Procter and Gamble Analysis

Stockton Erickson

Firm Information

Procter and Gamble (P&G) was founded in 1837 by William Procter and James Gamble. The company has grown considerably since then and now manufactures major household products. Amongst these include Crest, Charmin, Tide, and Bounty. The company dropped about 100 brands in 2014 to focus on its top profit products. The company is headquartered in Cincinnati, Ohio. The current CEO of the company is Joe Moeller.

The firm first offered an IPO on January 13, 1978. It was then priced at $100 per share. P&G is currently part of the S&P 500 with a ranking of #47. Today one share of P&G sells for approximately $150 and has a market cap of $362 billion.

Industry and Macroeconomic Overview

Procter and Gamble generally falls in the consumer goods industry. In 2019 this was the largest industry in the world and was valued at roughly $635 billion. However, P&G also falls within other industries, such as household products, personal care, and pharmaceuticals. Major competitors of P&G include Colgate-Palmolive, Church and Dwight, Johnson and Johnson, and Unilever. Procter and Gamble currently faces the same issues as many other companies throughout the United States. There are significant manufacturing issues, transportation difficulties, and a lack of employees available. Overall, however, the broad market of consumer goods is growing at a constant rate.

Investment Summary

After a thorough investment analysis of Procter and Gamble, it is an excellent buy-and-hold option. The company has proven capable of continuous growth, and despite current economic difficulties, it is expected to continue growing. Consumer goods is a constantly growing market, and following the COVID pandemic, the American people are more concerned for their health and well-being. Due to this, P&G should expect an increase in stock price, making it an excellent long-term option.

Valuation

We performed an equity valuation for Procter and Gamble using annual data from 2013-2022. We pulled the data from income statements, cash flow statements, and other financial statements from the Wharton Research Database Services. The valuation prediction was made using P/E valuation, residual income valuation, dividend discounted cash flow valuation, and free cash flow valuation.

The first calculation was the return on equity (ROE). This is an important measurement because it demonstrates how well management can manage capital and equity. ROE shows explicitly how well the company can generate capital using investments. ROE is also important because it takes the company's debts into account. In 2022 Procter and Gamble reported a high ROE of 31.46%, which is higher than their 10-year ROE average of 20.64%. Since 2019, P&G has seen continuous growth and is utilizing its equity better than ever. (Figure 1)

Following the ROE, the next calculation was the sustainable growth rate. This was calculated using the averages of geometric sales per share, earnings per share, book value per share, and dividends per share. The final sustainable growth rate is equal to 6.87%. (Figure 2)

Following the sustainable growth rate, We calculated a price-to-earnings valuation for 2022. The forward earnings per share were calculated using the earnings per share in 2022 of

$5.81 and multiplied by the non-constant growth rate (sustainable growth rate). The forward earnings per share are equal to $6.20. The current industry P/E was taken from NYU Stern Table and is equal to 25. The final P/E valuation for P&G is equal to the forward earnings per share multiplied by the industry P/E and is equal to $155.12. This is valued at $5.35 more than the current stock price of $149.77. This tells us that the current stock price is undervalued based on the price-to-earnings valuation. (Figure 3)

The next valuation method is the price-to-book ratio (P/B). For the year 2022, the BVPS was $18.45; utilizing the sustainable growth rate, we estimate that the forward BVPS is equal to $19.72. Multiplying this value and the industry P/B value of 8 gives us a final P/B valuation of $157.76. Once again, this is higher than the current stock price, meaning that based on this valuation, the stock is currently undervalued. (Figure 4)

The third valuation method is the dividend discount model (DDM). The CAPM for this stock is equal to 4.76%, and the constant growth rate is equal to 2%. In 2022 the dividends per share were equal to $3.45; utilizing the constant growth rate, the forward DPS would be equivalent to $3.52. This value, divided by the difference in CAPM and the growth rate, gives us a final DDM valuation of $127.52. This value is significantly lower than our current stock price and based on this valuation, the stock is overpriced. (Figure 5)

Our fourth valuation method is the residual income model (RIM). This is calculated utilizing the CAPM, equity of charge, constant growth rate, forward net income, and residual income. The final RI valuation is $201. This is much higher than the current stock price and reflects a possible low valuation. The RI model is essential because it reflects the firm's profitability from an economic standpoint and not just an accounting standpoint. (Figure 6)

The final valuation method is the free cash flow model. This value is calculated by discounting all future free cash flows to the present. The final value for the FCFM is $240.85, which is substantially higher than the current price meaning that the current price is highly undervalued. (Figure 7)

To determine the final weighted valuation, we assigned a weight of 30% to the P/E valuation and P/B valuation, a weight of 15% to DDM and RIM, and a weight of 10% to the FCFM. This gives us a final valuation of $167.23. This has a 10.44% upside to the current stock price, meaning that the stock for Procter and Gamble is undervalued. (Figure 8)

Risk and Return Analysis

We ran the risk and return analyses based on five years of monthly data to evaluate our stock's overall performance. We ran the same analyses on top competitors Colgate-Palmolive (CL), Church and Dwight (CHD), and Unilever (UL); an ETF tracking the S&P 500 (SPY); and an ETF that tracks the treasury bill rate (BIL). The data is from November 2017 to October 2022.

P&G had an annual arithmetic average of 11.14%; CL had an average of 2.83%; CHD returned 13.07%; UL returned -0.54%; SPY returned 10%; BIL returned 0.97%. P&G outperformed the general market by 1.14% but fell short of CHD. Since stocks are volatile, these measurements may produce less accurate results. Instead, We also calculated the geometric annual average. P&G returned 9.45%, CL returned 1.3%, CHD returned 10.27%, UL returned -1.89%, SPY returned 8.02%, and BIL returned 0.95%. Once again, P&G outperformed the market but fell short of top competitor Church & Dwight. (Figure 9)

However, these measurements only report the average return for each stock. Another critical part of investing is the risk associated with each stock. This is typically measured using standard deviation. The annual standard deviation for P&G was 16.89%, CL was 17.32%, CHD was 22.36%, UL was 16.85%, SPY was 18.54%, and BIL was 0.38%. CHD may have had a higher average return; however, P&G would be considered a less risky investment. (Figure 9)

A powerful way to evaluate a stock's return versus its risk is using Sharpe ratios. This is calculated by taking the average annual return, subtracting the risk-free rate, and dividing by the stock's standard deviation. This number ultimately tells us how much return we get for every unit of risk. Since we want to maximize our returns versus our risk, a higher Sharpe ratio signifies a better stock. The annual Sharpe ratio for P&G was 0.603, CL was 0.107, CHD was 0.541, UL was -0.90, and SPY was 0.487. P&G has the highest Sharpe ratio, which signifies that it has the best return versus its risk. (Figure 9)

Finally, we evaluated how much each stock would return if $1,000 had been invested at the beginning of the five years and sold at the end. By the end, Procter and Gamble would have returned $570.66, Colgate – Palmolive would have returned $66.64, Church & Dwight would have returned $630.09, Unilever would have returned -$91.19, SPY would have returned $470.59, and BIL would have returned $48.47. (Figure 9)

Portfolio Analysis

Investing in the stock market is not simply buying a single stock and hoping it results in a high return. This approach would be way too risky. Instead, one should create what is called an investment portfolio. This combination of several different stocks and assets results in a much less risky strategy. For example, investing in companies A, B, and C increases their portfolio diversity. If company A sees negative returns, but companies B and C see positive returns, someone is not simply out of the money they invested. However, if someone were only invested in company A, they would only see the negative return and wouldn't have the positive returns to offset it.

Because of this strategy, we ran our analyses on multiple different stocks. Our main goal of the portfolio is to maximize the Sharpe ratio by allocating different amounts of money to other stocks. After strategic analysis, the maximum Sharpe ratio we can achieve for our portfolio is 0.431. This is achieved by allocating 35% of our money to Procter and Gamble, 7% to Colgate – Palmolive, 34% to Unilever, and 24% to Spy. (Figure 10)

Another critical part of a portfolio is evaluating how correlated each asset is within the portfolio. If stocks A, B, and C are all perfectly correlated, then it serves no purpose to invest in each one. When stock A goes up, then so will stocks B and C. When Stock A goes down, then so will stocks B and C. This eliminates all diversification and makes our portfolio worthless. To evaluate the correlation between each stock, we created a correlation matrix. A value of 1 means the stocks are perfectly correlated, and there is no diversification. A score of 0 means that the stocks are more diverse. When looking at Procter and Gamble, it has the highest correlation score of 0.695 with Church & Dwight. This signifies a high correlation and that it would prove unwise to invest in both. P&G has the lowest correlation score of 0.402 with SPY. This indicates that there is some correlation but that it would prove beneficial to invest in both. (Figure 10)

Debt Analysis

Contrary to popular belief, debt is a good thing. As long as a company can utilize debt for intelligent purposes, such as various investment strategies, it is essential. Procter and Gamble has proven sensible with its debt. Their total current liabilities remain consistent across their financial reports. For the year 2022, their total liabilities equaled about $70 billion. This number may seem alarming, but it is important to remember that the company has stock shares worth about $358 billion. This firm has been around for a long time, and its debt management should be of little concern to investors.

ESG

Procter and Gamble is dedicated to providing benefits to the environment. The company aims to produce zero greenhouse gas by the year 2040. Additionally, all products are expected to be recyclable or reusable by 2030. Several other small goals are being put into action by P&G every year. If ESG is an important aspect to an investor, then P & G is an active part.

Behavioral Finance

When investing in different assets, many different biases play a big part. This is also true for all analyses run on specific assets. It is important to note that future forecasting analyses are imperfect and will likely not yield the expected results. There is a chance that they will yield higher returns but also a chance that they will yield lower returns. The stock market is highly volatile and unpredictable. No matter how many analyses are run, it will be impossible to predict perfectly what will happen to the economy. It is critical to note that just because a certain result is predicted, it is not guaranteed.

Investment Analysis

The final analysis evaluates what someone can expect if they buy and hold stock in P&G for a long time. We will run three different investment options, which include a Roth IRA, a Traditional IRA, and a taxable account. The Roth IRA is the best option because it includes after-tax dollars and can be pulled out tax-free as long as the holder is at least 59 ½ years old. The assumptions for each analysis include 40 years to retirement, investing $6000 each year, a current tax rate of 25%, and a retirement tax rate of 35%. The Roth IRA is expected to be worth $2.7 million; the Traditional IRA is expected to be worth $2.4 million; the taxable account is expected to be worth $1.3 million. It is clear that a Roth IRA is the best option and will be worth a significant amount of money in 40 years.

Conclusion

Procter and Gamble is a great stock to buy if the holder is willing to hold it for a long time. It yields consistent returns and is considered to be less risky. The consumer goods market is expected to grow as the United States economy grows. This is a positive sign for P&G that they will continue to produce high results. In conclusion, Procter and Gamble is an excellent firm and would be considered a wise investment.

Figure 1

	A	B	C	D	E	F	G	H	I	J	K
1	*General Assumptions*										
2	**Current Stock Price**	**$149.77**									
3	Current Stock Beta	0.42									
4	Rm	10.00%									
5	Rf	0.97%									
6	Current Fully Diluted SHROUT	2539.10									
7											
8											
9	*Select Ratios*										
10		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
11	SPS	$28.72	$28.60	$26.45	$22.96	$23.74	$25.16	$26.65	$27.02	$29.26	$31.58
12	EPS	$3.86	$4.01	$2.44	$3.69	$5.59	$3.67	$1.53	$4.96	$5.50	$5.81
13	BVPS	$23.45	$24.09	$21.87	$20.38	$20.35	$19.91	$18.74	$17.85	$17.94	$18.45
14	DPS	$2.22	$2.38	$2.53	$2.61	$2.64	$2.75	$2.95	$2.97	$3.18	$3.45
15	Dividend POR	57.63%	59.36%	103.57%	70.77%	47.21%	74.97%	192.40%	59.79%	57.76%	59.49%
16	ROE	16.46%	16.64%	11.16%	18.12%	27.48%	18.44%	8.19%	27.79%	30.66%	31.46%
17											

Figure 2

19			2014	2015	2016	2017	2018	2019	2020	2021	2022	Average	
20	g SPS		-0.43%	-7.49%	-13.21%	3.41%	5.96%	5.95%	1.38%	8.31%	7.91%	1.31%	
21	g EPS		3.84%	-39.13%	51.40%	51.39%	-34.38%	-58.19%	223.30%	10.87%	5.56%	23.85%	
22	g BVPS		2.75%	-9.24%	-6.77%	-0.15%	-2.20%	-5.88%	-4.71%	0.47%	2.88%	-2.54%	
23	g DPS		6.96%	6.21%	3.45%	1.00%	4.21%	7.31%	0.47%	7.10%	8.72%	5.05%	
24	Sustainable Growth Rate (SGR)		6.76%	-0.40%	5.30%	14.50%	4.61%	-7.57%	11.17%	12.95%	12.75%	6.68%	
25												**6.87%**	non-
26													
27													

Figure 3

27						
28	*P/E Relative Valuation*					
29	non-constant g	6.87%			Forward P/E	24.14
30	Industry P/E	25.00	NYU Stern Table		PEG (5-yr expected)	3.51
31	Current EPS	5.81				
32	Forward EPS	6.20				
33	P/E Valuation	**$155.12**		$5.35		
34						

Figure 4

35	*P/B Relative Valuation*		
36	non-constant g	6.87%	
37	Industry P/B	8.00	NYU Stern Table
38	Current BVPS	18.45	
39	Forward BVPS	19.72	
40	P/B Valuation	**$157.76**	
41			

Figure 5

41		
42	*Dividend Discount Model (DDM)*	
43	k (CAPM)	4.76%
44	constant g	2.00%
45	Current DPS	$3.45
46	Forward DPS	$3.52
47	DDM Valuation	**$127.52**
48		

Figure 6

48		
49	*Residual Income Model (RIM)*	
50	k (CAPM)	4.76%
51	Book Value of Equity	$46,854.00
52	Equity Charge	$2,231.53
53	constant g	2.00%
54	Forward NI	$15,036.84
55	Residual Income	$12,805.31
56	RI Valuation	**$201.00**
57		

Figure 7

58	*Free Cash Flow Model (FCFM)*	
59	MVE (E)	$380,281.01
60	MVD (D)	$31,304.00
61	We	92.39%
62	W_D	7.61%
63	Re	4.76%
64	Rd	1.40%
65	Tax Rate	17.79%
66	WACC	4.49%
67		
68	EBIT	$17,813.00
69	Tax Rate	17.79%
70	Dep. & Amort.	$2,807.00
71	CAPEX	$3,156.00
72	ΔNWC	-$1,387.00
73	FCFF	$15,681.38
74		
75	constant g	2.00%
76	FCFM Equity Valuation	$611,538.24
77	FCFM Valuation	**$240.85**
78		

Figure 8

80	*Weighted Valuation*		
81	Model	Weighting	Valuation
82	P/E	30.00%	$155.12
83	P/B	30.00%	$157.76
84	DDM	15.00%	$127.52
85	RIM	15.00%	$201.00
86	FCFM	10.00%	$240.85
87		100.00%	
88		Weighted Valuation	**$167.23**
89		Current Price	$149.77
90		Upside/Downside	**10.44%**
91			

Figure 9

1							
2		Proctor & Gamble	Colgate - Palmolive	Church & Dwight	Unilever	SPY	BIL
3	Ra	0.88%	0.23%	1.03%	-0.05%	0.80%	0.08%
4	Rg	0.76%	0.11%	0.82%	-0.16%	0.64%	0.08%
5	Ra EAR	11.14%	2.83%	13.07%	-0.54%	10.00%	0.97%
6	Rg EAR	9.45%	1.30%	10.27%	-1.89%	8.02%	0.95%
7	Total Cum. $R	$ 570.66	$ 66.64	$ 630.09	$ (91.19)	$ 470.59	$ 48.47
8	S.D.	4.875%	4.999%	6.456%	4.865%	5.351%	0.111%
9	S.D. annual	16.89%	17.32%	22.36%	16.85%	18.54%	0.38%
10							
11	Annual Sharpe Ratio	0.603	0.107	0.541	-0.090	0.487	0.000
12							

Figure 10

	Proctor & Ga	Colgate - Pal	Church & Dw	Unilever	SPY	BIL	Porfolio
Ra	0.88%	0.23%	1.03%	-0.05%	0.80%	0.08%	0.58%
Rg	0.76%	0.11%	0.82%	-0.16%	0.64%	0.08%	0.43%
Ra EAR	11.14%	2.83%	13.07%	-0.54%	10.00%	0.97%	7.18%
Rg EAR	9.45%	1.30%	10.27%	-1.89%	8.02%	0.95%	5.32%
Total Cum. $	$ 570.66	$ 66.64	$ 630.09	$ (91.19)	$ 470.59	$ 48.47	
S.D.	4.875%	4.999%	6.456%	4.865%	5.351%	0.111%	4.16%
S.D. annual	16.89%	17.32%	22.36%	16.85%	18.54%	0.38%	14.39%
Annual Shar	0.603	0.107	0.541	-0.090	0.487	0.000	0.431

Investment:	$ 1,000.00
Risk Free Ra	0.97%

	Proctor & Gamble	Colgate - Palmolive	Church & Dwight	Unilever	SPY
Proctor & Gamble	1				
Colgate - Palmolive	0.635458136	1			
Church & Dwight	0.695018959	0.613073255	1		
Unilever	0.431453028	0.586539208	0.494431368	1	
SPY	0.401932635	0.516618556	0.340918597	0.431148445	1

Optimal Weights	35%	7%	0%	34%	24%	100%
Optimal SR	0.458					
Weights	20%	20%	20%	20%	20%	100%

Figure 11

	A	B
1	Years to Retirement	40
2	Annual Pre-tax investment	$ 6,000.00
3	Current Tax Rate	25%
4	Retirement Tax Rate	35%
5		
6		P&G
7	Roth IRA	$2,724,560.03
8	Traditional IRA	$2,361,285.36
9	Taxable Account	$1,281,527.45