

PROCTER AND GAMBLE: COST OF CAPITAL

Since February 19, 1990, three days previously, Mary Shiller had been looking forward to receiving a reaction from her boss regarding her estimate of Procter and Gamble's (P&G) cost of capital. Ms. Shiller reported directly to Ron Emory, the president of CORPSTRAT, a consulting firm located in Washington, D.C. CORPSTRAT had been successful since its founding in 1980 by providing high-quality analysis for a few large corporate clients. Recently one of its largest clients had revealed that it was considering entering the household-products market and competing directly with P&G, the detergent and soap giant. The client's chief financial officer had stated that his company had become "a highly diversified conglomerate with subsidiaries spanning a host of unrelated businesses" and that "our company's overall cost of capital is neither useful as a benchmark for any of the existing subsidiaries, nor as a hurdle rate for entering new markets like consumer products." Although the CFO's staff had computed its own estimate of the household-products industry's cost of capital, the CFO wanted an independent estimate before taking the plan to the board of directors in March. If the estimated cost of capital was "significantly lower than the expected return" of entering the new market, he fully expected the company to introduce its own brand of detergents, soaps, cleansers, and personal-care products by the end of 1990.

CORPSTRAT had never before been asked to compute a client's cost of capital. The company's real expertise was defining and evaluating the strategic goals of a corporation. Therefore, upon receiving the client's request, Ron Emory quickly assigned the task to Ms. Shiller in order to take advantage of her recent exposure to financial theory in her MBA curriculum. Ms. Shiller decided that she would compute P&G's cost of capital, because P&G was the dominant player in the household-products and consumer-goods markets. Since this was her first project after joining CORPSTRAT, she had spent many hours preparing the first draft of her analysis as a memo to Mr. Emory (**Exhibit 1**). Unfortunately, Emory's memo in response to her work (**Exhibit 2**) indicated that much remained to be done.

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Exhibit 1

PROCTER AND GAMBLE

Mary Shiller's Analysis

TO: Ron Emory

DATE: February 19, 1990

SUBJECT: Analysis of Procter and Gamble's Cost of Capital

Assumptions

This analysis is based upon the following set of assumptions:

The cost of capital is a market-value concept. Whenever possible, market values rather than book values are used in the calculations, and only current market rates of return are relevant to the estimation process.

Management makes investment decisions with the goal of increasing the wealth of the company's investors. The objective of computing a cost of capital is to determine the minimum rate of return that adequately compensates the company's investors for the risk of investing in the company. Thus, only those projects that are expected to return profits in excess of the cost of capital are acceptable.

The bond and stock markets are reasonably efficient and, therefore, provide an ideal vehicle for extracting the market's assessment of the company's cost of debt and cost of equity.

P&G's employee stock ownership plan (ESOP) and the capital-structure changes associated with it are not relevant to the calculation of the company's cost of capital. P&G management states in the 1989 Annual Report that ESOP debt should not be considered part of permanent capital because "the Company's total cash outflows related to the employee profit sharing plan, with or without the ESOP, are not materially different." The 1989 balance sheet has been reproduced in Table 1 with the effects of the ESOP removed to make it more easily compared to 1988.

Exhibit 1 (continued)

Procter and Gamble's Business Risk

Procter and Gamble is the leading soap and detergent producer, with annual revenues expected to be approximately \$23.5 billion in 1990. Some of P&G's most recognizable detergent and soap brands are Tide, Cheer, Bold, Ivory, Zest, and Coast. The company also produces well-known toiletries like Head & Shoulders shampoo and Scope mouthwash, paper products, including Bounty paper towels and Luvs disposable diapers, foods such as Crisco shortening, Pringles potato chips, and Folger's coffee, pharmaceuticals, including Dramamine for motion sickness and Vicks cough drops, and a few industrial products such as wood pulp and animal-feed ingredients. For 1989, laundry and cleaning products accounted for 32.5 percent of corporate sales, personal-care products contributed 45.7 percent, food and beverages 13.8 percent, and pulp and chemicals 8.1 percent.

The personal-care and food-and-beverage segments have risks that are similar to those of the laundry-and-cleaning products segment. Like its competitors, P&G distributes all of its consumer products through grocery stores and other retail outlets such as Krogers, K-Mart, and Wal Mart. Soaps, detergents, toothpaste, peanut butter, etc., are small-ticket items on the average homemaker's shopping list and are, therefore, relatively insensitive to swings in the economy. By contrast, pulp and chemicals are either sold directly or through jobbers and have had profit margins about double that of the personal-care and laundry-and-cleaning products groups (the food-and-beverage segment had approximately broken even over the past three years). Thus, the industrial-products segment seems to be the only business segment that is of sufficiently different risk to merit having a different cost of capital. On the other hand, since pulp and chemicals made up only 8.1 percent of 1989 sales, the small influence of the industrial-products segment can safely be ignored in the calculations.

The Cost of Debt

The cost of debt should represent the cost of refunding the debt on the company's books. The relevant debt is all interest-bearing debt on the books as of the end of fiscal 1989, which according to the 1989 balance sheets (Table 1) is \$3,331 million.¹ Most of P&G's debt is privately placed and therefore has no public price information available. The 8 1/4 percent coupon issue, however, is traded on the New York Stock Exchange and has a recent market price of \$92.50 (see Table 2, Panel D). The yield to maturity (YTM) of 9.18 percent is very close to February's average yield for Aaa bonds of 9.22 percent (see Table 3). In addition, the 9.18 percent is very close to the average coupon rate of the dollar denominated debt on P&G's books.

¹Computed by adding the debt due within one year to the long-term debt, i.e., \$633 + \$2,698 = \$3,331 million.

Exhibit 1 (continued)

The Cost of Equity and the Capital Asset Pricing Model (CAPM)

The CAPM assumes that beta is the relevant measure of risk for a company. The most recent beta estimate published by *Value Line Investment Survey* is 0.95. This suggests that P&G stock is slightly less risky than the average stock, which has a beta of 1.0. The CAPM is usually written as

$$K_E = r_f + \beta(r_m - r_f)$$

where K_E is the cost of equity, r_f is the riskfree rate of interest, β is beta, which measures the firm's systematic risk, and $(r_m - r_f)$ is the expected premium of a market portfolio of stocks over the riskfree return. The interpretation of the model is that the cost of equity is composed of the riskfree rate plus a risk premium equal to the company's beta times the market-risk premium.

Most analysts use the prevailing U.S. Treasury rate for r_f and some sort of historic average for the market premium over r_f . However, there is some debate among academicians as to which risk-free rate and risk premium should be used. The debate centers upon whether it makes more sense to use a short-term or long-term Treasury rate for r_f . If you believe that the current 90-day Treasury rate is appropriate, then most would argue that the average annual premium of a market index over T-bills should be used for $(r_m - r_f)$. If you like to use a 10- or 30-year Treasury bond rate, then $(r_m - r_f)$ should be the average of the market over long-term Treasuries. The table below summarizes the historic market premiums realized over the period 1926-1988 as published by Ibbotson Associates:

	<u>Geometric Mean</u>	<u>Arithmetic Mean</u>
<u>Equity Risk Premium</u>		
Common Stocks - Bonds	5.4%	7.6%
Common Stocks - Bills	6.2%	8.4%

The two market premiums most frequently chosen are 8.4 percent, which is an arithmetic or simple average of annual market returns over the Treasury-bill rate, and 5.4 percent, which is a geometric or compound average of the market over Treasury bonds. Since the cost of debt is measured with YTM, which is a long-term, compound rate of return, I have chosen to use the average geometric market premium over long Treasuries to maintain consistency. Using 8.47 percent for r_f (Table 3), the long-term geometric average of 5.4 percent for $(r_m - r_f)$, and

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Exhibit 1 (continued)

p&G's beta of 0.95 (Table 2, Panel C), we get the following estimate of the cost of equity:

$$K_E = .0847 + .95 (.054)$$

$$= 13.6\%$$

The Weighted Average Cost of Capital

The overall cost of capital is the weighted average of the costs of debt and equity, where the weights are the relative proportions each source represents of the firm's total capital. The formula is

$$WACC = \frac{D}{V} K_D (1 - t) + \frac{E}{V} K_E$$

where V is total firm value, equal to the sum of the market value of debt D and equity E , K_D is the cost of debt, K_E is the cost of equity, and t is the corporate tax rate (equal to 34 percent).

Assuming, as stated in P&G's 1989 Annual Report, that the company's target debt-to-total capital ratio (on a book value basis) is 35 percent and substituting this into the weighted average cost of capital formula, we get

$$WACC = .35 (9.2\%) (1 - .34) + .65 (13.6\%)$$

$$= 11.0\%$$

Recommendation

The WACC represents the minimum acceptable rate of return for investing in the consumer-products markets. In a discounted cash flow analysis, the expected after-tax cash flows should be present-valued using 11.0 percent and compared to the initial investment required to enter the market. If the net present value is positive, the company should proceed with the expansion plans.

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Exhibit 1 (continued)

Table 1

Balance Sheets for Years Ended June 30
(millions of dollars except per-share amounts)

Assets	<u>1988</u>	<u>1989¹</u>
Current assets		
Cash and cash equivalent	1,065	1,448
Accounts receivable	1,759	2,090
Inventories	2,292	2,337
Prepaid expenses and other	477	564
Total current assets	5,593	6,439
Property, plant and equipment	6,778	6,793
Goodwill and other intangibles	1,944	2,305
Other assets	<u>505</u>	<u>675</u>
Total assets	14,820	16,212
Liabilities and Shareholders' Equity		
Current liabilities		
Accounts payable, trade	1,494	1,669
Accounts payable, other	341	466
Accrued liabilities	1,116	1,365
Taxes payable	371	523
Debt due within one year	<u>902</u>	<u>633</u>
Total current liabilities	4,224	4,656
Long-term debt ²	2,462	
Other liabilities ⁴	475	
Deferred income taxes	1,322	1,335
Shareholders' Equity		
Common stock par \$1	169	170
Additional paid-in capital	463	595
Currency translation adjustment	17	(63)
Retained earnings	5,688	6,374
Total equity	<u>6,337</u>	<u>7,076</u>
Total liabilities and equity	14,820	16,212

¹The effects of a leveraged employee stock ownership plan established in 1989 have been removed to allow comparison of 1988 and 1989.

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Exhibit 1 (continued)

Table 2

Financial Data

Panel A

Income Statements for Years Ended June 30
(millions of dollars except per-share amounts)

	<u>1987</u>	<u>1988</u>	<u>1989</u>
Income			
Net sales	17,000	19,336	21,398
Interest and other income	<u>163</u>	<u>155</u>	<u>291</u>
Total revenues 17,163	19,491	21,689	
Costs and expenses			
Cost of products sold	10,411	11,880	13,371
Marketing, admin., other expenses	4,977	5,660	5,988
Interest expense	353	321	391
Provision for restructuring	<u>805</u>	<u>0</u>	<u>0</u>
Total costs and expenses	16,546	17,861	19,750
Earnings before income taxes	617	1,630	1,939
Income taxes	<u>290</u>	<u>610</u>	<u>733</u>
Net earnings	327	1,020	1,207
Per common share			
Net earnings	1.87	5.96	7.12
Dividends	2.70	2.75	3.00

Panel B

Historical and Expected Growth Information

	<u>Past</u> <u>10 Yrs.</u>	<u>Past</u> <u>5 Yrs.</u>	<u>Estimated</u> <u>Next</u> <u>5 Yrs.¹</u>
Sales	7.6%	10.2%	8.0%
Earning	5.9	15.5	
Dividends	6.5	4.6	11.0

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Exhibit 1 (continued)

Panel C

Summary Financial Review, 1980-1989
(years ended June 30)

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>
Net sales (\$MM)	10,772	11,416	11,994	12,452	12,946	13,552	15,439	17,000	19,336	21,397
Net earnings (\$MM)	640	668	777	866	890	635	709	327	1,020	1,206
Earnings/Net sales (%)	5.9	5.9	6.5	7.0	6.9	4.7	4.6	1.9	5.3	5.6
Earnings/Common share	3.87	4.04	4.69	5.22	5.35	3.80	4.20	1.87	5.96	7.12
Dividends/Common share	1.70	1.90	2.05	2.25	2.40	2.60	2.63	2.70	2.75	3.00
End-of-year stock price	73.75	75.75	83.00	55.13	52.63	57.13	80.13	98.00	77.50	108.38
Beta ²	0.57	0.63	0.60	0.84	0.88	0.72	1.15	1.23	0.96095	

Panel D

Recent Stock and Bond Price Information³

	<u>Price</u>
8 1/4% bonds due in 2005, rated Aaa by Moody's	92 1/2
P&G common stock	126 1/4

¹Source: *Value Line Investment Survey*, January 26, 1990.²Betas for 1980-88 are case writer's estimates using daily stock returns with an equally weighted market-return index. The 1989 beta is taken from *Value Line Investment Survey*.³Source: *Wall Street Journal*, February 23, 1990.

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Exhibit 1 (continued)

Table 3

Current Market Conditions

Money Market Rates (%)	1989	1990	
	<u>December</u>	<u>January</u>	<u>February</u>
Commercial paper (3 month)	8.32	8.16	8.22
Eurodollar deposits (3 month)	8.39	8.22	8.24
U.S. Treasury bills:			
3 month	7.63	7.64	7.74
1 year	7.21	7.38	7.55
Prime rate charged by banks	10.50	10.11	10.00
<u>Capital Market Rates (%)</u>			
U.S. Treasury bonds:			
5 year	7.75	8.12	8.42
10 year	7.84	8.21	8.47
30 year	7.90	8.26	8.50
Corporate bonds by Moody's ratings:			
Aaa	8.86	8.99	9.22
Aa	9.11	9.27	9.45
A	9.39	9.54	9.75
Baa	9.82	9.94	10.14

Source: *Federal Reserve Bulletin*, May 1990.

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Exhibit 2

PROCTER AND GAMBLE

Ron Emory's Memo

DATE: February 23, 1990

SUBJECT: Cost of Capital Analysis

I'm on my way out to catch a plane to New York, so I'll outline my comments to save time. I'll take a look at the revised analysis when I get back in town on Monday morning.

1. P&G is only one company in the consumer-products business. However, they have such a dominant market share, I question whether their cost of capital is what a new entrant like our client should expect. I think we should compute the cost of capital for many of the relevant competitors, including Clorox, Colgate-Palmolive, and Church & Dwight. I want you to compute Clorox's cost of capital as a comparison for your P&G estimate. Clorox is much smaller than P&G and should more accurately capture the risks of a new entrant. I've asked Larry Atkins to work on Colgate-Palmolive and Church & Dwight. If your Clorox number ends up being much different from the P&G number, Larry's work may help us resolve which is more reasonable.
2. I get a cost of debt that is slightly lower than what you report. Investors look for yield plus appreciation in their investments. For a bond, the yield is the coupon payment and the appreciation is the difference between current price and par value. If the bond is selling at a discount, the appreciation is positive, and if the bond is selling at a premium, the expected price appreciation is negative, i.e., price depreciation. My estimate of the expected return on P&G's 8 1/4s is:

$$\text{Average yield} = \text{Coupon/Average price} = 8.25/\{(92.5 + 100)/2\} = 8.57\%$$

$$\text{Average gain} = (\text{Par Price})/\text{Years to maturity} = (100 - 92.5)/15 = \$0.50$$

$$\text{Average \% gain} = \text{Avg. gain/Avg. price} = \$0.50/\{(92.5 + 100)/2\} = 0.52\%$$

$$\text{Total return} = \text{Yield} + \text{Gain} = 8.57\% + 0.52\% = 9.09\%$$

Why are our numbers different?

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Exhibit 2 (continued)

3. I don't think we can sell the capital asset pricing model to the client. The model's credibility hinges upon the concept that investors value common stocks based upon betas. I'm certain that few, if any, individual investors think in terms of betas. Although stocks are riskier than bonds, investors look for the same two components of return: yield plus capital gains. Leave the CAPM estimates in your report, but add one or two additional estimates for cost of equity that are based on more intuitive techniques like the dividend growth and earnings capitalization models.
4. Your numbers suggest that the cost of a debt-financed expansion is 9.2 percent, whereas if the company has to sell stock to finance the expansion, the cost rises to 13.6 percent. The client's last equity issue was over 30 years ago, and they just recently closed a large private placement of sinking-fund bonds, so we can safely assume that neither stock nor long-term debt will be issued to finance this project. My guess is that they will use retained earnings and short-term bank loans. The bank funds would be borrowed at prime, but I'm not sure how we should estimate the cost of retained earnings. Since retained earnings represent the amount of net income not paid out as a dividend, it would seem logical that the cost would be the capital gains portion of what equity investors demand. Be sure to say how these sources should be factored into the estimation procedure.
5. The CFO has mentioned to me on several occasions that he never uses net-present-value numbers in presentations to the board of directors. The board has some appreciation for a discounted-cash-flow technique, but they prefer to focus on rates of return rather than absolute dollar amounts. Substitute a discussion of internal rate of return for the NPV section in the report.
6. Clorox has a higher proportion of equity than P&G. Given this difference, will the resulting WACCs for the two firms be comparable? I am having the necessary information on Clorox sent to you separately today (see following material on Clorox). Clorox has no publicly traded bonds, but I would think that P&G's cost of debt would serve as a reasonable proxy for Clorox's cost of debt.

Exhibit 2 (continued)

Clorox: Business Risk

Clorox specializes in detergents and cleansers such as Clorox bleach, Liquid-Plumer, Soft Scrub, and Formula 409. Like P&G, Clorox produces other product lines to take advantage of the distribution channels used for its main products. Examples include Kingsford and Match Light charcoal, Hidden Valley Ranch salad dressings, and Fresh Step cat litter. A small percentage of Clorox's sales come from Olympic and Lucite paint brands. Since Clorox's markets are mature, most of the growth has been through acquisitions. For example, since 1986, Clorox has been entering the bottled-water market by acquiring companies such as Aspen Water, Deep Rock Water, and Aqua Pure Water.

Exhibit 2 (continued)

Table 1

Clorox: Balance Sheets
 Years Ended June 30
 (000 except per-share items)

Assets	1988	1989
Current assets		
Cash & short-term investments	\$ 259,278	\$ 23,334
Accounts receivable, less allowances	114,697	143,354
Inventories	85,458	110,633
Prepaid expenses	6,353	10,816
Net assets held for sale	<u>0</u>	<u>116,704</u>
Total current assets	465,786	614,841
Net property, plant, & equip.	357,683	410,921
Brands, trademarks, patents, and other intangibles	92,003	99,654
Other assets including investments in affiliates	76,182	87,673
Net assets of discontinued operations	<u>147,665</u>	<u>0</u>
Total assets	\$1,139,319	\$1,213,089
Liabilities and Stockholders' Equity		
Current liabilities		
Accounts payable	\$ 86,133	\$ 85,798
Accrued liabilities	118,218	142,429
Income taxes payable	12,776	8,303
Commercial paper	78,811	79,580
Current maturities of long-term debt	<u>1,838</u>	<u>14,658</u>
Total current liabilities	297,776	330,768
Long-term debt & other obligations	29,190	7,051
Deferred income taxes	99,499	89,094
Stockholders' Equity		
Common stock: authorized, 17,000,000 shares, \$1 par	54,044	55,398
Additional paid-in capital	93,240	103,879
Retained earnings	570,163	634,275
Cumulative translation adjustments	(4,593)	(7,376)
Total stockholders' equity	<u>712,854</u>	<u>786,176</u>
Total liabilities and equity	\$1,139,319	\$1,213,089

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Exhibit 2 (continued)

Table 2

Clorox: Income Statements
 Years Ended June 30
 (000 except per-share items)

	<u>1987</u>	<u>1988</u>	<u>1989</u>
Net sales	\$1,022,339	\$1,153,103	\$1,356,294
Costs & Expenses			
Costs of products sold	479,214	524,572	642,141
Selling, delivery, and admin.	204,453	235,629	269,586
Advertising	139,041	161,722	200,696
Research and development	31,049	30,735	37,1610
Interest expense	5,377	4,085	7,187
Other (income)	<u>(22,176)</u>	<u>(12,450)</u>	<u>(30,158)</u>
Total costs and expenses	836,958	944,293	1,126,608
Earnings from continuing operations before taxes	185,381	208,810	229,686
Provision for income taxes	80,599	77,884	84,126
Earnings from continuing operations	104,782	130,926	145,560
Earnings (loss) from discontinued operations	<u>117</u>	<u>1,644</u>	<u>(21,416)</u>
Net earnings	\$104,899	\$132,570	\$124,144
Earnings per common share			
Continuing operations	\$1.92	\$2.37	\$2.63
Discontinued operations	<u>0.00</u>	<u>0.03</u>	<u>(0.39)</u>
Total	\$1.92	\$2.40	\$2.24
Weighted-average shares outstanding	54,652	55,127	55,333

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Exhibit 2 (continued)

Table 3

Clorox: Financial Summary Data

Panel A

Summary Financial Review for Years Ended June 30, 1980-1989

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>
Net sales (\$MM)	637	714	804	825	848	932	972	1,022	1,153	1,356
Net earnings (\$MM)	33	38	45	66	80	86	96	105	133	124
Earnings/Net sales (%)	5.2	5.3	5.6	7.9	9.4	9.2	9.8	10.3	11.5	9.2
Earnings/Common share	0.72	0.83	0.94	1.34	1.52	1.61	1.77	1.93	2.42	2.24
Dividends/Common share	0.39	0.41	0.43	0.48	0.54	0.62	0.70	0.79	0.92	1.09
End-of-year stock price	10.13	11.63	13.50	33.25	27.25	38.38	55.88	32.88	28.88	40.00
Beta ¹	0.78	0.94	0.96	1.32	1.30	1.36	1.23	1.14	0.91	0.90

Panel B

Recent Stock-Price Information²

Clorox common stock

Price

38 1/4

¹Betas for 1980-1988 are case writer's estimates using daily stock returns with an equally weighted market-return index. The 1989 beta is taken from *Value Line Investment Survey*.

²Source: *Wall Street Journal*, February 23, 1990.

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Exhibit 2 (continued)

Table 4

Clorox: Historical and Expected Growth Information

	Past <u>10 Yrs.</u>	Past <u>5 Yrs.</u>	Estimated Next <u>5 Yrs.</u> ¹
Sales	6.6%	8.6%	13.5%
Earnings	13.4	8.1	15.5
Dividends	12.1	15.1	13.5

¹Source: *Value Line Investment Survey*, January 26, 1990.