

Absolute Valuation: Economic Profit/EVA

Objective: The objective of this assignment is to help reinforce the concept of Economic Profit otherwise known as Economic Value Added (EVA). More specifically, this exercise is designed to have you learn how to:

- Calculate NOPAT, Operating Capital, EVA, and MVA (Market Value Added)
- Partition the EVA and use this partition in analyzing the firm
- Perform discounted cash flow analysis using EVA

Prior to doing this assignment, please read Chapters 8 - 12 in Copeland, Kotler, and Murrin, *Valuation: Measuring and Managing The Value of Companies*.

Company: Lowe's Companies, Inc. (Ticker: LOW, <http://www.lowes.com>) is the #2 US home improvement chain (after [The Home Depot](#)) with more than 850 superstores in about 45 states. The company's stores sell more than 40,000 products for home improvement and repair projects as well as appliances (for which the company has a market share of 14%) and consumer electronics. While Lowe's has previously concentrated on small and medium-sized markets, Lowe's is currently expanding in large metro areas, especially in the Northeast and Midwest. However, the company still plans on expanding its traditional customer base with approximately half of its new stores being smaller stores in rural markets. Lowe's is also focusing its attention on female customers, who, the company claims, call the shots on about 80% of home improvement decisions.



On September 23, 2003, Lowe's held their 2003 analyst and investors conference where Robert F. Hull, Jr., senior vice president and CFO, indicated that Lowe's fundamentals are strong and the company's future outlook remains bright. "We plan to add 140 and 150 new stores in fiscal 2004 and 2005, respectively, equating to approximately 13 to 15 percent square footage growth per year," said Hull. "This square footage growth should drive annual sales increases of approximately 17 percent for fiscal 2004 and 2005."

With fiscal year 2002 sales of \$26.5 billion, Lowe's Companies, Inc. is a FORTUNE 100 company that serves approximately nine million customers a week at more than 900 home improvement stores in 45 states. In 2003, FORTUNE named Lowe's America's Most Admired Specialty Retailer. Based in Wilkesboro, N.C., the 57-year old company is the second-largest home improvement retailer in the world.

Competitors: Home Depot (HD), Menard (Private Company), and TruServ (Private-Cooperative)

Assignment: Download the spreadsheet labeled LOW2004.xls from my website and do all your work on this spreadsheet. This is an *individual* assignment. Although you can discuss this case with your classmates, you are responsible for doing the case yourself. Students caught cheating will be given an F on this assignment. In doing this assignment, please use the assumptions given on the next page. The assignment/questions can be found after the assumptions.

Assumptions to Use in Calculations:

Item	Assumption
Growth rate in sales	Assume that LOW grows at its recently announced growth expectation of 17% per year up to and including Year 2008 after which time it start to decrease in equal increments per year until it reaches 6.8% in Year 2013. <u>Intuition</u> : we assume that sales will eventually revert back to the mean i.e., in the long run retail sales will only grow as fast as the economy as a whole.
Sales/Beginning Capital via Operating Approach	Based on historical performance, assume that LOW continues to have a sales-to-beginning capital ratio of 2.0
Cost of Goods Sold (COGS)	Cost of Goods Sold <i>includes</i> Depreciation and Amortization IF there is an "NA" for Depreciation and Amortization in the income statement. If this is the case, subtract out Depreciation and Amortization from COGS.
COGS (exclu. Depreciation & Amortization)/ Sales	Based on historical performance, assume that LOW continues to have a COGs/Sales ratio of .6935
(SGA + R&D Expenses)/ Sales	Assume that LOW's SGA(Selling, General, and Administrative expense + R&D Expense)/Sales remains at 18.5% up to and including Year 2008 after which time it becomes equal to that of Home Depot at 21%
Depreciation & Amortization	Use the Depreciation & Amortization number given in the income statement. If there is a NA, use the Depreciation and Amortization number given in the Statement of Cash Flows.
Depreciation & Amortization /Sales	Assume that this ratio is .023 based on historical performance. Technically, we should use the ratio of depreciation to Capital Expenditures (CapEx) and the ratio of CapEx to Sales in calculating Depreciation.
Tax Rate	Tax Rate = Provision for Income Taxes/Income Before Tax
Accounting Adjustments/ Sales	Based on historical performance, assume that (Goodwill Amortization or Impairment + Implied Interest on Operating Leases + Change in LIFO Reserves)/ Sales = .005

Item	Assumption
Cash Operating Taxes/ Adjusted Operating Profit	Based on historical performance, assume that this cash tax rate is 31%
Beta	<p>Assume that the beta in year 2002 is what you calculated for the prior 5 years using the historical return for LOW and that the beta in 2012 is 1 (mean reversion to beta of the market). The beta is assumed to decrease each year from 2002 to 2012 in a linear fashion using the formula</p> $\beta_T = \beta_{T-1} + (\beta_{2012} - \beta_{2002})/10$
Risk free Rate	Assume that the rate on a 10-year Treasury bond remains constant at the Year 2002 level. (use the Bond Yields spreadsheet)
Risk Premium	Assume that it is .055. As an aside, Bennet Stewart in his book "Quest for Value" uses 6%.
After-tax Cost of Debt	For the valuation based on EVA, assume that the after-tax cost of debt remains constant at the 1/31/03 level.
Weights for Debt and Equity	For the valuation based on EVA, assume that the market value weights for debt and equity remain constant at their 1/31/03 levels.
Terminal Value	<p>For the valuation based on EVA, assume that the terminal value in Year 2012 is calculated using the constant growth model:</p> $\text{Terminal Value}_{2012} = \text{EVA}_{2013}/(\text{WACC}_{2012} - \text{Sales Growth}_{\text{SP500}})$ <p>Note: Sales Growth = EBIT Growth = Growth in EVA in stable growth period due to our percentage of sales assumptions.</p>
NA	Assume that NA is equal to zero. See the preceding comment for the case of Depreciation and Amortization.
Absolute Value	Use the =abs() function in Excel in calculating the absolute value
Present Value of Operating Leases	Use the before-tax cost of debt associated with the firm's bond rating for a particular year as the discount rate.
Years Remaining on the Operating Lease	Round to the nearest whole number using the Round(,0) command in Excel. Years Remaining on the Operating Lease = Thereafter/Five Year Average of Operating Leases.
Operating Lease per annum	Operating Lease per annum = Thereafter/Years Remaining on the Operating Lease

Item	Assumption
Long Term Return on Invested Capital (LT ROIC)	.085; Since the real long term corporate average for ROI is 6%, if we assume inflation at 2.5%, the nominal LT ROI is 8.5%
Fade in ROIC per Year (increasing/up factor)	<p data-bbox="526 390 1276 422">.025; An increasing fade factor (+) is used as follows:</p> $ROIC_{T+1} = ROIC_T + \text{Fade Factor}_{UP} * (ROIC_T - LT ROIC)$ <p data-bbox="526 531 1435 600">An increasing fade factor means that ROIC is increasing over time.</p>
Year that decreasing fade starts	Year 2009. ROIC is increasing (an increasing fade factor is used) up to and including year 2008. Starting with year 2009, ROIC begins to decrease.
Fade in ROIC per Year (decreasing/down factor)	<p data-bbox="526 758 1179 789">A decreasing fade factor (-) is used as follows:</p> $ROIC_{T+1} = ROIC_T - \text{Fade Factor}_{DOWN} * (ROIC_T - LT ROIC)$ <p data-bbox="526 898 1411 928">A decreasing fade factor means ROIC is decreasing over time.</p>

A Note on Goodwill: Statement No. 142: states that the purchase method of accounting will be required for all business combinations initiated after June 30, 2001, effectively eliminating the pooling-of-interests method. The statement changes the accounting for goodwill from an amortization method to an impairment-only approach. FASB has declared that goodwill will no longer be amortized to earnings annually. Instead, goodwill will be tested for impairment at least annually, and recorded and expensed against earnings only in periods in which the recorded value of goodwill exceeds its fair value.

Assignment:

1. Valuation of Operating Leases and Calculation of Imputed Interest: (10 points) Using the financial statements, operating leases, bond yields, and bond ratings provided, calculate the Present Value of the Operating Lease and imputed interest on the operating lease for each of the fiscal years 1998 through 2002¹ for both Lowe's and Home Depot using the Operating Lease Template. Note: Since bond yields are not stated in terms of + or - e.g. only AA exists, not AA+ or AA-, use the bond yield that is the closest to your firm's bond rating.

2. Calculation of EVA for Lowe's: (25 points) Using the financial statements, operating leases, and risk factors as well as bond yields provided, calculate the

- a. Net Operating Profit (NOPAT)
- b. Cash Operating Taxes
- c. Capital via the Financing Approach
- d. Capital via the Operating Approach
- e. Market Value of Capital
- f. After-tax WACC based on market value weights
- g. Return on Capital
- h. Economic Profit (Economic Value Added (EVA))
- i. Market Value Added (MVA)

for Lowe's using the EVA Template provided. The area to be completed is highlighted in **yellow**. Note: There is a line item in each firm's income statement called Income Before Depreciation and Amortization (INC BEF DEP & AMORT). This may or may not be equivalent to EBITDA. The reason is that the Depreciation and Amortization is sometimes included in the Cost of Goods Sold. Please see the assumptions above.

To make sure that you understand where the LIFO Reserves, Accumulated Goodwill Amortization, Deferred Income Taxes, and Implied Interest on Operating Leases are found in the 10K, print out the appropriate pages from Lowe's 10K for the year ended January 31, 2003 and **highlight the relevant numbers in yellow**. You can obtain 10K reports from Thomson's Research (click on complete filings), Edgar Scan, or Lexis-Nexus using <http://www.nyu.edu/library/bobst/vbl> or you can go to the SEC website at <http://www.sec.gov/edgar.shtml>.

3. Calculation of EVA for Home Depot: (25 points) Using the financial statements, operating leases, and risk factors as well as bond yields provided, calculate the

- a. Net Operating Profit (NOPAT)
- b. Cash Operating Taxes
- c. Capital via the Financing Approach
- d. Capital via the Operating Approach

¹For Lowe's, 1/31/03 (2003 10K) represents fiscal year 2002, 2/1/02 represents fiscal year 2001, and so on. For Home Depot, 2/2/03 (2003 10K) represents fiscal year 2002, 2/3/02 (2002 10K) represents fiscal year 2001, and so on.

- e. Market Value of Capital
- f. After-tax WACC based on market value weights
- g. Return on Capital
- h. Economic Profit (Economic Value Added (EVA))
- i. Market Value Added (MVA)

for Home Depot using the EVA Template provided. The area to be completed is highlighted in yellow. Note: There is a line item in each firm's income statement called Income before Depreciation and Amortization (INC BEF DEP & AMORT). This may or may not be equivalent to EBITDA. The reason is that the Depreciation and Amortization is sometimes included in the Cost of Goods Sold. Please see the assumptions above.

To make sure that you understand where the LIFO Reserves, Accumulated Goodwill Amortization, Deferred Income Taxes, and Implied Interest on Operating Leases are found in the 10K, print out the appropriate pages from Home Depot's 10K for the year ended February 2, 2003 and highlight the relevant numbers in yellow. You can obtain 10K reports from Thomson's Research (click on complete filings), Edgar Scan, or Lexis-Nexus using <http://www.nyu.edu/library/bobst/vbl> or you can go to the SEC website at <http://www.sec.gov/edgar.shtml>.

4. Percentage of Sales: (10 points)

- a. Complete the highlighted sections of the worksheet labeled "Pct of Sales Template" using the various EVA Templates that you finished in the prior questions.
- b. Using your completed percent of sales worksheet in part a, complete the highlighted sections of the next worksheet labeled "Partitioning the EVA". Discuss how effective Lowe's management is at controlling their operating expenses relative to Home Depot (management of income statement). Is Lowe's management doing a better or worse job over time? Besides this, discuss how well Lowe's manages their assets (balance sheet) relative to Home Depot e.g. \$1 of assets (various asset components) generates how many dollars in sales? To what extent does differences in accounting affect profit at the firm level (EBIT) for Lowe's relative to Home Depot?

5. Valuation of Lowe's Using EVA and Percentage of Sales: (20 points) Calculate the justified value of the firm and the justified value of the equity for Lowe's by completing the highlighted sections of the worksheet labeled "LOW Valuation (% Sales)". Your cash flows should be in millions of dollars (Note: the financial statements are in thousands of dollars). The necessary assumptions regarding growth, risk, etc., are given above on the assumptions page in this case.

- a. Based on 1/31/2003 as your date of valuation (fiscal year 2002) and the price on that date of \$53.90, should you buy, sell, or hold Lowe's?
- b. What proportion of the justified value of the firm is based on future growth potential (and understated book value)? What portion of Lowe's value is due to its existing

asset base inclusive of excess cash and the value of non-operating assets? (Hint: the sum of the present value of the EVAs is equal to MVA. Think of how MVA is related to the value of the firm).

- c. Using the Data Table command in Excel, complete the sensitivity table of prices at various levels of expected growth in sales and for various levels of beta in the year 2012.
- d. Analysts typically assume that the WACC remains constant over time ($WACC_{2000} = WACC_{2002} = \dots = WACC_{2013}$) for purposes of discounted cash flow valuation. Using the results in your completed sensitivity table, what is the justified price of Lowe's assuming a constant WACC (no mean reversion exists over the forecasting horizon)? Given this assumption, is Lowe's stock a buy, a sell, or is it fairly priced (a hold)?

6. EVA Valuation of Lowe's Using Fade Factors: (20 points) Calculate what the Fade in ROIC per Year (decreasing/down factor) must be per year starting with year 2009

$$ROIC_{T+1} = ROIC_T - \mathbf{Fade\ Factor}_{Down} * (ROIC_T - LT\ ROIC)$$

where **Fade Factor**_{Down} = decreasing fade factor; ROIC is decreasing over time.

using the spreadsheet labeled "6. LOW Valuation-Fade Factor". To obtain proportion by which ROIC decreases in each period, use the Solver command in Excel (Tools → Solver) and set the justified equity value per share equal to the actual market price per share as of September 19, 2003 (\$53.90). Your cash flows should be in millions of dollars (Note: the financial statements are in thousands of dollars). The necessary assumptions regarding growth, risk, etc., are given above on the assumptions page in this case. Hint: In setting up your cash flows, use any arbitrary value for the **Fade Factor**_{Down} that is greater than zero but less than 1.

Note: The purpose of this question is to show students:

- that there are several ways to calculate firm value and equity value using EVA
- that one can use models to test assumptions such as what is the growth rate in sales and ROIC implied in the market price (assuming that your valuation model is the correct model that is used by market participants).

Please turn in a hard copy of the spreadsheet together with your disk containing the spreadsheet with all the appropriate calculations.