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ECON157: Corporate Finance
2 December 2020

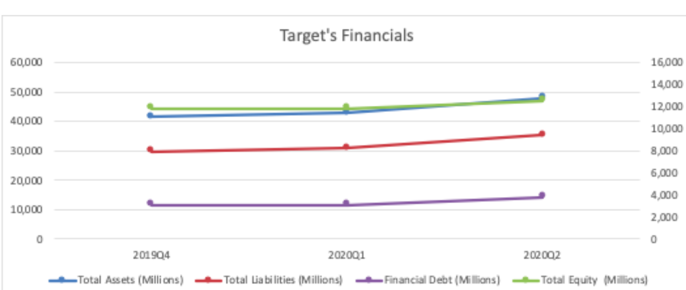
Financial Analysis of the Retail Industry

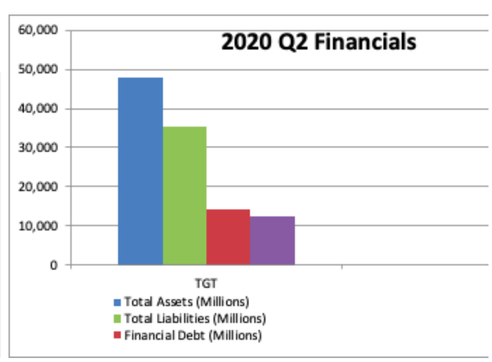
Introduction

The retail industry, which sells goods and services to consumers for private consumption, has evolved rapidly within the past decade and even more so in 2020 due to COVID-19. In this paper, we will focus on traditional brick-and-mortar retail stores, although we categorize both brick-and-mortar sales and online sales as retail sales if the majority of sales revenue comes from brick-and-mortar stores. We will analyze four large companies in the retail industry: Best Buy (BBY), Target (TGT), Walmart (WMT), and Costco (COST). Best Buy, founded in 1966 in Minnesota, specializes in electronic goods. Target was founded in Minnesota in 1902 and employs a product differentiation strategy to appeal to a wealthier customer base than Walmart. Founded in 1962 in Arkansas, Walmart competes with other retailers through a cost differentiation strategy that appeals to a lower income group of consumers than Target. Costco, which was founded in Seattle, Washington in 1983, employs cost and product differentiation through high-quality products sold in bulk for marginally lower per-item prices. To compete in cost differentiation, Costco bargains with suppliers to maintain competitive prices. In the analysis of the four retail companies, this paper will apply concepts from corporate finance to assess the financial performance of the firms over time. In addition, we will discuss firms' structural responses and financial performance regarding the COVID-19 pandemic, which impacted the United States' economy significantly beginning in March of 2020.

Financials

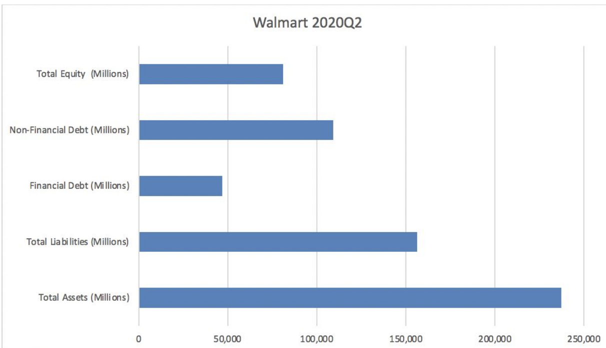
Target

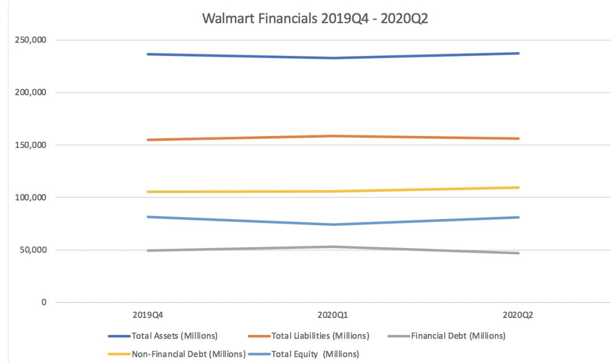




As of 9/8/2020, Target had a total market capitalization of $73.9 billion, with 501 million shares outstanding and a PPS of $144.55.

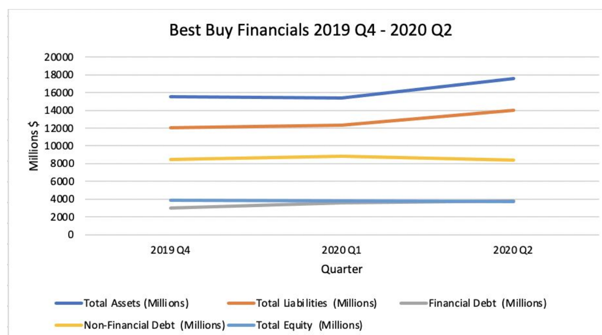
Walmart





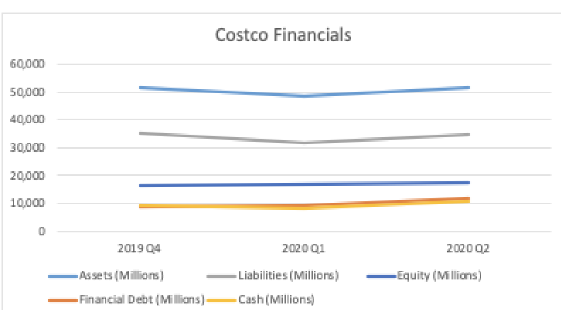
As of 9/8/2020, Walmart had a total market capitalization of $368.53 billion, with 2.85 billion shares outstanding and a PPS of $129.40.

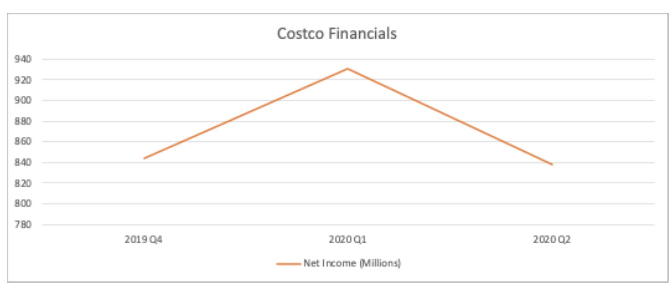
Best Buy



As of 9/8/2020, Best Buy had a total market capitalization of $27.245 billion with 260.17 million shares outstanding and a PPS of $104.72.

Costco





As of 9/8/2020, Costco had a market capitalization of $152.96 billion, with 452.26 million shares outstanding, and a PPS of $338.21.

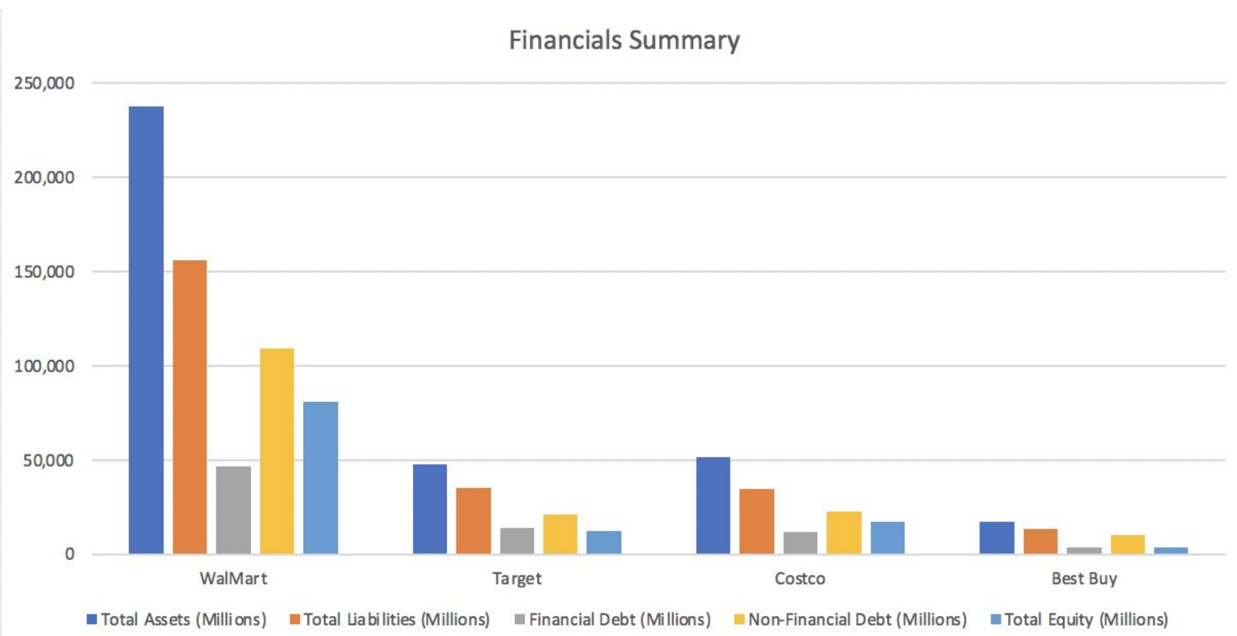
Table 1: Select Statistics for Retail Industry Firms

	Walmart	Target	Best Buy	Costco	Industry Average
IPO Year	1970	1967	1985	1985	N/A
# of Employees	2,200,000	360,000	125,000	214,000	724,750
Market Cap (Billions)	368.53	73.92	27.25	152.96	155.665
MV/BV	4.539	5.88	7.21	9.815	6.861

Table 1 compares the firms in the retail industry with four select metrics as of 9/08/2020. Considering IPO year, Target was the earliest to go public in 1967, followed by Walmart in 1970, and Best Buy and Costco both in 1985. In terms of employees, Walmart has the most, then Target, Costco, and Best Buy.

The large differences in market capitalization between the firms show how much they vary in size. Walmart is the largest with a market capitalization of $368.53B, followed by Costco at less than half that amount with $152.96B and then Target and Best Buy at the lower ends with $73.92B and $27.25B respectively. The average market capitalization for our retail industries was $155.665 billion, but the average market capitalization of the general retail industry is $39.02 billion[1]. Thus, our companies have a much higher market capitalization than the market average, indicating that investors are more optimistic about the value of our companies than the average retail firm. In addition, this demonstrates that our firms are generally larger than the average retail firm in the US. Regarding market to book value of equity, Costco has the highest with 9.815, followed by Best Buy at 7.21, and Target and Walmart with 5.88 and 4.539 respectively.

Chart 1: Balance Sheet Metrics in the Retail Industry



[1] http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/pedata.html

Chart 1 above shows the balance sheet metrics for the four retail industry firms as of 2020 Q2. Looking at total assets, Walmart has the highest, followed by Costco, then Target and finally Best Buy. For the rest of the metrics, Walmart is always highest and Best Buy is the lowest. Target has greater liabilities and financial debt while Costco has greater non-financial debt and equity. Considering the debt to equity ratios, Best Buy is the most levered with a ratio of 3.61, followed by Target with 2.82, then Costco with 2.01, and finally Walmart with 1.92. The average of the D/E ratios for the retail industry is 2.59. This average D/E ratio is fairly high but it is consistent with the characteristics of the retail industry, which requires high levels of capital for operation and scaling. The high costs to consider in this industry include inventory, land and construction costs, as well as employee wages for the thousands of stores across the globe.

Daily/Monthly Returns vs S&P 500

Table 2: Average Returns in the Retail Industry

	Average Returns				
	Number of Years in Sample	Firm Average Monthly Return	S&P Average Monthly Return	Firm Equivalent Annual Return	S&P Equivalent Annual Return
Target	20	0.95%	0.45%	12.06%	5.50%
	10	1.14%	0.97%	14.51%	12.31%
	2	3.06%	0.75%	43.55%	9.36%
Walmart	20	0.73%	0.45%	9.12%	5.50%
	10	1.16%	0.97%	14.88%	12.31%
	2	1.70%	0.75%	22.40%	9.36%
Costco	20	1.36%	0.45%	17.60%	5.50%
	10	1.61%	0.97%	21.13%	12.31%
	2	1.70%	0.75%	22.42%	9.36%
Best Buy	20	1.57%	0.45%	20.59%	5.50%
	10	1.46%	0.97%	19.00%	12.31%
	2	2.19%	0.75%	29.73%	9.36%
Industry Average	20	1.15%	0.45%	14.84%	5.50%
	10	1.34%	0.97%	17.38%	12.31%
	2	2.16%	0.75%	29.53%	9.36%

In Table 2, the average monthly returns and equivalent annual returns for the four firms and the S&P 500 are presented over the most recent 20 year, 10 year, and 2 year periods (up to September 2020). During the 20 year period, Best Buy had the greatest average monthly and equivalent annual returns at 1.57% and 20.59% respectively, followed by Costco, then Target, and finally Walmart. Over the 10 year period, Costco had the greatest average monthly and equivalent annual returns at 1.61% and 21.13% respectively, followed by Best Buy, Walmart, and Target. Over the last 2 years, Target had the greatest average monthly and equivalent annual returns at 3.06% and 43.55% respectively, followed by Best Buy, Costco, and Walmart. This implies that Best Buy stock has seen the greatest growth over the long-term while Target has seen the greatest growth most recently out of the four firms. Meanwhile, Costco has seen the most consistent average monthly returns over the three different time periods, increasing less dramatically between periods. Walmart's monthly and annual returns have been the lowest in all periods with the exception of the 10 year period. Compared to the S&P 500, all four firms in the retail industry beat the monthly and equivalent annual returns of the market in every time period.

Costco's consistent and high returns over the past ten years could be attributed to their dominant position in the wholesale niche of the retail industry. Compared to its competitors, Sam's Club and BJ Wholesale, Costco has more than double their revenue[2]. Additionally, with a significantly lower gross margin compared to that of traditional retailers as well as high customer satisfaction rates, Costco's growth is steady and reliable.

Best Buy's high level of average monthly return within the past two years could be attributed to the expansion and success of its curbside pickup system and online sales growth[3]. Best Buy also began price-matching with Amazon and other online resellers, which encourages customers to try out and purchase products in-store[4].

Target has been seeing the greatest growth recently due to technological advancements and the digitization of processes such as checking out, returns, and inventory implemented in the past three years. These changes have made Target's operations more efficient and perhaps indicates why its growth has been increasing in recent years.

Walmart has been seeing relatively less return on its stock compared to the other firms. This may be because Walmart is a very mature company that has stuck to its core business model for the past few years and hasn't innovated to the extent Target and Best Buy have.

[2] https://www.fool.com/investing/2020/09/12/could-costco-be-a-millionaire-maker-stock/

[3] https://www.forbes.com/sites/joanverdon/2019/09/26/a-better-best-buy-six-reasons-to-bet-on-it/?sh=32ac458972ea

[4] https://www.bestbuy.com/site/customer-service/price-match-guarantee/pcmcat290300050002.c?id=pcmcat290300050002

Valuing Equity

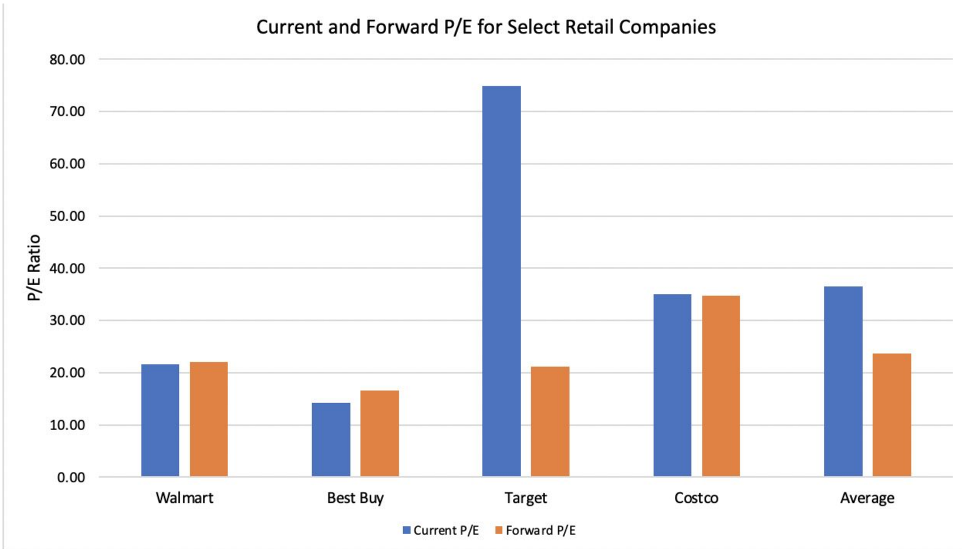
Table 3: Valuing Equity in the Retail Industry

	Walmart	Best Buy	Target	Costco	Average
Plowback Ratio	60.21%	65.80%	99.81%	70.68%	74.13%
Current Dividend Yield	1.8%	2.41%	0.0025%	0.84%	1.3%
Current P/E	21.60	14.22	74.91	35.04	36.44
Forward P/E	22.03	16.57	21.19	34.72	23.63
Current M/B Ratio	4.03	6.30	4.63	8.23	5.80
Current ROE	18.64%	44.29%	6.18%	23.48%	23.15%
Implied g	11.22%	29.26%	6.17%	16.60%	15.81%
Expected Dividend	6048	681.19	1.42	1249	1994.9
Price per Share	114.49	85.26	105.49	291.64	149.22
Implied r	13.07%	3.11%	N/A	17.43%	11.20%
Observed r	12.12%	2.90%	43.55%	2.60%	15.29%
EPS/r	43.73	206.76	3.23	320.16	143.47
PVGO	70.76	-121.50	102.26	-28.52	5.75
PVGO/P	0.62	-1.425	0.97	-0.10	0.02
Analyst g:					
Short Term	3.20%	1.60%	7.07%	10.10%	5.49%
Long Term	6.81%	7.40%	10.89%	7.32%	8.11%

In Table 3, the plowback ratio in fiscal 2019 was the highest for Target, followed by Costco, Best Buy, and Walmart. Target retained 99.81% of earnings after paying dividends, suggesting that the firm invested almost all excess cash into growth opportunities. Conversely, Walmart retained only 60.21% of earnings after paying dividends, which conveys that Walmart may not have as many opportunities for growth or seeks to attract older demographics of shareholders who prefer dividends. Likewise, Target's dividend yield was .0025%, reaffirming its status as a growth stock in comparison to Walmart and Best Buy specifically, which had yields of 1.8% and 2.41% respectively. Thus, Walmart and Best Buy had much higher dividends per share relative to their share prices than Target. The average for these firms was 1.3%, lower than the average for the consumer goods sector of 1.59%[5]. Perhaps our firms have better corporate governance than the general market, and adept management makes decisions such that a dollar inside the firm generates much more than paid out of the firm as a dividend. In addition, our firms may have greater opportunities for internal growth than the general market.

[5] http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/divfund.html

Figure 2: Current and Forward P/E for Select Retail Companies



Target's current P/E ratio was 74.91, the highest of the retail companies. Target's share price was therefore 74.91 times higher than its earnings per share. Costco's P/E ratio was the second highest, followed by Walmart and Best Buy. This analysis indicates that investors are more optimistic about Target's potential for growth than they are for Walmart, Best Buy, and Costco. Investors are more optimistic about future cash flows for Costco than Walmart, and they're least optimistic about Best Buy. From another lens, judging only from the current P/E ratio of the select retail companies, some investors may conclude that Target's shares are relatively overvalued while Best Buy's are relatively undervalued. The average current P/E for our firms was 36.44, higher than the industry average of 21.89[6], indicating that investors are more optimistic about our firms' future growth than the general market's.

The forward P/E ratio for the next 12 months follows the same trend as the current P/E ratio. Best Buy's forward P/E ratio was 2 points higher than its current P/E, exemplifying investor optimism in Best Buy's digital sales[7]. Costco's forward P/E ratio was lower than its current P/E, indicating that investors are less optimistic about Costco's growth in the future beating that of the present, while Walmart's forward P/E ratio increased compared to its current P/E, demonstrating that investors are optimistic that Walmart's share price will grow more quickly in the next 12 months relative to earnings. Target's forward P/E ratio was considerably less than its current P/E, indicating that investors doubt that Target's share price will continue to outpace its earnings at the current rate. The average forward P/E ratio was 23.63, which is higher than the industry average of 18.58[8], suggesting that investors are more optimistic about the future risky cash flows of our firms than the general market's.

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[6] http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/pedata.html

[7] https://www.forbes.com/sites/greatspeculations/2020/11/23/best-buys-stock-to-likely-trade-higher-post-fiscal-q3-earnings/?sh=6567fb05db7b

[8] http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/pedata.html

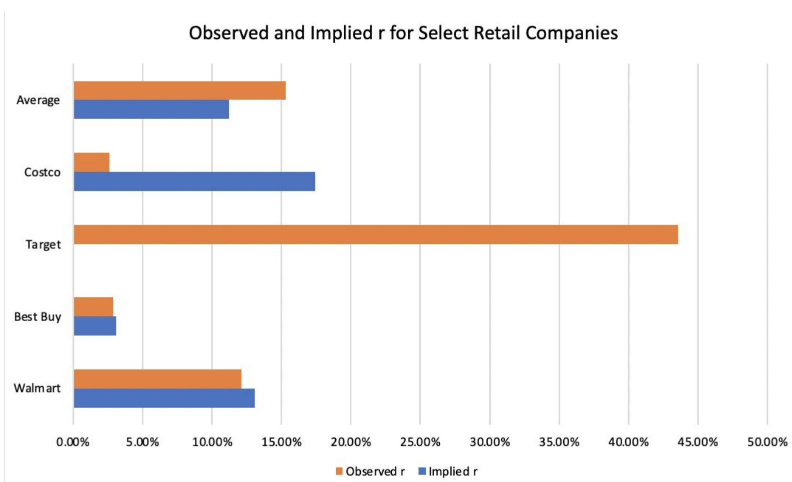
Costco's market/book ratio in fiscal 2019 was 8.23, indicating that investors were paying $8.23 for each dollar of net assets. Best Buy's current market/book ratio was second-highest, followed by Target and Walmart. The average market/book ratio for the four was 5.80, higher than the retail industry average of 4.0[9], demonstrating that investors are willing to pay more per dollar of net assets of our companies than the general market's.

Walmart's ROE in fiscal 2019 was 18.64%, indicating that Walmart earned 18.64% on shareholders' investment--for every $1.00 of equity, Walmart earned 18.64 cents in income. Best Buy's ROE was highest, followed by Costco, Walmart, and Target. By this metric, Best Buy is more profitable for shareholders than the other comparables because it had the highest returns per dollar of equity invested. The average for the firms was 23.15%, higher than the retail industry average of 18.14%[10], indicating that our companies are more profitable for shareholders than the general market in terms of ROE.

Regarding implied g, the firms followed the same trend as they did in current ROE. Best Buy had the highest implied g value at 29.26%, followed by Costco, Walmart, and Target. The average implied g for the firms was 15.81%.

The largest dividend in fiscal 2019 was Walmart's $6.048 billion, followed by Costco's $1.249 billion and Best Buy's $681.19 million. Target's expected dividend was only $1.42 million, which is reaffirmed by its comparatively miniscule dividend yield and a plowback ratio of nearly 100%. The average expected dividend for the firms was $1.9949 billion.

Figure 3: Observed and Implied r for Select Retail Companies



At the end of fiscal 2019, Costco had the highest share price, followed by Walmart, Target, and Best Buy. The average share price for the four firms was $149.22/share. Costco had the highest implied r (risky required rate of return) at 17.43%, followed by Walmart and Best Buy. Costco's observed r[11] was substantially lower than its implied r, however, and Walmart and

[9] http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/pbvdata.html
[10] http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/roe.html
[11] Observed required risky rate of return, derived using a 2 year sample of annualized returns

Best Buy's observed r values were less than 1% different than the implied r values, demonstrating the accuracy of our implied r calculations. Target's observed r was the highest of the four firms at 43.55%.

EPS/r was highest for Costco at 320.16, followed by Best Buy, Walmart, and Target. PVGO[12] and PVGO/P represent companies' potential growth. Target had the highest PVGO and PVGO/P of the group at 102.26 and .97 respectively, followed by Walmart, Costco, and Best Buy. PVGO and PVGO/P were negative for both Best Buy and Costco, indicating that the model may not have worked for these two particular companies; Analysts' long-term growth estimates for Best Buy and Costco are higher than that of Walmart, but Best Buy and Costco have negative PVGO values, which appears contradictory. Assuming that the model worked, the negative PVGO may indicate that investors expect Best Buy and Costco's earnings to fall, thus resulting in future capital losses and declining PPS. Investors would expect Costco's share price to fall by less than Best Buy's.

Analysts expect Costco to grow the most in the short-term, followed by Target, Walmart, and Best Buy. In the next five years, however, analysts expect Target to grow the most, followed by Best Buy, Costco, and Walmart. This conveys the idea that investors are most confident about Target's stock appreciating in value in the long-term--despite a lower forward P/E relative to current P/E in the short term--compared to the other retail industry firms. This is also reaffirmed by previous data, which indicates that Target is a growth stock with a high P/E ratio and high plowback ratio.

The most critical flaw in our equity valuation model for the retail industry is that our calculations assume a discounted cash flow (DCF) model in which industry and firm-specific parameters are constant. This is not the case in the real retail industry, however, and these non-constant parameters affect the calculations. For example, the implied g values for our companies are not necessarily representative of actual company growth rates.

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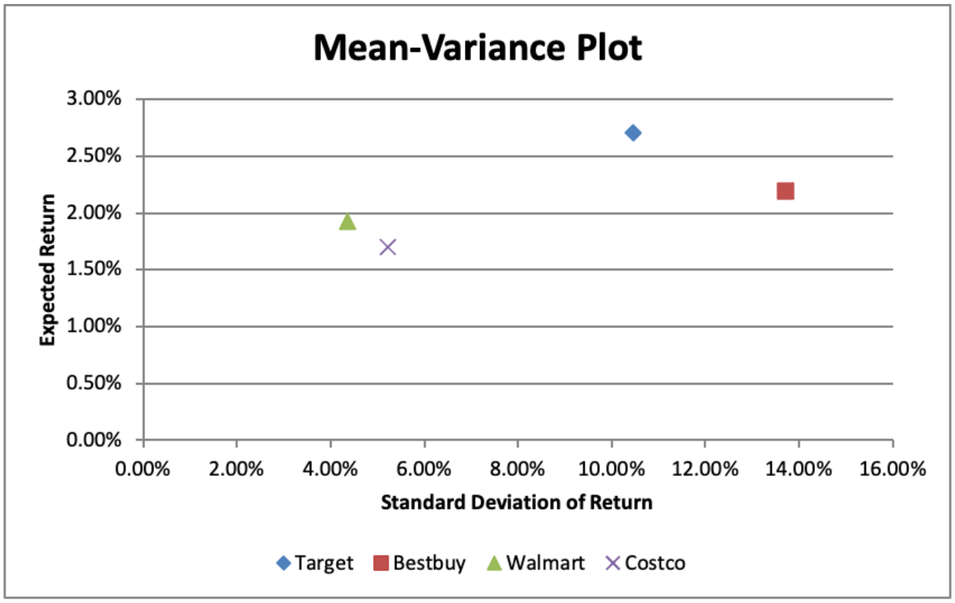
[12] PVGO=PPS-(EPS/r)

CAPM

Figure 4: Mean-Variance Plot for the Retail Industry



The retail industry's mean-variance frontier shows that Walmart and Costco have similar expected returns for the amount of risk denoted by the standard deviation of return. An investor who prefers higher mean and lower standard deviation will hold Walmart over Costco, however, because Walmart produces a higher expected return for less amounts of risk. Target has the highest expected return out of the group, but with approximately twice the amount of risk from holding Walmart or Costco. Best Buy has the highest standard deviation of return out of the retail industry, but less expected return than Target. Thus, a risk averse investor would hold Target over Best Buy because Target has a higher expected return for less amount of risk.

While the mean-variance frontier derived from the CAPM model provides useful insights for risk averse investors, there are limitations to this model and its recommendations are not absolute. Most notably, the mean-variance frontier is constructed based on historical numbers for each firm, meaning that the model is not forward-looking. While previous conclusions based on the mean-variance frontier would have investors holding Walmart over Costco and Target over Best Buy, there are several other metrics and qualitative factors that contribute to investors holding different stocks than what the mean-variance frontier would recommend.

Table 4: Sharpe Ratio for the Retail Industry

	SHARPE RATIO				
Sample Size	Target	Best Buy	Walmart	Costco	Industry Average
20 Yr	0.13	0.11	0.15	0.19	0.15
10 Yr	0.15	0.13	0.23	0.34	0.21
2 Yr	0.26	0.16	0.44	0.32	0.30

The Sharpe Ratio is the slope of the Capital Market Line (CML), or the line on the investment opportunity set that represents all portfolios that optimally combine expected return and expected risk. The Sharpe Ratio represents the average return earned in excess of the risk-free rate per unit of total risk. Therefore, a higher Sharpe Ratio is good when comparing similar portfolios. The highest Sharpe Ratio in the retail industry in the past two years is Walmart with 0.44, next is Costco with 0.32, then Target with 0.26, and the lowest Sharpe Ratio is Best Buy's 0.16. Based on the Sharpe Ratio, out of this bundle of firms, Walmart would be the best firm to hold.

The typical Sharpe Ratio of the S&P 500 index over a 10-year period is around 0.5. All of our retail industries have Sharpe Ratios below that level. In fact, the industry average for the last 2 years is 0.30. Since the Sharpe Ratio indicates how much your portfolio returns for how much risk taken, investors prefer higher ratios. Despite this, an industry average of 0.30 for the retail industry is expected, and actually indicates that our four firms have above average returns per unit of volatility. Empirically for the retail industry as a whole, the average Sharpe Ratio of retail investors has hovered around 0.25.

Again, there are limitations to using the Sharpe Ratio as the only indicator for which firms investors will prefer. The Sharpe Ratio is calculated using historical numbers--while it is a useful metric for firms on an optimal investment opportunity set, it is not exactly predictive of the market. Industry experts who cover the inner workings of a sector would have tailored recommendations for which firms to invest in that take into account firm-specific idiosyncrasies that cause risk or could increase return for a certain company than the Sharpe Ratio would provide.

Table 5: Volatility of Returns for the Retail Industry

	Volatility of Returns		
	Number of Years in Sample	Standard Deviation of Daily Return	Standard Deviation of Monthly Return
Target	20	2.00%	7.55%
	10	1.63%	7.12%
	2	2.34%	10.46%
Walmart	20	1.40%	5.19%
	10	1.22%	4.87%
	2	1.58%	4.36%
Costco	20	1.62%	5.90%
	10	1.22%	4.74%
	2	1.57%	5.22%
Best Buy	20	2.75%	13.64%
	10	2.58%	11.35%
	2	2.82%	13.71%
Industry Average	20	1.94%	8.07%
	10	1.66%	7.02%
	2	2.08%	8.44%

Table 5 shows that the standard deviation of daily returns are consistent for all four retail industry firms converging at an industry average of about 2% for the past 20-, 10-, and 2-year sampling periods. The standard deviation of monthly returns is lowest with Walmart, for all three sampling periods, and the highest standard deviation of monthly returns is with Best Buy. The standard deviation for both daily and monthly returns represent the level of volatility and risk each firm has with their stock. The annualized standard deviations corroborate the findings on the mean-variance frontier: Costco and Walmart have similar low levels of volatility hovering around the 5% mark and Target and Best Buy are stocks with higher levels of volatility.

The Investment Question

Table 6: Risk Decomposition of the Retail Industry Firms

	Risk Decomposition					
	Number of Years in Sample	Total Variance	Aggregate Component	Idiosyncratic Component (Residual)	% Idiosyncratic Variance	% Aggregate Variance
Target	20	0.040%	0.013%	0.027%	66.54%	33.46%
	10	0.026%	0.006%	0.021%	78.77%	21.23%
	2	**0.055%**	**0.014%**	**0.040%**	**73.73%**	**26.27%**
Walmart	20	0.020%	0.006%	0.014%	70.60%	29.40%
	10	0.015%	0.003%	0.011%	77.55%	22.45%
	2	**0.025%**	**0.008%**	**0.017%**	**69.76%**	**30.24%**
Costco	20	0.026%	0.009%	0.017%	35.22%	64.78%
	10	0.015%	0.005%	0.009%	36.16%	63.84%
	2	**0.025%**	**0.012%**	**0.013%**	**47.23%**	**52.77%**
Best Buy	20	0.076%	0.021%	0.054%	72.10%	27.90%
	10	0.067%	0.014%	0.053%	79.54%	20.46%
	2	**0.079%**	**0.038%**	**0.041%**	**51.87%**	**48.13%**
Industry Average	20	0.041%	0.012%	0.028%	61.114%	38.886%
	10	0.031%	0.007%	0.024%	68.006%	31.994%
	2	**0.046%**	**0.018%**	**0.028%**	**60.647%**	**39.353%**

This table shows the risk decomposition of our firms' stock price over a 2, 10 and 20 year sample period, as well as industry averages. We notice that in the last two years, Walmart and Costco have had the least variance in its stock price at 0.025%, while Target and Best Buy have had much higher total variance figures with Target having a total variance of 0.055% and Best Buy 0.079%. The industry average is 0.046%. This same trend can be seen throughout the 2, 10 and 20 year samples.

One of the causes of this discrepancy can be seen in the much higher absolute idiosyncratic risk for Target and Best Buy, with Target having 0.04% idiosyncratic risk and Best Buy having 0.041%, these figures are even higher than the total variance of Walmart and Costco. Idiosyncratic risk is firm specific and could be driven by a multitude of internal factors such as Best Buy's more urgent need to adapt against online retailers like Amazon or Target's rapid digitization of operations that may have caused this firm specific volatility. Alternatively, Walmart and Costco may also just have much lower absolute idiosyncratic risk because they are very established brands that have not had any major changes in leadership or any large changes to their business models.

Another driver for the high total variance of Best Buy is the much higher absolute aggregate component in its variance, at 0.038%. This may be because Best Buy sells more luxury goods in electronics thus its business is much cyclical and affected by overall market movements, while Target, Walmart and Costco sell much more necessary goods and thus move less with the market.

We also notice that most of the risk in this industry is in idiosyncratic risk versus aggregate risk, with the industry average being 63.5% of variance being attributed to idiosyncratic risk and 36.5% to aggregate risk. These results again make sense as most of the firms in our sample sell goods like groceries that are very much needed no matter the aggregate state of the market. However, again we notice that as a percentage of total variance Best Buy has the highest proportion of aggregate variance, supporting the notion that because they sell more luxury goods in electronics, which is highly cyclical, then a greater portion of its volatility depends on the market.

However, one criticism in this model is in the calculation of the aggregate and idiosyncratic components. To calculate this we ran a simple regression to obtain beta and used the formula that included variance of the S&P to determine aggregate risk and thus idiosyncratic risk. These models we used are not perfect specifically in the regression; we did not include many controlling variables that would help reduce the error term. Namely, there may be factors that could affect both the return on the market and the return on the stock that were not accounted for. Moreover, the equation to calculate aggregate variance only has beta and the S&P's variance as inputs; there may be other factors that need to be considered.

Table 7: Business and Financing Risk in the Retail Industry

	Business and Financing Risk			
	Number of Years in Sample	Beta of Equity	Debt/Equity Ratio	Beta of Assets
Target	20	0.93	0.19	0.78
	10	0.69		0.58
	2	0.72		0.61
Walmart	20	0.61	0.13	0.54
	10	0.53		0.47
	2	0.52		0.46
Costco	20	0.77	0.10	0.70
	10	0.67		0.61
	2	0.64		0.59
Best Buy	20	1.16	0.22	0.95
	10	1.07		0.88
	2	1.18		0.97
Industry Average	20	0.87	0.16	0.74
	10	0.74		0.64
	2	0.77		0.66

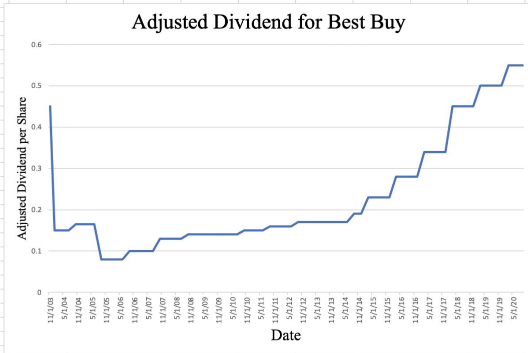
The above table shows the beta of equity and beta of assets for each of the firms in a 2, 10 and 20 year sample. The most current Debt/Equity ratio from the last fiscal year is also included. We notice that Walmart has the lowest beta of equity and assets by quite a large margin, while on the other end Best Buy has a much higher beta of equity and assets as compared to the other firms/industry average. The industry average beta of equity in the lost two years is 0.77, and the beta of assets 0.66. Notice both of the betas are under the value of one, meaning that as an industry, retail is less volatile than the overall market. This result is intuitive and similar to the explanation of the risk decomposition table, as most of these firms sell necessities like household goods and groceries that are in high demand no matter the overall state of the economy. Another explanation for the low industry betas is the relatively low fixed costs/operating leverage, as the majority of the costs in the retail industry are in the variable cost of cost of goods sold of the products. Best Buy has the highest beta of equity and assets, with its beta of equity in each sample being greater than one. This again supports our findings in the previous table that Best Buy is more volatile than the market as they sell luxury goods in electronics which are highly affected by aggregate market cycles. Walmart has a much lower beta of equity and assets than the other firms in the industry, suggesting it is the least volatile compared to the market which makes sense as they are the biggest retailer and sell necessities at affordable rates.

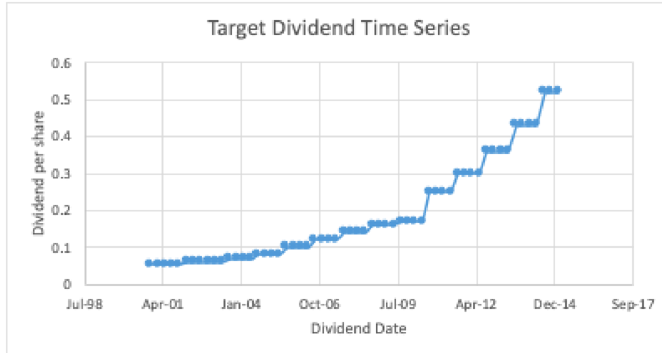
The table also shows the industry average debt/equity ratio being 0.16 and all of our firms are around that figure. As an industry, retail has a very low debt to equity ratio, meaning most of its financing is through equity/cash versus debt via lenders. This result makes sense, as the retail industry is not particularly capital intensive like oil and gas or telecommunications. Additionally, the firms we picked are fairly large and have billions in cash reserves and thus are mostly self sustaining without the need for major outside debt. This result will be explained more in the discussion of capital structure.

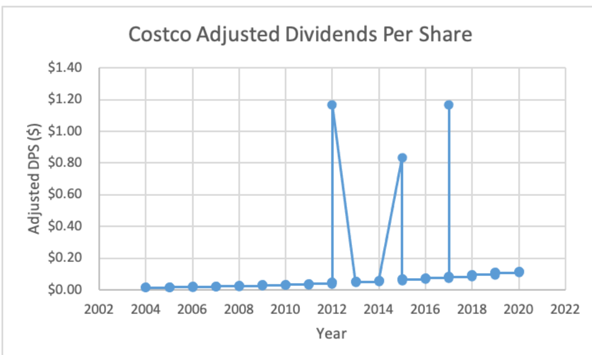
There are some flaws in this model we must acknowledge. As previously mentioned, the beta of equity was obtained by using a simple regression between the return on the stock and the market, but there are many other factors that could influence beta of equity. Moreover, to calculate beta of assets, we used a CAPM model in which we did not consider the beta of debt as we assumed that to be zero, whereas in reality these companies have risky debt. CAPM has many assumptions, including that investors are price takers, there are no taxes or transaction costs, and that there are homogeneous expectations. Thus, the model does not accurately capture the exact realities of the economy.

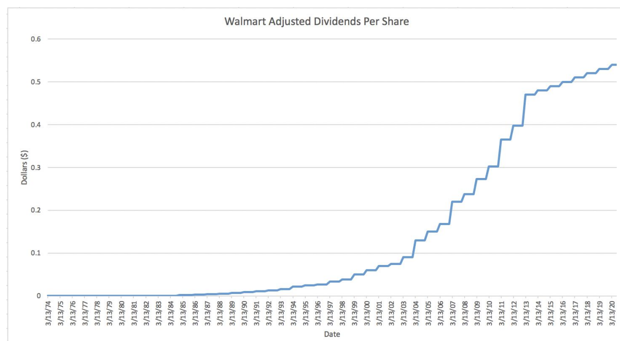
The Payout Question

Figures 5-8: Adjusted Dividends for the Retail Industry







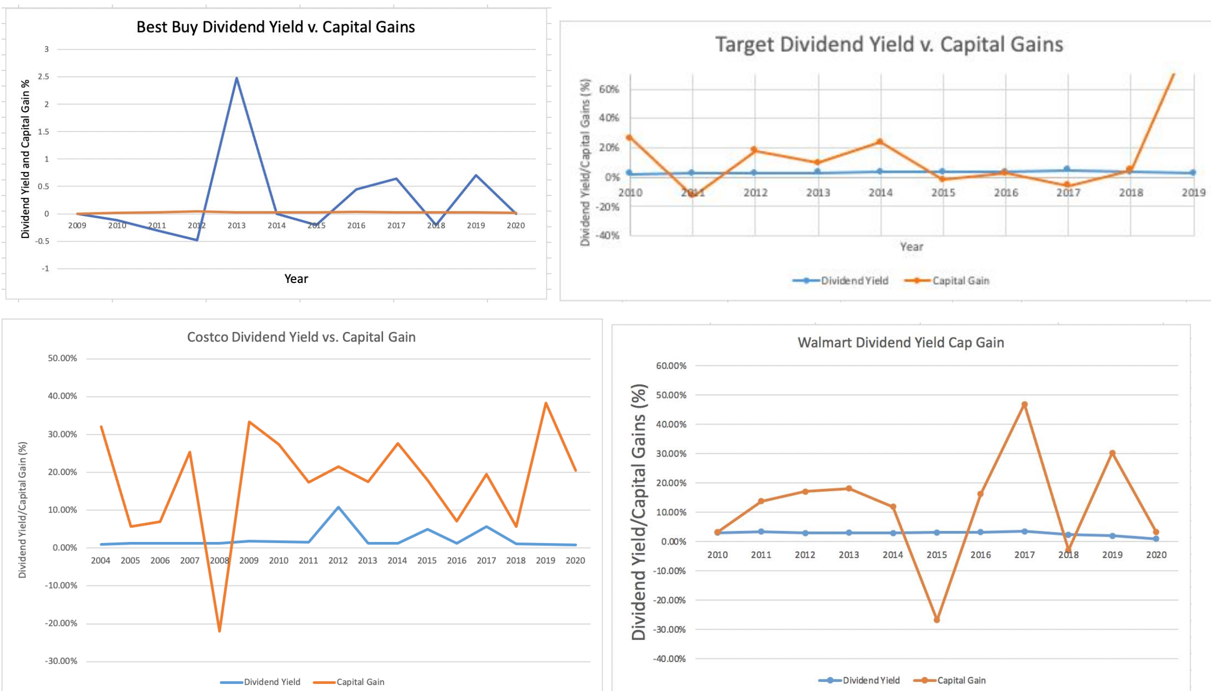


The figures above show the adjusted dividend payouts per share of each of our firms from the earliest date possible. In general, we see an upward trend in dividends paid, especially with Target and Walmart where the dividends paid per share have never gone down and have only increased or stayed the same. Best Buy's adjusted dividend fell dramatically from 2003 to 2004 and proceeded to steadily increase from 2006 onwards. Indeed, Best Buy's dividend on Nov. 14th, 2003 was $.3 per share, which dwarfs the following dividend on Jan. 5th, 2004 of $.1 per share. There were no stock splits for Best Buy between these dates that would have altered the dividend per share payout, and so the reason for the decrease is unknown. Costco's graph is quite unique as Costco prefers to payout special one-time dividend payments as seen in 2012, 2015, and 2017 versus the sustained dividends that Walmart, Target, and Best Buy prefer to pay its shareholders. These payments are one time, much larger payments per share such as in 2012 Costco decided to payout $1.2 to every share. Despite this special dividend, we see that the regular dividend is still rising in Costco's graph as well. Additionally, each firm has similar levels of dividends paid per share, around $0.5-$0.6 per share, with the exception of Costco at a lower rate of around $0.1 per share, most likely due to their preference for special dividend payments.

In general, when excluding the 2003-2005 Best Buy anomaly, dividends per share are steadily increasing. This result falls inline with the theory that payout sends signals to investors. Permanent increases in dividends signal higher levels of sustained earnings thus pleasing investors, while if dividends drop this would suggest failed sustainment of those earnings and thus having negative effects on stock prices. Thus, it seems that our firms in the retail industry will only increase dividends if they are sure they can sustain them indefinitely and never decrease them to preserve the stock price.

One flaw in the payout question, according to Modigliani and Miller's theory, is that it does not account for special dividends like in Costco's case. From the graph we see that Costco's dividends are not steadily increasing and are decreasing sharply at points. Theory would suggest that this would hurt Costco's stock price, as it signals instability to sustain high earnings. But in reality, there are mechanisms like the special dividends that are not accounted for in this theory and do not send negative signals.

Figures 9-12: Dividend Yield versus Capital Gains for the Retail Industry



The graphs above show the dividend yield and capital gain for each of our firms as a percentage of their stock price. Amongst the graphs we see a very similar trend, with dividend yield remaining fairly constant and always positive throughout the years, while capital gain is very volatile and sometimes negative. One exception to this general trend is in Costco's fluctuations in dividend yield due to their special dividend payout policy. These results support theory, as dividends are generally sticky and are regularly paid out resulting in their constant yield, while stock price is much more volatile and can be either positively or negatively affected by factors like the macroeconomy, firm leadership, and firm specific initiatives and projects that cannot be controlled, like a dividend payment.

Table 8: 12-Month Payout Financials for the Retail Industry

12 months ended Last Fiscal Year	Best Buy	Target	Walmart	Costco	Industry Average
Exact Date	12 months ended 2/1/2020	12 months ended 2/1/2020	12 months ended 1/31/2020	12 months ended 9/1/2019	
Dividends	527	1,330	6,048	1,038	2,236
Repurchases	1,003	1,565	5,717	247	2,133
Net Income	1,541	3,218	15,201	3,659	5,905
Payout Ratio	34.20%	41.33%	39.79%	28.37%	37.86%

Table 9: YTD Payout Financials for the Retail Industry

Year to Date	Best Buy	Target	Walmart	Costco	Industry Average
Exact Date	6 months ended 8/1/2020	6 months ended 8/1/2020	6 months ended 7/31/2020	9 months ended 5/10/2020	
Dividends	284	662	3,058	860	1,216
Repurchases	62	706	723	110	400
Net Income	591	2,009	10,513	2,613	3,932
Payout Ratio	48.05%	32.95%	29.09%	32.91%	30.93%

The tables above display the repurchases, dividends, net income, and payout ratio of each firm from their last fiscal year, and their current fiscal year to date. The tables also include industry averages, but because of differences in fiscal calendars for each firm, we must take that into consideration. We notice that in the first table, the payout ratio is fairly high for our firms at an industry average of 37.9%. This is because most of our firms are established and mature and perhaps don't have many growth opportunities to spend that cash on and thus would rather pay it out to its investors. Costco in particular has a relatively lower payout ratio at 28.37% to sustain the increase in dividend payouts and to induce a liquidity buffer to respond to the volatility from coronavirus, according to the Motley Fool[13].

The payout ratio year to date for the industry has fallen to 30.93%. This may be in part because of the COVID-19 pandemic that has caused firms to increase cash holdings inlight of the uncertainty in the market. Moreover, we see that Best Buy was the only firm that actually increased their payout ratio, but this is driven by the constant dividends despite the fall in net income to only $591 million in 6 months, whereas in the last fiscal year they made $1,541

[13] https://www.fool.com/investing/2020/09/29/is-costco-a-great-dividend-stock/

million. Best Buy's dividends paid is $284 million in 6 months where in the last fiscal year it was at $527 million. These actions by Best Buy reinforce the theory that dividends remain sticky and are often a signal to investors thus Best Buy is still matching its previous dividend payments despite the fall in net income. Target, Walmart, and Costco seem like they are going to meet or exceed both their dividend payments and their total net income this fiscal year versus the last fiscal year. This again is driven by the COVID-19 pandemic and economic crisis that has led to the increased dependency on these retailers that sell affordable necessities like food and household goods, while Best Buy--which almost exclusively sells electronics--is suffering in sales due to the luxury nature of their goods.

In the tables above, we also notice that each of the firms engage in share repurchases. Walmart's board in 2017 approved a $20 billion stock buyback plan that would take place over the coming years. Similar plans have been approved for Best Buy, Costco and Target. However, Costco does have a much lower share repurchase plan perhaps to sustain the special dividend program. Share repurchases mainly occur when management believes that their shares are undervalued, or are used as a way to increase stock price as share repurchases send a signal to the market that internally management believes the firm is worth more or should be worth more given future projects/inside metrics. As a result, in the last fiscal year Best Buy tended to use the majority of their net income in stock repurchases, much more than the other companies. One reason Best Buy may have had higher share repurchases because these repurchases have historically boosted share prices; Best Buy's $3 billion share repurchase plan announcement boosted share prices by 15% in November fo 2019, according to Business Insider[14]. However, due to the COVID-19 pandemic, the firms have severely decreased the amount of share repurchases this fiscal year compared to the last, with Best Buy announcing that they will not engage in any more share repurchases this year. This trend throughout the industry can be attributed to the uncertainty in the market and volatility in each of their shares prices. As a result of the uncertainty caused by the pandemic, companies are increasing cash holdings, and thus are not using that cash on share repurchases.

In most cases in this section the Modigliani and Miller theory holds. We see that all of the firms engage in substantial share repurchase programs and we have seen that historically, especially in the last two years all of the firms have seen positive stock price growth, beating the market. However, one flaw in the theory is that since the onset of the COVID-19 pandemic, most of our firms have drastically scaled back repurchases, and theory would suggest that stock prices would be down as it is a negative signal to investors. In reality, however, the retail industry has been growing, and all of our firms' stock prices are up since the start of the COVID pandemic.

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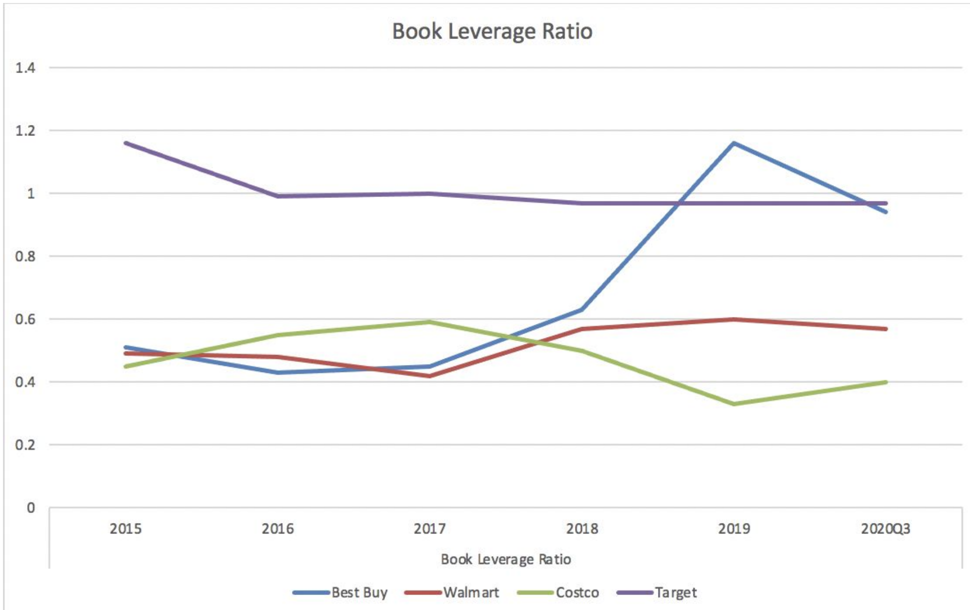
14 https://markets.businessinsider.com/news/stocks/best-buy-earnings-stock-spikes-after-buyback-plan-announcement-2019-2-1027989167

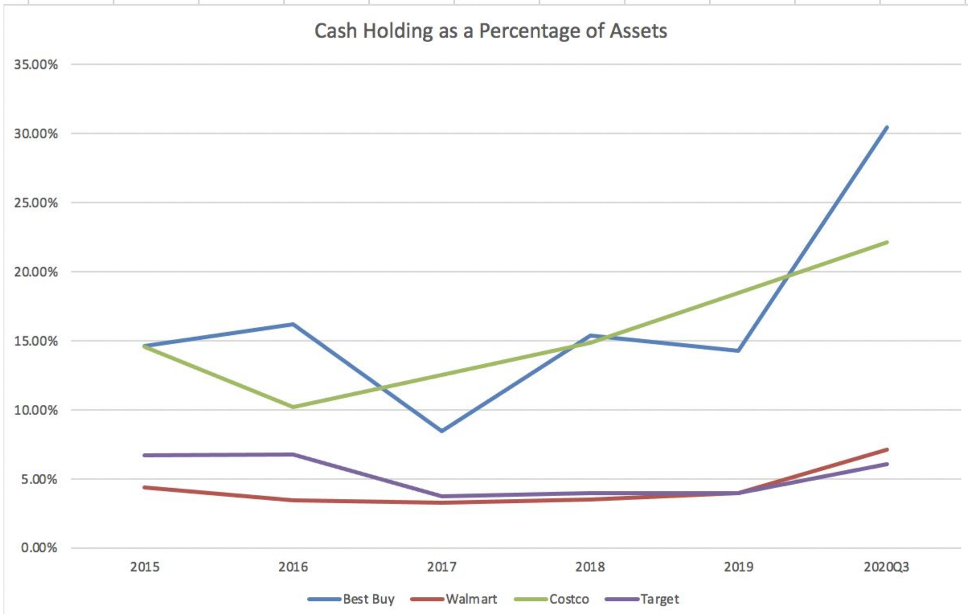
Capital Structure

Figure 13: Book Leverage Ratio Comparison for the Retail Industry, 2015-2020 Q3



Target has the highest average book leverage ratio of the retail industry firms. From 2015 to Q3 of 2020, Target had a consistently higher book leverage ratio than the comparables, indicating that Target had a higher level of total financial debt relative to total equity compared to Best, Walmart, and Costco. Best Buy's book leverage ratio increased significantly from 2018 to 2019, indicating that the firm took on more long-term liabilities relative to its equity in 2019 than in 2018. Walmart's book leverage ratio increased marginally, while Costco's book leverage ratio decreased from 2017 to 2019, suggesting that the firm had more equity relative to total financial debt in 2019 than in 2018 and 2017.

Figure 14: Cash Holding as a Percentage of Total Assets Comparison for the Retail Industry



Both Walmart and Target follow a similar trend regarding their cash holdings as a percentage of total assets with both firms holding around 6.5% of cash as a percentage of total assets in quarter three of 2020. Best Buy has the highest cash holding as a percentage of assets and continues to trend upwards. Similarly, Costco is also steadily increasing their cash holdings as a percentage of assets. The recent uptick in all firms' cashing holdings as a percentage of their assets can be attributed to the recent uncertainties and risks from the coronavirus pandemic in the US. Many firms wish to increase their liquidity buffer in order to withstand this period of economic volatility, but with most of these retail firms, especially Target, Walmart, and Costco, consisting of inelastic products, these firms' liquidity buffers need not be too large as consumers will still need to purchase retail necessities during this time.

Table 10: Capital Structure Breakdown for the Retail Industry

Retail Industry: Capital Structure							
	Total Assets	Total Cash	Total Liabilities	Total Financial Debt	Total Equity	Debt/Equity (Book)	Debt/Equity (Market)
	42,779	2,588	30,946	11,499	11,833	0.97	0.16
Target		6.05%		26.88%			
	17,412	5,305	13,634	3,554	3,778	0.94	0.14
Best Buy		30.47%		26.07%			
	237,382	16,906	156,185	46,512	81,197	0.57	0.11
Walmart		7.12%		29.78%			
	55,556	12,277	36,851	7,514	18,705	0.40	0.05
Costco		22.10%		20.39%			
	88,282	9,269	59,404	17,270	28,878	0.72	0.11
Industry Average		16.44%		25.78%			

In the table above, an important observation is that Walmart has a higher level of total financial debt relative to total liabilities compared to the other firms, while Costco had the lowest level of total financial debt relative to total liabilities. Since financial debt encompasses a firm's long-term liabilities, Walmart has a lower level of current liabilities compared to the other firms, which have higher levels of current liabilities. This can be interpreted in multiple ways. With this knowledge, investors may conclude that Walmart is a safer investment, as it does not have as many short-term obligations to fulfill during the COVID-19 pandemic, a riskier business environment than that of previous years. The retail industry is one of the few industries that have emerged relatively unscathed or even better off during the pandemic, however, and from this perspective, investors are likely less worried about the firms' current and noncurrent liability breakdown. Additionally, the high debt/equity book ratios for Target and Best Buy particularly are very high, this may be attributed to pecking order theory which states that firms prefer to finance internal projects with cash on hand, then debt, and lastly issuing equity. Given that Target had one of the lowest cash holdings percentages, Target may be financing through debt. While we would expect our firms to be highly levered because these retail firms tend to hold a lot of tangible assets, this is not the case. We hypothesize this is because our firms are mature and have cash on hand and payout regularly and thus do not need to borrow.

According to Modigliani and Miller's third assumption, capital structure does not affect the investment decision. In the COVID-19 pandemic, however, firms are encouraged to create a liquidity buffer and increase their cash holdings instead of financing positive NPV projects, which limits firm value.

Conclusion

Through financial analysis presented in the preceding sections, we demonstrate that major players in the retail industry--Target, Walmart, Best Buy, and Costco--have not been as affected by the COVID-19 pandemic as many other industries in 2020. On the contrary, these firms have benefited from the changing market conditions brought about by the pandemic in a variety of ways.

Before making buy, hold, sell verdicts, we must first make three assumptions. The first assumption is that we do not have a stake in or against the stock of Target, Best Buy, Costco, and Walmart. The second assumption is that we are standing at the end of November of 2020 when we make our investment decisions. The third assumption is that we have the resources to invest in any of the stocks mentioned if we wish to do so and will not take any other external information into account than what is contained in this paper.

Best Buy (BBY): Hold

As demonstrated by Figure 9, the dividend yield vs. capital gains graph, Best Buy's capital gains were extremely volatile between 2010-2020. In addition, Table 7 (business and financing risk) exhibits Best Buy's high beta of equity and beta of assets compared to the other firms, which suggests that Best Buy's products are inelastic and that Best Buy moves more than 1 to 1 with the general market, accentuating losses in economic downturns. Figure 4, the mean-variance plot, reaffirms Best Buy's high-risk nature, with a higher expected return than all stocks with the exception of Walmart, but a much higher level of standard deviation of return than the others. Indeed, Best Buy's risk was more than twice that of Walmart and Costco. Since COVID-19 is expected to be a significant threat to the American economy for many more months to come, and without the prospect of a stimulus bill to potentially boost consumer spending on elastic goods, our verdict is to *hold* Best Buy (BBY) stock.

Walmart (WMT): Buy

Figure 4, the mean-variance plot, indicates that Walmart's expected return is higher than Costco's, with a lower standard deviation of return (risk). In addition, although Walmart's stock has a lower level of expected return than Best Buy and Target's shares, Walmart's stock is less than half as risky as that of Target and Best Buy. Our decision is to *buy* Walmart (WMT).

Target (TGT): Buy

According to Figure 4, the mean-variance plot, Target's stock has a higher expected return than all other comparable firms, and its standard deviation of return is significantly less than that of Best Buy. In addition, Figure 10--Target's dividend yield versus capital gains graph--demonstrates that Target's capital gains are less volatile and more predictable than those of Costco and Walmart. Table 7 (business and financing risk) indicates that Target moves less than 1 to 1 with the market, suggesting that Target's goods are more inelastic than those of Best Buy, which may prove invaluable if the COVID-19 crisis worsens. Therefore, our decision is to *buy* Target (TGT) stock.

Costco (COST): Hold

Costco's dividend yield vs. capital gains graph (Figure 11) documents a reliable fifteen year history of positive capital gains. According to Figure 4, however, Costco actually has the lowest expected returns despite having higher standard deviation of return than Walmart's stock. Therefore, an investor acting optimally would invest in Walmart instead of Costco, and our decision is to *hold* Costco (COST).