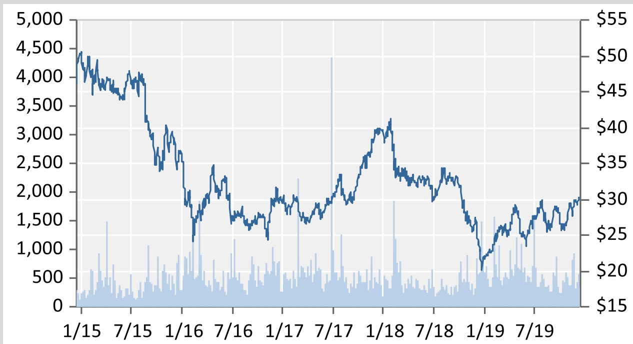
Financials, Investment Managers

Artisan Partners Asset Management, Inc.

Recommendation: Hold

Current Price	**$31.16**	---	Ticker	APAM
1 Year Bear	$29	*-7%*	Sh. Out. (M)	77.8
1 Year Base	**$34**	***10%***	M.Cap. ($M)	2,425
1 Year Bull	$43	*35%*	EV ($M)	2,478

Price History



Source: FactSet Prices

	5Y	3Y	2Y	LTM	YTD	3M	1M
Return	2.2%	13%	0.2%	53%	62%	10%	11%

Financials

	2015	2016	2017	2018	2019	2020F	2021F
Sales($M)	**806**	**721**	**796**	**829**	**791**	**823**	**856**
Gr. %	*-2.3%*	*-11%*	*10%*	*4%*	*-4.5%*	*4%*	*4%*
Cons.	-	-	-	-	-	*5.3%*	*3.8%*
Ind.	*-3.5%*	*-9.6%*	*9.6%*	*10.9%*	*-6.8%*	*6%*	*-2.4%*
EPS	**1.85**	**1.57**	**0.75**	**2.84**	**2.62**	**2.97**	**3.14**
Gr. %	-	*-11%*	*-52%*	*277%*	*-8%*	*13%*	*6%*
Cons.	-	-	-	-	-	*6.5%*	*3.7%*
Ind.	*18.8*	*5.1%*	*18.9%*	*-4.2%*	*6.7%*	*9.7%*	*5.4%*

Ratios

	2015	2016	2017	2018	2019	2020F	2021F
NPM	**10.2%**	**10.1%**	**6.2%**	**19.1%**	**19.2%**	**19.5%**	**19.8%**
Ind.	*15.4%*	*9.5%*	*14.8%*	*18.6%*	*20.9%*	-	-
ROE	*54.6%*	*45.8%*	*27.8%*	*113.4%*	*113.9%*	*138.0%*	*172.3%*
Ind.	*14.9%*	*11.4%*	*11.2%*	*12.7%*	*16.4%*	-	-
ROA	*7.32*	*6.37*	*3.79*	*16.91*	*18.3%*	*18.9%*	*19.8%*
Ind.	*1.8%*	*1.9%*	*2.5%*	*4.9%*	*3.5%*	-	-
A T/O	0.90	0.77	0.90	1.02	0.96	0.97	1.00
A/E	7.27	7.09	7.75	5.73	6.75	7.99	9.57

Valuation

	2015	2016	2017	2018	2019	2020F	2021F
P/E	19.39	18.95	52.67	7.78	8.40	11.50	11.40
v. Ind.	18.00	17.32	19.39	10.99	14.91	13.59	12.90
P/S	1.59	1.57	2.20	1.29	2.22	-	-
P/B	10.93	9.52	18.13	8.85	16.65	-	-
P/CF	3.98	4.20	8.64	3.24	5.79	-	-
EV/EBITDA	1.79	1.78	2.62	1.51	6.4	-	-
D/P	*7.2%*	*9.3%*	*7.5%*	*14.9%*	*9.5%*	-	-

Summary

I recommend a neutral rating with a target of $34. Artisan has historically traded in line with equity market sentiment and in the past year, APAM has shown significant price appreciation. Despite Artisan's excellent performance of its investment strategies, the firm has struggled with translating this performance into consistent AUM growth. I forsee this becoming an increasing strife for the firm as domestic investors shift into more passive strategies. The stock is fairly valued based on relative and DCF analysis.

Key Drivers

- Investment strategy performance: Retaining investors through generation of alpha is the largest driver for Artisan's long-term success. Of Artisan's 14 established strategies, 13 have outperformed their relative benchmarks since inception. Strong performance retains AUM and creates revenues for APAM.
- Expansion of market share through talent acquisition: The ability for Artisan to efficiently attract top managers and launch new investment strategies provides opportunity for AUM growth.
- Increased demand for active management in foreign markets: Artisan has more than doubled its share of AUM from investors in the past five years. As domestic demand for active AUM falls in the U.S., the firm has successfully attracted new investors to recoup potential lost revenues.
- Competition: Artisan Partners' yields the highest dividend return within its peer management and the firm consistently pays out 80% of its cash each quarter. This capital allocation structure puts Artisan ahead of its peers.

Valuation

Using a relative valuation approach, APAM appears to be fairly valued in comparison to the investment management industry. DCF analysis implies that the stock is much undervalued and worth $39.54. Taking a weighted average of the approaches suggests that APAM is fairly valued, as the stock's value is about $34 and the shares trade at $33.16.

Risks

- Failure to retain key investment managers
- Failure to generate returns above benchmarks
- A slowdown in equity markets, effecting investor sentiment
- Macroeconomic risks and global political uncertainty

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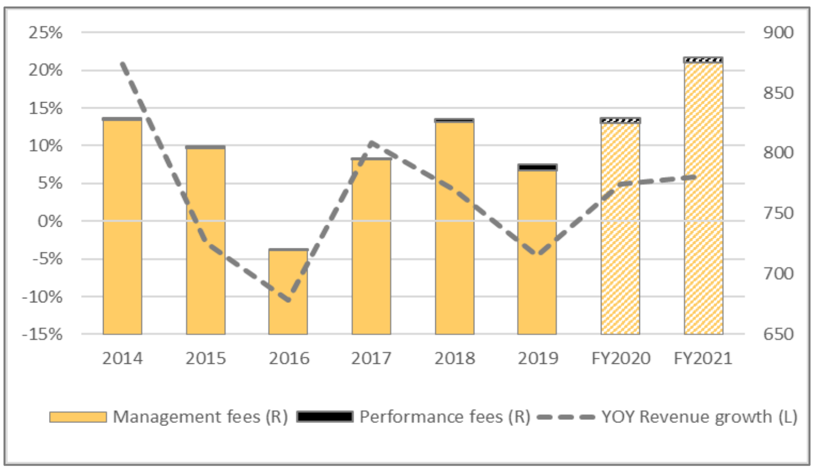
Company Overview

Artisan Partners Asset Management Inc. (APAM) operates as an investment management firm with a focus on providing high value add strategies to a global network of clients. Artisan Partners structures itself around a central business leadership team that provides the necessary operational infrastructure to its autonomous investment teams.

Artisan currently operates nine investment teams, managing 17 individual investment strategies. Producing unique and attractive investment strategies is a core business model for Artisan. The firm's autonomous investment teams operate a widespread range of U.S., non-U.S. and global investment strategies that vary by asset class, market cap and investment style. The firm is headquartered in Milwaukee, WI and was founded 1994. APAM completed its IPO in March 2013.

Artisan Partners generates almost of its revenues from investment management fees, which are a specified percentage of client's average assets under management. A majority of Artisan's expenses, including compensation expense, accumulate directly with changes in revenue. In 2018, the firm generated $828.7 million in revenues. As shown by figure 1, Artisan has grown revenues 0% in the past five years. Over a shorter, three-year term, the firm grew revenues by ~15%. The fee structure is divided into two segments:



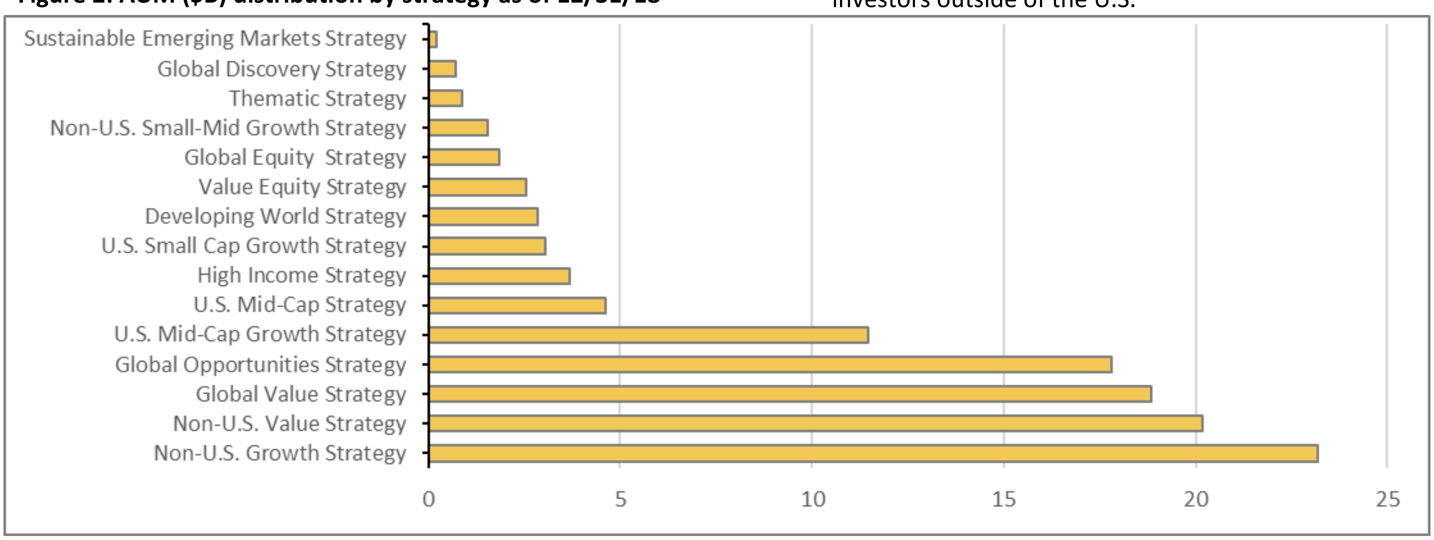
Source: FactSet

1) **Management Fees** – The vast majority of Artisans revenues come from management fees. This segment made up approximately 99.6% of total revenue or $825.7 million in 2018. The firm determines these fees through investment advisory and sub-advisory agreements with clients.

2) **Performance Fees** – The remaining revenue is derived from performance fees. Artisan generated $3 million, or 0.4% of total revenue, from this segment in 2018.

As of June 30, 2019, the firm had $113,843 million in assets under management. Of Artisan's assets, 79% belong to clients and investors within the U.S., and the remaining 21% belong to clients and investors outside of the U.S.

Figure 2: AUM ($B) distribution by strategy as of 12/31/18



Source: Company filings

Business/Industry Drivers

Artisan Partners' company and industry drivers can be found below:

1) Investment Strategy Performance
2) Expansion of Market Share through Talent Acquisition
3) Increase in Demand for Asset Management in Foreign Markets
4) Competitor Analysis
5) Macroeconomic Environment

<u>Investment Strategy Performance</u>

Since inception, only one of APAM's strategies has failed to beat its benchmark

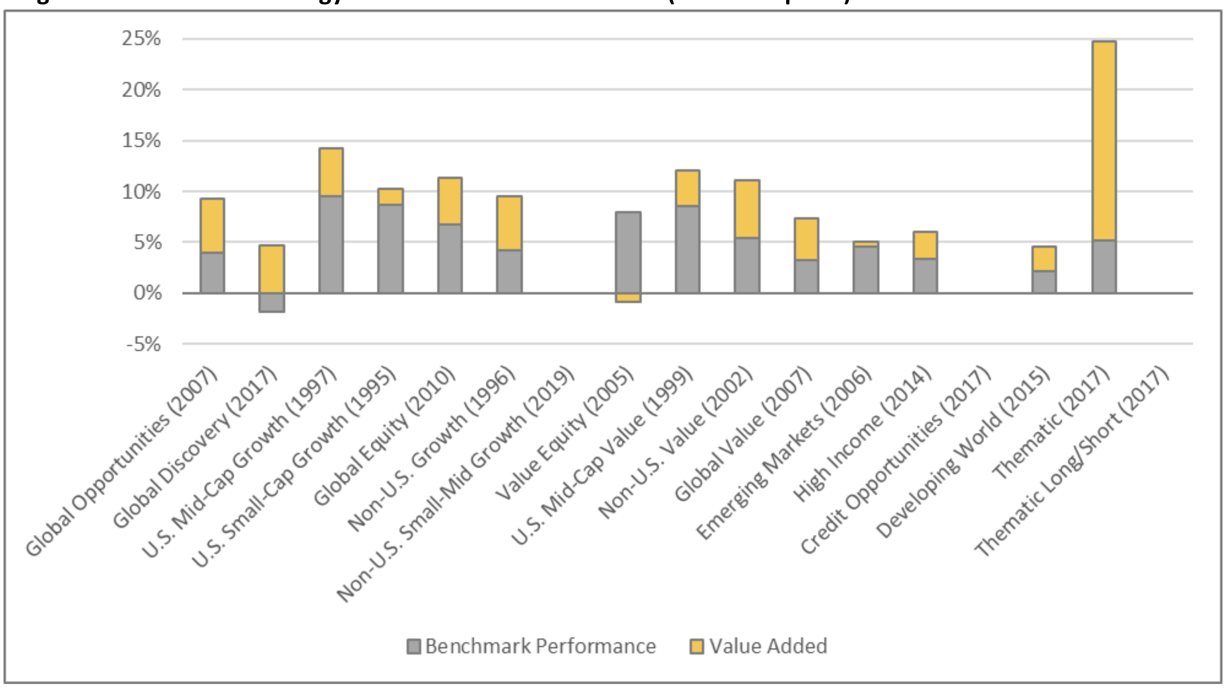
Being a high-value added asset management firm, the most important driver to Artisan Partners' long-term success will be its ability to generate alpha over the long-term. The firm owns nine different autonomous investment teams:

- Growth Team	- Global Equity Team	- U.S. Value Team
- Global Value Team	- Sustainable Emerging Markets Team	- Credit Team
- International Value Team	- Developing World Team	- Thematic Team

These nine teams collectively operate 17 individual investment strategies. APAM benchmarks these strategies to their best respective market indexes. Figure 3 below shows us that out of Artisans' 14 established[1] strategies, 13 outperformed their relative indices on a gross composite return bases.

The firm's four largest strategies collectively hold about 71% of the firm's total AUM or $80 Billion. The strategies are as follows: Non-U.S. Growth, Non-U.S. Value, Global Value, and Global Opportunities. Their track record is stellar and each fund has outperformed its relative indices on both a short five year term and over the longer term. This performance is critical for Artisan's overall success.

Figure 3: Investment Strategy Performance vs. Benchmark (Since inception)



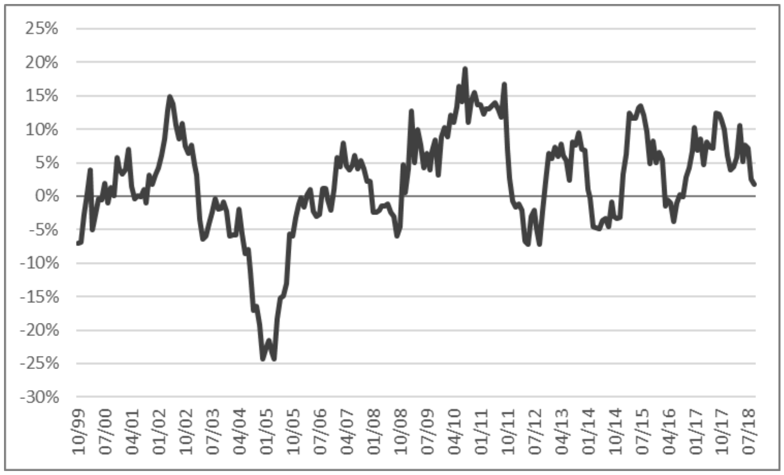
[1] The Non-U.S. Small-Mid Growth Strategy has yet to report returns. Artisan has intentionally omitted returns for the Credit Opportunities and the Thematic Long/Short strategies

Trends in foreign markets is another large driver for Artisans' overall strategy performance. The firm currently has nine (including its four largest funds) investment strategies solely targeting returns from foreign markets. To put the value added from these strategies into perspective, we can look at the past 20 year returns of the S&P 500 vs. the MSCI Global Index (ex. U.S.).

Artisan's four largest strategies, which make up ~80% of AUM, focus on foreign markets

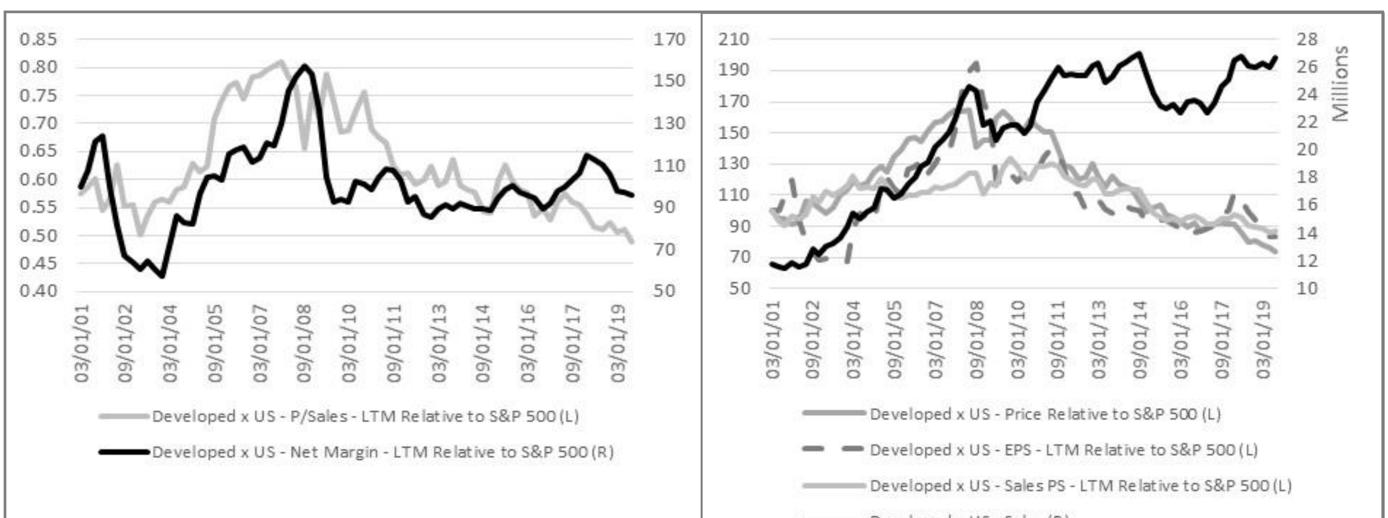
Figure 4 below shows the year over year return difference between the two indices. We can see that the S&P 500 generate higher returns on a much more frequent basis than the MSCI Global Index (ex U.S.). While some may say that there are more opportunities to find growth and value in emerging markets, with that incentive to invest comes a lot of risk. It is impressive that Artisan's largest and best performing strategies are operating in markets that are not necessarily generating the greatest returns.

Figure 4: YOY S&P 500 returns vs. YOY MSCI Global Index (ex U.S.) returns



To continue the discussion on US markets vs. foreign markets, figures 5 and 6 below look at the growth and valuation of these markets. We can see that ex-US growth is beginning to pick up, while the 2018-19 recent relative move down may be temporary as a result of the US tax cut. A reversal of this trend could be excellent for Artisan's performance due to its heavy fund exposure to the global markets.

Figures 5 & 6: LTM Developed x US P/Sales and Net Margin, Relative to S&P500 (left) and Developed x US Sales Valuations relative to S&P500 (right)



Source: FactSet

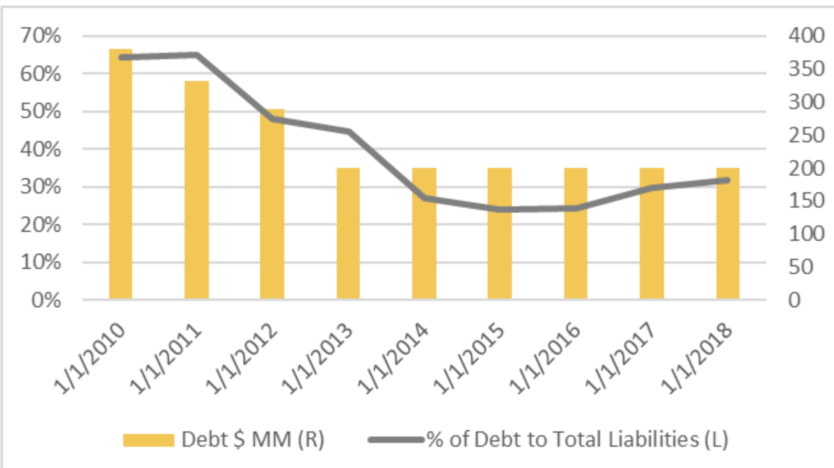
Artisan Partners launched six new investment strategies in the past five years

Expansion of Market Share through Talent Acquisition

With the freedom given to Artisans' autonomous investment teams and the ever-changing landscape within the field, it is important that the firm is ready to create new strategies whenever necessary. In the past five years, Artisan Partners launched seven new funds: Global Discovery, Non-U.S. Small-Mid Growth, High Income, Credit Opportunities, Developing World, Thematic, and Thematic long/short. The introduction of these funds raised an additional 9.63 billion in AUM as of 6/30/19. Collectively, new strategies have yielded an average of 967 BPs net of fees since inception. For reference, the average BPs return net of fees for established strategies over the past five years was only 92.69.

Historically, Artisan Partners has expanded its investment strategy offerings through acquisitions of other investment managers. One such example came in 2006 when the firm's acquired four senior investment professionals from DuPont Capital Management to launch a new emerging markets strategy. Whilst an efficient and necessary way for the firm to grow, Artisan became highly levered in this process. In 2010, debt made up ~66% of total liabilities vs. the ~30% we see now. Figure 7, below, shows Artisan's debt balance over time.

Figure 7: Firm Total Debt in ($) millions vs. Firm Debt as a % of Total Liabilities

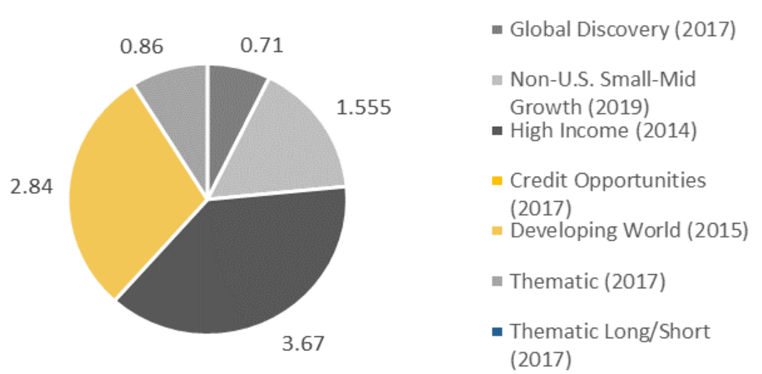


Source: FactSet

In the past ~8 years Artisan has focused on expanding its investment strategies through both direct talent hiring and development of internal talent. This strategy has reduces costs for the firm and allows for a more organic approach to growth. The autonomous nature of Artisan's structure allows for a seamless onboarding process for new managers.

In 2018, Rezo Kanovich joined Artisan Partners to oversee the new Non-U.S. Small-Cap Growth Strategy. Prior to joining the firm, Kanovich was a PM of the Oppenheimer International Small-Mid Company fund. Since its release to investors on 1/1/2019, Kanovich's strategy has raised $1.555 billion in AUM and generated 1,145 BP value add net of fees.

Figure 8: Distribution of AUM ($ B) in newly established strategies



Source: Company filings

In 2016, Chris Smith joined the firm as a founding portfolio manager for the new thematic team. The thematic team have since released two strategies: thematic and a thematic long/short. The thematic strategy released to investors in May of 2017 and has since raised $860 million in AUM and generated 1,684 BP value add net of fees.

Other notable strategy acquisition developments include:

2015 - Developing World Fund launched by Lewis Kaufman

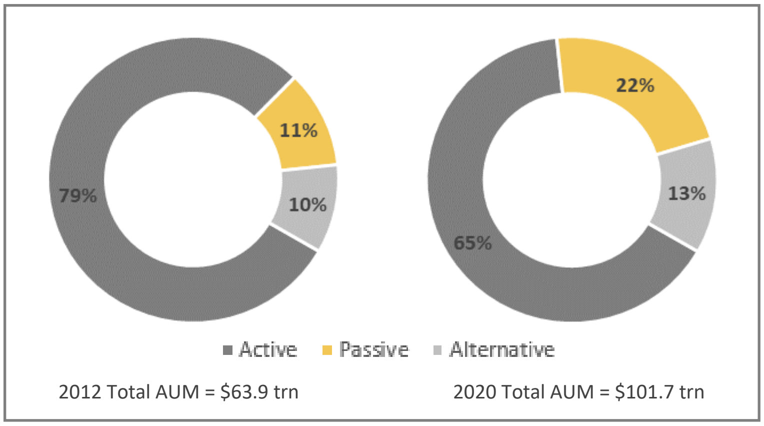
2014 – Launch of High-Income Fund by Bryan Krug

Artisan Partners has increased investment from foreign clients by ~40% since 2013

Increase in Demand for Asset Management in Foreign Markets

A large potential growth opportunity for Artisan Partners is leveraging the autonomous nature of its investment teams to tap funds from foreign investors. The growing number of sophisticated investors in emerging markets such as Asia, Africa, and the Middle East have driven new demand for active management across the industry. This has helped to offset the declining active AUM share in the U.S. due to the rise of lower fee passive management strategies. Artisan has been able to keep fees high amidst the trend due to its commitment to high-yielding equity strategies.

Figure 9: 2012 AUM Breakdown (Left) and 2020 est. AUM Breakdown (Right)

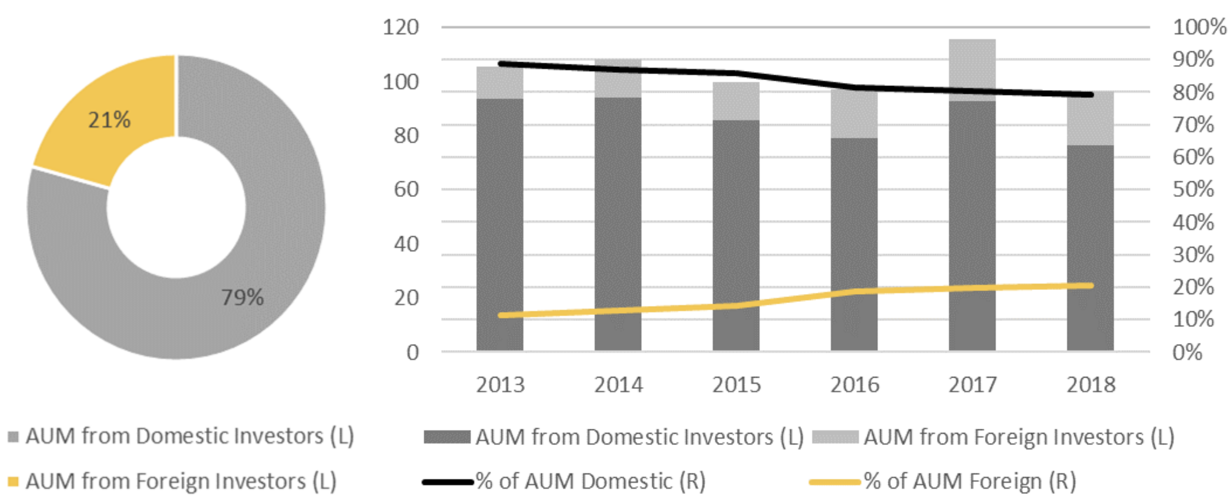


~15% growth estimated for non-active AUM

Source: PwC Analysis

Since its IPO in 2013, APAM has steadily grown its share of AUM from foreign investors. Figures 6 and 7 below shows a breakdown of Artisan's AUM allocation to domestic and foreign clients since 2013. In 2013, only ~11% of AUM was generated from foreign investors. Today, foreign investors represent ~21% of total AUM. This increase represents a ~40% growth in foreign investor AUM since 2013.

Figures 10 & 11: AUM distribution (Left) and AUM distribution history since 2013 (Right)

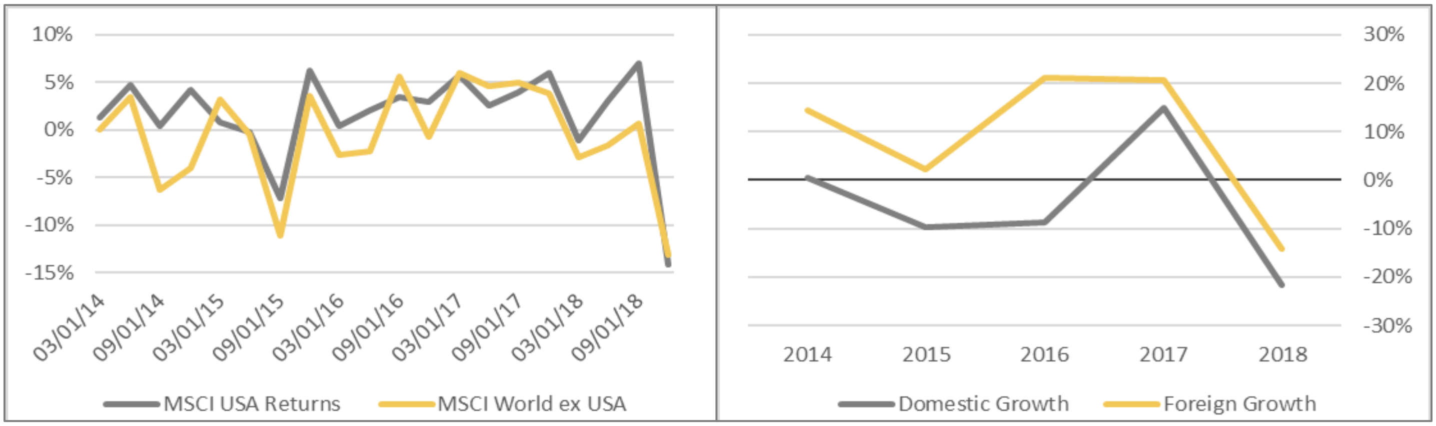


Source: FactSet, Company Filings

Artisan's AUM from foreign investors is growing faster than AUM from domestic investors

I believe that this is a huge opportunity for Artisan as competition for domestic investors increases. Figure 13 below shows that since 2014 foreign AUM growth has outperformed domestic growth on a relative basis. I expect to see these this trend to continue as active domestic AUM share continues decreasing. This money flow trend correlates well with world market trends. In periods of low returns, money flows are fairly negative and vice versa. A strong initiative for Artisan is keeping foreign growth rates high during the steady run of positive market returns from EOY 2015 to EOY 2017.

Figures 12 & 13: MCSI USA Annual Return vs. MSCI ex USA Annual Return (Left) & Domestic and Foreign AUM Growth Rate (Right)



Source: FactSet, Company Filings

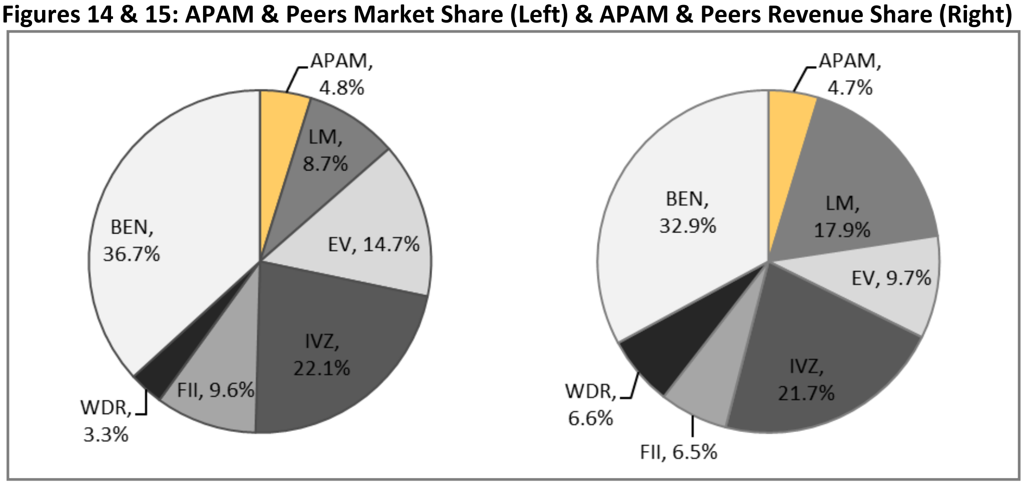
Competitor Analysis

Active managers face an extremely competitive market space. Artisan Partners competes with the small-to-mid part of the industry based on market cap and AUM trends. New entrants to this market may face boundaries due to tight regulations and difficulties establishing relationships and raising capital. Firms, however, are very susceptible to competitive AUM fluctuations and underperforming a benchmark during a given quarter can prove costly to the bottom line.

APAM carries additional risk compared to competitors due to its exposure to equity markets

Looking at Artisan Partners specifically, figure 14 and 15 below shows that the firm has 4.8% of its peer-allocated market cap while contributing 4.7% of the market's sales. This implies that Artisan is fairly valued, assuming it has the same margins, risk, and growth as the competitors. Its net margins are right at the median (see figure 29). I expect good growth in the future for AUM, but perhaps risk is higher since the firm is focused on equity markets.

Figures 14 & 15: APAM & Peers Market Share (Left) & APAM & Peers Revenue Share (Right)

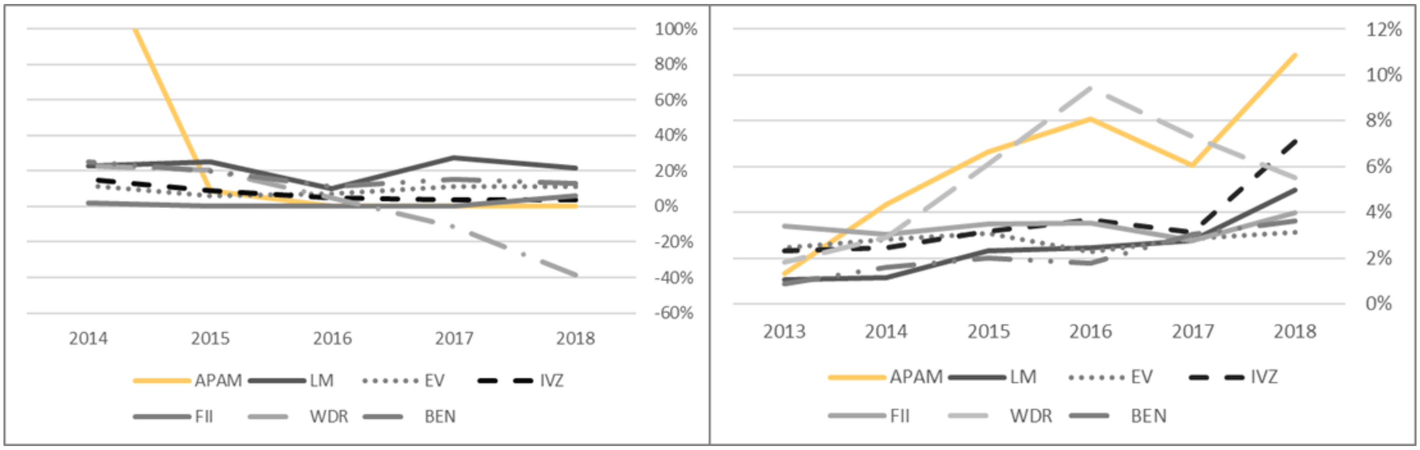


Source: FactSet

Artisan Partners averages a higher dividend payout ratio than all of its peers

A large differentiator for Artisan over its peers is its extremely high dividend yield. Over the past five years, Artisan Partners has annually yielded a dividend ~3% greater than its closest peer. Artisan Partners' management has stated that it expects to allocate 80% of cash generated every quarter towards dividends for shareholders. In addition to the quarterly dividend, management may also distribute a "special annual dividend" that will take into consideration Artisans' annual performance and overall business condition. For perspective, in Q4 of 2018 the firm distributed a quarterly dividend of $0.56 a share plus a special annual dividend of $1.03 per share. This annual dividend rewards investors and may help convince investors to stick around for a full dividend cycle. Figures 16 & 17 below show Artisan Partners' dividend distribution statistics compared to peers.

Figure 16 & 17: Peer Group Dividend Growth (Left) & Peer Group Annual Dividend Yield (Right)



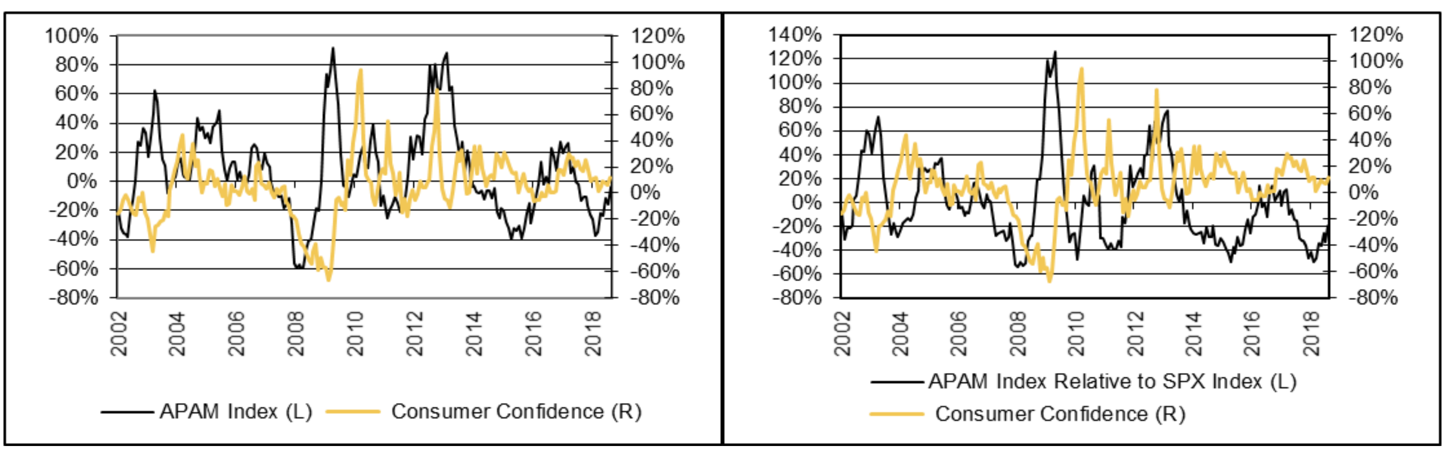
Source: FactSet

Investment managers react far faster to the market than their potential investors

<u>Macroeconomic Trends</u>

The investment management industry is a cyclical business, and is positively correlated to consumer confidence. APAM and its competitors in investment management are particularly sensitive to the overall economic environment. The peer group relative to S&P tends to lead the consumer confidence index by about a year, which would make sense as consumers may be sightly slower to react to trends in the market than investment managers.

Figures 18 and 19: Consumer confidence YOY compared to APAM peers YOY (left) and Consumer Confidence YOY Compared to APAM Peers Relative to the S&P 500 Index (right)



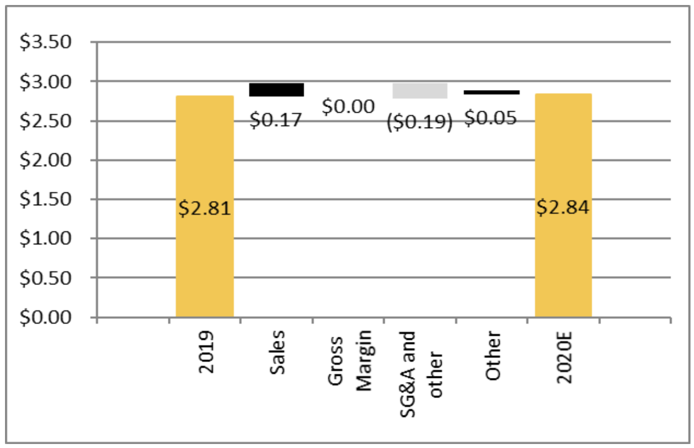
Source: Bloomberg, IMCP

Financial Analysis

Quantification of Drivers

I anticipate EPS to grow slightly to $2.84 in FY2020 – up from $2.81 in 2019. Sales growth, driven by a strong equity market environment and inflows to AUM, will continue to be Artisan's most important earnings driver. I predict that our current market condition continues throughout the next year and that strong fund performances will add $0.17 in EPS accretion. Artisan's efficiency-driven autonomous business model helps to eliminate almost all direct costs associated with sales. I predict a continuation of this initiative in 2020, with gross margin having a net zero on EPS growth. Although, SG&A and other will rise as a percentage of sales, detracting $0.14 from EPS.

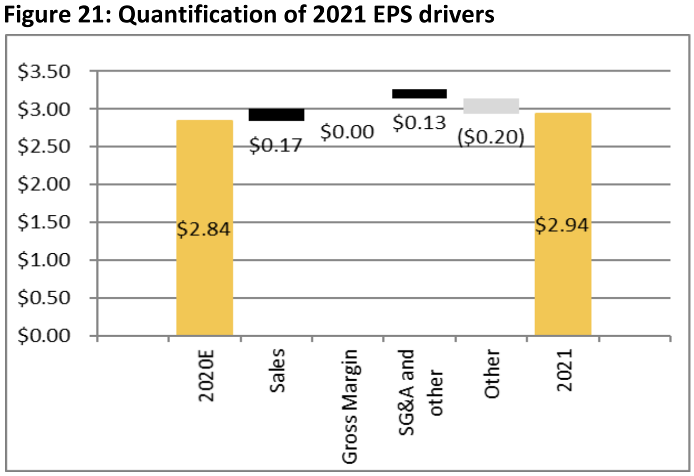
Figure 20: Quantification of 2020 EPS drivers



Source: Company Reports, IMCP

In FY2021, I predict EPS to expand once again to $2.94 from 2020's expected eps of $2.84. Assuming that we see a lack of post-election volatility in the equity markets, I expect returns to continue their above average trend. Sales and a decrease in SG&A as a percent of sales will add a combined $0.30 in EPS accretion. Almost three years of strong equity market performance would leave Artisan with surplus cash, and I predict new investment from the firm on the ever-evolving technology side of the business. I expect this spend to decrease EPS by around $0.20.

Figure 21: Quantification of 2021 EPS drivers



Source: Company Reports, IMCP

Estimate & Consensus Comparison

I am slightly more optimistic than consensus with my estimates for 2020 and 2021. My estimates for EPS growth are fairly bullish relative to consensus over both forward-looking years. This is because I believe in Artisan's ability to continue growing its share of AUM from foreign investors. The above average AUM growth in this division will be extremely important for driving sales in a post-election U.S. market. Any signs of increased volatility may drive domestic investors to shift their assets into strategies that are more passive, taking sales away from the firm. I expect sales to reflect these same beliefs, and grow at a consistent rate of 4% in the next two years.

Figures 22: APAM Estimates vs. Market Consensus

My Estimates	FY2020	FY2021	Consensus	FY2020	FY2021
EPS	$2.97	$3.14	EPS	$2.77	$2.87
Growth	13.2%	5.9%	Growth	6.5%	3.7%
Sales ($ M)	823	856	Sales ($ M)	836.3	855.2
Growth	4.8%	6.0%	Growth	5.3%	2.3%

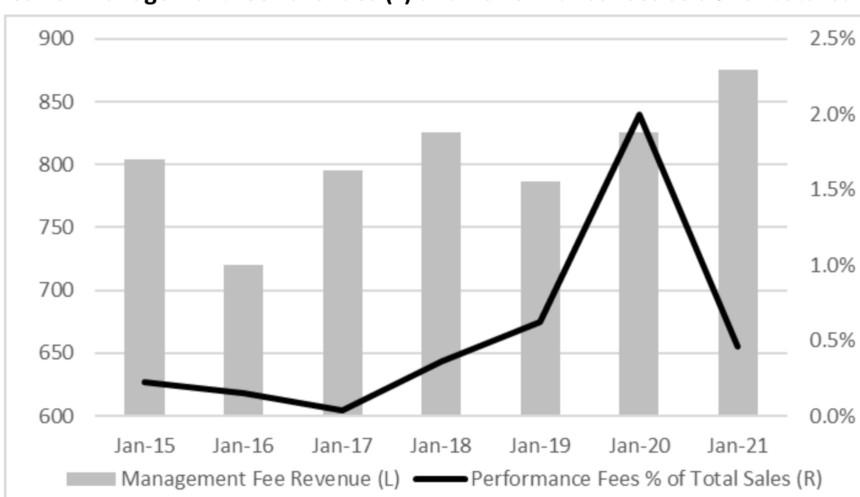
Revenues

Artisan Partners' revenue growth has increased steadily since hitting a five-year low in 2016. Since then, Artisan has increased revenues by about ~15% to an all-time sales high in 2018. As stated previously, the vast majority of the firm's sales are derived purely from management fees on AUM. In 2018, management fees accounted for 99.6% of revenues generated by the firm. A lot of volatility in revenues can be explained by this business structure, and a 10% to -10% YOY swing in revenues in not uncommon for APAM.

The firm is on track to decrease revenues by about ~5% in 2019 to $791m. I predict this trend to reverse come 2020 and have modeled a 4.8% uptick in revenue from 2019. Consensus is a bit more optimistic myself and they predict a 5.3% growth in revenues in FY2020. Looking forward to FY2021, I am confident that Artisan will continue growing sales, and have priced in a reflecting growth rate of 6%.

Performance fees make up the remainder of Artisan's revenues. These fees represent a minuscule portion of the firm's revenues, but they may tell a lot about performance in a given year. YOY changes is this category tend to mirror management fee growth and I have forecasted high growth bar FY2021, where I predict incentive fees to slow slightly despite growth.

Figures 23: Management fee revenues (L) and Performance fees as a % of total sales (R)



Source: Company Reports, IMCP

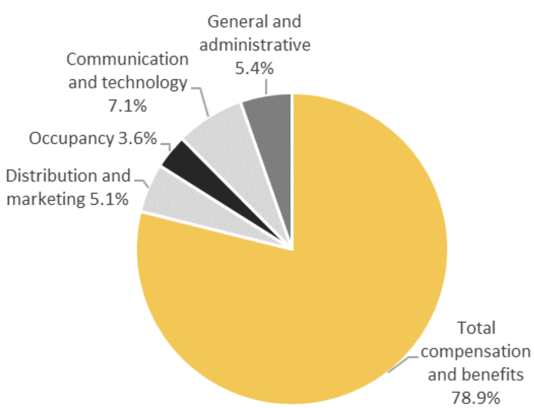
Operating Income and Margins

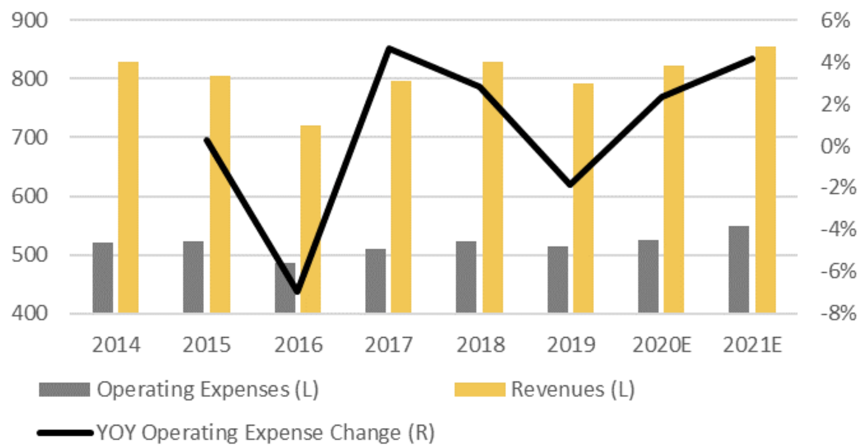
Compensation related expenses have totaled ~79% every year for the past 5 years

A majority of Artisan's expenses fluctuate directly with revenues. Operating expense is composed primarily of compensation & benefit packages, marketing & technology costs, and selling, general and administrative costs. The firm's operating expense ratio is extremely consistent and historically costs have floated between 62% and 67% of total revenues. The firm, however, will not cut costs that affect the overall structure of the firm. Meaning that if revenues decline too much, profits will begin declining as well.

The largest expense comes from its compensation structure. Historically, compensation and benefits have accumulated roughly ~79% of the firm's total expenses. In such a performance and incentive-based field, this ratio does not surprise me. Human capital is Artisan Partners' greatest asset and it must be willing pay a premium to keep its managers in such a competitive industry.

Figures 24 & 25: Composition of 2018 operating expenses (left); Operating expenses & Revenues vs YoY operating expense growth (right)





Source: Company Reports, IMCP

Return on Equity

Artisan Partners' ROE relative to comps is extremely high (refer to figure 29). From the firm's IPO in 2013 to EOY 2018, APAM has averaged an ROE of 58.66%, but in the past three years, ROE has risen by almost ~75%. In 2018, ROE was significantly impacted by a 13% increase in sales margin, which can be credited to that year's extremely strong equity bull market. With my predicted continuation of a strong sales trend, combined with the equalization of common stock issuance by the firm, we see ROE continue to rise to all-time highs for the firm.

Market environment heavily effects APAM's ROE: In 2018, ROE rose 75%

Figure 26: ROE breakdown, 2016 – 2021E

3-stage DuPont	2016	2017	2018	2019	2020E	2021E
Net income / sales	10.1%	6.2%	19.1%	19.2%	19.5%	19.8%
Sales / avg assets	0.77	0.90	1.01	0.96	0.97	1.00
ROA	7.8%	5.6%	19.3%	18.3%	18.9%	19.8%
Avg assets / avg equity	7.18	7.39	6.61	6.21	7.32	8.72
ROE	55.7%	41.3%	127.4%	113.9%	138.0%	172.3%

Source: Company Reports

With a 3-stage DuPont analysis, we can see that APAM's ROE was considerably positively affected by rising margins and asset turnover. This drove ROA from 7.85 in 2016 to 18.35 in 2019. ROE is also rising, despite the leverage ratio declining from 7.2 to 6.2. Going forward, I expect margin and asset turns to rise modestly, but there will be a big bump in leverage.

Free Cash Flow

Figure 27: Free cash flow calculations

Free Cash Flow	2015	2016	2017	2018	2019	2020E	2021E
NOPAT	$222	$182	$154	$264	$229	$244	$259
Growth		*-17.9%*	*-15.5%*	*71.5%*	*-13.0%*	*6.5%*	*5.9%*
NOWC	209	199	202	216	231	220	206
Net fixed assets	702	705	609	549	577	588	611
Total net operating capital	$911	$904	$811	$765	$808	$807	$817
Growth		*-0.7%*	*-10.3%*	*-5.7%*	*5.6%*	*-0.1%*	*1.2%*
- Change in NOWC		(9)	3	14	15	(11)	(14)
- Change in NFA		3	(95)	(60)	28	11	24
FCFF		$189	$246	$310	$186	$245	$249
Growth			*30.7%*	*25.7%*	*-39.8%*	*31.5%*	*1.6%*
- After-tax interest expense		9	3	9	9	9	9
+ Net new short-term and long-term debt		(6)	48	(31)	(12)	19	25
FCFE		$174	$291	$270	$165	$255	$265
Growth			*67.1%*	*-7.4%*	*-38.7%*	*54.4%*	*3.9%*
* NWC excludes cash							
** No adjustment is made for debt							

Source: Company Reports, IMCP

In 2017, APAM incurred a $420M income tax expense, abnormally reducing NOPAT

APAM's free cash flow has been fairly volatile over the last several years. NOPAT has been trending upwards since 2017. The 2017 NOPAT decrease of ~16% was from an abnormally high deferred-tax expense due the federal tax reform, reducing NOPAT in this year to levels unintended. After 2018, NOPAT rose by 71.5%. This is due to the large reduction in income taxes paid by Artisan after the tax reform, which allowed the firm to reduce its income tax expense by a considerable after adjusting for new policies in the prior year.

I expect NOPAT to continue its current trend, and rise / fall with overall equity market performance. Looking forward two years, my forecast is based on the belief that world equity markets will not see a significant pullback. Compared to investment in 2019 of $43 million, in 2020 reduction in working capital and growth in net fixed assets offset and in 2021, I only forecast $10 mil in investment. Given NOPAT is rising and investments are low, I expect FCFF to rise. FCFE is even higher after considerations of new debt. This will be used to help pay a dividend that is greater than income.

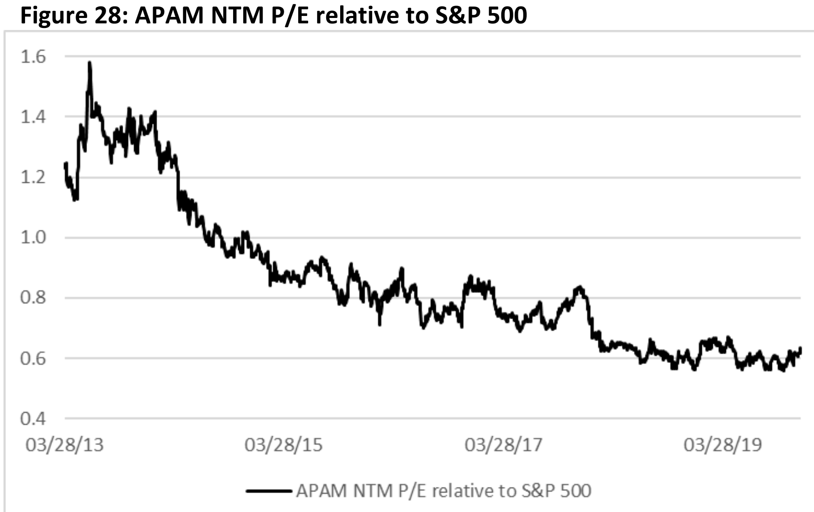
Valuation

APAM was valued using multiples and a 3-stage discounting cash flow model. Based on earnings multiples, the stock is priced in line with other comparative firms and is worth $26; however, due to the volatility of APAM's earnings the past few years, as well as the effect of recent market conditions, I believe this number undervalues Artisan's potential. Relative valuation shows APAM to be overvalued based on its fundamentals versus those of its peers in the investment management space. A P/B valuation yielded a price target of $27. A detailed DCF analysis values APAM higher, at $40; I give this value a bit more weight because it incorporates assumptions of margin changes and appropriate growth rates for an expanding company like APAM. Based on these valuations, I believe the firm is worth $34.

Trading History

APAM is currently trading near its all-time low relative to the S&P 500, but it is bottoming. This is the result of consistently good, but overall lackluster, earnings performance and the fact that most analysts believe that the firm's growth initiatives haven't been translating into earnings. APAM's current NTM P/E is at 11.29 compared to its five year average of 12.95. While I expect some progression towards that number in the future, I understand that there could be hindering natural growth barriers (cyclical client flows affecting revenues, etc.) that effect the firm's ability to convince the market of growth potential.

Figure 28: APAM NTM P/E relative to S&P 500



Source: FactSet

Assuming the firm maintains its current 11.29 NTM P/E at the end of 2020, it should trade at $33.19 by the end of the year:

- Price 2020E = NTM P/E x EPS 2021E = 11.29 x $2.94 = $33.19.

Discounting $33.19 back to today at a 15.8% cost of equity (explained in Discounted Cash Flow section) yields a price of $26.33. Given APAM's consistent earnings growth and continued profitability, this seems to be a reasonable valuation. However, one might argue this valuation metric underrates APAM's growth due to naturally cyclical tendencies regarding money flows for the firm and the impacting results on past earnings growth.

Relative Valuation

Artisan is currently trading at a P/E near the average of its peers. With a P/E TTM of 12.9 compared to a peer average of 12.4[2], the stock is trading in-line with market expectations for its industry. APAM's dividend yield is the highest among peers, with 2019 number of 7.95% compared to 2019 industry average of 4.99%. APAM's P/S is slightly above average as well, with a 2019 P/S of 2.22 vs. an average of 2.04 among peers. Lastly, Artisan has the highest P/B of all its peers, with a 2019 P/B of 16.55 compared to an average of 4.16. This is due to its very high ROE, but its debt/equity ratio is also about three times the industry average (254% vs. 90%).

Figure 29: APAM comparable companies

	Current	Market	Price Change						Earnings Growth								LT Debt/	S&P	LTM Dividend	
Ticker	Price	Value	1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	LTG	NTM	2018	2019	2020	2021	Pst 5yr	Beta	Equity	Rating	Yield	Payout
APAM	$31.17	$1,754	2.6	6.0	8.9	21.0	28.5	41.0	-1.1	13.4%	22.0%	-10.9%	3.4%	1.1%		1.96	254.4%		7.95%	95.3%
LM	$36.56	$3,174	0.6	(6.6)	(8.0)	(0.4)	37.9	43.3	10.0	-616.6%	-117.4%	-1052.6%	60.8%	7.2%		1.08	61.0%	B	3.79%	
EV	$47.05	$5,343	0.8	(2.7)	0.9	14.4	27.9	33.7	5.2	0.5%	12.4%	23.1%	6.5%	9.6%	7.5%	1.41	187.6%	B+	3.02%	40.7%
IVZ	$17.71	$8,038	3.6	0.6	2.6	(13.5)	0.4	5.8	6.7	125.1%	175.0%	-527.3%	-18.1%	-33.8%	2.1%	1.37	81.4%		7.00%	105.0%
FII	$34.43	$3,482	1.3	2.5	2.7	5.7	37.6	29.7	7.9	12.9%	21.2%	10.9%	-25.8%	-5.5%	7.1%	0.34	24.1%	B	3.22%	43.4%
WDR	$16.84	$1,184	2.0	2.7	(6.8)	(0.5)	(10.3)	(6.9)	-10.5	-21.5%	-7.6%	24.1%	4.2%	6.7%	-5.0%	1.15	13.3%	B+	6.19%	51.9%
BEN	$26.79	$13,343	3.3	(4.2)	(10.1)	(19.5)	(16.2)	(9.7)	10.0	7.6%	-5.0%	27.5%	-9.8%	-7.1%		1.05	7.3%	B+	3.78%	44.3%
Average		$5,188	2.0	(0.2)	(1.4)	1.0	15.1	19.6	4.0	-68.4%	14.4%	-215.0%	3.0%	-3.1%	2.9%	1.19	89.9%		4.99%	63.4%
Median		$3,482	2.0	0.6	0.9	(0.4)	27.9	29.7	6.7	7.6%	12.4%	10.9%	3.4%	1.1%	4.6%	1.15	61.0%		3.79%	48.1%
SPX	$3,169		0.9	2.5	5.3	10.0	19.5	26.4			11.5%	22.1%	4.2%	11.2%						

	2019		P/E							2019	2019				EV/	P/CF	Sales Growth			Book
Ticker	ROE	P/B	2017	2018	2019	TTM	NTM	2020	2021	NPM	P/S	NM	OM	ROIC	EBIT	Current	NTM	STM	Pst 5yr	Equity
APAM	140.0%	16.65	12.3	13.4	8.4	12.9	11.3	11.5	11.4	18.6%	2.22	16.6%	35.9%	46.8%	3.8		5.7%	-	3.6%	$1.87
LM	8.4%	0.85	13.7	-110.5	7.0	-49.5	9.6	6.3	5.9	10.8%	1.09	-1.1%	16.5%	-0.6%	9.0	8.9	0.6%	-	1.1%	$42.86
EV	23.3%	4.48	23.7	28.3	14.4	13.4	13.4	18.0	16.5	16.5%	3.16	22.2%	31.0%	13.2%	12.8	10.7	2.8%	-	4.4%	$10.50
IVZ	-4.3%	0.82	379.3	166.1	-17.8	15.2	6.8	-23.0	-34.7	-9.8%	1.85	16.3%	24.2%	5.4%	10.4	6.2	-13.7%	-1.0%	2.1%	$21.63
FII	44.5%	3.66	9.1	9.6	6.4	13.9	12.3	11.1	11.8	32.1%	2.64	18.6%	26.1%	22.0%	9.1	11.5	13.0%	7.8%	5.0%	$9.40
WDR	30.5%	1.43	6.2	7.7	5.0	8.7	11.1	4.5	4.2	23.8%	1.11	15.8%	20.5%	18.9%	3.2		-3.3%	-1.3%	-3.5%	$11.79
BEN	31.1%	1.36	7.8	9.0	4.8	11.4	10.6	4.9	5.2	54.4%	2.38	20.6%	27.3%	11.1%	6.9	11.9	-1.5%	0.3%		$19.66
Average	39.1%	4.18	64.6	17.7	4.0	3.7	10.7	4.8	2.9	20.9%	2.06	15.6%	25.9%	16.7%	7.9	9.8	0.5%	1.4%	2.1%	
Median	30.5%	1.43	12.3	9.6	6.4	12.9	11.1	6.3	5.9	18.6%	2.22	16.6%	26.1%	13.2%	9.0	10.7	0.6%	-0.4%	2.8%	

Source: FactSet, IMCP

APAM has strong ROE and dividend yield

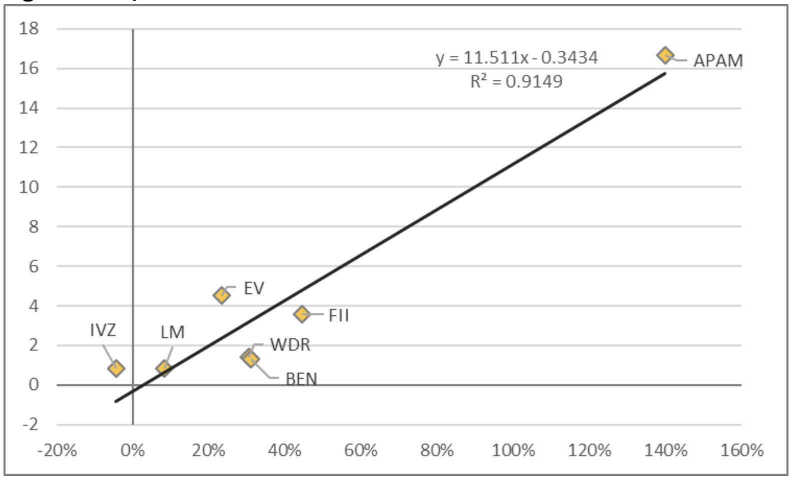
A more thorough analysis of P/B and ROE is shown in figure 29. The calculated R-squared of the regression indicates that over 91% of a sampled firm's P/B is explained by its NTM ROE. APAM has the highest P/B and ROE of this grouping, and according to this measure, is overvalued.

- Appropriate P/B = Estimated 2020 ROE (138%) x 11.511 + .3434 = 16.233
- Target Price = Estimated P/B (16.233) x 2020E BVPS (1.96) = $31.87

Discounting back to the present at a 15.8% cost of equity leads to a target price of $26.83 using this metric.

[2] Legg Mason ($LM) omitted from peer group calculation due to negative earnings growth skewing the average

Figure 30: P/B vs NTM ROE



Source: IMCP

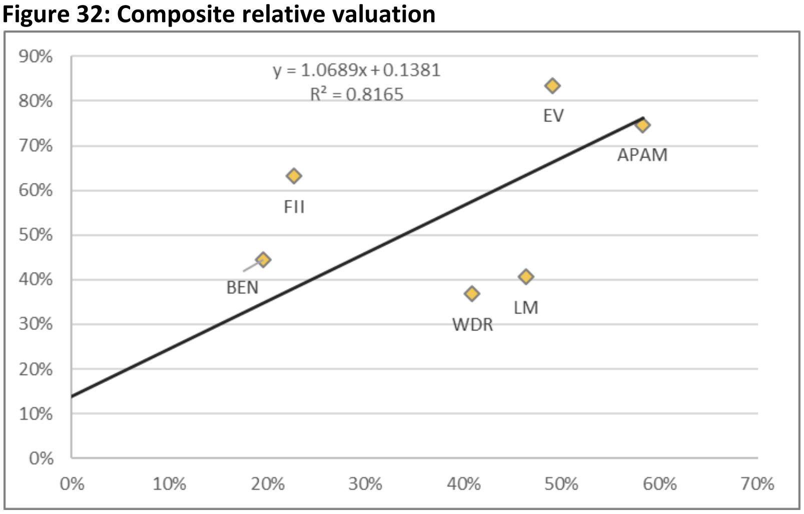
I created a composite ranking of several valuation and fundamental metrics to further compare APAM to competing firms. Since the variables have different scales, each was converted to a percentile before calculating the composite score. A fundamental weighting of earnings growth, payout ratio, and 2019 ROE was compared to a valuation weight composite of 2020E P/E, P/B and P/CF. Regressing this composite gives an R-squared of 0.82. One can see that APAM is slightly below the line, so it is slightly inexpensive based on its fundamentals.

Figure 31: Composite valuation, % of range

	Fundamentals				Valuation				
	15%	15%	25%	45%	50%	20%	30%		
	Earnings Growth		1/Payout	ROE	P/E				
Ticker	2020	2021	2019	2019	2020	P/B	P/CF	Fund	Value
APAM	6%	12%	43%	100%	63%	100%	77%	58%	75%
LM	100%	75%	69%	6%	34%	5%	76%	46%	41%
EV	11%	100%	100%	17%	100%	27%	94%	49%	84%
IVZ	-30%	-353%	39%	-3%	-126%	5%	53%	-49%	-46%
FII	-43%	-57%	94%	32%	60%	21%	97%	23%	63%
WDR	7%	70%	78%	22%	24%	8%	77%	41%	37%
BEN	-16%	-74%	92%	22%	26%	8%	100%	20%	45%

Source: IMCP

Figure 32: Composite relative valuation



Source: IMCP

Discounted Cash Flow Analysis

A three stage discounted cash flow model was also used to value APAM.

For the purpose of this analysis, the company's cost of equity was calculated to be 15.8% using the Capital Asset Pricing Model (CAPM). The underlying assumptions used in calculating this rate are as follows:

- The risk-free rate, as represented by the ten-year Treasury bond yield, is 1.82%.
- A ten-year beta of 1.61 was utilized since the company has higher risk than the market.
- A long-term market rate of return of 10.5% was assumed, since historically, the market has generated an annual return of about 10%.

Given the above assumptions, the cost of equity is 15.8% (1.82 + 1.61 (10.5 – 1.82)).

Stage One - The model's first stage simply discounts fiscal years 2020 and 2021 free cash flow to equity (FCFE). These per share cash flows are forecasted to be $4.44 and $4.45, respectively. Discounting these cash flows per share, using the cost of equity calculated above, results in a values of $3.83 and $3.32. Thus, stage one of this discounted cash flow analysis contributes $7.16 to value.

Stage Two - Stage two of the model focuses on fiscal years 2022 to 2026. During this period, FCFE is calculated based on revenue growth, NOPAT margin and capital growth assumptions. The resulting cash flows are then discounted using the company's 15.8% cost of equity. I assume volatile sales growth figures through 2021 to 2026, as it is possible that equity market environment changes in this time period. My estimates for sales growth as follows: 2022 -> 6.0%, 2023 -> 10%, 2024 -> 8%, 2025 -> -5%, 2026 -> 5%. The ratio of NWC to sales will remain at 2021 levels, but NFA turnover will rise slowly from 1.4 in 2021 to 1.48 in 2026 as a result of improvements in operations. NOPAT margin is expected to rise and fall with the respective sales growth figures.

Figure 33: FCFE and discounted FCFE, 2020 – 2026

	First Stage		Second Stage				
	2020	2021	2022	2023	2024	2025	2026
FCFE	$4.44	$4.45	$4.43	$3.56	$3.87	$4.76	$4.06
Discounted FCFE	$3.83	$3.32	$2.85	$1.98	$1.86	$1.97	$1.46

Added together, the second stage discounted cash flows total $10.12.

Stage Three – Net income for the years 2021 – 2026 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from $2.97 in 2020 to $4.44 in 2026.

Figure 34: EPS estimates for 2020 – 2026

	2020	2021	2022	2023	2024	2025	2026
EPS	$2.97	$3.14	$3.75	$4.49	$4.71	$4.03	$4.44

Stage three of the model requires an assumption regarding the company's terminal price-to-earnings ratio. A P/E ratio of 14 is assumed at the end of APAM's terminal year. While this may be a high multiple at the end of 2026, it is important to keep in mind the NTM industry P/E for investment managers of 10.7. I believe this is a fair P/E for Artisan as, historically, the firm's price and earnings have grown and fallen with the industry. In tandem, by 2026, the firm's successful strategy should be better recognized and perhaps fears of a market meltdown may have passed (especially if this already occurs by then).

Given the assumed terminal earnings per share of $4.44 and a price to earnings ratio of 14, a terminal value of $62.14 per share is calculated. Using the 15.8% cost of equity, this number is discounted back to a present value of $22.26.

Total Present Value – given the above assumptions and utilizing a three stage discounted cash flow model, an intrinsic value of $39.54 is calculated (7.16 + 10.12 + 22.26). Given APAM's current price of $31.16, this model indicates that the stock is undervalued.

Scenario Analysis

The cyclicality of financials and the investment management sector can cause significant changes to my valuation assumptions. To try to understand how these fluctuations could change my valuation, I made adjustments to my DCF model assumptions to create a scenario analysis. In each of my scenarios, I made adjustments to the beta, second stage growth rate, and the terminal P/E.

Figure 35 & 36: Bull case (top) and bear case (bottom)

Bull			Changes	
First stage	$7.20	Present value of first 2 year cash flow	Decrease beta by .06	1.55
Second stage	$10.38	Present value of year 3-7 cash flow	Amplify changes in positive growth rates	
Third stage	$25.97	Present value of terminal value P/E	Increase terminal P/E by 1	15
Value (P/E)	**$43.55**			

Bear			Changes	
First stage	$7.11	Present value of first 2 year cash flow	Increase beta by .06	1.67
Second stage	$10.01	Present value of year 3-7 cash flow	Amplify changes in negative growth rates	
Third stage	$12.80	Present value of terminal value P/E	Decrease terminal P/E by 2	13
Value (P/E)	**$29.91**			

Business Risks

Loss of key investment professional within the senior management team:

The success of Artisan's market strategies can be credited to its long tenured and extremely experienced investment professionals. A loss or disruption in their abilities to execute a given funds' philosophies could be damaging to APAM's long-term performance, and subsequently effect client flows. For example, the firm's largest strategy (the Non-U.S. Growth strategy), which has 22% of Artisan's AUM, is solely led by one senior portfolio manager.

Inability to cultivate an attractive and effective investment environment:

Artisan's most important asset is its investment professionals and the ideas they bring to the firm. Any combination of scenarios that create an unstable or negative corporate culture could hinder managers' ability to perform, thus damaging overall fund performance and revenues.

Poor investment strategy performance:

The performance of Artisan's respective funds is critical for retaining existing clients and attracting new AUM. Poor performance from a fund could lead to the following:

- Damaged and possibly terminated relationships with existing clients
- Lack of product recommendations from third party financial advisors and consultants
- Decline in rating and ranking of funds given by Morningstar and Lipper, which have a negative effective on the ability for a fund to attract new investors

Difficult market conditions:

Almost all of the firm's revenues are generated from investment management fees. These fees are directly tied to the market value of the firm's AUM. The values of Artisan's funds could decline at any moment from factors outside of the firm's control, such as declining markets, economic downturn, political uncertainty or acts of terrorism. In the downturn that followed the financial crisis of 2008, the firm's AUM declined by 43%.

Macroeconomic risks:

As of 12/31/18, approximately 54% of the firm's assets under management were invested in securities of non-U.S. companies. In addition, approximately 48% of the firm's AUM were invested in securities denominated in currencies other than the U.S. dollar. Global economic and political effects could have an adverse effect on the performance of foreign companies and the value of foreign currencies.

Appendix 1: Porter's 5 Forces

Threat of New Entrants – Moderate

New investment management firms face high amounts of regulation, which may restrict early stage growth. Much of the business is relationship dependent. Building the reputation needed to attract new investors takes long amounts of time. However, a firm's reputation is based on its investment professionals who can walk out the door and start a new firm.

Threat of Substitutes – High

Artisan relies on its fund performance and diverse strategy offerings to convince investors of its value. For larger asset managers, launching a new fund to compete with an Artisan would take little investment. This factor will always be an issue in this industry, as investors are free to move their assets out of funds at will.

Supplier Power - Moderate

Investment managers use various forms of technology to perform their jobs. Once this is ingrained in the process, it is difficult to change.

Buyer Power – High

Investors of mutual funds have a great degree of power over managers. There are no exit fee costs for Artisan's funds and there are a large number of potential substitutes. There is little urgency for investors to tolerate poor performance, so they are able to pick and choose the best funds.

Intensity of Competition – Very High

There are numerous high-value added mutual fund managers in the asset management space. As ease of access to investors continues, APAM's rivals are fighting even harder to obtain market share.

Appendix 2: SWOT Analysis

Strengths	Weaknesses
Strong historical fund performance High operating margins AUM expanisions	Lack of revenue diversification Exposure to equity markets
Opportunities	**Threats**
Foreign investor growth Lauch of new, high value-add strategies	Rise of passive management and fee decompression Global Instability

Appendix 3: Income Statement

Income Statement						Base Case		Bull Case		Bear Case	
Items	**Dec-15**	**Dec-16**	**Dec-17**	**Dec-18**	**Dec-19**	**Dec-20**	**Dec-21**	**Dec-20**	**Dec-21**	**Dec-20**	**Dec-21**
Sales	$806	$721	$796	$829	$791	$823	$856	$846	$906	$775	$767
Direct costs	-	-	-	-	-	-	-	-	-	-	-
Gross Margin	806	721	796	829	791	823	856	846	906	775	767
SG&A, R&D, and other	535	485	213	516	514	526	548	525	561	519	522
EBIT	271	236	583	313	277	296	308	322	344	256	246
Interest	12	12	11	11	11	11	11	11	11	11	11
EBT	259	225	571	302	266	285	297	310	333	245	235
Taxes	47	51	421	48	46	50	48	48	53	46	42
Income	**212**	**173**	**151**	**254**	**220**	**235**	**250**	**262**	**280**	**198**	**192**
Other	130	100	101	96	68	75	80	95	100	105	110
Net income	**82**	**73**	**50**	**158**	**152**	**160**	**170**	**167**	**180**	**93**	**82**
Basic Shares	35.5	38.1	44.6	48.9	54.0	54.0	54.0	53.7	54.9	53.5	53.5
EPS	$1.85	$1.57	$0.75	$2.84	$2.62	$2.97	$3.14	$3.12	$3.27	$1.74	$1.54
DPS	$3.49	$3.03	$2.93	$3.43	$3.56	$3.33	$3.43	$3.35	$3.37	$2.99	$2.62

Appendix 4: Balance Sheet

Balance Sheet						Base Case		Bull Case		Bear Case	
Items	**Dec-15**	**Dec-16**	**Dec-17**	**Dec-18**	**Dec-19**	**Dec-20**	**Dec-21**	**Dec-20**	**Dec-21**	**Dec-20**	**Dec-21**
Cash	166	157	137	160	150	154	154	165	156	73	71
Operating assets ex cash	78	75	91	96	123	107	103	95	95	78	84
Operating assets	244	232	228	256	273	261	257	260	252	151	156
Operating liabilities	35	32	26	40	42	41	51	34	41	47	42
NOWC	209	199	202	216	231	220	206	226	211	104	114
NOWC ex cash (NWC)	43	42	65	56	81	66	51	61	54	31	42
NFA	702	705	609	549	577	588	611	529	584	646	614
Invested capital	*$911*	*$904*	*$811*	*$765*	*$808*	*$807*	*$817*	*$755*	*$795*	*$750*	*$727*
Marketable securities	-	-	-	-	-	-	-	-	-	-	-
Total assets	***$946***	***$936***	***$837***	***$805***	***$850***	***$848***	***$868***	***$789***	***$836***	***$797***	***$770***
Short-term and long-term debt	$200	$199	$199	$199	$199	$198	$198	$199	$199	$198	$198
Other liabilities	576	572	456	408	478	478	478	438	423	483	493
Debt/equity-like securities	5	-	48	17	5	25	50	15	35	25	50
Equity	130	132	108	140	126	106	91	103	138	44	(13)
Total supplied capital	*$911*	*$904*	*$811*	*$765*	*$808*	*$807*	*$817*	*$755*	*$795*	*$750*	*$727*
Total liabilities and equity	***$946***	***$936***	***$837***	***$805***	***$850***	***$848***	***$868***	***$789***	***$836***	***$797***	***$770***

Appendix 5: Sales Forecast

Sales						**BaseCase**		**Bull Case**		**Bear Case**	
Sales	$806	$721	796	$829	$791	$829	$879	$886	$975	$806	$812
Growth		*-10.5%*	*10.4%*	*4.2%*	*-4.5%*	*4.8%*	*6.0%*	*12.0%*	*10.0%*	*1.9%*	*0.8%*
Management Fees	803.7	719.8	795.3	825.7	786.1	825	875	880	968	802	810
Growth		*-10.4%*	*10.5%*	*3.8%*	*-4.8%*	*5.0%*	*6.0%*	*12.0%*	*10.0%*	*2.0%*	*1.0%*
% of sales	*99.8%*	*99.8%*	*100.0%*	*99.6%*	*99.4%*	*99.5%*	*99.5%*	*99.3%*	*99.3%*	*99.5%*	*99.7%*
Perfromance Fees	1.8	1.1	0.3	3.0	4.9	4	4	6	6	4	3
Growth		*-38.9%*	*-72.7%*	*900.0%*	*63.3%*	*-20.0%*	*3.0%*	*20.0%*	*10.0%*	*-10.0%*	*-40.0%*
% of sales	*0.2%*	*0.2%*	*0.0%*	*0.4%*	*0.6%*	*2.0%*	*0.5%*	*0.7%*	*0.7%*	*0.5%*	*0.3%*
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
United States	806	721	796	829	791	829	879	886	975	806	812
Growth		*-10.5%*	*10.4%*	*4.1%*	*-4.5%*	*4.8%*	*6.0%*	*12.0%*	*10.0%*	*1.9%*	*0.8%*
% of sales	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*

Appendix 6: Ratios

Ratios											
Items	**Dec-15**	**Dec-16**	**Dec-17**	**Dec-18**	**Dec-19**	**Dec-20**	**Dec-21**	**Dec-20**	**Dec-21**	**Dec-20**	**Dec-21**
Profitability											
Gross margin	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Operating (EBIT) margin	33.6%	32.8%	73.2%	37.8%	35.0%	36.0%	36.0%	38.0%	38.0%	33.0%	32.0%
Net profit margin	10.2%	10.1%	6.2%	19.1%	19.2%	19.5%	19.8%	19.8%	19.9%	12.0%	10.7%
Activity											
NFA (gross) turnover		1.03	1.21	1.43	1.41	1.41	1.43	1.53	1.63	1.27	1.22
Total asset turnover		0.77	0.90	1.01	0.96	0.97	1.00	1.03	1.11	0.94	0.98
Liquidity											
Op asset / op liab	6.92	7.18	8.79	6.42	6.50	6.34	5.01	7.68	6.17	3.24	3.69
NOWC Percent of sales		28.3%	25.2%	25.2%	28.3%	27.4%	24.8%	27.0%	24.1%	21.6%	14.2%
Solvency											
Debt to assets	21.1%	21.3%	23.8%	24.8%	23.4%	23.3%	22.8%	25.2%	23.8%	24.9%	25.7%
Debt to equity	153.8%	151.1%	184.3%	141.9%	157.9%	186.5%	218.2%	192.5%	144.0%	447.9%	-1482.6%
Other liab to assets	60.9%	61.1%	54.5%	50.7%	56.2%	56.3%	55.0%	55.5%	50.6%	60.6%	64.0%
Total debt to assets	82.0%	82.4%	78.3%	75.5%	79.6%	79.7%	77.9%	80.7%	74.4%	85.5%	89.8%
Total liabilities to assets	85.7%	85.9%	81.4%	80.4%	84.6%	84.5%	83.8%	85.0%	79.3%	91.3%	95.2%
Debt to EBIT	0.74	0.84	0.34	0.64	0.72	0.67	0.64	0.62	0.58	0.77	0.81
EBIT/interest	23.16	20.29	50.89	27.92	24.96	26.64	28.28	28.86	31.44	23.01	22.55
Debt to total net op capital	22.0%	22.1%	24.5%	26.0%	24.6%	24.5%	24.2%	26.4%	25.0%	26.4%	27.2%
ROIC											
NOPAT to sales	27.5%	25.2%	19.3%	31.8%	29.0%	29.7%	30.2%	32.1%	31.9%	26.7%	26.2%
Sales to NWC		16.96	14.85	13.76	11.57	11.21	14.61	11.93	15.71	13.84	20.96
Sales to NFA		1.03	1.21	1.43	1.41	1.41	1.43	1.53	1.63	1.27	1.22
Sales to IC ex cash		0.97	1.12	1.30	1.25	1.25	1.30	1.36	1.47	1.16	1.15
Total ROIC ex cash		24.4%	21.6%	41.2%	36.3%	37.3%	39.3%	43.6%	47.1%	31.0%	30.2%
NOPAT to sales	27.5%	25.2%	19.3%	31.8%	29.0%	29.7%	30.2%	32.1%	31.9%	26.7%	26.2%
Sales to NOWC		3.53	3.97	3.96	3.54	3.65	4.02	3.70	4.14	4.63	7.05
Sales to NFA		1.03	1.21	1.43	1.41	1.41	1.43	1.53	1.63	1.27	1.22
Sales to IC		0.79	0.93	1.05	1.01	1.02	1.05	1.08	1.17	1.00	1.04
Total ROIC		20.1%	17.9%	33.5%	29.2%	30.3%	31.9%	34.8%	37.3%	26.6%	27.3%
NOPAT to sales	27.5%	25.2%	19.3%	31.8%	29.0%	29.7%	30.2%	32.1%	31.9%	26.7%	26.2%
Sales to EOY NWC	18.93	16.97	12.29	14.86	9.77	12.50	16.67	13.89	16.67	25.00	18.18
Sales to EOY NFA	1.15	1.02	1.31	1.51	1.37	1.40	1.40	1.60	1.55	1.20	1.25
Sales to EOY IC ex cash	1.08	0.96	1.18	1.37	1.20	1.26	1.29	1.43	1.42	1.15	1.17
Total ROIC using EOY IC ex cash	29.8%	24.4%	22.8%	43.6%	34.9%	37.4%	39.1%	46.1%	45.3%	30.6%	30.7%
NOPAT to sales	27.5%	25.2%	19.3%	31.8%	29.0%	29.7%	30.2%	32.1%	31.9%	26.7%	26.2%
Sales to EOY NOWC	3.86	3.62	3.94	3.83	3.42	3.75	4.16	3.74	4.30	7.45	6.76
Sales to EOY NFA	1.15	1.02	1.31	1.51	1.37	1.40	1.40	1.60	1.55	1.20	1.25
Sales to EOY IC	0.88	0.80	0.98	1.08	0.98	1.02	1.05	1.12	1.14	1.03	1.05
Total ROIC using EOY IC	24.3%	20.1%	19.0%	34.5%	28.4%	30.3%	31.7%	36.0%	36.4%	27.6%	27.7%
ROE											
5-stage											
EBIT / sales		32.8%	73.2%	37.8%	35.0%	36.0%	36.0%	38.0%	38.0%	33.0%	32.0%
Sales / avg assets		0.77	0.90	1.01	0.96	0.97	1.00	1.03	1.11	0.94	0.98
EBT / EBIT		95.1%	98.0%	96.4%	96.0%	96.2%	96.5%	96.5%	96.8%	95.7%	95.6%
Net income /EBT		32.5%	8.7%	52.5%	57.1%	56.2%	57.1%	53.9%	54.0%	38.1%	35.1%
ROA		7.8%	5.6%	19.3%	18.3%	18.9%	19.8%	20.4%	22.1%	11.3%	10.5%
Avg assets / avg equity		7.18	7.39	6.61	6.21	7.32	8.72	7.15	6.73	9.67	50.78
ROE		55.7%	41.3%	127.4%	113.9%	138.0%	172.3%	145.9%	148.9%	109.5%	534.5%
3-stage											
Net income / sales		10.1%	6.2%	19.1%	19.2%	19.5%	19.8%	19.8%	19.9%	12.0%	10.7%
Sales / avg assets		0.77	0.90	1.01	0.96	0.97	1.00	1.03	1.11	0.94	0.98
ROA		7.8%	5.6%	19.3%	18.3%	18.9%	19.8%	20.4%	22.1%	11.3%	10.5%
Avg assets / avg equity		7.18	7.39	6.61	6.21	7.32	8.72	7.15	6.73	9.67	50.78
ROE		55.7%	41.3%	127.4%	113.9%	138.0%	172.3%	145.9%	148.9%	109.5%	534.5%
Payout Ratio		158.1%	264.2%	106.0%	126.5%	112.4%	109.1%	107.6%	102.8%	171.7%	169.8%
Retention Ratio		-58.1%	-164.2%	-6.0%	-26.5%	-12.4%	-9.1%	-7.6%	-2.8%	-71.7%	-69.8%
Sustainable Growth Rate		-32.3%	-67.8%	-7.6%	-30.2%	-17.1%	-15.7%	-11.0%	-4.2%	-78.5%	-373.2%

Appendix 7: 3-Stage DCF Model

	Year						
	1	2	3	4	5	6	7
Year ending January	2020	2021	2022	2023	2024	2025	2026
Sales Growth	*4.0%*	*4.0%*	*-6.0%*	*10.0%*	*8.0%*	*-5.0%*	*5.0%*
NOPAT / S	*29.7%*	*30.2%*	*26.5%*	*29.0%*	*28.5%*	*26.0%*	*27.5%*
S / NWC	*12.50*	*16.67*	*14.00*	*16.50*	*16.00*	*15.00*	*16.00*
S / NFA (EOY)	*1.40*	*1.40*	*1.42*	*1.42*	*1.44*	*1.46*	*1.48*
S / IC (EOY)	*1.26*	*1.29*	*1.29*	*1.31*	*1.32*	*1.33*	*1.35*
ROIC (EOY)	*37.4%*	*39.1%*	*34.1%*	*37.9%*	*37.7%*	*34.6%*	*37.3%*
ROIC (BOY)		*39.6%*	*32.2%*	*41.0%*	*40.2%*	*32.6%*	*38.4%*
Share Growth		*0.0%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*	*1.0%*
Sales	$823	$856	$804	$885	$955	$908	$953
NOPAT	$244	$259	$213	$257	$272	$236	$262
Growth		*5.9%*	*-17.6%*	*20.4%*	*6.1%*	*-13.3%*	*11.1%*
- Change in NWC	-15	-14	6	-4	6	1	-1
NWC EOY	*66*	*51*	*57*	*54*	*60*	*61*	*60*
Growth NWC		*-22.0%*	*11.9%*	*-6.7%*	*11.4%*	*1.3%*	*-1.6%*
- Chg NFA	11	24	-43	55	40	-42	22
NFA EOY	*588*	*611*	*568*	*623*	*663*	*622*	*644*
Growth NFA		*4.0%*	*-7.1%*	*9.7%*	*6.5%*	*-6.3%*	*3.6%*
Total inv in op cap	-5	9	-37	51	47	-41	21
Total net op cap	653	662	625	677	723	682	703
FCFF	$249	$250	$250	$205	$226	$277	$241
% of sales	*30.3%*	*29.2%*	*31.1%*	*23.2%*	*23.6%*	*30.5%*	*25.3%*
Growth		*0.3%*	*0.2%*	*-17.9%*	*9.9%*	*22.7%*	*-13.1%*
- Interest (1-tax rate)	9	9	9	9	10	10	10
Growth		*-0.3%*	*-6.0%*	*10.0%*	*8.0%*	*-5.0%*	*5.0%*
FCFE w/o debt	$240	$241	$242	$196	$215	$267	$231
% of sales	*29.1%*	*28.1%*	*30.0%*	*22.1%*	*22.6%*	*29.4%*	*24.2%*
Growth		*0.3%*	*0.4%*	*-18.9%*	*10.0%*	*24.0%*	*-13.7%*
/ No Shares	54.0	54.0	54.5	55.1	55.6	56.2	56.8
FCFE	$4.44	$4.45	$4.43	$3.56	$3.87	$4.76	$4.06
Growth		*0.3%*	*-0.6%*	*-19.7%*	*8.9%*	*22.8%*	*-14.6%*
* Discount factor	0.86	0.75	0.64	0.56	0.48	0.41	0.36
Discounted FCFE	$3.83	$3.32	$2.85	$1.98	$1.86	$1.97	$1.46
Terminal value P/E							
Net income	$160	$170	$205	$247	$262	$226	$252
% of sales	*19.5%*	*19.8%*	*25.4%*	*27.9%*	*27.4%*	*24.9%*	*26.4%*
EPS	$2.97	$3.14	$3.75	$4.49	$4.71	$4.03	$4.44
Growth		*5.9%*	*19.4%*	*19.6%*	*5.0%*	*-14.5%*	*10.2%*
Terminal P/E							14.00
* Terminal EPS							$4.44
Terminal value							$62.14
* Discount factor							0.36
Discounted terminal value							$22.26

First stage	$7.16	Present value of first 2 year cash flow
Second stage	$10.12	Present value of year 3-7 cash flow
Third stage	$22.26	Present value of terminal value P/E
Value (P/E)	**$39.54**	

Cost of equity	
Market return	10.5%
- Risk free rate	1.82%
= Market risk premium	8.7%
* Beta	1.61
= Stock risk premium	14.0%
r = r_f+ stock RP	**15.8%**