

## **Optimal Capital Structure** **(How Many Licks Does it Take to Get to the Center of a Tootsie Pop?)**

**Objective:** The objective of this assignment is to further apply the concepts learned regarding the cost of equity, cost of debt, and weighted average cost of capital in deriving the optimal capital structure for a firm.

**Company:** Tootsie Roll (Ticker Symbol: TR, <http://www.tootsie.com>)



Tootsie Roll, named after the founder's daughter whose nickname was Tootsie, remains one of the more consistent and conservatively run companies in the food industry. In fact, the candy roll still sells for one penny, the original price and is still manufactured with the same wholesome recipe used by Leo Hirshfield, the founder, in 1896. Tootsie Roll Industries is one of the country's largest candy companies, producing more than forty-nine million Tootsie Rolls and sixteen million Tootsie Pops per day. In addition to its flagship product, other Tootsie Roll products include Child's Play, Caramel Apple Pops, Charms, Blow-pop, Blue Razz, Zip-a-dee-doo-da Pops, Cella's, Mason Dots, Mason Crows, Junior Mint, Charleston Chew, Sugar Daddy and Sugar Babies. The Company acquired the last four of these trademarks in 1993 along with the manufacturing assets of the former Chocolate/Caramel Division of Warner Lambert Company. The September quarter is traditionally the firm's strongest as they are well into shipping their Halloween items.

Historically, Tootsie Roll's management has efficiently grown the company through key acquisitions, controlling costs, and prudently using its assets. Among the financial milestones that the company has achieved are the following:

- 23 straight years of sales growth
- 18 straight years of net income growth
- 35 straight years the company has paid a 3% stock dividend
- 57 straight years the company has also paid a cash dividend

Furthermore, the company's return on assets (and return on equity) is not only consistently in the mid- to upper-teens, but is also greater than the firm's cost of capital. Given that the candy industry is a fairly mature and static, nothing should alter Tootsie's positioning in its markets in the foreseeable future. Analysts expect an annual sales growth of 5% to 10% per year over the next 5 years with EPS growth between 10% to 15%. The firm was added to the S&P Midcap Index on December 20, 2000. Insiders own 58% of the company.

**Competitors:** Cadbury Schweppes (CSG), Hershey Foods Corp. (HSY), Mars (Private company), Nestlé (NSRGY), William Wrigley Jr (WWY),

**Assumptions:**



Item	Assumption
Shares outstanding	See spreadsheet; use latest number given
Price per share (as of 12/26/2000)	\$45.50
Beta	.50 (computed using 5 years of monthly data)
Risk premium ( $R_M - r_F$ )	5.5%
Current $r_F$	Use yield on 5 year Treasury Bond in spreadsheet
Bond Spread	See spreadsheet under Bond Spreads for given rating and maturity
Marginal tax rate	36%
Bond rating	If synthetic bond rating is CC, use the bond spread = 1022 for 5 year maturity.
Debt	Use the book value of debt since no information is given on the maturity of the debt nor whether interest is adjustable or fixed. For all bond-rating calculations, assume a 5-year maturity. Also assume that existing debt is refinanced at the "new rate" associated with the applicable bond rating.
NA	Set NA = 0 in the Financial Statements (Disclosure spreadsheet)



**Assignment:** Download the TOOTSIE data from my website and use the downloaded spreadsheet to answer the following questions<sup>1</sup> (all work should be done on this spreadsheet):

1. Is External Financing Necessary? (5 points): Does Tootsie need to use external financing to sustain and grow its candy business given its current financial condition?
  
2. Why Be So Financially Conservative? (5 points) According to the company's 10K, what reason does management give for their conservative financial position?
  
3. How is Management Able to Pay a Stock Dividend While Keeping Its Shares Outstanding Essentially Constant/Flat? (5 points) (Recall that stock dividends increase the number of shares outstanding in the company, in a similar fashion to stock splits)
  
4. What is Tootsie Roll's current after-tax weighted average cost of capital (WACC)? To calculate the cost of debt, use the synthetic bond ratings based on the interest coverage ratio chart given in your Tootsie spreadsheet. Assume a 5-year bond maturity. (15 points)
  
5. What is the levered beta ( $\beta_L$ ) and the corresponding cost of equity for Tootsie Roll at the following debt to total capital ratios (debt/(debt + equity)): 0%, 10%, 20%, 30%, and 40%? (*Hint: you first need to unlever the beta and then relever it given the various debt to equity ratios*) (25 points)

Debt/(Debt+Equity)	0.00%	10.00%	20.00%	30.00%
Debt/Equity	0.00%	11.11%	25.00%	42.86%
Beta ( $\beta_L$ )				
Cost of Equity				



<sup>1</sup>We are using the 10K instead of the most recent 10Qs to expedite things since this assignment is towards the end of the semester.

**Assignment:** (continued)

6. What is the corresponding after-tax cost of debt for Tootsie Roll at the following debt to total capital ratios (debt/(debt + equity)): 0%, 10%, 20%, and 30%? The likely bond ratings are given below<sup>2</sup>. (Total capital is assumed to remain constant at the current levels (12/99). Only the composition of the total capital varies e.g. the portion that is equity and the portion that is debt changes for various D/(D+E) levels. See example of how to set up the spreadsheet below) (25 points)

D/(D+E)	0.00%	10.00%	20.00%	30.00%
D/E	0.00%	11.11%	25.00%	42.86%
Total Capital				
\$Amount of Debt	0			
EBIT				
Interest	0			
Pre-tax Interest coverage	---			
Likely Rating	AAA	A	B-	CC
Effective Tax Rate	0.36	0.36	0.36	0.36
Current 10 year risk free rate				
Bond spread (10 years)				
Pre-tax cost of debt				
After-tax cost of debt				

7. Calculate the after-tax weighted average cost of capital for Tootsie Roll at the following debt to total capital ratios (debt/(debt + equity)): 0%, 10%, 20%, and 30%. Based on the after-tax WACC, what is Tootsie Roll's optimal capital structure e.g., what is the proportion of debt that should be used? What is the proportion of equity that should be used? Should Tootsie Roll move to its optimal capital structure? Why or why not? (20 points)

D/(D+E)	0.00%	10.00%	20.00%	30.00%
D/E	0.00%	11.11%	25.00%	42.86%
Cost of Equity ( $k_{\text{Equity}}$ )				
After-tax Cost of Debt $((1-\tau)k_{\text{Debt}})$				
After-tax WACC				

<sup>2</sup>I have given you the synthetic bond rating since a circular reference exists. Essentially, the interest rate depends on the rating and the rating depends on the interest coverage ratio, which in turn depends on the interest rate. If time permits, I will show you how to model this using Excel.