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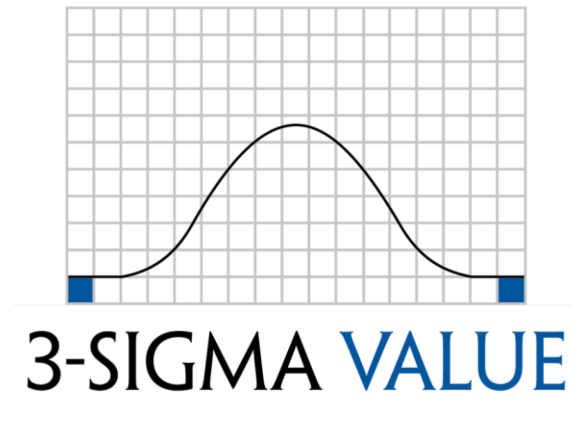

2015 Review / 2016 Outlook

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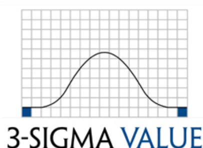

2015 In Review

For the year ended December 31, 2015, 3-Sigma Value, LP (the "Partnership") had an estimated gain of 12.9% (net of management fees and expenses) with average gross exposure of 64.5% and net exposure of *negative* 18.7%.

3-Sigma Value, LP

PERFORMANCE AND EXPOSURE STATISTICS

	Monthly Performance			Average Fund Exposure			
	Gross[1]	Long	Short	Long	Short	Gross	Net
January	4.4%	-0.2%	4.6%	8.1%	32.7%	40.8%	-24.7%
February	-1.9%	-0.1%	-1.8%	7.5%	31.2%	38.7%	-23.6%
March	-0.7%	-1.0%	0.3%	8.7%	29.5%	38.3%	-20.8%
April	-0.7%	0.6%	-1.3%	9.7%	30.8%	40.6%	-21.1%
May	-1.1%	-1.7%	0.7%	9.0%	28.4%	37.4%	-19.5%
June	0.2%	0.1%	0.1%	8.5%	23.3%	31.7%	-14.8%
July	2.2%	-1.3%	3.5%	24.3%	41.4%	65.7%	-17.2%
August	3.0%	-1.0%	3.9%	38.4%	58.1%	96.5%	-19.6%
September	10.1%	-1.4%	11.5%	37.8%	57.5%	95.3%	-19.7%
October	-2.4%	0.1%	-2.5%	41.4%	59.6%	101.0%	-18.2%
November	-1.1%	0.6%	-1.7%	42.6%	52.2%	94.7%	-9.6%
December	0.7%	-1.9%	2.5%	39.1%	54.3%	93.5%	-15.2%
2015	12.9%	-7.0%	19.9%	22.9%	41.6%	64.5%	-18.7%
Cumulative [2]	**111.0%**						
Annualized [2]	**16.1%**						

1 Net of management fee and expenses but gross of the incentive allocation.

2 Since January 2011.

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 15 companies, and short 25 companies.

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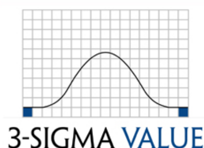

Our investment approach is global in scope, yet, at this time, North American equities constitute the vast majority of our gross exposure. We are market-cap agnostic.

Portfolio Construction

As of December 31, 2015, the 3-Sigma Value portfolio had gross long exposure of 38.7% and gross short exposure of 59.2%, for net investment exposure of *negative* 20.5%. 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) - 12/31/15

	Long	Short	Gross	Net
By Industry				
Technology	10.1%	-36.5%	46.6%	-26.4%
Natural Resources	22.4%	-7.3%	29.7%	15.1%
Financials	6.2%	-15.3%	21.5%	-9.1%
Total	38.7%	-59.2%	97.9%	-20.5%
By Geography				
North America	31.7%	-59.2%	90.9%	-27.5%
South America	4.4%	0.0%	4.4%	4.4%
EMEA	2.6%	0.0%	2.6%	2.6%
Asia	0.0%	0.0%	0.0%	0.0%
Total	38.7%	-59.2%	97.9%	-20.5%
By Market Capitalization				
Greater than $1B	28.1%	-26.8%	54.9%	1.3%
$500M - $1B	1.0%	-9.5%	10.5%	-8.4%
Less than $500M	9.6%	-22.9%	32.5%	-13.4%
Total	38.7%	-59.2%	97.9%	-20.5%

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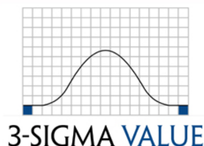

Although we remain fundamentally pessimistic regarding the macro outlook, we don't seek to take directional bets on the overall market (we're not economists), and as a result, our success is not dependent on either a bull or bear market. In contrast, we are completely comfortable taking directional bets on specific industry segments (in our areas of expertise) dominated by a secular trend that is either creating or destroying value. In fact, this is the first step in our investment process.

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 wield an incredible edge over most market participants.

As discussed in previous letters, our use of scenario analyses is central to quantifying the impact of various positive and negative assumptions on valuation. Most importantly, our research effort is (and has always been) focused on the *Downside Case Operating Scenario*. In other words, what can possibly go wrong? Or, when analyzing a potential short, what is the valuation if management delivers according to plan? By focusing our effort first on quantifying *the risk*, we approach sources of information – management, industry experts, analysts – with a skeptical eye aimed primarily at finding the flaws rather than merely buying the pitch.

Our skeptical approach to investing is one reason why we focus and find success on the short side of the portfolio notwithstanding market conditions. We accept nothing at face value – management projections, government data, sell side analyst math, all of it, as far as we're concerned, is tainted by the agendas of those making the calculations. We have no bullish or bearish agenda, or bias or proclivity. We are a data-driven investment firm that does all of its own research and builds all of its own models from scratch and draws all of its own conclusions. We invest <u>only</u> when we are overwhelmed by the evidence. We separate the survivors from the doomed, the value from the junk, the good from the bad. And we remain mindful that it is precisely in environments such as the current one where the greatest opportunities for mispricing exist.

During 2015, many new ideas were added to the portfolio and the number of positions increased from 25 to 40.

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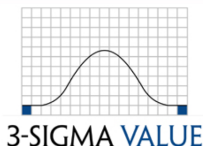


Key investment themes in 2016 include:

1. The next phase(s) of the credit bubble

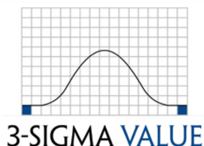
In 2007, a friend suggested I look at **American Capital (ACAS),** one of the fastest growing BDCs (Business Development Companies). ACAS loans money to and occasionally invests in small and midsize companies that otherwise can't access capital from traditional commercial banks. It's a business model that is riskier than people realize because adverse selection is structural. David Einhorn wrote an incredible book *called Fooling Some of the People All of the Time: A Long, Short Story* about Allied Capital (acquired by Ares Capital (ARCC)), another BDC that shared many of the same characteristics as ACAS. Einhorn does a great job of explaining the accounting machinations at BDCs and I highly recommend reading it for detail. In 2008, the equity of the BDCs evaporated along with much of the financial system, and the concept expired as a credit bubble experiment.

But then a funny thing happened on the way to recovery. The BDC model was resuscitated. Banks are operating under tighter restrictions now, leaving many small and midsize businesses without access to their traditional source of term loans and revolvers. Filling the gap are dozens of new (either reorganized or de novo) BDCs promising high single digit distributions, and staffed by new and junior analysts instructed to put money to work. The quality of the underwriting is simplistic at best and usually nothing more than a back-of-the envelope leverage calculation.

3-Sigma Value is short BDCs including **PennantPark Investment Corp. (PNNT),** which we highlight because of its 13.8% loan exposure to low quality energy companies.

PNNT Energy Investments as of 9/30/15

		Par	Cost	Fair Value	Adj. FV	Notes
1	American Gilsonite Company					The world's only supplier of Gilsonite, a natural hydrocarbon resin used as an additive that
	2nd Lien Secured due 9/1/17	25,400,000	25,400,000	24,130,000	24,130,000	improves the performance in O&G cementing and drilling fluids. Value at par.
2	Bennu Oil & Gas, LLC					Offshore O&G E&P
	2nd Lien Secured	26,484,773	25,150,663	20,393,275	7,680,584	FV mark of 77 versus 9/30/15 public bid of 46 that has drifted down to 29 in December.
3	Linc USA GP and Linc Energy Finance (USA), Inc					Distressed O&G E&P in Houston TX
	1st Lien Secured Debt	5,626,850	5,626,850	5,007,897	1,144,662	Use New Gulf write-down as benchmark
	2nd Lien Secured	11,875,000	11,667,848	9,143,751	2,090,000	Use New Gulf write-down as benchmark
4	New Gulf Resources, LLC					Distressed O&G E&P in Tulsa OK focused on Woodbine/Eagle Ford in East TX
	2nd Lien Secured	45,000,000	44,698,345	31,500,000	7,200,000	Proceeds used to acquire >80,000 acres in Texas. PNNT marks the 2nd lien bonds at 70 as of
	Subordinated Debt	15,204,289	14,829,719	1,520,429	0	9/30/15 while the public mark was 30 and has since dropped to 16. The notes are in non-accrual.
	Common Stock	13,500	495,000	0	0	Worthless sub debt and stock
5	RAM Energy LLC, Tranche A					Distressed O&G E&P in Tulsa OK
	1st Lien Secured	76,425,000	75,177,005	72,759,582	16,630,762	Use New Gulf write-down as benchmark
	Common Stock	23,141	20,824,388	0	0	Worthless common stock
6	U.S. Well Services, LLC					Frac services in Marcellus/Utica
	1st Lien Secured Debt due 5/2/19	15,297,762	15,036,838	15,308,835	15,308,835	Value at par
	Total Energy Investments		238,906,656	179,763,769	74,184,843	
	Total Investment Portfolio		1,424,237,162	1,299,047,833	1,193,468,907	
	% Energy		16.8%	13.8%	6.2%	
	Total Incremental Write-down of Energy Portfolio				105,578,926	



PennantPark's (PNNT) unraveling will continue with at least $105 million of write-downs in the energy portfolio that will trigger a liquidity crunch. BDCs are subject to various rules in return for tax exemption, one of which governs leverage – BDCs are limited to a 1:1 debt-to-equity ratio. After writing-down the value of its energy portfolio, PNNT's NAV will approach $600 million. With a total investment portfolio of $1.3 billion ($1.2 billion pro forma), PNNT will breach its leverage ceiling requiring portfolio sales. Forced sales will trigger additional write-downs. A cash sweep will be instituted, eliminating dividends. And without yield, PNNT's equity will evaporate. Sifting through the BDC universe to find perpetrators of the credit bubble I am awaken to a feeling of déjà vu – didn't I conduct this exact same due diligence back in 2007/2008?

Other credit-related shorts include:

- The sub-prime auto financiers, as described in a separate report called *The Subprime Auto Bubble*[1].
- A shady P&C (property and casualty) insurance company;
- An installment loan provider under investigation;
- A timeshare operator that lends to its members up to 90% of their purchase of vacation interests.

2. Bank Consolidation in the U.S.

As detailed in a separate report called *Bank Investing in 2016*, we employ a proprietary framework for evaluating banks[2] that ponders five factors:

1) The high correlation between return on equity (ROE) and tangible book value (TBV). In 2016, we require a return on assets (ROA) in excess of 0.90% – because a bank that earns 0.90% (the minimum level) is worth at least 1.8x tangible book value (TBV) based on historical M&A data (using data from SNL going back to 1990).

2) Franchises that are tightly managed, as reflected in a below-average efficiency ratio[3].

[1] Available at www.3sigmavalue.com.

[2] Not just banks but all spread businesses.

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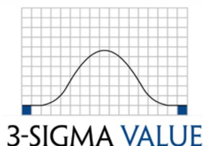

3) Management is always the predominant factor in any bank investment, or any investment in financial services for that matter. Financial services is a human capital business.

4) A catalyst to unlock value over 3-Sigma Value's investment time horizon of 1 to 3 years.

5) M&A – in light of continuing consolidation in the banking industry, we are drawn to the busiest geographies in terms of deal volume - Florida, Georgia and the Carolinas. The southeast is consolidating in the wake of a boom and bust banking cycle more extreme than what was experienced in other parts of the country. More banks were formed and more banks failed in Florida and Georgia than any other states during the bubble. Now that the dust has settled, the southeast remains a powerful demographic that continues to attract money from all over the world. And therefore, the southeast remains a growth market for banking.

3. Energy – incredible dislocation breeds incredible opportunities on both sides of the portfolio

The world is over-capacitated with fossil fuels – oil, natural gas, and coal – in part because of new technologies that have drastically increased supply and lowered the marginal cost of energy production and in part because of burgeoning renewable sources of energy – solar, wind, and biofuels – causing a global shift in demand.

The second wave of destruction in the energy patch is upon us as hedges roll off and bankruptcies accelerate. Few companies are hedged for 2016 and no one is attractively hedged (some have hedges in the high $40s). Yet, even under scenarios where commodity prices fall well-below their marginal cost of production and henceforth are unsustainable, many companies operating at the low end of the cost curve, with solid balance sheets and no external financing requirements, trade at the same relative valuation levels of their more leveraged brethren.

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[3] Efficiency ratio equals non-interest expense divided by (net interest income plus non-interest income). Ironically, a 100% efficiency ratio means a bank is not being efficient. The lower the ratio the better, with most banks striving for a sub-60% ratio.

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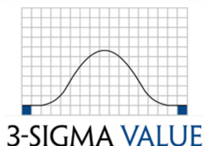

For short ideas, please read *Energy Investing After the Price of Oil Drops – Parts II and III*[4], with detail on specific shorts including **Fairmount Santrol Holdings (FMSA)**, a terminally-over-leveraged frac sand supplier, and **California Resources Corporation (CRC)**, a terminally-over-leveraged E&P with operations in the state of California.

On the long side, we seek investments in companies operating at the low end of the cost spectrum, first and foremost. Recently, natural gas prices fell below $2 per Mcfe[5], a Mendoza line that puts most resource basins out of business. In fact, only one major basin has cash operating costs below $2 – the Appalachian Basin (Marcellus/Utica) where cash costs are ~$1.85. Moreover, when making a drilling decision, E&Ps in Appalachia will exclude sunk costs and drill down to $0.90.

As producers in the Appalachian Basin continue to increase production in a sub-$2 price environment, the price will stay low and producers in the higher cost basins will be forced to shut production. The major natural gas plays in the U.S., are located in three regions: (1) the Appalachian Basin consisting of the Marcellus and Utica plays located in the Northeast (PA, NY, OH, WV); (2) the Rockies (Pinedale Anticline, Niobara), which used to be the cheapest source of natural gas before shale became economical; and (3) the South, mainly in TX, OK, AR, & LA, where four prolific basins are located – Barnett in the Ft. Worth Basin in TX is the highest cost and will be the first to shut down, Eagle Ford in the Permian Basin in TX will be next, followed by Haynesville on the border of TX and LA, and finally Fayetteville in AR. Other major shale plays in the U.S. such as Anadarko-Woodford in OK and Granite are primarily crude and liquids plays.

The winning resource is clearly Marcellus/Utica in the Appalachian Basin, and the winning companies are either (a) consumers of natural gas, (b) infrastructure service providers, or (c) low cost natural gas producers – all of which benefit in theory while, in reality, execution issues and lousy management teams can destroy even the best laid plans. With energy prices and share prices crushed, we sift through the rubble to find deeply undervalued energy-related companies, the proverbial babies thrown out with the bath water. The result is an energy-related portfolio that includes **CF Industries (CF)** – a consumer of natural gas, **CONSOL Energy (CNX)** – a producer of natural gas, and **Columbia Pipeline Group (CPGX)** – a transporter of natural gas.

[4] Available at www.3sigmavalue.com.

[5] Mcfe means 1,000 cubic feet equivalent. 6 Mcfe of natural gas equals 1 bbl of crude oil in terms of energy equivalent.

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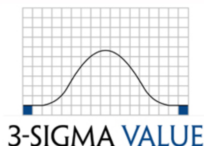

4. Aftermath of The Great IPO Flood

Introduced in 3-Sigma Value's *2013 Review / 2014 Outlook*, The Great IPO Flood is the story of four simultaneous bubbles: (1) cloud/social/mobile technology; (2) consumer growth; (3) yield-oriented companies; and (4) biotechnology. While it can be argued all four are the result of zero-bound interest rate policy, what is unusual is the diversity across growth and income-generating securities. On the one hand, the bubbles in technology and consumer growth are akin to the internet bubble at the turn of the millennium when profit and other financial metrics were subjugated to non-financial measures such as TAM (total addressable market), # of members (free and freemium), inquiries, and eyeballs. On the other hand, the bubble in Yield Cos. is a desperate reach for yield. According to my understanding of history, this is the first time we have ever had simultaneous exuberance in income-generating stocks with no growth and growth stocks with no income.

The 2015 IPO market was the slowest in six years, with 170 IPOs raising $30 billion – down significantly from the $85 billion that was raised from 275 IPOs in 2014. In January 2016, not a single IPO was sold. Despite the fact that the IPO market is dead, we are still sifting through the recent boom to find companies that should never have been taken public in the first place. In a 3-Sigma Value report titled *The Down Round*[6], we analyzed IPOs that priced at a lower level than the valuation received in a previous round of private financing. Psychologically, a down round is demoralizing for employees with under-water stock options and for investors who face dilution. Operationally, it becomes much harder to hire and retain talent. And financially, a down round signals distress. Companies forced to accept a down round typically share the same fundamental characteristics

1. Down rounders are losing money and more importantly burning cash.

2. Down rounders sell a rapidly commoditized product under attack by larger deep-pocketed technology vendors. Reliance on first mover advantage is ephemeral at best.

3. Down rounders are led by jargon-laced CEOs who own a relatively small amount of stock due to dilution.

As of 12/31/15, 3-Sigma Value is short the down rounders **Box, Inc (BOX)** and **Hortonworks (HDP)**.

[6] Available at www.3sigmavalue.com.

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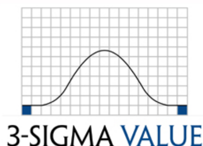

Winners & Losers

Following is a list of the top 10 winners in 2015, and the 7 losers that were material to performance.

	Top 10 Winners in 2015	
1	Short: California Resources Corp (CRC)	Profiled in 3-Sigma Value's, *Energy Investing After the Price of Oil Drops - Part III: Oil Patch Blues*
2	Short: Castlight Health (CSLT)	Profiled in 3-Sigma Value's 1Q 2014 Letter, *When the Levee Breaks*
3	Short: Higher One Holdings (ONE)	Profiled in 3-Sigma Value's 2Q 2013 Letter, *The Hidden Fee Business Model*
4	Short: Hortonworks (HDP)	Profiled in 3-Sigma Value's, *The Down Round*
5	Short: KEYW Holdings (KEYW)	Profiled in 3-Sigma Value's, *Skinny Bears Hiding Behind Trees*
6	Short: Boingo Wireless (WIFI)	Premium WiFi is a fatally-flawed business model
7	Short: Lending Club (LC)	Not a tech company; LC is a financial services company increasingly catering to sub-prime borrowers
8	Short: Straight Path (STRP)	A science-project for its 29-year old Rabbi CEO
9	Short: Verifone (PAY)	Creative destruction in payment technology will obviate checkout lines and the plastic card
10	Short: World Acceptance Corp (WRLD)	Installment lender under investigation by the CFPB (Consumer Financial Protection Bureau)
	Top 10 Losers in 2015	
1	Long: Awilco Drilling (AWLCF)	Offshore driller with net cash valued at less than the PV (present value) of its current contract
2	Long: CF Industries (CF)	Profiled in 3-Sigma Value's, *Penetrating the Macro through the Micro*
3	Long: Madison Square Garden (MSG)	Sum-of-the-parts (SOTP) > $300 per share
4	Long: Taylor Morrison Homes (TMHC)	Homebuilders are weak despite solid fundamentals and cheap valuations
5	Long: Walter Investment Corporation (WAC)	Mortgage service provider transitioning to asset-light business model by creating a REIT to buy its MSRs
6	Short: Nuance Communications (NUAN)	Profiled in 3-Sigma Value's 3Q 2012 Letter, *Searching for Autonomy*
7	Short: Gogo, Inc. (GOGO)	Premium WiFi is a fatally-flawed business model

Many of the names on this list are profiled in letters and reports available at www.3sigmavalue.com. Evaluating the list holistically, what strikes me is that one winner, **Boingo Wireless (WIFI),** and one loser, **Gogo (GOGO)**, share the same investment thesis – **premium WiFi is a fatally-flawed business model**. This calls for further explanation.

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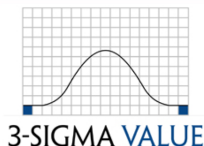

Premium Wi-Fi is a Fatally-Flawed Business Model

As wireless connectivity has become ubiquitous so has the idea that publicly-accessible wireless connectivity (Wi-Fi) should be free. This extends from airports and on airplanes to the far reaches of the planet. Free connectivity is reality and any company bilking customers on the notion of premium WiFi is bound to be creatively destroyed. This thesis leads us to a handful of providers, but, for the purpose of this report we will focus on the two that had a material impact on performance last year. Both remain in the portfolio.

Gogo (GOGO) offers in-flight internet connectivity (Wi-Fi) and digital entertainment to commercial and business airlines, including Delta Air Lines (DAL), American Airlines (AAL), US Airways (LCC) and Alaska Airlines (ALK). Competition is tremendous, not only from traditional aero communications providers such as Panasonic – contract with United Continental (UAL); Global Eagle Entertainment (ENT) / Row44 – contract with Southwest Airline (LUV), and Viasat (VSAT) – contract with JetBlue (JBLU), but also from traditional telecom providers. The only competitive advantage for GOGO is the ever unreliable *first mover advantage*.

GOGO Capitalization as of 9/30/15	
Price as of June 21, 2013 IPO	**$17.00**
Price as of December 31, 2015	**$17.80**
FD Shares Outstanding (incl. anti-dilutive)	83.8
Market Capitalization	**1,492.1**
Cash	388.0
Debt (Senior Term Facility due 6/21/17)	236.6
3.75% Convertible Notes (x = $23.85)	340.0
Enterprise Value (EV)	**1,680.8**
EV / Revenue - 2015	3.3x
EV / Revenue - 2016	2.7x
EV / Revenue - 2017	2.3x
EV / Revenue - 2018	1.9x
EV / EBITDA - 2015	31.6x
EV / EBITDA - 2016	23.2x
EV / EBITDA - 2017	16.3x
EV / EBITDA - 2018	11.4x

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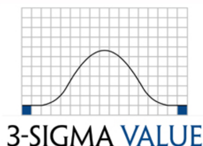

GOGO offers connectivity on more airplanes than any other company, which would be an advantage if the technology were any good. GOGO has spent hundreds of millions of dollars ($362 million of capital expenditures over the past three years alone) building out a puny amount of bandwidth based on crappy technology called ATG (air-to-ground). In 2006, GOGO acquired exclusive rights to 4 MHz of ATG spectrum for $38.339 million, then built a satellite network with 250 cell sites located through the U.S. ATG is old technology based on EVDO Rev A that offers only 3.1 Mbits of throughput (divided amongst all the passengers). An update, ATG-4 (EVDO RevB) offers 9.8 Mbits to the aircraft, but that is still crap. A litany of further advancements will continue to improve throughput but at the end of the day ATG has two technological limits that are fatal flaws – it does not work over bodies of water, and therefore is limited to flying over land, and it can't stream video.

After years of promoting ATG, GOGO announced adoption of a newer technology called 2Ku, with peak speeds of 70 Mbits. In addition to the 7x improvement in throughput, 2Ku is a global satellite solution with lower upfront capex and the flexibility to buy more transponder capacity on a transponder by transponder basis. GOGO plans to replace its entire ATG fleet with 2Ku, costing hundreds of millions of dollars, but the problem is that 2Ku is neither proprietary nor the solution. It is a *transitional technology*. 70 Mbits is not nearly enough for a plane full of people. One of the most important factors driving GOGO's financial performance is service take rate. In the third quarter of 2015, service take rate was a mere 5.6% - which means only 5.6% of flyers purchased GOGO's inflight connectivity service. Part of the reason for the low usage is the cost but the main reason is the limited amount of bandwidth – at 9.8 peak Mbits, only a few people can access the internet at the same time. With 70 Mbits, maybe 15 or 20 people can comfortably surf, still nowhere near enough bandwidth to cover a majority of flyers on most commercial flights. Thus, GOGO is planning to build an entirely new network with full knowledge it is already substandard. GOGO views itself as if it were AT&T or Verizon, building generation on top of generation of telecommunications infrastructure, executing an iterative process with unlimited resources. Unfortunately, GOGO is a small company with limited resources that will continue to burn cash as long as it wants to compete.

Boingo Wireless (WIFI) sells Wi-Fi service to 212,000 retail customers (down 26% from 286,000 in 3Q14) and 46,000 military subscribers (up from 2,000 in 1Q14). Boingo also sells wholesale Wi-Fi service to AT&T and Verizon.

Wi-Fi resides on 5GHz spectrum that is abundant and free. Wi-Fi equipment (radios and antenna) is cheap and everywhere. The price of Wi-Fi is free. So why does anyone still pay

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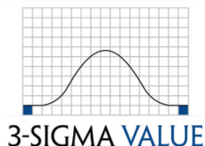

$9.95 per month to be able to access Boingo Wi-Fi (or single-use Boingo AsYouGo for $7.95 per day)? As a result, Boingo's core retail Wi-Fi business is in secular decline.

Moreover, Boingo is bilking our troops. Boingo's new growth business is providing broadband and IPTV services for troops stationed on U.S. military bases. The most common plans are the $29.95 monthly subscription for Standard services (Internet or IPTV) and the $49.95 monthly subscription for Expanded services (Internet or IPTV). The Standard combo package is $54.95 per month and the Expanded combo package is $89.95 per month. Military personnel can also add premium channels at additional cost to enhance their IPTV service. Plans are available on daily (Internet only), weekly and monthly schedules, with different service options at each interval. These services are only available on the U.S. military bases.

Think about it – the least that military personnel can pay for broadband connectivity is $29.95 per month ($360 per year). Meanwhile, Google built out broadband connectivity for free for all of Kansas City as an experiment that has since expanded to other cities in the U.S. If the rest of us can get free Wi-Fi then why is our military forced to pay exorbitant prices? When a company resorts to fleecing the military, it is but one step away from facing reality. As of 9/30/15, Boingo built out its high-speed WiFi and IPTV network covering 178,000 military beds with a total addressable market (TAM) of 300,000 beds. Boingo's 46,000 military subscribers represent 26% penetration. We make various assumptions regarding build-out (up to 100% of TAM) and penetration (up to 40%) to arrive at the conclusion that the best Boingo can do on a free cash flow basis is roughly breakeven. More likely, Boingo will burn through what's left of its cash, a mere $8.6 million, requiring a highly dilutive capital raise.

WIFI Capitalization as of 9/30/15	
Price as of 12/31/15	$6.62
FD Shares Out (excl. anti-dilutive)	37,140
Market Cap	245,867
Debt	21,500
Cash	8,556
EV	258,811
EV / 2015 Revenue	1.8x
EV / 2016 Revenue	1.6x
EV / 2017 Revenue	1.6x
EV / 2015 EBITDA	13.3x
EV / 2016 EBITDA	8.1x
EV / 2017 EBITDA	6.4x

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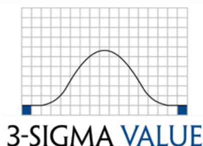

Final Thoughts

Over the holidays I read a book that I still can't believe I had never read before. It was on my list for years, decades even, but I never considered it necessary. Now I buy copies for my colleagues. The book is *Reminiscences of a Stock Operator* by Edwin Lefevre, about Jesse Livermore, a successful stock and commodities trader during the early 1900s. Originally published in 1923, it reads as fresh as anything I've ever read on the subject.

How do you generate ideas? I am often asked.

This is what the great trader had to say: "*A man must believe in himself and his judgment if he expects to make living at this game. That is why I don't believe in tips. If I buy stocks on Smith's tip I must sell those same stocks on Smith's tip. I am depending on him. Suppose Smith is away on a holiday when the selling time comes around? No, sir, nobody can make big money on what someone else tells him to do. I know from experience that nobody can give me a tip or a series of tips that will make more money for me than my own judgment.*"

A key attribute of 3-Sigma Value is market agnosticism. We pursue investment theses based on assumptions we view as credible but acknowledge their uncertainty. We aim to buy "cheap" and sell "expensive" stocks but do so mindful of the reality that valuation disparities can persist for periods long enough to render their corrections pyrrhic victories. We pay particular attention to knowing our fellow shareholders and shortsellers. We remain cognizant that portfolio correlation to the market is fragile and, consequently, maintain net market exposure between negative 25% and positive 25%. In short, we undertake the same approach we took to 2015 but do so with even greater humility and caution.

"The bear side doesn't appeal to me any more than the bull side, or vice versa. My one steadfast prejudice is against being wrong."

Thank you for your confidence.

Benjamin Weinger
Portfolio Manager
3-Sigma Value, LP
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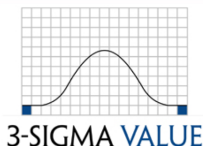

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