

## Built Up Betas and the Cost of Equity

**Objective:** The objective of this assignment is to introduce students to how to calculate beta using comparable companies. Not only is this approach the correct one to use in general but is especially appropriate when a firm is either a private company or a publicly traded company that has been trading only a short time or only infrequently. A secondary goal is to show the impact that leverage (the use of debt) has on risk (beta).

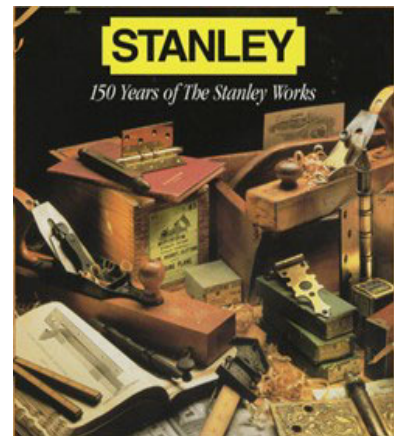
**Company:** The Stanley Works (Ticker: SWK)

The Stanley Works is a worldwide manufacturer and marketer of tools, hardware and specialty hardware products for home improvement, consumer, industrial and professional use. The company still bears Frederick Stanley's name.

The company is divided into two segments. The Company's Tools segment manufactures and markets carpenters, mechanics, pneumatic and hydraulic tools, as well as tool sets. These products are distributed directly to retailers (including home centers, mass merchants and retail lumber yards) and end users, as well as through third-party distributors. The Doors segment manufactures and markets commercial and residential doors (both automatic and manual), as well as closet doors and systems, home decor, door locking systems, commercial and consumer hardware, security access control systems and patient monitoring devices.

On December 8, 2003, The Stanley Works (NYSE: SWK) announced that entered into a definitive agreement to sell its **residential** entry door business, headquartered in Charlotte, NC, to Masonite International Corporation (TSE, NYSE: MHM) for \$160 million in cash. Goldman, Sachs & Co. advised the company on this transaction. The definitive agreement includes a multi-year license for the use of the "Stanley Door" brand name and related brands by Masonite following closing. The transaction will generate an after-tax gain and net proceeds of \$95 million, which will be utilized for acquisitions in its growth vehicles in the upcoming months. The company expects that as a result of this transaction: 1) Doors Segment sales will decline by approximately \$180 million (U.S. \$, U.S. GAAP basis), and 2) Earnings are expected to be lower by about 14 cents per fully diluted share. On March 2, 2004 Masonite International Corporation announced that it had completed the acquisition of the residential entry door business of The Stanley Works.

**Competitors (Publicly Traded):** Black and Decker (BDK), Danaher (DHR), Snap-On Incorporated (SNA).



**Assumptions:**

<b>Item</b>	<b>Assumption</b>
Beta	Use 60 months of the most recent data given in the "Returns" worksheet to calculate the beta for each firm using the SLOPE command in Excel.
Marginal tax rate	Use the trailing twelve month (TTM) marginal tax rate for our subject firm (Stanley Works),
Riskfree rate	Use the 10 year Treasury bond as the appropriate benchmark.
Debt	Assume that SWK has a 10 year debt maturity. On February 6, 2004, MOODY'S affirms THE STANLEY WORKS' A2 bond rating and revised its outlook to negative from stable. To calculate the pre-tax cost of debt which you will use as the discount rate to calculate the present value of the operating lease (Value of Off-Balance Sheet Debt), add the 10 year Treasury (located in the "Treasury Rates" worksheet) to the Default Spread (located in the "Corporate Bond Spreads" worksheet). Use the most recent debt outstanding for each firm with respect to On Balance Sheet Debt.
Operating lease	We will assume based on the operating lease payment for Year 2007 of \$5,800 that the Thereafter amount of \$10,200 represents 2 additional years worth of operating leases with the lease payment in each of the two years being an equal amount.
Shares Outstanding	Use the most recent shares outstanding for each firm
Equity	Calculate the market value of equity (aka market cap) for each firm using the most recent shares outstanding for each firm multiplied by the price (given in the "Comps" worksheet).
Risk premium ( $R_M - r_F$ )	5.5%
NA	Set NA = 0 in the Financial Statements (Disclosure spreadsheet)
Date of Analysis	Assume that the date of your analysis is as of <b>March 6, 2004</b> .

**Assignment:** Download the SWK data from my website and use the downloaded spreadsheet to answer the following questions (all work should be done on this spreadsheet). The assumptions for each calculation are given on the preceding page. Please highlight your answers in **yellow** in the worksheet templates provided:

1. Firm Betas (5 points): Calculate the betas for the comparable firms using either the Regression option<sup>1</sup> under Data Analysis in the Excel menu or the SLOPE command.
2. Total On Balance Sheet Debt (5 points): Calculate the total amount of On Balance Sheet debt using the appropriate 10Q spreadsheet for each firm. In calculating the debt for each comparable company, use the *most recent* figure given in the spreadsheet for each firm. Assume that the book value of debt equals the market value of debt.
3. Market Value of Equity also known as Market Cap (5 points): Calculate the total market value of equity using the appropriate 10Q spreadsheet for each firm and the stock price for each firm located in the “Comps” worksheet.
4. Off Balance Sheet Debt (5 Points): Calculate the Present Value of Operating Leases.
5. Estimate the Beta for SWK using Comparables (60 points):
  - a. Method 1: Average the Betas and Debt/Equity and Then Unlever the Average Beta. Calculate the levered beta for SWK using the “BuiltUp Beta - Method1” template. Note that in re-leveraging the beta, the debt to equity ratio for SWK includes both on balance sheet and off-balance sheet debt.
  - b. Method 2: Unlever the Beta for Each Comparable Firm and then Average the Unlevered Betas. Calculate the levered beta for SWK using the “BuiltUp Beta – Method2” template. Discuss whether the estimate of beta for SWK using the two approaches is similar.
  - c. Method 3: Fundamental Beta: Rosenberg and Marather (1979) suggest that fundamental information about a firm (the independent X variables) can be used together with the historical levered beta (the Y variable) to obtain superior predictors of future betas. Fundamental information that we use include the firm's dividend yield, the coefficient of variation in operating income (standard deviation of operating income divided by the mean of operating income), the size of the firm as measured by its total assets, its debt/equity ratio (in book value terms), and its expected growth rate in earnings per share. Using the data provided in the “Inputs for Fundamental Beta” worksheet, use the Regression option under Data Analysis to calculate the imputed levered beta for SWK. To calculate the levered beta for SWK you will need to first calculate the X variables for SWK. More specifically, use the “SWK 10K” worksheet to obtain the coefficient of variation of operating income (use 5 years

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<sup>1</sup>If you do not see the Data Analysis option under the Tools submenu in Excel, click on the Add-Ins option under the Tools submenu then click on Analysis Toolpak and then click OK. You should now see the Data Analysis option under the Tools submenu.

worth of data). Use the “SWK 10Q” in conjunction with the “Comps” worksheet to obtain the dividend yield. Use the “SWK 10Q” to obtain the On Balance Sheet Debt to Book Value of Shareholder Equity Ratio for the trailing twelve months. For the constant average growth rate (CAGR), refer to the “Earnings Estimate (SWK)” worksheet and use the MEAN Estimate of LT Growth Rate. For firm size (Total Assets) use the “SWK 10Q”.

6. Estimate the Cost of Equity for The Stanley Works (10 points): Calculate the cost of equity for SWK under each of the three methods using the Capital Asset Pricing Model (CAPM). The cost of equity is the discount rate that shareholders use to discount back the cashflows they receive (dividends, stock buybacks, etc.). Use the 10 year Treasury bond for the riskfree rate.

7. Revised Levered Beta and Cost of Equity for Staples (10 points): The Stanley Works (NYSE: SWK) announced that entered into a definitive agreement to sell its **residential** entry door business, headquartered in Charlotte, NC, to Masonite International Corporation (MHM). What is the impact of the sale of Stanley Works residential entry door business to Masonite International Corporation with respect to SWK's Levered Beta and SWK's Cost of Equity? More specifically, what is SWK's Levered Beta and its Cost of Equity after the sale of its residential entry door business? Does its beta and cost of equity change? Please calculate using the “Business Segment Analysis (SWK)” template and **discuss your results**. Recall from your Foundations of Finance class that

$$\beta_{\text{Portfolio}} = \text{weight}_{\text{Stock1}} * \beta_{\text{Stock1}} + \text{weight}_{\text{Stock2}} * \beta_{\text{Stock2}} + \dots + \text{weight}_{\text{StockN}} * \beta_{\text{StockN}}$$

Since a firm can be thought of as a portfolio of different divisions

$$\beta_{\text{Firm}} = \text{weight}_{\text{Division1}} * \beta_{\text{Division1}} + \text{weight}_{\text{Division2}} * \beta_{\text{Division2}} + \dots + \text{weight}_{\text{DivisionN}} * \beta_{\text{DivisionN}}$$

where the weight for a division is the  $\text{EBIT}_{\text{Division } i} / \text{Sum} (\text{EBIT}_{\text{Division1}} + \dots + \text{EBIT}_{\text{DivisionN}})$ .

For SWK, it has two divisions, the Tools segment and the Door segment. In calculating the weights using EBIT, the EBIT to use should exclude one time non-recurring charges. To obtain the beta for the Door segment, assume that the levered beta for Masonite International Corporation (MHM) is representative. In unleveraging and releveraging the MHM beta for SWK, assume that SWK uses the same debt to equity ratio for both of its two segments e.g., that the firm's debt to equity ratio is equal to each division's debt to equity ratio.

Please turn in a hard copy of your solutions together with your disk, which shows all work on your spreadsheet. Since this is an individual effort, any student caught cheating will be given an F on this assignment.