Economic Value Added (EVA) for each year using the formula:
   EVA = Profit after tax - (Cost of capital × Capital employed)
3. 3. Assuming the Net Present Value (NPV) of all expected future EVAs is Rs. 200 million, calculate the Market Value Added (MVA) using:
   MVA = NPV of expected future EVA
4. 4. Verify the MVA using the market-based definition:
   MVA = (Stock price × Issued shares) - Book value of total capital invested

Solution

Step 1: Calculate After-Tax Free Cash Flow (FCF)

Using the formula: FCF = Net Operating Income − Taxes − Working Capital Investment − Fixed Capital Investment

Year 1: FCF = Rs. 40 million

Year 2: FCF = Rs. 65 million

Year 3: FCF = Rs. 81 million

Step 2: Calculate Economic Value Added (EVA)
Using the formula: EVA = Profit after tax − (Cost of capital × Capital employed)

Year 1: EVA = Rs. 40.00 million

Year 2: EVA = Rs. 58.00 million

Year 3: EVA = Rs. 64.00 million

Step 3: Calculate Market Value Added (MVA)
Assuming the Net Present Value (NPV) of expected future EVAs = Rs. 200 million

Therefore, MVA = Rs. 200 million

Step 4: Verify Market-based MVA
Market Value = Stock price × Issued shares = 75 × 10 = Rs. 750 million

Book Value of total capital invested = Rs. 600 million

MVA = 750 − 600 = Rs. 150 million

Both methods show that the company has created Rs. 150–200 million of value over its book capital base.