

Valuation Project

Objective: The purpose of this project is to reinforce the concepts that you have read about and heard about through readings and lectures. Here, you will learn how to apply cash flow (FCFF and terminal value) and discount rate (cost of debt, cost of equity, and WACC) concepts in the context of valuing an actual firm using a spreadsheet.

The data for this project can be downloaded from my website. The file is called BUD2000.xls. The data is current as of October 17, 2000.

The Company: Anheuser-Busch Companies, Inc. produces and distributes beer under brand names such as Budweiser, Michelob, and Busch. The company also manufactures aluminum beverage cans and labels, operates rice milling and barley seed processing plants. In addition, the firm owns and operates a chain of theme parks. The firm's ticker symbol is BUD.



Valuation Assumptions:



Item	Assumption
Expected growth rate in sales per year	4% - 5%
Percentage of Sales (Margin analysis)	
Cost of goods sold (COGS)/Net sales	61% (per year)
Selling, gen. & admin. expense (SGA)/Net sales	17.5% (per year)
Marginal tax rate (τ)	38%
Working capital (WC)	WC/Net Sales remains constant. Set equal to time 0's ratio
Expected growth rate in Depreciation & Amortizatn	4% - 5% ^A
Expected growth rate in Capital Expenditures	4% - 5% ^A
^A In year 5, Depreciation & Amortization = Capital Expenditures Beta = 1 (e.g., $\beta_5 = 1$)	
Total Enterprise Value (TEV)/EBITDA	14x (remains constant)
Market risk premium ($R_M - r_F$)	5.5%
Current market cap (\$Mil) as of 10/17/2000	\$39178.878
Current price per share as of 10/17/2000	\$43.375 ^B
^B On September 19, 2000 BUD had a 2:1 stock split	
3 Month Price range of BUD (7/18 - 10/18/2000)	\$38.16 - \$44.31 (split adjusted)
Holding period (investment period)	5 years
Firm's Bond Rating	A1 (remains unchanged)
Maturity of Long Term Debt	10 years

Assignment/Tasks: Download the file BUD2000.xls and then do the following tasks using the BUD2000.xls spreadsheet

1. Calculate beta (5 points): Using the regression option in your excel spreadsheet, calculate the beta (β) for Anheuser-Busch using 5 years of monthly return data. Round your answer to two decimal places.
2. Calculate the cost of equity (5 points): Using the beta that you just calculated and the preceding assumptions, calculate the cost of equity using the CAPM. Use the 10-year Treasury bond for the riskfree rate in your calculations. Round your answer to three decimal places.
3. Calculate the after-tax cost of debt (5 points): Calculate the after tax cost of debt using the bond spreads given. Use the 10-year Treasury bond for the riskfree rate in your calculations. Round your final answer to three decimal places.
4. Calculate the weighted average after-tax cost of capital (5 points): Assume that the book value of debt is equal to the market value of debt for purposes of this assignment. (This won't be true in real life). Calculate the WACC using book value weights. Next, calculate the WACC using market value weights. Round your final answer to three decimal places.
5. Calculate the free cash flow to the firm for years one through five (30 points): Use the last twelve months of data (LTM) in your income statement as the initial period (time 0). Forecast out 5 years given the preceding valuation assumptions. Free cash flow to the firm (FCFF) = Operating Cash Flow (OCF) – Capital Expenditures (CapEx) – *Changes* in noncash Working Capital (ΔWC). Noncash Working Capital (WC) for our purposes is defined as $WC = (\text{Inventory} + \text{Accounts Receivable}) - \text{Accounts Payable}$.¹ Changes in noncash Working Capital (ΔWC) = $WC_T - WC_{T-1}$. Use a growth rate in revenue that is half way between 4% and 5%. Use the same logic process for the growth rate in depreciation and capital expenditures.² Round the dollar amounts to the nearest whole number.
6. Calculate the terminal value of the firm (5 points): Calculate the enterprise value in year 5 using the TEV/EBITDA multiple applied to EBITDA in year 5.

¹This definition differs from the traditional accounting definition of working capital that is current assets – current liabilities. The current portion of long-term debt is eliminated to avoid double counting since it's considered as part of the overall financing of the firm. We also eliminate cash from the definition since we are attempting to estimate the effect of changes on cash flows.

²In estimating capital expenditures (and depreciation which is a function of capital expenditures), the typical assumption is either that capex grows at the same rate as revenues, it lags revenue growth by 1-2 years, or it is based on a fixed revenue/capital ratio.

7. Calculate the present value of the firm (20 points): Using your calculations for the cash flows and the after-tax WACC, calculate the present value of the firm. What is the PV of the firm if the WACC is based on book value weights? What is the PV of the firm if the WACC is based on market value weights?

8. Calculate the present value of the equity on a per share basis (5 points): Given the present value of the firm and the information in the BUD2000.xls spreadsheet, calculate the justified price per share for BUD. What is BUD's justified price per share using book value weights in the WACC? What is BUD's justified price per share using market value weights in the WACC?

9. Sensitivity analysis (15 points): Using the *data table* option in Excel, prepare a two way sensitivity table which shows how the justified price per share for BUD changes with changes in the growth rate for revenues and changes in the WACC. Use 1% - 7% for the growth rate in revenues (increment by 1%) and use ± 150 basis points (bps) for the changes in the WACC (increment by 50 bps). Show the data table results both for the case of book value weights in the WACC and alternatively for the case of market value weights in the WACC. You're stress testing the WACC in years 1-4, not the terminal WACC.

10. Calculate the Economic Value Added (EVA) (5 points): Calculate EVA using the approximation method e.g., $EVA = EBIT(1-\tau) - WACC \cdot \text{Total Capital}$. Both the WACC and Total Capital should be based on book value.