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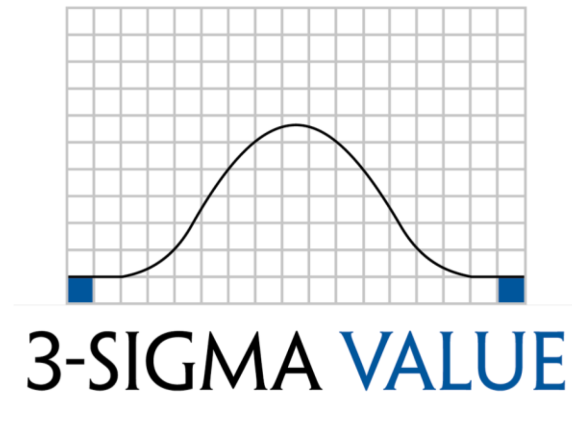

2017 Review / 2018 Outlook

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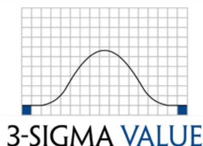

2017 In Review

For the year ended December 31, 2017, 3-Sigma Value, LP (the "Partnership") had an estimated gain of 0.30% (net of management fees and expenses) with average gross exposure of 133.3% and net exposure of *negative* 14.4%.

3-Sigma Value, LP

PERFORMANCE AND EXPOSURE STATISTICS

	Monthly Performance				Average Fund Exposure			
	Gross	Net[1]	Long	Short	Long	Short	Gross	Net
2011	37.4%	29.9%	1.9%	34.8%	78.6%	89.4%	168.1%	-10.8%
2012	32.3%	25.8%	17.1%	13.1%	64.8%	79.0%	143.8%	-14.1%
2013	-12.8%	-12.8%	7.3%	-19.0%	46.7%	72.4%	119.1%	-25.7%
2014	18.1%	17.0%	-0.3%	18.4%	7.4%	54.9%	62.3%	-47.4%
2015	12.8%	10.2%	-7.0%	21.0%	22.9%	41.6%	64.5%	-18.7%
2016	12.3%	9.9%	13.0%	-1.8%	37.7%	55.6%	93.3%	-17.9%
January	-0.9%	-0.9%	1.2%	-2.1%	41.2%	64.0%	105.3%	-22.8%
February	0.9%	0.9%	0.3%	0.7%	43.8%	65.2%	109.0%	-21.3%
March	1.5%	1.2%	1.7%	-0.2%	50.2%	67.9%	118.1%	-17.8%
April	-3.7%	-3.4%	-4.0%	0.3%	51.3%	69.3%	120.5%	-18.0%
May	-1.4%	-1.4%	-1.8%	0.4%	52.7%	70.7%	123.4%	-18.0%
June	-6.2%	-6.2%	1.3%	-7.4%	56.8%	72.2%	129.1%	-15.4%
July	1.5%	1.5%	4.3%	-2.8%	66.0%	83.4%	149.5%	-17.4%
August	-1.1%	-1.1%	-0.7%	-0.4%	61.2%	79.1%	140.2%	-17.9%
September	0.2%	0.2%	0.4%	-0.2%	55.2%	67.9%	123.1%	-12.6%
October	-1.5%	-1.5%	-0.4%	-1.1%	68.4%	76.1%	144.5%	-7.7%
November	5.1%	5.1%	0.3%	4.9%	80.4%	82.4%	162.8%	-2.0%
December	6.4%	6.2%	5.1%	1.3%	85.6%	87.9%	173.5%	-2.3%
2017	0.3%	0.2%	7.6%	-6.9%	59.4%	73.8%	133.3%	-14.4%
Cumulative	137.5%	102.4%						
Annualized	13.2%	10.6%						

(1) Net of incentive fee.

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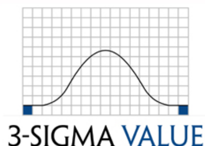

The Partnership's portfolio, both long and short, focuses its investment efforts in three industries – Technology, Media & Telecom ("TMT"), Natural Resources, and Financials – chosen based on the experience of our investment professionals. In total, 3-Sigma Value, LP is invested long in 18 companies, and short 18 companies.

Our investment approach is global in scope, yet, at this time, North American equities constitute the vast majority of our gross exposure. We are market-cap agnostic.

Portfolio Construction

As of December 31, 2017, the 3-Sigma Value portfolio had gross long exposure of 83.2% and gross short exposure of 90.6%, for net investment exposure of *negative* 7.4%. As value investors frequently targeting companies facing rapidly changing operating performance and/or market perceptions, we remain cognizant that portfolio correlation to the market can change on a dime and thus the continuity between the past and future is tenuous at best. Notwithstanding this caveat, we generally seek overall market agnosticism in the construction of the portfolio as reflected in a target range of net exposure between *negative* 25% and *positive* 25%.

Balance Sheet (% Of Equity) - 12/31/17				
	Long	Short	Gross	Net
By Industry				
Technology	48.4%	45.0%	93.4%	3.4%
Natural Resource	20.2%	16.3%	36.5%	3.9%
Financials	14.6%	29.3%	43.9%	-14.7%
Total	83.2%	90.6%	173.8%	-7.4%
By Geography				
North America	65.4%	75.4%	140.8%	-10.0%
South America	8.2%	0.0%	8.2%	8.2%
EMEA	9.6%	0.0%	9.6%	9.6%
Asia	0.0%	15.2%	15.2%	-15.2%
Total	83.2%	90.6%	173.8%	-7.4%
By Market Capitalization				
Greater than $2B	40.3%	45.3%	85.5%	-5.0%
$500M - $2B	33.6%	45.3%	79.0%	-11.7%
Less than $500M	9.3%	0.0%	9.3%	9.3%
Total	83.2%	90.6%	173.8%	-7.4%

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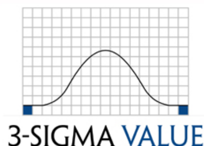

Reflecting on the bull market of 2017, the image I conjure is running on a treadmill. Although 3-Sigma Value did manage to earn positive alpha in excess of 3%, we cannot eat alpha, and thus at the end of the year what matters is total return not alpha. With a piddly return of 0.3%, our winners barely beat our losers and only did so with a strong fourth quarter.

We are not market timers. We do not attempt to predict, or think much about, where the S&P 500 will be at the end of the year. All we do and all we know is that if we stay disciplined to our market agnostic process and intellectually honest in its application then we will outperform over the course of a cycle.

While most people will remember 2017 for a bull market in which the S&P 500 was up 21.8%, the more significant factor for us was the historic lack of volatility. For the first time ever, the S&P 500 delivered a positive total return in each and every month of the year. Moreover, the average daily market move was only 0.18% – the smallest ever; and the largest peak-to-trough drawdown was a mere 2.8% – also, the smallest ever.

The forces suppressing market volatility are well-known – namely, the rise of passive, robo and quantitative-based investing that direct money into the same investment vehicles all of which invest in the same securities. I was recently told we are in a "new paradigm". Yet again. Two words I bought in 1999. And sold too late. In the summer of 2007, it took the bankruptcy of a mortgage originator to disprove the core assumption underlying another new paradigm – that home prices only go up – and awaken me to its false confidence. Whether or not we are in a new paradigm today, neither the economy nor corporate earnings support the end of volatility. The issue today is not valuation. Whether or not the market is expensive is irrelevant when all of the money is moving in the same direction. The issue is volatility, or lack thereof.

There is positive correlation between volatility and alpha (uncorrelated return) – we need volatility in order to generate alpha. Otherwise, beta (correlated return) is the only way to generate return. When volatility rises, as is inevitable, the exiting of beta investments will turn into a stampede and remind investors why an alpha-generating strategy acts as an insurance policy. While we do not take directional bets on the overall market, the existence of a short book will tend to cause underperformance in a one-sided bull market like the one we experienced in 2017. Finally, history shows that 3-Sigma Value tends to significantly outperform after a period of underperformance – a pattern that bodes well for 2018.

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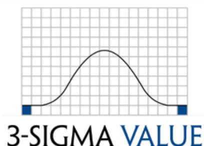

Winners & Losers

Following is a list of 3-Sigma Value's top 10 winners and losers in 2017.

	Top 10 Winners in 2017	
1	Long: ALLY Bank (ALLY)	Liability shift from debt to deposits lowers cost of capital and improves net interest margin (NIM)
2	Short: Badger Daylighting (BAD.TO)	Hydrovac truck owner/operator overstates capex to burnish its profits in a saturated market
3	Short: Carvana (CVNA)	Auto vending machine innovator was profiled in 3-Sigma Value's *Second Quarter 2017 Letter**
4	Long: Customers Bank (CUBI)	Undervalued PA-based bank is managed with creativity by CEO Jay Sidhu and his experienced team
5	Long: First Internet Bank (INBK)	Undervalued internet bank saw its stock price jump after pricing secondary offering in September 2017
6	Short: Gogo (GOGO)	Profiled in 3-Sigma Value's *Premium Wi-Fi is a Fatally-Flawed Business Model**
7	Short: Home Capital Group (HCG.TO)	April 2017 bank run led this distressed Canadian mortgage bank to seek refuge with Warren Buffet
8	Short: Hornbeck Offshore (HOS)	Offshore supply vessel (OSV) company announced possible reorganization under Chapter 11
9	Short: Impinj (PI)	RAIN RFID is no better than the RFID sold by Symbol Tech when it was acquired by Motorola in 2006
10	Long: Match (MTCH)	Leading provider of dating sites earns huge 36% EBITDA margin and is large enough to acquire any upstarts
	Top 10 Losers in 2017	
1	Short: Atlassian (TEAM)	Profiled in 3-Sigma Value's *Polishing Turd - Part 2*; was a Top 10 Winner in 2016*
2	Long: Altisource Portfolio Solutions (ASPS)	Profiled in 3-Sigma Value's *Second Quarter 2017 Letter**
3	Short: Control4 (CTRL)	High-end home automation provider is under attack by large cap tech including Amazon, Apple, and Google
4	Short: Credit Acceptance Corp (CACC)	Profiled in 3-Sigma Value's *The Subprime Auto Bubble - Part 2**
5	Long: Criteo (CRTO)	Crashed after announcing that Apple's rollout of Intelligent Tracking Prevention will impact 2018 revenue
6	Long: DHX Media (DHXM)	Children's content provider whose stock fell after acquiring the Peanuts and Strawberry Shortcake brands from Iconix owns an extremely undervalued collection of assets
7	Long: DISH Networks (DISH)	The value of DISH's spectrum holdings is more than its enterprise value, thereby ascribing negative value to an operating business that generates nearly $3 billion per year of EBITDA
8	Short: Exchange Income Fund (EIF.TO)	Cash-burning regional airline / airplane lessor is a chop shop that under-invests in its 33-year old fleet
9	Long: Ocwen (OCN)	Profiled in 3-Sigma Value's *Second Quarter 2017 Letter**
10	Short: Universal Display (OLED)	Patent expiry will lead to lower royalty rates and new competition in material sales
	* Available at www.3sigmavalue.com	

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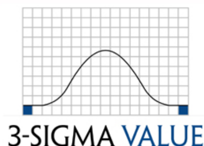

The one name on both the 2017 and 2016 lists is **Atlassian (TEAM)**[1]; the difference is that in 2016 TEAM was a Top 10 winner while in 2017 it was a Top 10 loser. TEAM sells workplace collaboration software without a traditional direct sales force. Instead, 98% of sales are transacted through TEAM's website resulting in S&M as a % of revenue at the low end of its software peers. The savings on S&M enables a higher level of R&D (R&D ~50% of revenue).

The problem is two-fold: (1) operating expenses are growing faster than revenues as TEAM acknowledges it must build out its sales infrastructure if it wants to compete for business across the enterprise; and (2) competition is intensifying with comparable/better collaboration products offered by Microsoft, salesforce.com, Slack, ServiceNow, Google, IBM, et al.

At a recent $55 per share, TEAM's market cap is $13 billion. This compares to only $740 million of revenue in calendar year 2017 (17.5x) growing to ~$1 billion (13x) by 2019. Free cash flow of $251 million in 2017 (1.8% FCF yield), is expected to decline in 2018 due to accelerating investment in the business.

In terms of valuation, we look to recent comparable software transactions, which average 4.8x revenue and 18.7x EBITDA.

M&A Comps - Systems & Data Management Software

Target	Acquirer	Date	Valuation	Revenue	EBITDA
InfoBlox (BLOX)	Vista Equity	Sep-16	1,300	3.3x	NM
Netsuite (N)	Oracle	Jul-16	9,300	9.5x	NM
Qlik Technologies (QLIK)	Thoma Bravo	Jun-16	2,700	3.4x	NM
SolarWinds (SWI)	Silver Lake, TB	Oct-15	4,500	9.2x	28.1x
Informatica (INFA)	Permira, CPPIB	Apr-15	5,300	4.6x	25.5x
Tibco Software (TIBX)	Vista Equity	Sep-14	4,300	4.0x	18.0x
Compuware (CPWR)	Thoma Bravo	Sep-14	2,500	3.4x	22.5x
BMC Software (BMC)	Bain and G. Gate	May-13	6,900	3.1x	9.6x
Quest Software (QSFT)	Dell	Mar-12	2,400	2.6x	8.6x
Average				**4.8x**	**18.7x**

[1] Profiled in *Polishing Turd – Part 2*. Available in the research center at www.3sigmavalue.com.

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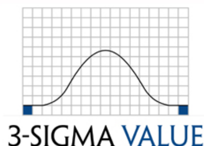

Using 25x EBITDA as the terminal value multiple (10% WACC) and Upside Case projections, TEAM's discounted cash flow (DCF) value is around $10 billion (8.2x 2020 revenue), or $40 per share. Using Base Case numbers and 18.7x EBITDA, the valuation drops to $19 per share (4.2x 2020 revenue). Either way, TEAM is significantly overvalued.

The fact that many of last year's losers become this year's winners, and vice versa, is not surprising given 3-Sigma Value's deep value approach and long-term time horizon. When I look at the list of losers, I see more opportunity than mistake. **Ocwen (OCN)** and **Altisource Portfolio Soulutions (ASPS)** were sold in 2017, and explained in detail in 3-Sigma Value's Second Quarter 2017 Letter. The rest are re-introduced here.

SHORT: Credit Acceptance Corp (CACC)[2] – this subprime auto lender defies many laws, including those of valuation, accounting, and Nasdaq listing requirements. According to Nasdaq, "Audit committees are required to have a minimum of three members and be comprised only of Independent Directors." Meanwhile, there are only four people on CACC's Board of Directors – the CEO, CFO, and two gentlemen associated with CACC's largest and longest standing shareholder, Prescott General Partners. Prescott General Partners has been invested in CACC for over 20 years, and is sitting on a huge capital gain, rendering it undesirable to sell its stock. With no independent voice on the Board of Directors, let alone on the Audit Committee, there is no catalyst for improving disclosures and adhering to accounting standards.

Meanwhile, CACC does not disclose any actual credit metrics – forcing investors to rely on internal projections as opposed to actual results of delinquencies and defaults. In connection with this lack of transparency, CACC inappropriately applies purchased credit impaired loan accounting, also known as level yield accounting (FAS ASC 310-30) rather than standard FAS 91 loan accounting. The result is a front-loading of earnings, and thus an overstatement of earnings as long as originations continue to grow.

Making matters more opaque, CACC further under-reports credit losses (and overstates earnings) by transferring failed dealer loans to its purchase programs and applying an absurd 120 month grace period to non-performing loans. In sum, CACC's over-stated earnings mask a lending operation that generates no cash flow.

[2] Profiled in *The Subprime Auto Bubble – Part 2*. Available in the research center at www.3sigmavalue.com.

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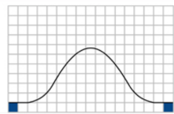

Long: DHX Media (DHXM) – this Canadian-based owner of children's content including Teletubbies, Caillou, Bob The Builder, Yo Gabba Gabba, and Inspector Gadget, and now Peanuts and Strawberry Shortcake trades at a significant discount to its net asset value.

On May 10, 2017, DHXM announced a **transformative** acquisition of 80% of the Peanuts brand (Schultz family continues to own 20%) and 100% of the Strawberry Shortcake brand. The $345 million deal was financed by a new debt financing facility, a convertible debenture, and cash on hand. Peanuts had been owned by Iconix (ICON), mainly a licensor of brands for clothing, which accounted for ~90% of Peanuts revenue. Clothing should represent no more than 40%, with the remainder from media, toys and other consumer products. In short, Peanuts is an under-monetized asset

On October 2, 2017, after reporting quarterly results that missed expectations and under pressure from shareholders, DHXM announced a strategic review that includes the potential sale of the Company. Applying a range of valuation multiples from 10x EBITDA to 11.8x EBITDA, the multiple DHXM paid for Peanuts & Strawberry Shortcake, we arrive at an average target price around $6.

DHXM Valuation Summary		
I. Probability-weighted DCF (11.8x is the valuation paid for Peanuts):		
Base (10.9x, WACC)		$5.31
Upside (11.8x, WACC)		$10.08
Downside (10x, WACC)		$1.51
Probability-weighted Target Price		**$5.50**
% Upside (Downside)		**55.0%**
II. Sum-of-the-Parts:	CAD	USD
Wildbrain - Assume sale of 20% at 15x EBITDA ~CAD33 million	500,000	400,000
Family Channel - Assume sale at 5x EBITDA ~CAD15 million	75,000	60,000
2019 Core DHX EBITDA, ex. Wildbrain and Family Channel	68,787	55,030
2019 Peanuts EBITDA	52,276	41,821
Total 2019 EBITDA, ex. Wildbrain and Family Channel	121,064	96,851
11.8x multiple paid for Peanuts		11.8x
Enterprise Value, ex. Wildbrain and Family Channel		1,142,841
Consolidated Enterprise Value		1,602,841
Net Debt		613,061
Non-Controlling Interest (Schultz family)		73,722
Equity Value		916,058
Per Share		**6.62**
% Upside (Downside)		**86.5%**
Average of DCF and SOTP		**6.06**
% Upside (Downside)		**70.8%**
C$/US$ x-rate		0.80

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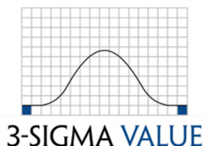

Long: DISH Networks (DISH) – whether the satellite television business is worth the 8x that AT&T paid for DirecTV is debatable; what is not debatable is the fact that the market ascribes negative value to DISH's operating business (~$3 billion of EBITDA).

DISH Valuation Summary

	Midpoint	MHz	POPs	MHZ-pops (B)	$/MHZ-pop	After-tax Value (5)
AWS-3 paired (1968) at cost (1)	1968	13	202	2,626	1.93	5,068
AWS-3 unpaired at cost	1968	13	308	4,004	0.50	2,002
AWS-4 (2180-2200) acquired from DBSD and Terrestar (2)	2190	40	313	12,520	1.93	19,903
PCS H Block (1915-1920) acquired at auction in 2014 (3)	1918	10	313	3,130	1.93	5,167
700MHz E Block (722-728) acquired in 2008 (4)	726	6	230	1,380	1.03	1,282
New 600 MHz at cost (acquired in 2017)	600	18	313	5,634	1.10	6,211
Total		100.0		29,294	1.53	39,633

After-tax Value of Spectrum	39,633
FD Shares Outstanding	466.11
Spectrum Value per Share	85.03
Less: Net Debt	27.94
Equity Value of Spectrum	**57.09**
Price at 12/31/17	47.75
% Discount to Spectrum Value	-16%

(1) DISH's bidding pushed up the price of AWS-3 then used affiliated "very small business" bidding credits to get a discount.
(2) Similar to AWS-3 but arguably worth more because of downlink optionality.
(3) Potential to pair with AWS-4, thus comparable value on a MHZ-POP basis.
(4) Unpaired, covering ~75% of the US, worth less than $1.85 paid by TMUS to VZ in 2014.
(5) Gains taxed at 20% rate.

DISH's spectrum is worth ~$40 billion after-tax ($85 per share). Subtract the $28 per share in debt, and the equity value of spectrum-only is $57 (12/31/17 price = $47.75). In an Upside Case where DISH is acquired for 8x EBITDA, the valuation increases to $98. At 5x, DISH is worth $83.

Long: Criteo (CRTO) - sells a digital ad re-targeting technology that works with retailers to serve personalized online/mobile display advertisements to consumers that have previously visited the advertiser's website/mobile application. Rather than charge clients on a traditional cost per thousand impressions (CPM) basis for ads delivered, i.e. $10 CPM, Criteo charges on a click-through basis and measures performance on the basis of post-click sales. Since Criteo only gets paid when a user engages with an advertisement (clicking on it), the result is a pay for performance model that is more effective (higher ROIC) than the traditional pay for delivery model. Moreover, whereas CPM pricing requires clients to set a budget, the click-through model enables uncapped spending that is effectively constrained only be Criteo's ability to find enough relevant opportunities for clients to achieve their specific return objectives. In Q3 2017, 78% of Criteo's revenues were derived from clients with uncapped budgets.

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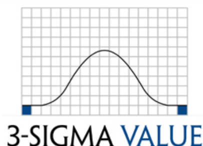

CRTO's stock collapsed in 2017 (from $56 to $23) after an announcement that confirmed investors' worst fear – that Apple would roll out ad blocking software (Intelligent Tracking Prevention) in its iOS 11.2 update that will cause cookies to be deleted after 24 hours, impacting the ability of CRTO to collect and utilize data. As a result, management guided 2018 revenue down as much as 22% if it is unable to find a solution. In this case, however, CRTO still generates ~$200 million of EBITDA (8x) and ~$140 million of free cash flow, which is worth ~$30 per share. However, if CRTO is able to find a work-around as it has in the past then free cash flow in 2018 will approximate $170 million and the stock is worth ~$44 per share. 12/31/17 price = $26.03.

SHORT: Control4 (CTRL) – this high-end home automation system provider faces massive competition from Amazon, Apple, Google, et al. CTRL sells on-premise hardware (35% controllers / 65% end point products – smart lighting, HVAC, security, etc.) that requires professional installation costing thousands of dollars from 3rd-party distributors who control the ongoing relationship with customers. In short, CTRL is a hardware company, not a home automation platform, not a service provider; and as such it should be valued as one.

Growth at CTRL is based on what we call **the TAM fallacy**[3] and undercut by single-digit organic revenue growth. Moreover, bogus non-GAAP #s inflate an exuberant valuation - (1) taxes – CTRL becomes a full payer in 2018, (2) stock-comp – 5% of revenue is a real expense; (3) amortization of acquired intangibles – CTRL closed 2 acquisitions in the past year in order to diversify the product offering beyond controllers – Packedge sells home routers, and Triad Speaker sells high end speakers. The strategy is to cross-sell the newly acquired products across its distribution network; the challenge is to produce durable growth rather than one-time bumps. Either way, at 30x EBITDA (vs. 6.8x EBITDA take-out value for ADT), CTRL's valuation is irrationally exuberant. 12/31/17 price = $29.76.

Short: Exchange Income Fund (EIF.TO) – this cash burner funds its monthly dividend by borrowing and issuing equity (Ponzi-esqe). As liquidity runs low by the end of 2018 (unless they continue fleecing the market), focus will shift from dividend yield to asset value. EIF.TO owns:

[3] TAM stands for Total Addressable Market. The TAM fallacy is when management uses unrealistic assumptions about the size of a market in order to justify an inflated valuation.

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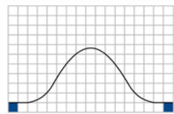

1. Regional airlines – Calm Air, Perimeter, Keewatin, Berskin, Custom Helicopters, and Provincial – that are mostly monopolies operating in remote parts of Canada. Air Canada (AC.TO) is the best comp, trading ~6x EV/EBITDA (up from 4x). Worth 6x $120 million = $720 million.
2. Regional One (R1) is an airplane leasing company that derives only 1/3 of its revenues from leasing airplanes to operators and 2/3 from selling airplanes in parts (chop shop). EIF acquired R1 in 2013 for US$90 million (5.6x EBITDA ~ $16 million). Subsequent to the announcement of the acquisition of R1, EIF.TO's auditor immediately resigned. Worth somewhere between $90 million cost and 5.6x LTM EBITDA of $110 million = $616 million.
3. Manufacturing – consists of 5 businesses: communications infrastructure (WesTower), stainless steel tanks (Stainless), precision parts used in aero (Ben Machine), heavy duty pressure washing and water recycling systems (Alberta), precision sheet metal and tubular products (Overlanders). Comps trade between 6x – 8x EBITDA. Worth 7x $20 million = $140 million.

Add the assets, subtract corporate expenses (capitalized at 6x), and subtract net debt of $706 million, and what is left is equity value between $124 million ($3.31 per share) and $650 million ($17.42 per share). 12/31/17 price = $35.64

Short: Universal Display (OLED) – this OLED (organic light-emitting diode) patent holder shot to an all-time high above $200 per share during 2018's just-concluded January CES consumer electronics show in Las Vegas. The problem is Universal's core patent expired at the end of 2017, enabling Samsung (who dominates OLED capacity) to re-negotiate its $90 million annual license fee and price paid per gram of color emitters – Universal makes red and green emitters, while blue is based on an old Kodak patent. The most likely scenario is one in which price per gram is reduced but offset by increased volumes.

The incredible valuation premium accorded to Universal (24x 2017 revenue / 45x 2017 EBITDA / 70x 2017 EPS) is a function of the perception of value in the OLED patent portfolio, not in future sales of commodity materials. No matter how far we stretch the assumptions underlying the transition of the IT and TV backlighting markets from LCD & LED to OLED, Universal will never sell enough emitter materials (and host materials to a lesser extent) to remotely justify the Company's $8 billion market capitalization. 12/31/17 price = $172.65.

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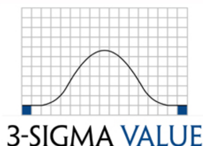

Final Thoughts

Over winter break, I read the book *Thinking, Fast and Slow* by Daniel Kahneman. It had been gathering dust on my shelf for years, waiting for me to ask the types of questions that Kahneman seeks to answer. After a tough year in the market, during which I held true to my core beliefs about investing, I began to wonder if something was amiss. My guttural feeling is that the long/short strategy is sound, and so are the core tenets of my investment process. Which leaves execution. Why am I executing poorly? What am I doing different? Are my habits different? What about biases? Have I developed biases that are impacting my buy/sell decision-making?

The basic conclusion of Kahneman's work is that simple algorithms are better predictors than expert judgement, a premise that underlies the paradigm shift from active to passive investing and ETFs. Even the smartest people can be overwhelmed by biases formed by their own experiences. Kahneman identifies a long list of biases of judgement and choice, a few of which I can relate to:

- Bias towards cohesive stories – "the most coherent stories are not necessarily the most probable"…yet confidence is built by "the coherence of the best story you can tell from the evidence at hand."
- Overconfidence – "the confidence that individuals have in their beliefs depends mostly on the quality of the story they can tell about what they see, even if they see little. We are confident when the story we tell ourselves comes easily to mind (cognitive ease), with no contradiction and no competing scenario. We often fail to allow for the possibility that evidence that should be critical to our judgment is missing – what we see is all there is."
- The halo effect / confirmation bias – "the tendency to like (or dislike) everything about a person (or a company), including things you have not observed."
- Sequence matters – "the sequence in which we observe characteristics of a person (or a company) is often determined by chance. Sequence matters, however, because the halo effect increases the weight of first impressions, sometimes to the point that subsequent information is mostly wasted."
- Repetition bias – "a reliable way to make people believe in falsehoods is frequent repetition, because familiarity is not easily distinguished from truth."
- Optimistic bias – "the optimistic bias may well be the most significant of the cognitive biases. Because optimistic bias can be both a blessing and a risk, you should be both happy and wary if you are temperamentally optimistic."

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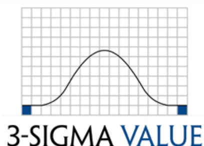

Only ~25%-33% of active managers outperform their benchmark in any single year (depending on the index), and Kahneman uses this statistical fact as proof that money management is an industry built largely on the *illusion of skill*.

During the "bomb cyclone" that shut down the East Coast in early January 2018, I was fortunate to spend time with legendary investor Bill Miller, formerly of Legg Mason, who lives in Baltimore but was stuck in New York. On my way to meet him at Serafina on 61st street, I marveled at his peerless record – he outperformed the S&P 500 for 15 straight years – a feat that defies the laws of statistics and can only be explained as the work of genius. Knowing Bill is a student of philosophy, I asked if he had read *Thinking, Fast and Slow*, and of course he knew it well. He chuckled when I asked if he agreed with Kahneman. He prefers Gary Klein.

Gary Klein was Kahnemen's adversary and erstwhile collaborator. He tells the story of a team of firefighters who enter a burning kitchen. The commander, who is very experienced, gets a feeling that something is wrong and calls for evacuation moments before the floor collapses. How did he know? Was it expert intuition? Only later did the commander process what he felt at the time, "the fire had been unusually quiet and his ears had been unusually hot. It turned out that the heart of the fire had not been in the kitchen but in the basement beneath where the men had stood."

The commander's skill was real, not an illusion, the direct result of experience. Herbert Simon, who studied chess masters, showed that it takes thousands of hours of practice (ten thousand, according to Malcolm Gladwell in his book, *Outliers*) to achieve mastery such that you see the board differently than everyone else. He wrote, "The situation has provided a cue; this cue has given the expert access to information stored in memory, and the information provides the answer. Intuition is nothing more and nothing less than recognition."

Skill in investing is not an illusion; like firefighting, it is the product of hard work and repetition. Knowledge accumulates. The fact that the average fund manager fails to beat the S&P 500 is irrelevant because not all fund managers are average. Seek an outlier as defined by his/her work over the course of a cycle. Don't chase returns.

Thank you for your confidence.

Benjamin Weinger
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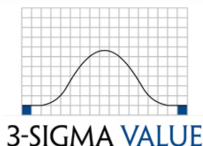

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