A VALUE PERSPECTIVE: THE CASE OF WARREN BUFFET AND HIS INVESTMENT BEHAVIOR TOWARDS APPLE, WALMART AND AMAZON

Shanhong Wu, University of Arkansas-Fort Smith
Kermit Kuehn, University of Arkansas-Fort Smith
Jing Jiang, Sacred Heart University

ABSTRACT

In this paper, we use metrics of Ben Graham's value investing principle to examine the actions taken by Warren Buffet toward three prominent stocks: Amazon, Apple and Walmart. We find that decisions of investment/dis-investment and not-investment by Buffet toward the stocks are largely in line with Graham's view on value investing. This paper provides in-depth analysis of value for three stocks and relates to research on the book-to-market anomaly in the finance literature.

INTRODUCTION

Value investing is an investment strategy by which stocks are selected that trade for less than their intrinsic values. Benjamin Graham was a representative figure who pioneered the principles used in security analysis and value investing decisions. The value investment philosophies and strategies can be traced back to Graham and Dodd (1934) on security analysis. For many years, scholars and investment professionals have argued that value strategies outperform the market (Dreman, 1977). Graham's published his ideas in the 1949 classic *The Intelligent Investor*.

A central theme of Graham's thinking is that one should make an investment only when there is a margin of safety available in the security being considered. This requires the investor to "measure or quantify" the investment in terms of "what is paid to what is being offered". If a business can be acquired at a rational price, regardless of what the stock market might say to the contrary, "the ultimate result of such a conservative policy is likely to work out better than exciting adventures into the glamorous and dangerous fields of anticipated growth (Introduction xvi)."

Warren Buffett is perhaps the most prominent and successful figure alive today who practices Graham's investment philosophy. Joined by his partner Charlie Munger, Buffett has expanded on Graham's principles by focusing on "finding an outstanding company at a sensible price", as opposed to chasing a rather generic company at a bargain price.

In this paper, we present an analysis of three prominent stocks that Buffett has regularly discussed but acted toward in differing ways. They are Amazon (AMZN), Apple (AAPL), and Walmart (WMT). These investment decisions will be used to illustrate how the principles of security analysis proposed by Graham were adopted and acted on by Buffett.

In sum, the paper is a case study which examines value investing through the application of theory by a prominent practitioner.

The purpose of this study, then, is to demonstrate value investing as carried out by Buffett, as well as illustrate the shifting realities which appear to move him to invest, disinvest or never invest in what most would consider great companies. Specifically, this study (1) used several metrics to assess the relative attractiveness of each of the three companies based on principles of the value investor and (2) compared these findings with the actions taken by Buffett's Berkshire Hathaway to determine their consistency with Graham's view on investing.

The primary contribution of this research is the application of value investing principles to the investment decisions of a real and substantial market participant and celebrity, Warren Buffett. It is admittedly limited, but we believe representative. Additionally, the paper is related to one of the most researched market anomalies in finance, the book-to-market phenomenon. Notable examples of this literature include Fama and French (1992), Bartov and Kim (2004), and Daniel and Titman (2012). This paper provides this literature with concrete anecdotal evidence of the issues highlighted by this stream of literature.

ANALYSIS

Berkshire's Investment History with AMZN, AAPL and WMT

For this analysis, we selected Amazon (AMZN), Apple, Inc. (AAPL), and Walmart (WMT). These companies are prominent players in their respective industries and Buffett has taken decidedly different investment approaches to each. We begin our discussion by summarizing Berkshire's behavior toward each.

As of June 30, 2018, Warren Buffett's Berkshire Hathaway owned about 246.5 million shares, or about 5.1% of Apple (AAPL), which is worth nearly $50 billion and making it by far the most valuable slice of any company Buffett has invested in (Kim, 2018; Oyedele, 2018).
Buffett was a major shareholder in Walmart (WMT) until 2016, before he sold most of Berkshire Hathaway's stake in the retailer (Lutz, 2017). Berkshire still held roughly 1.4 million shares of Walmart at the end of June 2018, valued at roughly $140 million, but exited completely by the end of 2018 (Boyle & Kochkodin, 2018). At the same time, Buffett cited Jeff Bezos and Amazon as a threat that made retail stocks a "tough" game (Rosenbaum, 2018). Walmart has invested billions in e-commerce, yet it holds a tiny share of the online market compared to Amazon (AMZN). While still well behind Amazon, Walmart has reported online sales of $20.91 billion in 2018 compared with Amazon's $250.92 billion during the same period.

Buffett has praised Bezos effusively, stating, "Jeff Bezos has built an extraordinary economic machine from standing still, a start of zero, with competitors with lots of capital". Yet, he has not bought any Amazon stock. "I should have bought long ago, but I didn't understand the power of the model and the price always seemed more than the power of the model…", the Berkshire CEO told CNBC in 2016. As of 2018, Berkshire had not purchased any Amazon shares.

Table 1 summarizes Buffett's holdings of Apple and Walmart as recently reported by Berkshire.

Table 1
Buffett's Positions in AAPL and WMT (as of reported by Berkshire's most recent 10K)

Firm	Last Report	Percentage of Company Owned	Market Cap (Millions)	First Report	Percentage of Company Owned	Highest Percentage Owned	Highest Percentage Report	Highest Market Cap (Millions)
AAPL	12/31/2017	3.30%	28,213	12/31/2017	1.10%	5.10%	6/30/2018	51,000
WMT	12/31/2015	2.00%	3,893	12/31/2005	0.50%	2.10%	12/31/2014	5,815

Note: major investment holdings from Berkshire Hathaway annual report

Basic Company Information

Apple Inc. (AAPL) is a well-known technology company that designs, develops, and sells consumer electronics, computer software, and online services. The company's major hardware products include the iPhone smartphone, the iPad tablet computer, the Mac personal computer. Apple's key software includes the macOS, iOS operating systems. Its online services include the iTunes Store, the iOS App Store, Apple Music, iCloud, and more. On August 2, 2018, Apple became the world's first trillion-dollar public company in terms of market value.

Amazon.com, Inc. (AMZN) is an American electronic commerce and cloud computing company. The tech giant is the largest Internet retailer in the world as measured by revenue and market capitalization. The amazon.com website sells a well-diversified range of products. The company also produces consumer electronics—such as Kindle and Echo, —and is the world's largest provider of cloud infrastructure service. Amazon also sells certain low-end household products under its in-house brand AmazonBasics. On September 4, Amazon became the second trillion dollar public company.

Walmart Inc. (WMT) is an American multinational retail corporation that operates a chain of hypermarkets, discount department stores, and grocery stores.
In table 2, we present a summary of basic information for the three companies, based on each company's 2017 annual report.

While all three companies are large cap firms, as of the end of August 2018, both AMZN and AAPL market caps were around $1 trillion. The market cap of WMT, which is still one of the largest companies in the world, now only stands at around $280 billion, less than one-third of the other two companies.

Although WMT's market cap is only a fraction of the other two companies, WMT still generates sales twice those of AAPL ($496,785 million vs. $229,234 million) and about three times those of AMZN ($496,785 million vs. $177,866 million). WMT's total net earnings is more than three times that of AMZN, $9,862 million vs. $3,033 million. On the other hand, AAPL is much more profitable in terms of total earnings ($48,351 million vs. $9,862 million).

By the end of 2017 fiscal year, earnings per share (EPS) rankings place AAPL on top, followed by AMZN and WMT. Walmart has been falling out of favor with investors for some time as evidenced by its declining EPS, especially in recent years. Its average EPS during 2010-2012 was $4.58, while the average for the most recent three years is only $4.08. In contrast, both AMZN and AAPL show significant growth of EPS during the same period. Despite the declining earnings, WMT still pays $2.07 per share dividend. AMZN has yet to pay a dividend. Impressively, AAPL paid $2.40 per share dividend in the most recent fiscal year.

Table 2
Basic Information on AAPL, WMT and AMZN

A. Capitalization	AMZN	WMT	AAPL
Price of common, Aug 29, 2018	1998.10	96.08	222.98
Number of shares of common, Jun 29, 2018 (million)	485.23	2950.84	4915.14
Market cap of common, Aug 29, 2018 (million)	969532.07	283517.09	1095977.47
Fiscal year end, 2017			
Fiscal year end month	12	1	9
Number of shares (million)	484.00	2952.00	5126.20
Price of common	1169.47	106.60	154.12
Market cap of common, fiscal year 2017 (million)	566023.48	314683.20	790050.10
Long-term debt (million)	37926	36825	97207
Preferred stock	0	0	0
Total capitalization, fiscal year 2017 (milliion)	603949.48	351508.20	887257.10
B. Income Items, fiscal year end 2017			
Sales	177866	496785	229234
Net income	3033	9862	48351
EPS	6.15	3.28	9.21
EPS, ave., 2015-2017	4.10	4.08	8.91
EPS, ave., 2010-2012	1.27	4.58	4.14
EPS. Ave. 2005-2007	0.78	2.92	0.37
Current dividend	0.00	6124.00	12803
Current dividend per share	0.00	2.07	2.4
C. Balance-sheet Items, fiscal year end 2017			
Current assets	60197	59664	128645
Current liabilities	57883	78521	100814
Current assets to current liabilities	1.04	0.76	1.28
Net assets for common stock (equity)	27709	77869	134047
NWC	2314	-18857	27831
TA-LCT-DLTT	35501	89176	177298
Book value per share	57.25	26.38	26.15

Data source: fiscal year data is from Compustat. Number of shares in recent date is from CRSP.

Overall, all three companies are profitable. Though WMT's profitability has been declining in recent years, AMZN and AAPL's EPS have been growing rapidly, with AAPL even having begun to offer dividends.

For some balance sheet items, AAPL stands out as having the best current ratio of 1.28. In contrast, WMT's current ratio is below the desired level of 1, which, however, may not be a major concern given the nature of the retail business and the quick turnover of the inventory by WMT.

Valuation Ratios

Following the basic concepts of value investing, we examine the valuation ratios, especially the earnings multiples of the three companies. We investigate whether there is a contradiction between fundamentals and valuations. The results can be found in table 3.

Table 3
Valuation Ratios for AAPL, WMT and AMZN

	AMZN	WMT	AAPL
Ratios			
P/E, August, 31, 2017, TTM	159.4	54.84	22.72
Price/earnings, present price, 2017 earnings	324.89	29.29	24.21
Price/earnings,present price, avg. 2015-2017 earnings	487.34	23.57	25.02
Price/book value, present price, 2017 book value	34.90	3.64	8.53
Dividend yield, present price, 2017 dividend	0.00%	2.16%	1.08%
Price/earnings, fiscal 2017 price, 2017 earnings	190.16	32.50	16.73
Price/earnings,fiscal 2017 price, avg. 2015-2017 earnings	285.24	26.15	17.29
Price/book value, fiscal 2017 price, 2017 book value	20.43	4.04	5.89
Dividend yield, fiscal 2017 price, 2017 dividend	0.00%	1.95%	1.56%
52-week low as of Aug, 30	931.75	77.50	149.16
52-week high as of Aug, 30	2025.57	109.98	228.26

Data source: fiscal year earnings are from Compustat, 52-week range is from Yahoo Finance

AMZN's valuation ratio, especially price earnings (PE), is much higher than those of WMT and AAPL. This clearly is a reflection of AMZN's greater growth momentum. The question is always whether the optimism of growth is overblown, which can lead to an irrationally high valuation. Even at a modest valuation level, AMZN is only selling at 0.625% (160 PE) earnings yield. This might be one of the reasons Buffett can't bring himself to invest in AMZN.

AAPL, on the other hand, is performing noticeably better than WMT on a number of key variables, including EPS growth, better overall earnings, a comparable level of dividends, and better current ratios. Yet, AAPL is selling at a similar earnings multiple with WMT. This may be an indication of value that Graham (and Buffett) seeks in an investment: better fundamentals coupled with similar or even cheaper valuation.

WMT's PE, in some cases, is higher than that of AAPL. This perhaps is an indication that even with the declining earnings, the market has not counted WMT out. Walmart has actually gained following Berkshire's 2016 sale of the stock. WMT said U.S online sales climbed 40 percent during the second quarter of fiscal year 2018, and the company is still anticipating an increase of 40 percent for the full year. Even though it is down from the 50 percent jump logged in the third quarter of fiscal year 2017, it still raises the question whether Walmart is underestimated by Buffett — again.

As of August 30, 2018, all three stocks are selling close to 52-week highs despite vastly different fundamental readings and relative valuation levels with respect to their fundamentals.
Different factors could contribute to high valuation multiples, such as PE or MB (market-to-book). First, high multiples may represent a company with a lot of intangible assets, such as R&D capital, that are not reflected in accounting book value due to being expensed. A high multiple could also describe a company with attractive growth opportunities and thus, high expected future growth. A high multiple might also indicate a company with high, but temporary, profits. Finally, a high multiple may indicate an overvalued stock based on overestimated future growth opportunities (Lakonishok, Shleifer and Vishny, 1994).

In the following sections, we examined additional fundamentals of the three companies which provides considerable support for the latter case.

Stock Return Performance

In figure 1 and table 4, we present the return performance of the three stocks since 2009. Stock performance illustrates the business growth underlying the three companies.

Figure 1
Growth of $10,000 Investment in AAPL, WMT and AMZN from 2009-2018

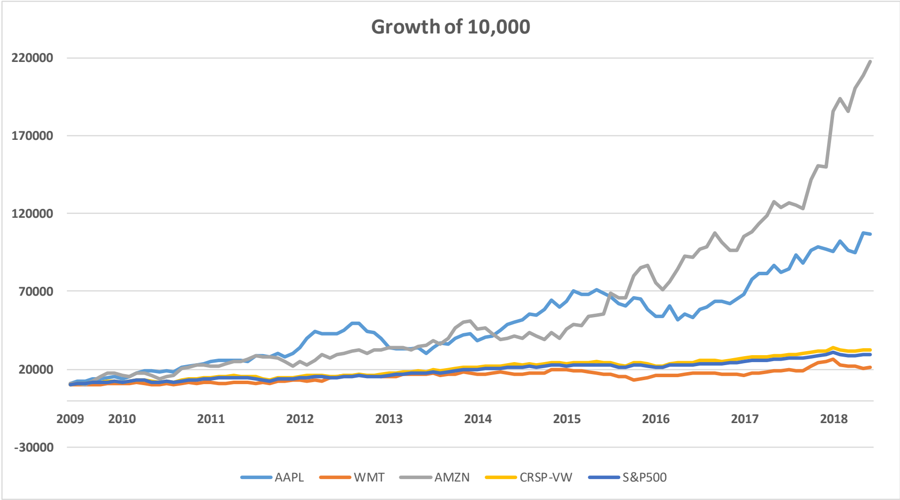

Table 4
Return Performance for AAPL, WMT and AMZN

	2013	2014	2015	2016	2017	2009-TD
AAPL	8.03%	40.43%	-3.04%	12.43%	48.44%	1881.00%
CRSP	30.45%	10.51%	98.32%	12.67%	20.64%	
S&P500	29.60%	11.39%	-0.73%	9.54%	19.42%	
ALPHA	-13.27%	34.20%	-9.43%	20.19%	4.23%	
	2013	2014	2015	2016	2017	2009-TD
WMT	18.24%	11.83%	-26.59%	16.02%	46.51%	114.00%
CRSP	30.45%	10.51%	98.32%	12.67%	20.64%	
S&P500	29.60%	11.39%	-0.73%	9.54%	19.42%	
ALPHA	3.56%	1.29%	-46.75%	25.64%	37.26%	
	2013	2014	2015	2016	2017	2009-TD
AMZN	58.96%	-22.18%	117.78%	10.95%	55.96%	3603.00%
CRSP	30.45%	10.51%	98.32%	12.67%	20.64%	
S&P500	29.60%	11.39%	-0.73%	9.54%	19.42%	
ALPHA	14.98%	-49.49%	103.28%	25.95%	4.83%	

Data source:
Return is calculated using the data from CRSP.
Alpha is calculated using four factor model and factor returns are from Ken French data library.

For a $10,000 investment in AMZN at the beginning of 2009, the value grows to $217,950 by the end of June 2018. AAPL also has tremendous growth, but the value ends up at less than half that of AMZN with the same $10,000 investment growing to $106,910 for the period. The stagnant growth of WMT in the last decade has taken a toll on WMT stock, with the same $10,000 investment worth only $21,603. The period returns and alphas for the three stocks reveal similar stories.

More Fundamentals – Key Profitability Ratios and Earnings Growth

Next, we examine more key profitability measures, which are contained in table 5.

Table 5
Profitability and Earnings Growth for AAPL, WMT and AMZN

	AMZN	WMT	AAPL
Net/sales, 2017	1.71%	1.99%	21.09%
Net per share/book value	10.95%	12.66%	36.07%
Return on invested capital	4.85%	12.25%	19.72%
Earnings growth per share			
2015-2017 vs. 2010-2012	222.83%	-10.99%	115.20%
2015-2017 vs. 2005-2007	423.40%	39.61%	2312.11%
Annual rate: 2015-2017 vs. 2010-2012	26.41%	-2.30%	16.56%
Annual rate: 2015-2017 vs. 2005-2007	18.00%	3.39%	37.48%

Note:
RIOC= (operating income-Taxes)/(LDTT+equity)
Accounting data is from Compustat

Thanks to its dominating ecosystem, AAPL has the best profit margin, return on invested capital (ROIC) and equity (ROE). For fiscal year of 2017, AAPL's profit margin was 21.1% compared to 1.7% and 2.0% for AMZN and WMT respectively. The low profit margins for AMZN and WMT are typical for the retail business sector.

Earnings per share/book value is a measure similar to ROE. AAPL is again in a commanding position, at 36.1%, while AMZN and WMT trail at 11% and 12.7% respectively.
The return on invested capital is calculated by taking the total operating income minus taxes divided by the sum of long-term debt and equity. AMZN shows the lowest ROIC with 4.9%. WMT is in the middle with 12.3%, and AAPL has the highest ROIC at 19.7%.

Taken together, AAPL has the best valuation and margin/profit combination. AMZN on the other hand shows the worst valuation and margin/profit combination. This is not surprising, as many growth firms pursue strong growth momentum at the expense of earnings. However, it may also indicate overvaluation, which can be a red flag for the value investor, assuming other indicators cannot justify the high valuation.

The earnings per share (EPS) growth further attests to the quality of AAPL and, to a certain extent, offers an explanation for the strong price momentum of AMZN and the falling favor of WMT. During the most recent five years, the cumulative EPS growth for AMZN is 222.83%, the highest among the three, with AAPL growing by 115.20% and, in stark contrast, WMT earnings per share declining by 10.99%. In the past decade, AAPL earnings per share grew by 2,312%, followed by AMZN 423%, and WMT by nearly 40%.

The annual compounding rate of earnings per share growth for AMZN is 18% for the past 10 years and 26.41% for the past five years. AMZN's EPS growth has accelerated in the most recent five years. AAPL's earnings per share growth is nearly 38% per year for the past 10 years and 16.6% for the most recent five years. AAPL's earnings per share growth continues to be high but at a slower pace compared to the first five years of the past decade. WMT earnings per share has been in decline. The 10-year annual earnings per share growth rate comes in at 3.4% and has turned negative in the most recent 5 years at -2.3%.

The accelerated EPS growth helps explain the greater price momentum of AMZN. At the same time, the high growth rate by AAPL strengthens the case of 'value' for AAPL. AMZN has the earnings multiple of seven times that of AAPL (159.41%/22.72%), while AMZN's earnings growth rate in recent years is only 1.6 times that of AAPL (26.41%/16.56%).

Due to the declines in recent years, the valuation of WMT has become more expensive than AAPL's. It seems that WMT does not have a case for undervaluation at the moment, at least relative to AAPL. The recent earnings multiple of WMT is 54.8 compared to AAPL's 22.7.

The traditional definition of value stocks is that their growth prospects are weak but they are so cheap that they deliver higher yields. In this sense, based on earnings history, WMT should be most likely a value stock candidate compared to AAPL and AMZN. However, the earnings multiples so far reveal a different story. The earnings multiple drop observed has not been enough to offset the declining growth prospects of WMT. This may explain Buffett's decision to reduce his holdings of the stock. WMT also fails the tests outlined in Graham's book in terms of earnings growth. He states that "[a] minimum increase of at least one-third in per-share earnings in the past ten-years using three-year averages at the beginning and end" is required (p. 184).

AAPL's earnings record shows that it is not a traditional value play either. Even if the earnings growth has slowed, it still shows attractive organic growth prospects. The value of AAPL comes from its relatively cheaper valuation compared with its stronger fundamental growth.

More on Value Strength of Apple

The following analysis substantiates the observation that AMZN may not be a security with an attractive price while AAPL is, based on the principles of value investing represented by Buffett.

Table 6
Earnings Forecast, Actual Earnings and Price Reaction

	Forecast 2015-2017	(Adjustment Stock Splits) Actual 2017	Forecast Error	Price Forecast Date	Price on Announcement Date	Price Advance
AAPL	$9.45	$9.21	-2.61%	$118.93	$168.11	41.35%
AMZN	$5.29	$4.56	-16.01%	$379.00	$1,390.00	266.75%
WMT	$6.01	$4.42	-35.97%	$83.52	$94.11	12.68%

Data source: forecast data is from I/B/E/S

In table 6, we report the median earnings projection for fiscal year 2017 made three years earlier for the three companies. We also report the actual earnings and price realized from the actual earnings announcements. Although most of the forecasts proved to be on the high side, the price has advanced significantly from the date when the forecast was made. However, the magnitude of the price advance varied considerably and render support to the view that AMZN may not be attractively priced relative to AAPL. The forecast error for AAPL is about -2.6% (computed by actual value minus forecasted divided by actual) and price advance is approximately 41%. It is worth noting that AAPL has actually been *under*estimated. In contrast, AMZN's forecast error is 16% (*over*estimated) and price advance was more than 266%.

Consistent with what we report in table 6, La Porta (1993) shows that contrarian strategies based directly on analysts' forecasts of future growth (i.e., buying stocks that are underestimated by analysts' forecast while selling those that are overestimated by analysts' forecast) can produce even larger returns than those based on financial ratios.

Earnings Stability

Graham emphasized that the price a defensive investor pays for a stock should not be unduly high as judged by applicable standards.

One of the standards that Graham proposed was to test earnings stability. Earnings stability is measured by taking the maximum decline in per share earnings in any one of the past ten years divided by the average of the three preceding years. No observed decline translates into 100% stability. Table 7 shows that APPL has a record of 100% earnings stability. AMZN has a disruption in 2011-2014 but shows strong momentum in recent years. AMZN's case may question the usefulness of looking at earnings, if the company is continuing to expand and make investments in potential growth areas. WMT's record again indicates the company is in a downward trend.

Table 7
Earnings Stability

	AAPL	AAPL-Stability	WMT	WMT-Stability	AMZN	AMZN-Stability
2005	0.22		2.68		0.78	
2006	0.32		2.92		0.45	
2007	0.56		3.16		1.12	
2008	0.77	0.40	3.35	0.43	1.49	0.71
2009	1.30	0.75	3.72	0.58	2.04	1.02
2010	2.16	1.29	4.18	0.77	2.53	0.98
2011	3.95	2.55	4.54	0.79	1.37	-0.65
2012	6.31	3.84	5.02	0.87	-0.09	-2.07
2013	5.68	1.54	4.85	0.27	0.59	-0.68
2014	6.45	1.14	4.99	0.19	-0.52	-1.14
2015	9.22	3.07	4.57	-0.38	1.25	1.26
2016	8.31	1.19	4.38	-0.42	4.9	4.46
2017	9.21	1.22	3.28	-1.37	6.15	4.27

Data source: EPS data is from Compustat, EPS has been adjusted for splits or stock dividend.
Stability is calculated by the current year's EPS minus the average of previous three year's EPS

In academic circles, it may still be an open question whether value strategy is fundamentally riskier than other more conventional approaches, and therefore requires higher expected returns, a case argued most forcefully by Fama and French (1992). The evidence here disputes the risk-based explanation, however, and supports the possibility of exploiting the naiveté of investors and markets. The value stock, AAPL, in this case, is on average a much better investment in "bad" states in which the marginal utility of wealth is high.

Growth companies may be popular to the public, but value investors demand more earnings and more assets per dollar of price than the popular issues allow. This is by no means the standard viewpoint of financial analysts. In fact, most analysts will insist that even conservative investors should be prepared to pay generous prices for growth stocks. The value perspective challenges the notion of growth by insisting that the margin of safety disappears when too large a portion of the price depends on ever-increasing earnings in the future. For AMZN's case, it may be too difficult to quantify the materialization of those potential areas. Graham's school opted for the inclusion of a modest requirement of growth over the *past* decade. In contrast, the popular tech stocks may only need a vision of the stock in the *future*.

According to Graham's basic recommendation, the stock, when acquired, should have an overall earnings to price ratio at least as high as the current high-grade bond rate. At the time of this publication, Moody's Aaa bond yield was still below 4%. AAPL provides 4.4% yield at 22.7 times the trailing twelve-month earnings. Therefore, APPL is a bargain opportunity, while AMZN is not.

Segment Profile

The fundamentals of the various business segments of the three companies convey additional qualitative and quantitative evidence to judge their valuation. That is, the relationship between price and indicated value differs considerably among the three.

Table 8
Segment Performance for AAPL, WMT and AMZN

AMZN Sales Share by Reportable Segments				AMAN Profit Margin by Reportable Segments				AMZN Sales Growth by Reportable Segments			
	2015	2016	2017		2015	2016	2017		North America	International	AWS
North America	59.5%	58.7%	59.7%	North America	2.24%	2.96%	2.67%	2015-2017	29.06%	23.82%	48.85%
International	33.1%	32.3%	30.5%	International	-1.99%	-2.92%	-5.64%	2010-2012	36.42%	30.22%	N/A
AWS	7.4%	9.0%	9.8%	AWS	19.12%	25.44%	24.81%				
WMT Sales Share by Reportable Segments				**WMT Profit Margin by Reportable Segments**				**WMT Sales Growth by Reportable Segments**			
					2015	2016	2017		Walmart U.S.	International	Sam's Club
Walmart U.S.	62.3%	64.0%	64.2%	Walmart U.S.	6.39%	5.76%	5.61%	2015-2017	3.31%	-2.19%	2.08%
International	25.8%	24.1%	23.8%	International	4.33%	5.00%	4.53%	2010-2012	2.70%	11.25%	6.81%
Sam's Club	11.9%	11.9%	11.9%	Sam's Club	3.20%	2.91%	1.66%				
AAPL Sales Share by Reportable Segments				**AAPL Profit Margin by Reportable Segments**				**AAPL Sales Growth by Reportable Segments**			
	2015	2016	2017		2015	2016	2017		America	Europe	Greater China
America	40.2%	40.2%	42.1%	America	33.22%	32.53%	31.76%	2015-2017	1.45%	4.47%	-12.68%
Europe	21.5%	23.2%	24.0%	Europe	32.83%	30.73%	30.06%	2010-2012	53.22%	39.40%	187.19%
Greater China	25.1%	22.5%	19.5%	Greater China	39.18%	38.84%	38.05%				

Data source: the calculation is based on the 2017 annual report from AMZN, WMT and AAPL

Let's begin with AMZN. As we see from table 8, the company's ecommerce business in North America is now the dominant part of its business, accounting for 60% of its sales. International ecommerce accounts for about 30%, but the number has declined slightly in recent years. The lucrative cloud computing business, the Amazon Web Service (AWS) segment, accounts for about 10% of the sales but the share has been increasing in recent years. AMZN's ecommerce has been a disruptive force in the retail industry. The Web Services business is a high growth area. The segment distribution is consistent with the growth profile AMZN exhibits.

Operating margins confirm that AWS is a high margin business as well. The recent fiscal year margin is about 25%, an increase over the 19% reported in 2015 but slightly lower than that of 2016. Even with the leading role in the ecommerce retail industry, it is a low margin business with operating margins consistently below 3%. The margins in the international ecommerce retail unit is actually negative and continues to deteriorate, suggesting the firm is driving for market share at the expense of short-term profit. This picture of segment profitability is likely to give value investors pause in the face of the hefty share price.

Another concern for the value investor when it comes AMZN revolves around growth. Segment growth data shows that ecommerce sales growth has been slowing when comparing the most recent three-year period with five years ago. AWS is the exception, which didn’t even exist five years ago. This indicates AMZN’s innovative power as it continues to enter into new growth areas, but these bets will not be particularly attractive to the value investor at this point.

WMT segment information is consistent with its stagnant and declining trajectory. Segment sales share has been pretty stable over the three-year period 2015-2017, except in the international segment which has declined slightly. The operating margin for all segments has been declining over the years even though the margin from Walmart U.S. and international are still higher than those of AMZN. Sales growth rates in all segments are generally declining relative to the same period five years ago. The only exception is in Walmart’s U.S. operations, where sales growth in the most recent period was 3.31% compared to 2.71% five years ago.

The information from AAPL’s segment is also consistent with AAPL’s steady and solid results. Here, we only report the results for the three major segments (America, Europe, and Greater China) which account for more than 86% of the total sales in each year. AAPL America sales share have grown slightly in recent years. The sales share from Europe has also shown notable increases. In contrast, the sales share from the Greater China market has experienced significant declines.

The operating margin results for AAPL’s three major segments confirm that AAPL is in a relatively higher margin business. The margin is always more than 30%, a stark contrast to the retail business for both AMZN and WMT. The margin from the greater China area is typically close to 40%. Unfortunately, AAPL’s sales growth has slowed when compared to the same period five years ago. This may explain the much more modest multiples AAPL is trading at compared to AMZN.

Other Aspects of Fundamentals

Based on recent valuations, the general consensus seems to be that AMZN is a force of growth, which leads to it trading at higher multiples. However, the problem is that even though the growth has been impressive in recent years, earnings remain unstable. Supporters of its valuation would argue that the firm has sacrificed the short-term earnings for long-term growth. WMT has been the opposite with earnings slowing down and earnings growth deteriorating. As a result, its valuation has suffered. Given the general slump of its fundamentals, the price is still relatively on the high end.

AAPL is still another story. The fundamentals of earnings growth, stability and margin are all very impressive. Most importantly, it is still trading at moderate multiples. It is a natural candidate for the value investor who demands the fair price come with a margin of safety.

In the following section, we discuss the growth rates by looking at items other than earnings. Table 9 presents capital expenditures (CAPX), operating cash flows (OCF), free cash flows (FCF), cash holdings, and sales over the 10-year period for each of the companies. We then calculated the annual growth rate for the 10-year period and the most recent 5-year period.

Table 9
More Fundamentals for AAPL, WMT and AMZN

AAPL

	CAPX	OCF	Free Cash Flow	CASH	Sales	Dividend Per Share	Repurchase
2007	735	5470	4735	15386	24006	0.00	0.02%
2008	1091	9596	8505	24490	32479	0.00	0.00%
2009	1144	10159	9015	23464	42905	0.00	0.00%
2010	2005	18595	16590	25620	65225	0.00	0.00%
2011	4260	37529	33269	25952	108249	0.00	0.00%
2012	8295	50856	42561	29129	156508	0.38	0.00%
2013	8165	53666	45501	40546	170910	1.63	12.98%
2014	9571	59713	50142	25077	182795	1.81	21.74%
2015	11247	81266	70019	41601	233715	1.98	15.21%
2016	12734	65824	53090	67155	215091	2.18	10.23%
2017	12451	63598	51147	74181	229234	2.40	10.81%
10-growh	32.71%	27.80%	26.87%	17.04%	25.31%		
5-growth	8.46%	4.57%	3.74%	20.56%	7.93%		

WMT

	CAPX	OCF	Free Cash Flow	CASH	Sales	Dividend Per Share	Repurchase
2007	14937	20354	5417	5569	375376	0.88	5.09%
2008	11499	23147	11648	7275	402298	0.95	2.15%
2009	12184	26249	14065	7907	406103	1.09	4.45%
2010	12699	23643	10944	7395	420016	1.21	8.66%
2011	13510	24255	10745	6550	444948	1.46	3.49%
2012	12898	25591	12693	7781	467231	1.59	3.93%
2013	13115	23257	10142	7281	474259	1.88	3.29%
2014	12174	28564	16390	9135	483521	1.92	0.50%
2015	11477	27389	15912	8705	479962	1.96	2.02%
2016	10619	31530	20911	6867	482154	2.00	4.16%
2017	10051	28337	18286	6756	496785	2.04	4.17%
10-growth	-3.88%	3.36%	12.94%	1.95%	2.84%		
5-growth	-4.87%	2.06%	7.57%	-2.79%	1.23%		

AMZN

	CAPX	OCF	Free Cash Flow	CASH	Sales	Dividend Per Share	Repurchase
2007	224	1405	1181	3112	14835	0.00	5.68%
2008	333	1697	1364	3727	19166	0.00	1.54%
2009	373	3293	2920	6366	24509	0.00	0.00%
2010	979	3495	2516	8762	34204	0.00	0.00%
2011	1811	3903	2092	9576	48077	0.00	1.47%
2012	3785	4180	395	11448	61093	0.00	3.80%
2013	3444	5475	2031	12447	74452	0.00	0.00%
2014	4893	6842	1949	17416	88988	0.00	0.00%
2015	4589	11920	7331	19808	107006	0.00	0.00%
2016	6737	16443	9706	25981	135987	0.00	0.00%
2017	11955	18434	6479	32315	177866	0.00	0.00%
10-growth	48.84%	29.36%	18.56%	26.37%	28.20%		
5-growth	25.86%	34.55%	74.98%	23.07%	23.83%		

Data source: accounting information is from Compustat
Free Cash Flow = Operating cash flow (OCF) - Capital expenditure (CAPX)

The results provide some additional justification for AMZN's high valuation. For example, AMZN has the highest growth rate for all the above items for the 10-year period. 10-year capital expenditure growth rate for AMZN is a whopping 48.84% compared to Apple's 32.71% and -3.88% for WMT. This provides evidence that AMZN is pursuing long-term investment rather than short-term earnings. Cash holdings growth for AMZN is also striking. The growth rate for the 10-year period is 26.37%, compared to Apple's 17.04% and WMT's 1.95%. This is consistent with AMZN's expansion strategy where holding cash is critical for investment or M&A.

Other growth rates, such as OCF, FCF and Sales, for the 10-year period for AAPL and AMZN are quite similar. However, when looking at the growth rate of the most recent 5-year period, AMZN is much stronger than AAPL. This shows that AAPL may have lost some of its growth momentum relative to AMZN. In this regard, AAPL becomes a better value play than AMZN.

If WMT's price continues to decline, it has the potential to become a bargain. The growth for WMT is generally meager and even gotten worse in recent periods. However, WMT does have a stable history of dividends and decent growth of OCF and FCF.

A concern of note for AMZN is that recent five-year annual growth rates of CAPX and Sales have been lower than its own 10-year annual growth rate. This implies that growth have been slowing in recent years. The result is consistent with the finding of differences between glamor and value stocks as noted in Lakonishok et al (1994). Using similar descriptive characteristics here, they found that although glamor stocks grew substantially faster than value stocks before the portfolio formation years, the relative growth rates of fundamentals over the post formation years for glamor stocks are much less impressive. The evidence indicates there may be excessive extrapolation of expected future growth implied by the very high valuation multiples.

Capitalization Rates for Growth Stocks

In his book *The Intelligent Investor*, Graham suggests a formula for the valuation of growth stocks. The formula is Value = Current (Normal) Earnings × (8.5 plus twice the expected annual growth rate). The growth figure should be the expected rate over the next seven to ten years. It is easy to make the reverse calculation and determine what rate of growth is anticipated by the current market price, assuming the formula is valid. We back out the implied growth rate for the three stocks using his equation. The results are in table 10.

The difference between the implicit annual growth rate and the even higher actual rate for AAPL provides further evidence that it is a value candidate. On the other hand, WMT's record suggests it has not reached an attractive price level for the value investor. AMZN has not generated a stable earnings record.

Graham once pointed out this caution: "the valuations of expected high-growth stocks are necessarily on the low side, if we were to assume these growth rates will actually be realized. In fact, according to the arithmetic, if a company could be assumed to grow at a rate of 8% or more indefinitely in the future its value would be infinite, and no price would be too high to pay for the shares". What the value investor actually does in these cases is to introduce a margin of safety into his calculations. On this basis, the buyer would realize his assigned objective even if the growth rate actually realized proved substantially less than the projection.

Table 10
Projected Capitalization Rates for AAPL, WMT and AMZN

	P/E 2014	Projected Growth Rate (%) 2014	Earned Per Share 2014	Earned Per Share 2017	Actual Annual Growth (%) 2014-2017	P/E Ratio 2017	Projected Growth Rate (%) 2017
AAPL	15.62	3.56	6.45	9.21	12.61	16.73	4.12
WMT	17.03	4.27	4.99	3.28	-13.05	32.5	12.00
AMZN	N/A	N/A	-0.52	6.15	N/A	190.16	90.83

	P/E 2012	Projected Growth Rate (%) 2012	Earned Per Share 2012	Earned Per Share 2017	Actual Annual Growth (%) 2012-2017	P/E Ratio 2017	Projected Growth Rate 2017
AAPL	15.11	3.31	6.31	9.21	7.86	16.73	4.12
WMT	13.93	2.72	5.02	3.28	-8.16	32.5	12.00
AMZN	N/A	N/A	-0.09	6.15	N/A	190.16	90.83

	P/E 2007	Projected Growth Rate 2007	Earned Per Share 2007	Earned Per Share 2017	Actual Annual Growth (%) 2007-2017	P/E Ratio 2017	Projected Growth Rate 2017
AAPL	39.05	15.28	0.56	9.21	32.31	16.73	4.12
WMT	16.06	3.78	3.16	3.28	0.37	32.5	12.00
AMZN	82.71	37.11	1.12	6.15	18.57	190.16	90.83

Data source: EPS is from Compustat

RESULTS AND CONCLUSION

In this article, using Graham's value investing principles, we applied several tests to examine the valuations of AAPL, WMT and AMZN stocks with respect to their individual fundamentals. In our review, we found that the most attractive investment option of the three was AAPL. Based on our analysis, the reasons for this include AAPL's large size in an industry that is still growing. Additionally, AAPL was very strong in the metrics examined here, as well as providing a stable dividend history supported by earnings stability and a proven growth record. This impressive track record has not been fully recognized in its stock price. This is the definition of a value play.

We further noted that WMT was not a likely candidate for investment due to declining earnings trend in an industry experiencing changes unfavorable to the company. Moreover, the company does not seem to be trading cheaply enough to justify a bargain in the eyes of the value investor.

And finally, our analysis suggests that AMZN is a difficult prospect for the value investor to embrace due to its valuation hinging on the high expectation of the continuing high-growth without a proven earnings record.

Buffett, a successful practitioner of value investing, has behaved quite differently toward each. From a value investor's perspective, our analysis indicates that AAPL has superior intrinsic value, WMT is not yet cheap enough to invest and AMZN is too expensive relative the underlying value. The evidence strongly suggests that Warren Buffett would agree and has largely invested accordingly, at least through 2018.

REFERENCES

Bartov, E. & Kim. M. (2004). Risk mispricing and value investing, *Review of Quantitative Finance and Accounting*, 23(4), 353-376.

Bloomberg News (2019, August 3). *Warren Buffett sees cash pile swell to new record at Berkshire Hathaway*. Retrieved August 7, 2019 from https://www.investors.com/news/warren-buffett-berkshire-hathaway-earnings-q2-2019-cash/

Boyle, M. & Kochkodin, B. (2018, November 14). *After More Than Two Decades, Warren Buffett Sells His Last Walmart Shares*. Retrieved August 7, 2019 from https://www.bloomberg.com/news/articles/2018-11-14/buffett-bids-farewell-to-walmart-after-20-years-as-amazon-reigns

Daniel, K. & Titman, S. (2012). Testing factor-model explanations of market anomalies, *Critical Finance Review*, 1(1), 103-139.

Dreman, D. (1977). *Psychology and the Stock Market: Why the Pros Go Wrong and How to Profit*, New York: Warner Books.

Fama, E. & French, K. (1992). The cross-section of expected stock returns, *The Journal of Finance*, 46, 427-466.

Graham, B. (1949). *The Intelligent Investor*, New York: Collins Business.

Graham, B. & Dodd, D. (1934). *Security Analysis*, New York: McGraw-Hill.

Kim, T. (2018, August 1). *Warren Buffett just made more than $2 billion in Apple*. Retrieved September 17, 2018 from https://www.cnbc.com/2018/08/01/warren-buffett-just-made-more-than-2-billion-in-apple.html

Lakonishok, J., Shleifer, A. & Vishny, R. (1994). Contrarian investment, extrapolation, and risk, *The Journal of Finance*, 49(5), 1541-1578.

La Porta, R. (1996). Expectations and the cross-section of stock returns, *The Journal of Finan*ce, 51(5), pp. 1715-1742.

Lutz, A. (2017, Feb. 14). *Warren Buffett just dropped Walmart and signaled the death of retail as we know it*. Retrieved September 17, 2018 fromhttps://www.businessinsider.com/warren-buffett-drops-walmart-stock-2017-2

Oyedele, A. (2018, August 6). *Warren Buffett's Berkshire Hathaway now owns a whopping $50 billion-plus stake in Apple, its largest in any single company*. Retrieved September 17, 2018 from https://www.businessinsider.com/warren-buffett-berkshire-hathaway-apple-stake-rises-over-50-billion-2018-8

Perez, S. (2018, December). *Walmart passes Apple to become No. 3 online retailer in U.S.* Retrieved August 9, 2019 from https://techcrunch.com/2018/11/16/walmart-passes-apple-to-become-no-3-online-retailer-in-u-s/

Powell, J. (2019, February 26). *Buffett puts the final nail in the coffin of book value*. Retrieved July 31, 2019 from https://ftalphaville.ft.com/2019/02/26/1551164404000/Buffett-puts-the-final-nail-in-the-coffin-of-book-value/

Rosenbaum, E. (2018, August 16). *Warren Buffett's warning on Walmart: There are better stocks than retailers*. Retrieved September 17, 2018 from https://www.cnbc.com/2018/08/16/warren-buffetts-warning-on-walmart-better-stocks-than-retailers.html