STERN IAG

Board of Advisors Meeting

February 12th, 2020

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Letter from Portfolio Manager

Dear Board of Advisors,

We are greatly looking forward to the new semester and hope to build on the structure that we've implemented over the past two years. This process requires reflection on what has been done in the past. One recurring theme was the suggestion of:

- **Expanding our mandate to foreign companies:** There's been significant organizational interest in looking at foreign companies. In the past, we've brought foreign companies that have ADRs listed in the US. However, we believe it might be an interesting exercise to look at foreign-listed companies as well, assuming the same or higher level of market capitalization and trading volume requirements as our US pitches.

With that in mind we'd like to bring **Dell Technologies (Page 15)**. Our thesis is a core business discount in spite of exposure to cloud hardware in addition to a sum of the parts discount after accounting for significant equity holdings.

Best,

Steve Woo

Portfolio Manager

A Review of Our Historical & Current Positions

TMT Holdings			
Company Name	**Analyst**	**% of Portfolio**	**Return on Exit**
Western Digital Corp	Mateo P.	**6.00%**	18.7%
Nutanix	Jaro V.		-32.10%
Blackberry	Nived G.		-34.20%
Charter	Steve Z.		28.00%
Formula One	Kaan T.		39.50%
Celestica	Kaan T.		-13.00%
IAC Interactive Corp	Sushil B.		45.40%
Disney	Steve W.		29.80%
Gannett Co	Robert Y.		31.70%
Dish Network	Robert Y.		-45.50%
Win Rate	**60.0%**	**Average**	6.83%
Std. Dev	**34.4%**		

Consumer Holdings			
Company Name	**Analyst**	**% of Portfolio**	**Return on Exit**
BorgWarner	Larry W.	**4.00%**	-12.4%
Stanley Black & Decker	Spencer H.	**4.90%**	16.9%
Target	Sruthi B.		27.6%
Purple Innovation	Robert Y.		-29.8%
Hanesbrands	Steve W.		-14.4%
Supervalu	Samuel L.		71.0%
Dave and Busters	Keshav S.		32.5%
GNC Holdings	Gregory G.		-58.8%
Chipotle Mexican Grill	Dryden B.		49.4%
Ferrari	SiHeng Y.		157.0%
Win Rate	**60.0%**	**Average**	49.4%
Std. Dev	**60.8%**	**Avg. w/o Ferrari**	9.1%

Healthcare Holdings			
Company Name	**Analyst**	**% of Portfolio**	**Return on Exit**
CVS Health Corp	Robert Y.	**3.10%**	-7.4%
HCA	Srikar A.	**6.00%**	22.4%
Recro Pharma	Mark S.	**6.10%**	34.4%
Baudax Bio	Mark S.	**1.20%**	
DaVita	Mark/Nived		0.2%
Incyte Corp	Robert Y.		7.6%
Gilead	Samuel L.		-10.4%
Bristol-Myers Squibb	Suresh K.		11.5%
Perrigo Co	Dryden B.		-31.9%
Win Rate	**62.5%**	**Average**	3.3%
Std. Dev	**20.6%**		

Industrials Holdings			
Company Name	**Analyst**	**% of Portfolio**	**Return on Exit**
Allison Transmissions	Cody F.	**4.70%**	-8.0%
United Rentals	Steve W.	**5.50%**	21.8%
XPO Logistics	Chen Z.	**6.00%**	17.4%
ZTO Express	Mark S.	**5.10%**	23.2%
Axon Enterprises	Steve Z.		165.6%
Win Rate	**80.0%**	**Average**	44.0%
Std. Dev	**69.1%**	**Avg. w/o Axon**	13.6%

Observations:

- **Average Holding Period of 1.4 years:** The holdings that were held above that average were legacy positions in which we had struggled to justify the thesis (Dish, Western Union, Perrigo)
  - This is reflected by the fact that the positions in which we had made a gain had an average holding period of 1.3 years while those with losses had a period of 1.5 years.
- **TMT and Healthcare Remain Pain Points:** Both industries span too wide to generalize with, but they both require an in-depth knowledge of the product more so than other industries. We have found that product related thesis points and knowledge is more difficult to pass down.
- **Even Adjusting for the Outlier, Consumer Picks Have Done Well, But Have Been Less of A Focus In Recent Years:** The sector breakdown of IAG pitches has moved from consumer oriented in the past to industrial/TMT oriented.
  - It's possible this is because many consumer companies have recovered since the 2018 industry wide slump.
- **A Standard Deviation of 20% Indicates Many Companies in Our Portfolio are Hit or Miss:** Adjusting for the outliers, the average loss is 24% and the average gain is 27%. The slightly higher win rate compensates for losses on the same magnitude.

*Industries with sample sizes of less than 5 were omitted above, but included in the calculations. This includes Chemicals, Real Estate and Financial Institutions.

II. Performance Analysis

Holdings Summary *(as of February 7th, 2020)*

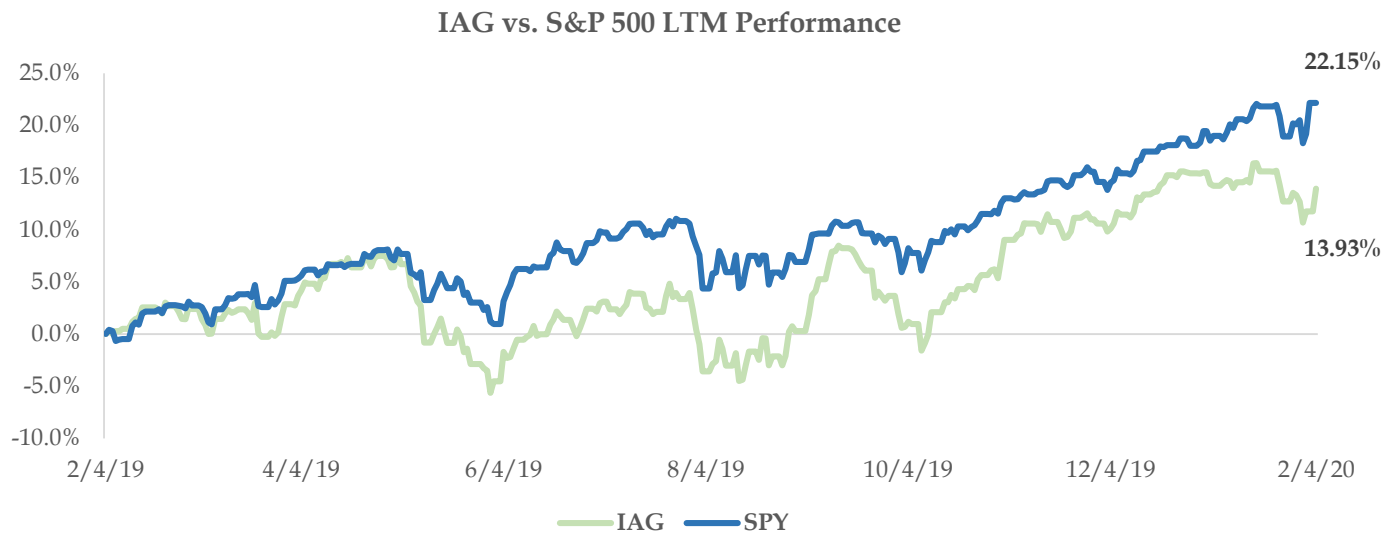
Core Holdings									
Company Name	**Ticker**	**Analyst**	**Date of Purchase**	**% of Portfolio**	**Share Count**	**Price At Purchase**	**Share Price**	**Current Return**	**Morningstar Industry**
Allison Transmissions	ALSN	Cody F.	12/3/19	4.7%	50	$47.42	$43.62	**(8.0%)**	Industrials
BorgWarner	BWA	Larry W.	3/14/19	4.0%	55	$38.34	$33.57	**(12.4%)**	Consumer Cyc.
CVS Health Corp	CVS	Michael G.	12/6/16	3.1%	20	$77.28	$71.56	**(7.4%)**	Healthcare
First Energy	FE	Achyut S.	10/29/19	5.5%	50	$47.30	$51.23	**8.3%**	Utilities
HCA	HCA	Srikar A.	9/26/19	6.0%	19	$119.20	$145.93	**22.4%**	Healthcare
Stanley Black & Decker	SWK	Nicole D.	5/3/18	4.9%	14	$139.53	$163.05	**16.9%**	Consumer Stp.
United Rentals	URI	Caleb N.	3/14/19	5.5%	17	$122.97	$149.75	**21.8%**	Industrials
XPO Logistics	XPO	Chen Z.	10/20/19	6.0%	30	$79.37	$93.21	**17.4%**	Industrials
ZTO Express	ZTO	Mark S.	3/14/19	5.1%	100	$19.28	$23.76	**23.2%**	Industrials
SPDR S&P 500 ETF	SPY			5.7%	8		$332.20		
Total Core Holdings				**50.4%**			**$21,270.07**		

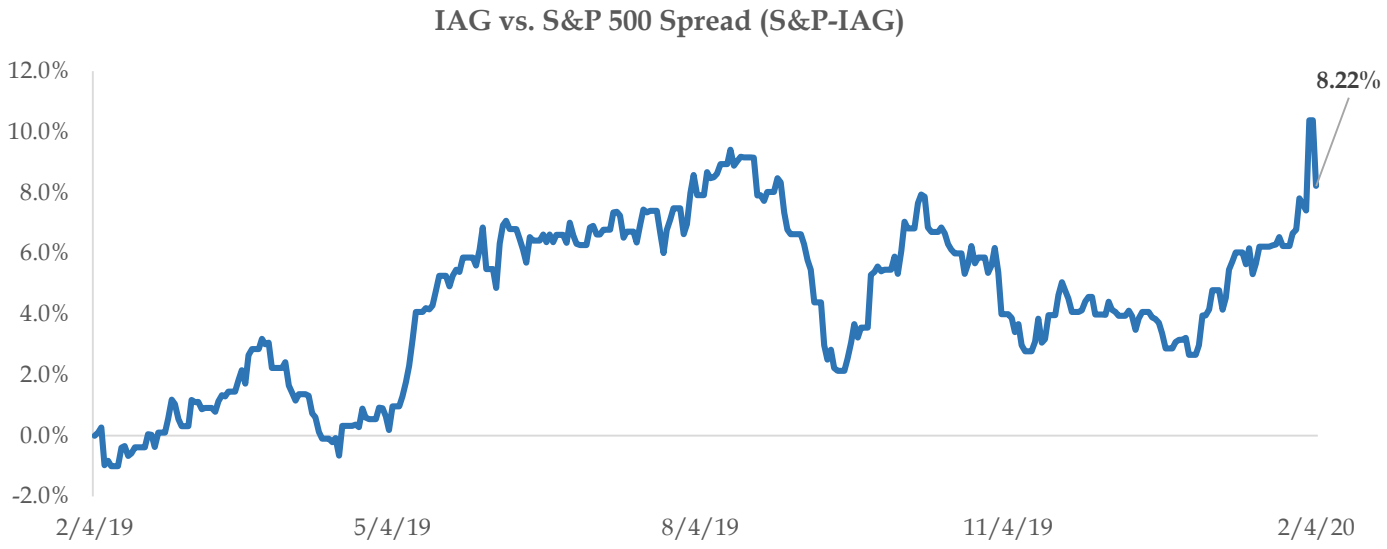
Opportunistic Holdings									
Company Name	**Ticker**	**Analyst**	**Date of Purchase**	**% of Portfolio**	**Share Count**	**Price At Purchase**	**Share Price**	**Current Return**	**Morningstar Industry**
Green Brick Partners	GRBK	Srikar A.	12/3/17	**4.1%**	162	$11.39	$11.86	**4.1%**	Real Estate
LyondellBasell	LYB	Tony W.	4/18/19	**4.4%**	25	$91.55	$82.10	**(10.3%)**	Chemicals
Recro Pharma	REPH	Mark S.	10/29/19	**6.1%**	160	$13.20	$17.74	**34.4%**	Healthcare
Baudax Bio	BXRX		11/14/19	**1.2%**	64	$0.00	$9.00		Healthcare
Western Digital Corp	WDC	Mateo P.	10/3/18	**6.0%**	42	$56.45	$67.03	**18.7%**	TMT
Total Oppt. Holdings				**21.9%**			**$10,203.48**		
Total Portfolio Equity				**72.3%**			**$33,654.55**		
Cash				**27.7%**			**$12,882.09**		
Total Portfolio Holdings				**100.0%**			**$46,536.64**		

Portfolio KPIs	
Indicator	**Number**
Daily Sharpe Ratio	0.04
Annualized Sharpe Ratio	0.63
Portfolio Beta (Top-Down)	0.86
Daily Volatility	0.8%

Assumption: Given that the Google Finance interface pulls numbers on a daily basis and we don't have multiyear data on portfolio performance, **we annualize daily beta to get the year end number**. We do realize this is a significant assumption.

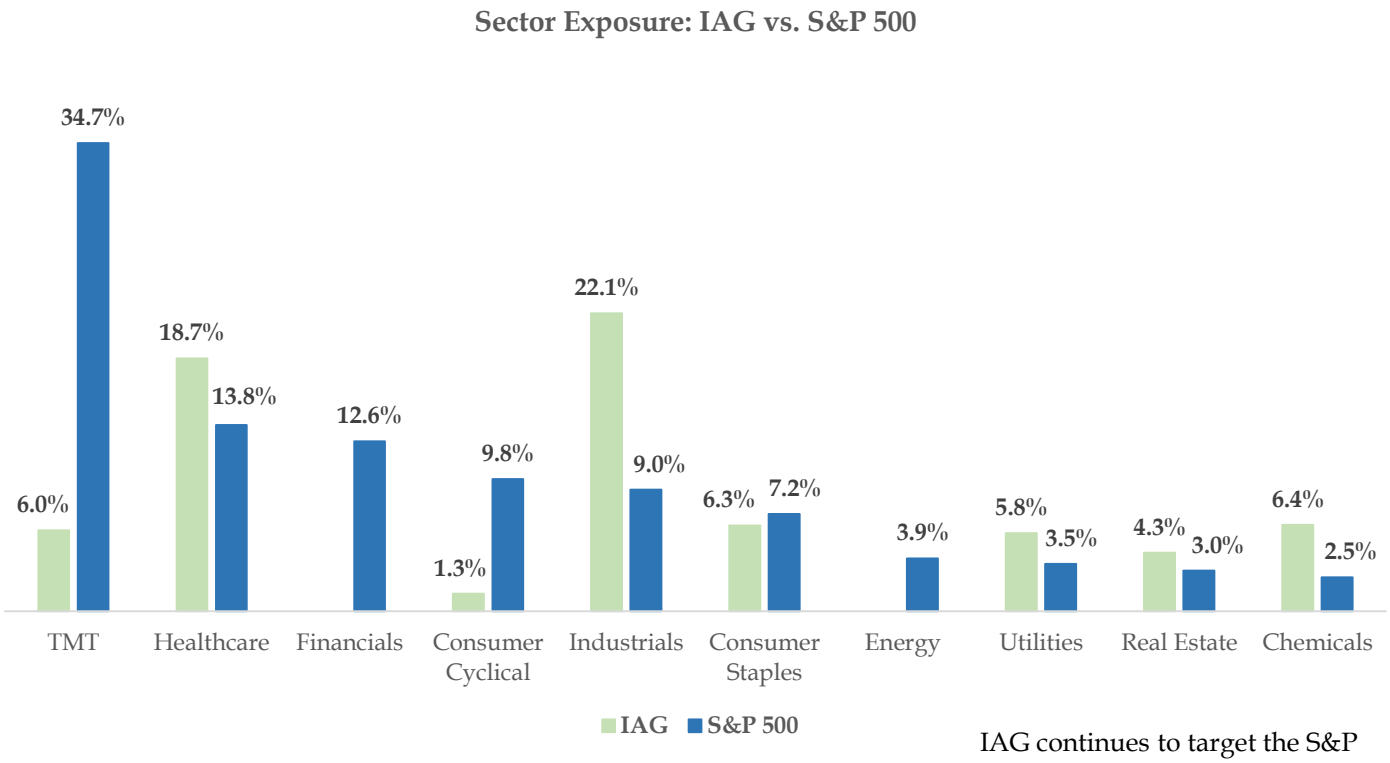
Portfolio Performance vs. Benchmark

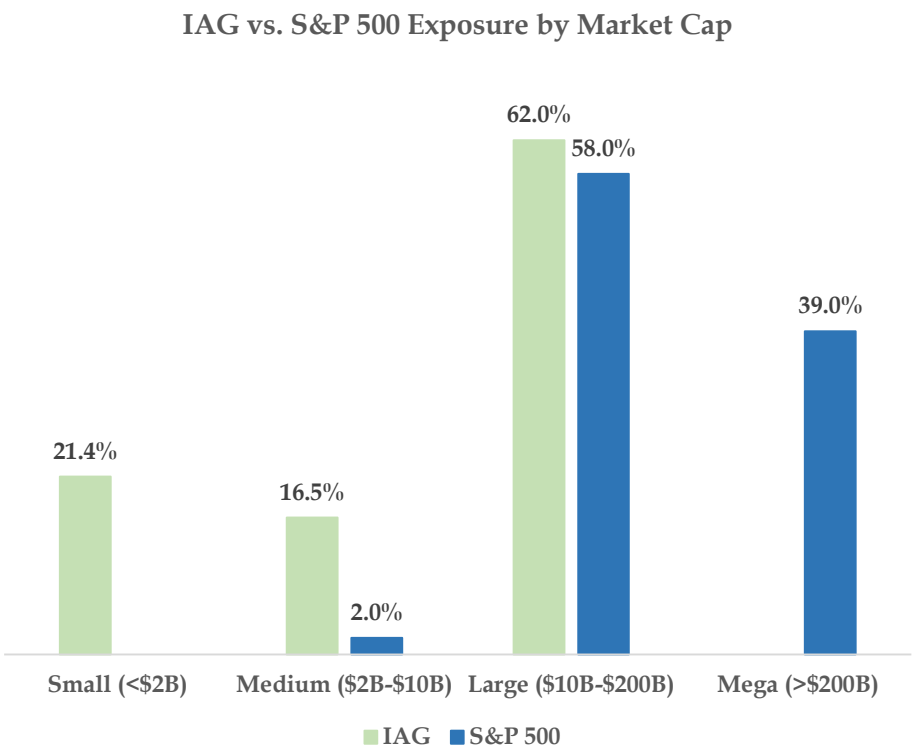




We closed out the year with almost 30% of our portfolio in cash. After adjustment, the portfolio performed 2% lower than what the market return was. The spread widened in the beginning of 2020 when companies that accounted for a significant portion of the S&P saw large gains through earnings (MSFT, AMZN, TSLA).

Portfolio Exposure vs. Benchmark





IAG continues to target the S&P 500 benchmark specified in the fund mandate. As of November 2019, **IAG is most overexposed in healthcare and industrials**. However, the overexposure is somewhat exacerbated by the fact that much of the fund is in cash. Although the industry spans too wide to generalize, TMT has not been our best industry and we are reassessing our methodology in analyzing the industry, primarily service companies.

IAG continues to be underexposed to mega-cap positions, yet drastically overexposed to small-cap companies. Our underexposure to large-cap was corrected with the sale of many of our opportunistic holdings in December.

III. Key Holdings Update

Portfolio Updates Since Dec. 2019 Meeting

Company	Ticker	Update
Allison Transmissions	**ALSN**	Full year 2019 earnings results are scheduled for February 20, 2020. With that being said, the current temporary coronavirus headwind on oil and gas prices continues to be a headwind for the company's replacement parts segment. A more detailed update will be presented after the company reports FY 2019 earnings. Overall the expectation continues that 2020 will be a softer year in terms of end market demand, but multiple suppliers have expressed a more optimistic view of the year as a whole.
BorgWarner	**BWA**	We would like to propose holding our stake in BorgWarner at $42.79 per share, up 11.6% since inception in March 2019. BWA reported an overall solid Q3 result, delivering strong earnings that drove a modest price rally. The company's backlog contribution was better than expected, resulting in a full year increase from ~$480 million to ~$550 million. In addition, BWA's announced its new contract wins in Integrated Drive Module, a product that integrates BWA electric motor, transmission and power electronics, further demonstrating new progresses in expanding its electric propulsion technology portfolio. Given its robust fundamentals and more opportunities in the hybrid and EV market, we believe there can be additional upsides to be captured. We will pay close attention to the result of full-year earnings release on 02/13/2020.
CVS Health Corp	**CVS**	Since our last oversight meeting in December, no major changes have occurred within the company. The company laid out at a JPMorgan conference that HealthHUBs are beating expectations, with 600 being rolled out by the end of FY20. The HealthHUBs are concentrated in Aetna concentrated regions, and it is CVS's current strategy on connecting the two companies and their brands together for consumers. Earnings will be released the morning of oversight, so a short update will be provided with financial results.
First Energy	**FE**	We want to propose continuing to hold our stake in FirstEnergy (8% upside since purchase), due to recent events that signal the company is continuing to transition into a low-risk business that is focused on capital-intensive growth. FirstEnergy is anticipated to exit the power-generation business because of the recent bankruptcy of one of its subsidiaries, FirstEnergy Solutions, which became acquired by Energy Harbor. FirstEnergy plans to time this exit with its proposal to have its subsidiary Suvon LLC become an energy broker across Ohio with the hope of brokering electricity to customers as early as February 16 of this year. It plans to operate in FirstEnergy's traditional geographic territories in NorthEast Ohio as well as nationwide in territories served by other companies. By doing this, First Energy reduces the riskiness of its business because it will facilitate competition among electric suppliers instead of competing with them. 4Q earnings of 2019 was released on February 7, with 2019 earnings per share coming at $1.70, which is at the high-end of the company's guidance range. Shareholder return was 34% for the year, which is higher than expected. Lower operating expenses negated the absence of Ohio Distribution Modernization Rider, lower commercial and industrial usage, and the impact of more mild temperatures (less use of electricity for heating). With the company confident in its liquidity ($465 million in cash), the company plans to continue investing in its Grid Modernization program to reduce power outages and provide more information to its customers regarding energy use (expected to invest $170 million in 2020). The company also plans to continue investing long-term in its infrastructure development program, especially with Energizing the Future plan. And in December, FERC approved FirstEnergy's application to move JCP&L's transmission assets onto forward-looking formula rates, which supports plan for approximately $175 million in customer-focused capital spending in 2020. Because a lot of effects of the mark-to-market adjustments (annual non-cash, pension, and OPEB adjustment) are going to be seen in 1Q 2020, we propose to hold our position.

Portfolio Updates Since Dec. 2019 Meeting

Company	Ticker	Update
Green Brick Partners	**GRBK**	Green Brick Partners has seen positive growth in their communities as the count has grown from 76 to 92. Despite this extensive growth, the company has seen its margins stabilize. With Trophy Signature Homes, Green Brick expects it to meaningfully contribute to earnings in 2020. Management also announced plans to potentially continue the expansion of this type of development to their other core markets. The company still trades at a discount to peers at only 9.7x forward P/E, therefore we would like to recommend a hold on this position. The company will report earnings on March 2nd which should give guidance on next year's projected community count.
HCA	**HCA**	HCA recently reported full fiscal year earnings and beat on EPS and met revenue consensus estimates. They have experienced more than 5% YoY growth in admissions and emergency room visits. The company also experienced 2% growth in both in-patient and outpatient visits. Management has further reiterated their desire for M&A recently and will mainly focus on small scale transactions and growth of their surgical centers business. The company also authorized a 2 bn dollar share buyback as well as an increase in their dividend. They are guiding for about 5% revenue growth for FY 2020. We see no changes in the fundamentals and we would like to recommend a hold on this position.
LyondellBasell	**LYB**	**Sell note in packet.**
Recro Pharma/ Baudax Bio	**REPH/ BXRX**	We would like to continue to hold our stake in Recro at $17.83 per share, representing 35.1% upside and Baudax Bio at $9.18 per share, representing 110% upside since its spin-off. The only major update since last oversight would be Baudax Bio has announced its PDUFA date on Feb 20, which could essentially determine the value of our spin-off segment. We are optimistic about the approval and we will check if exiting this position would make sense after the PDUFA date. For the Recro segment, we are seeing limited updates from the company and we will be waiting for its first financials post-spin off to confirm our thesis, which the Recro Pharma could be more profitable after ditching its non-performing drug segment.
Stanley Black and Decker	**SWK**	We would like to propose holding our stake in Stanley Black & Decker, Inc, at $163.05 per share, up 16.8% from inception. Q4 performance was in line with management expectations, proving that SWK's management is capable of maintaining operating margins and profitability despite absorbing $445 million of external headwinds from tariffs and foreign exchange. They have also announced a $200 million cost-reduction plan to prepare for any other unexpected headwinds. SWK has now completed its acquisition of IES Attachments, a leading provider of off-highway specialized attachments for prime moving equipment, near tripling the size of their infrastructure business unit while further diversifying their presence in the industrial markets. SWK is continually making strategic M&A decisions to grow and diversify their industrial business, and is currently executing their margin resiliency program where they expect to generate $300 to $500 million of benefits over the next three years through technological innovations and applications to manufacturing and procurement processes. Although SWK operates in a challenging environment, they are still performing well and the brand's moat is intact.
United Rentals	**URI**	We would like to recommend holding URI at $149.75 per share (PT: $140-180), currently representing 21.8% upside. We believe that URI's risk/reward profile is still highly favorable with the business trading at 4.9x LTM EBITDA which is close to recession levels. URI has continued to see margin pressure from the O&G segment causing fleet productivity to decrease but given the consistent decrease in leverage, share repurchasing and growth in the core end markets, we are still comfortable holding URI for the foreseeable future.

Portfolio Updates Since Dec. 2019 Meeting

Company	Ticker	Update
Western Digital Corp	**WDC**	Since our last update on December 2nd, WDC has seen convincing pointers that would appear to corroborate our thesis. As a reminder, we entered our position in WDC at a price point of $56.45 and with a price target north of $100. However, as the memory market developed and continued to show a faster pace of price deflation, we have updated our model to a new price target of $75. With that being said, although WDC's current per share price of $67.03 represents a 18.7% upside, there is still room for additional capital appreciation. We are confident this appreciation will indeed manifest, given the positive outlook during the last earnings call, as well as the state of the memory market. On January 30th , WDC reported Q2 results that beat on earnings and met on revenue. Furthermore, WDC now expects an accelerated recovery for its flash gross margins in H1 with continued improvement through the year, as was expected in our thesis. Lastly, one of the critical indicators for the upside in WDC, according to our model, was margin performance going into 2020 and 2021. Management has indicated that they expect "NAND gross margins to progress toward its long-term target of 35-40% in H2 as the company benefits from supply/demand improvements and faster than expected enterprise SSD share gains. As a result, we recommend continuing to hold our position in WDC to capitalize on the recovery in the NAND market, only to realize our gains past the conservative price target of $75.
XPO Logistics	**XPO**	We recommend holding our current position in XPO at $93.2 per share (Feb. 9th), up 17.4% from the purchase date. XPO currently trades at 7.7x forward EV/EBITDA, representing a multiple expansion from the purchase multiple at 7.2x. While there has not been an earnings update since Dec. 2nd meeting, the firm announced a strategic review exploring the possible sale or spinoff of one or more of its business units. "We continue to trade at well below the sum of our parts and at a significant discount to our pure-play peers," CEO Brad Jacobs said in a statement. That's why we believe the best way to continue to maximize shareholder value is to explore our options. The market reacted positively to the announcement, posting a 16% gain. Despite the correction, we believe that XPO's current multiple still represents a considerable discount over its SOTP valuation as well as the 2018 level of 9.8x, which is on track for further corrections as additional near-term catalysts come to sight. The auction processes have begun on the company's European transportation and supply chain units, its supply chain business in the Americas and the Asia-Pacific regions, and the company's North American transportation unit, as the CEO aimed to build the company as a fast-growing, pure-play LTL company with a lot of liquidity, in line with our thesis on the LTL segment and the overall discount.
ZTO Express	**ZTO**	We would like to hold our stake in ZTO at $23.76 per share, representing a 23.2 % upside since our inception. Since the last update, ZTO has held its annual investor conference and network partner summit. The operating data coming from these two conferences is very positive, suggesting ZTO is continuing capturing market share and competing effectively with its rivals in key customer demographics. The stock has also gently rebounded amid better operating data and ease of trade tension which boost all Chinese stocks listed in the U.S. However, going forward, we have to closely monitor two critical events that could potentially impact our investment thesis. First, the coronavirus outbreak in China has significantly impacted the transportation and delivery sector as the Chinese government has been limiting the movement of migration laborers as well as the non-essential goods to contain the diseases. Therefore, it could impact ZTO from both demand side (e-commerce purchase is less frequent for regular customers) and supply-side (ZTO is unable to recruit enough laborers/part-time to fulfill its orders). Although the network partners model would help ZTO to limit its downside as most of the risks will be contained in the network partner level with limited financial impacts to the ZTO listed entities, we will closely monitor this event to be unfolded and the impacts of the industry. Second, there are some formidable new entries to the delivery as JD announced that they will start to deliver third-party packages with its delivery network. Although it has limited impacts on ZTO now as it only focuses on major cities, we will continue to observe such a trend.

IV. Sell Note

Sell Note: LyondellBasell Industries (NYSE: LYB)

Dear Board of Advisors,

We would like to sell our position on **LyondellBasell Industries (NYSE: LYB)**, representing a **10.3% downside**. Our initial thesis was as follows:

Global low-cost producer of olefins [Actualized]: LYB is able to produce olefins at a cheaper cost than other global players due to access to North American Ethane, from which Ethylene is derived. European and Asia producers have to use Naphtha to derive Ethylene at a 20% yield compared to 80% from NA Ethane. Ethane is also cheaper per MT than Naphtha. While providing tailwinds through FY18, this cost advantage proved to be transitory and we expect ethane prices to move higher from current levels due to increased demand by domestic competition.

Capacity additions slowing [Actualized]: In 2018, many companies moved to take advantage of lower NGL prices, resulting in a spike in capacity. Thus, Ethane prices increased and Ethylene prices decreased, lowering LYB's margins. We believed that capacity additions should slow down in FY2019 with Sinopec already reducing Ethylene production by 0.8% despite a 9.2% growth in demand. Our thesis proved true for FY2019 due to startup issues with several competitors. However, we expect significant capacity additions going forward: the Formosa ethylene cracker, full ramping-up of the Sasol, Indorama and Shintech ethylene crackers and the start-up of Dow's expansion in early '20. Capacity totaling another 3.5 million MT is expected to come onstream in 2020.

Expect refining segment profitability in 2Q19 [Not Actualized]: LYB refineries source crude from the Gulf Coast. The spread between LLS, MAYA, and USLD is called the Maya 2-1-1 crack spread. The spread was unusually weak in 4Q18, with high gasoline inventories and low discounts for heavy sour crude oil resulted in historically low refining crack spreads, hurting LYB's refinery margins. We expected that a turnaround in the spread would translate to profitability. The refining segment turned EBITDA positive in 4Q19, with margins aided by strong naptha and coke prices relative to crude, as well as Maya 2-1-1 increasing $1.31 to $19.44.

We would like to sell for the following reasons:

- **Underappreciated the competitive dynamics of the olefins space:** Upon reflection, we underestimated the abilities of competitors to add capacity given ethane cost advantages. Additionally, although LYB's low-cost production was compelling, it was a transitory advantage that could be mimicked by existing competitors. We see the addition of capacity going into 1H20 as a significant threat to LYB ethylene margins. Given the undifferentiated nature of LYB's end product, it possesses little pricing power. In tandem with historically weak polyethylene and propylene margins, this downward pressure may serve as a major headwind going into 2020-2021.

- **Concerns with other business segments:** LYB operates in six segments, of which our original thesis only covered two. Most notably, we lacked a strong view on the O&P EAI segment. O&P EAI, which represents the largest portion of revenue among segments, faces higher feedstock costs among both olefins and polyolefins, with consistently unfavorable spreads in FY2019. Recovering Maya spreads and refining performance failed to move the needle, while subpar results in other sectors weighed more heavily on LYB's overall performance.

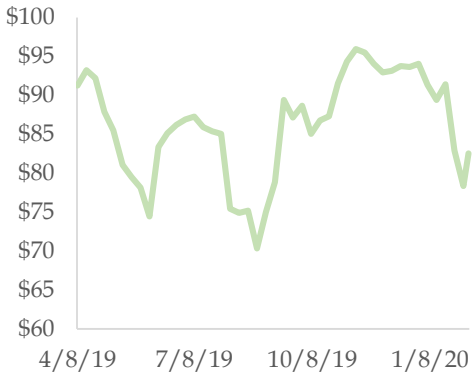
Best,

Tony Wang

Stock Overview (LTM Figures)

	At Purchase:	Current:
Share Price	$91.55	$82.10
Market Cap.	$31,206mm	$31,501mm
EBITDA	$6,108mm	$5,698mm
EBITDA Margin	16.97%	16.41%
Div. Yield	3.18%	4.49%
FCF Yield	8.73%	8.06%

Performance Since Purchase on 4/18/19



V. New Position Proposal

STERN IAG

Dell Technologies Inc. (NYSE: DELL)

Large Free Cash Flow Generating Business at Discount

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Price Target: $66.62 (30.11% upside)

January 12th, 2020

Business Description:

Dell Technologies, founded in 1984, is a large American computer technology company which develops, sells, repairs, and supports computers and related products and services. The company operates three distinct segments, it's Infrastructure Solutions Group (ISG), Client Solutions Group (CSG), and VMWare (VMW). Historically, Dell had been excessively reliant – over 80% of revenues – on their Client Solutions Group, which includes things such as Desktop PCs, Laptops, monitors, and some software products. However, after taking the company private in 2013 with the help of Silver Lake, the company diversified their revenues by acquiring IT and Cloud company EMC Co. in 2015 for $67 Billion. This acquisition greatly expanded Dell's ISG segment, which includes storage, servers, data protection, and networking technologies. As of 2019, 47.7% of Dell's Revenues are attributable to CSG, while 40.5% are attributable to ISG. By acquiring EMC in 2015, Dell also effectively acquired control of VMWare, currently holding over 80% of the cloud computing company. VMW represents ~10% of revenues, with the remaining 2% being attributable to Dell's many other small operations.

Business Quality:

- **Operating Leverage:** Dell Technology has higher leverage than peers within its industry, with the majority being derived from the company's debt driven acquisition of EMC. The company's debt is split between the company's "core business", representing Dell and EMC operations, and the company's large ownership stakes in other technology companies, such as VMWare. Dell Technologies has been repaying debt at a healthy rate over the past 4 years, decreasing core-debt from $48.8 Billion to $39.3 Billion. Management has been looking to decrease debt more rapidly in the future, estimating core-debt levels of $35.9 Billion by Q3 2020. The company has another ~$12 Billion in debt from the company's financial services and VMware. Core Debt Levels are composed of ~$12.8 Billion in unsecured Term Loans and High-Yield Notes. These debts place restrictions on asset sales until the company's leverage falls below 3.75x or its debt achieves investment grade status.
- **Diversified Revenues:** Dell's primary weakness pre-2013, was its revenue's overdependence on their PC production market. Following the company's overhaul in the private markets and its acquisition of EMC and VMWare, Dell has a significantly more diversified revenue stream. The company has now become one of the last few remaining "end-to-end" technology companies, being able to provide every part to a company's technology infrastructure itself. Dell continues to generate high free-cash flow from its traditional PC sales, which it is able to reinvest in its higher-growth segments, such as VMWare. Using Dell's LTM Unlevered FCF, it generated an extremely impressive $16.06 Billion.

Industry Drivers:

- **International Information Technology Spend:** Dell's future growth is seen coming from its various IT segments, and as such is subject to changes in international IT spending. The industry is projected to grow at 4.1% CAGR over the next three years according to IDC and Gartner, with over half of the demand coming from US corporations. In 2019, there was an estimated $2.7 Trillion spend in IT segments which Dell services. Included within these figures are the growing demand for cloud storage and computing. It is worth noting that in 2018, Dell was tied with Hewlett Packard as the top server manufacturer in the US, coming in at 16% market share. Other notable competitors are Lenovo, IBM, Huawei, and Inspur. Other than the technology acquired through the EMC merger, Dell's VMWare also sits as the industry leader within the cloud computing and virtualization. One area for risk for Dell within the IT industry

Key Ratios and Statistics:

Recommendation	**Buy/Long**
Price Target	$66.62
Implied Return	30.11%
Share Price (2/7/2020)	$51.62
Market Cap	$37.67 B
52-Week Low	$42.57
52-Week High	$70.55

Figure 1 – (DELL) 52-Week Stock Performance

Figure 2 – Global Information Technology Spend

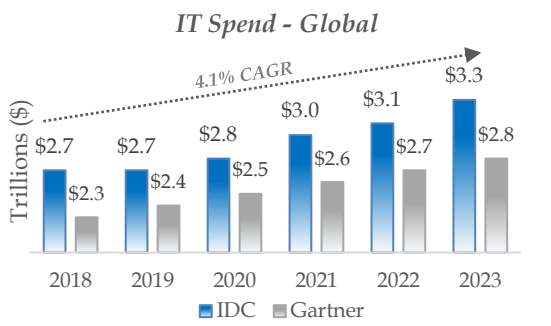
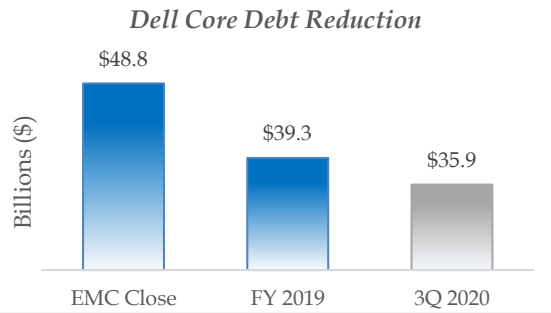


Figure 3 – Dell Core Debt Reduction



is the fear that China may ban all Dell operations as a response to the sweeping Huawei bans in the US.

- **New PC Purchases:** Given that Dell's historical core business has revolved around its ability to design, manufacture, and sell PC's, it is still exposed to global demand for PCs. Global sales of PC have certainly decreased over the past 10 years, which has continued the overall slowing demand for PCs since 2006. One acute risk which Dell faces pre-2013, was its over exposure to this shrinking demand for PC's, which was particularly seen in the US and EU. Historically, Dell had focused on selling directly to the consumer, rather than sell through traditional retailers. The company had instead focused on supply-chain efficiencies, enabling them to offer the lowest prices for desktop PC's. Dell achieved this through manufacturing most of their product in China. However, around 2006 Dell's US competitors, such as HP who focused on retail sales, were able to secure similar supply-chain efficiencies. This disruption caused Dell to fall behind most of its more innovative competitors. The restructured Dell has learned its lesson from this period. The company has since focused on diversifying its revenues, while also focusing on R&D rather than simply supply chain efficiencies.

Investment Thesis:

- **Private Company Turnaround Successful:** When Dell decided to go private back in 2013, it secured financing and a partnership with Silverlake Partners. Since the company has gone private, the company has improved dramatically. Currently, Silverlake and founder, Michael Dell, control over 76.6% of shares in the company. Michael and Silverlake launched project "Dell 2.0", with the goal to cut waste and under-performing segments. Dell was able to increase profits by reducing the number of employees and cutting management bonuses. Despite the declines in the traditional PC market, Dell continues to be able to generate high free cash flow from its CSG group. In addition to the improved savings within Dell's core PC driven business, the aforementioned EMC acquisition for $67 Billion enabled Dell to expand into the cloud computing business. Overall, Dell has greatly improved since it restructured itself privately, and will be able to continue generating its high free cash flow levels into the future.
- **Severe Core Dell Enterprise Valuation:** Dell's subsidiaries *VMWare* and *Secureworks* is also a separately traded company, something which was grandfathered in following Dell's acquisition of EMC. When you discount Dell's market valuation by the value of the public equity stakes it owns, current market prices imply Dell's core CSG and ISG business are only worth $15.01 Billion. This implies a 2.18x Core EV/Core EBITDA. The market dropped the value of Dell in May 2019 by 20% due to China regulatory retribution fears and due to IT exposure to economic cycles. While these post risks to the company in the future, the company trades significantly below peers as well as its own pre-2013 EV/EBITDA multiples.
- **VMWare Spinoff Event:** One of Dell's largest investors, Silverlake Partners, wants to be able to exit their significant position within Dell to realize some of their gains. They continue to refuse to do so at these discounted public market prices, and there appears to be a lucrative opportunity to exit in 2021. Since Dell's low valuation is being covered by VMWare's high market value, a spinoff would create a value realization event. In 2021, the company can spinoff VMWare as a tax-free event.

Risks:

- **Economic Downturn:** Both Core Dell operating business and VMWare have exposure to broad economic activity and could be impacted by a recession. While the recurring element of the software model and replacement-driven nature of the hardware business would help buffer such an impact, economic activity and employment would have a meaningful influence.
- **Corporate Structure:** Michael Dell and Silverlake Partners own two separate classes of shares in Dell, with each share holding 10 to 1 voting rights with respect to public Class C shares. This greatly limits the voting rights of public investors, and as such may misalign the interests of the company management and its public shareholders.

Figure 4 – Global PC Shipments Worldwide

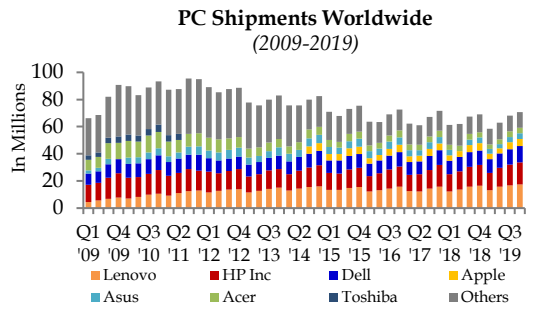


Figure 5 – Dell Ownership Summary

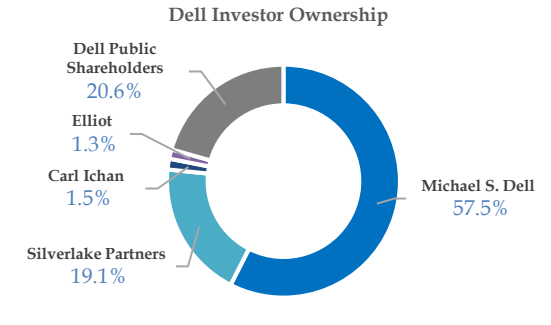


Figure 6 – Corporate Structure

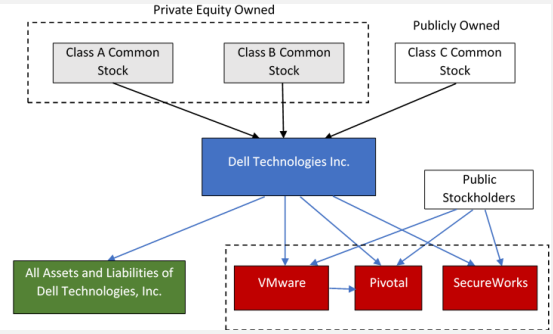
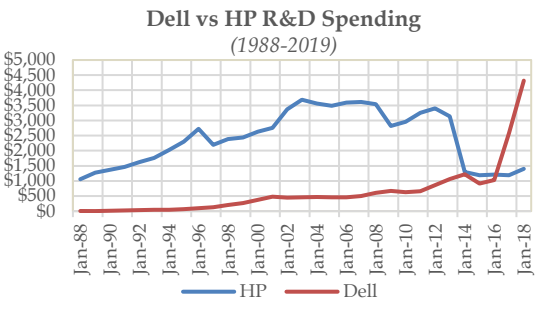


Figure 7 – R&D Spend History



In Millions	8/3/2018	11/2/2018	2/1/2019	5/3/2019	8/2/2019	11/1/2019
EBIT	(13.00)	(356.00)	331.00	550.00	519.00	836.00
(-) Income Tax	(2.73)	(74.76)	69.51	115.50	108.99	175.56
(+) D&A	1,931.00	1,961.00	1,940.00	1,616.00	1,498.00	1,494.00
(-) Change in NWC	(3,106.00)	1,429.00	(4,210.00)	(990.00)	(1,880.00)	(2,579.00)
(-) CAPEX	288.00	300.00	297.00	610.00	473.00	529.00
Unlevered FCF	**4,738.73**	**(49.24)**	**6,114.49**	**2,430.50**	**3,315.01**	**4,204.44**

TTM Unlevered FCF	16,064.44
Market Value	35,510.00
Unlevered FCF Yield	**45.24%**

TTM Levered FCF	14,005.70
Market Value	35,510.00
Levered FCF Yield	**39.44%**

In Millions	8/3/2018	11/2/2018	2/1/2019	5/3/2019	8/2/2019	11/1/2019
EBT	(468.0)	(995.0)	(275.0)	(143.0)	(111.0)	159.0
(-) Income Tax	(98.28)	(208.95)	(57.75)	(30.03)	(23.31)	33.39
(+) D&A	1,931.00	1,961.00	1,940.00	1,616.00	1,498.00	1,494.00
(-) Change in NWC	(3,106.00)	1,429.00	(4,210.00)	(990.00)	(1,880.00)	(2,579.00)
(-) CAPEX	288.00	300.00	297.00	610.00	473.00	529.00
Levered FCF	**4,379.28**	**(554.05)**	**5,635.75**	**1,883.03**	**2,817.31**	**3,669.61**

Total Shares Outstanding (DELL)	756.06
Share Price (2/7/2020)	$51.67
Market Value of DELL	**39,065.62**
Total Long-Term Debt	**44,727**
(Cash from Parent)	(8,555)
Total Net Debt	**36,172**
Total Enterprise Value	75,238
Less Public Equity Stakes	(45,954)
Value of Core Dell	**29,283**
TEV / 2021E EBITDA of Core Dell	*4.33*
TEV / 2022E EBITDA of Core Dell	*4.26*

	Owned by Dell			
Public Equity Stakes	**Mkt Value**	**Shares**	**Price**	**% Owned**
VMWare	51,741	338	$153.08	81%
Secureworks	1,080	70	$15.43	86%
Owned Public Equity Stak	$52,821			

Core Dell EBITDA (2022E)	6,876.23
Core Dell EBITDA (2021E)	6,755.30
Discount Rate	12.9%

EBITDA	Q3 2019	10-K	Q3 2018	LTM
Dell	6,513	7,555	5,284	8,784
VMWare	1,911	2,680	1,851	2,740
Secure Work	-7.64	-7.53	-7.46	-7.70
Core EBITDA	**4,609.636**	**4,882.525**	**3,440.460**	**6,051.701**

EBITDA	2021E	2022E
Dell	10,986.40	11,568.00
VMWare	4,216.60	4,669.00
Secure Work	14.503	22.775
Core EBITDA	6,755.30	6,876.23

Core Dell Valuation:	
Core Dell EBITDA	$6,755
Target EV / EBITDA Multiple	6.0x
Target Enterprise Value	$40,532
Dell Total Net Debt	36,172
Target Equity Value for Core Del	**$4,360**
Value of Owned Public Equity Sta	$46,007
Total Dell Equity Value Target	**$50,367**
Shares Outstanding	756.06
Target Price	**$66.62**
Current Price (1/24/2020)	$51.20
Implied Returns	**30.11%**

PC Comps	Mkt Cap	EV	EV/EBITDA 2021E	EV/EBITDA 2022E
LENOVO GROUP LTD	8,385.94	10,951.84	4.62	4.24
ASUSTEK COMPUTER INC	5,500.65	3,669.05	7.61	-
ACER INC	1,720.66	1,094.85	6.07	-
TOSHIBA CORP	15,248.16	14,519.43	6.04	5.67
Median	**6,943.29**	**7,310.44**	**6.05**	**4.96**

Server Comps	Mkt Cap	EV	EV/EBITDA 2021E	EV/EBITDA 2022E
HP INC	31,577.76	32,177.76	6.81	6.99
LENOVO GROUP LTD	8,385.94	10,951.84	4.62	4.24
INTL BUSINESS MACHINES CORP	135,865.64	195,299.64	9.99	9.52
Median	**31,577.76**	**32,177.76**	**6.81**	**6.99**

Early Successes [1980-2000]

The Rise of the PC

Gaming Consoles
Home video gaming begins to gain popularity with the Atari Video Computer System (Atari 2600).

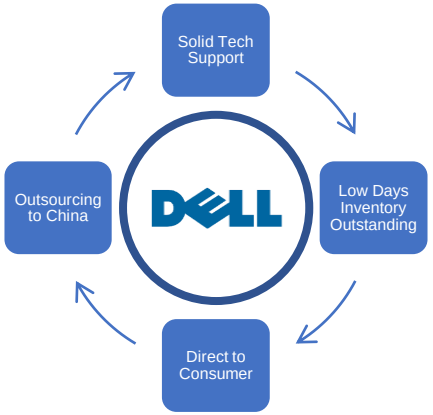
Educational Applications
For many students in the 1980s, the Commodore PET was an introduction to desktop computing and simple programming.

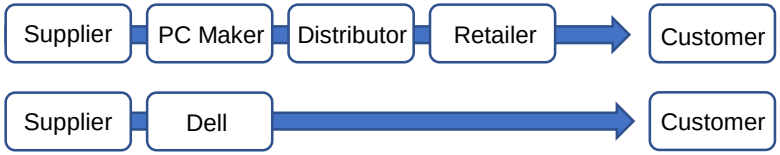
Household Uses
Released in 1982, the C64 helped establishing the home computing market. An early platform for consumer-friendly software, it remains one of the all-time, top-selling PC's.

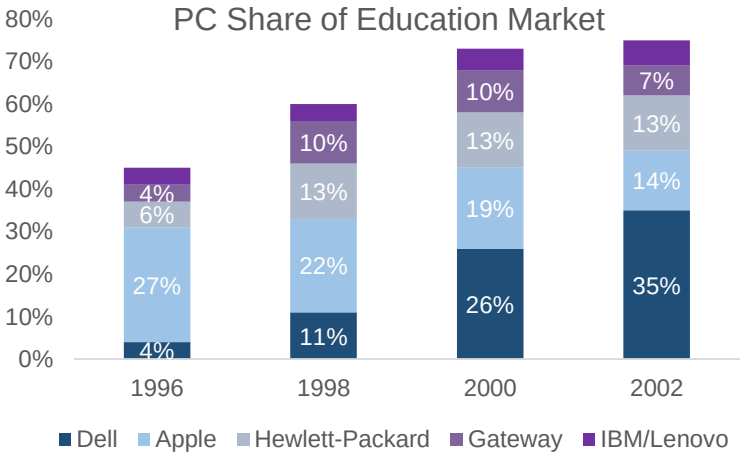
Information Superhighway
A term coined by Al Gore, the superhighway refers to digital communication systems and the Internet telecommunication network, providing users access to high-speed communication.

Dell's Competitive Edge

During the advent of the PC, Dell steadily captured share from competitors through unbeatable cost efficiency, thanks in large part to the CEO himself, Michael Dell. Their tight supply chain and differentiated customer experience drove sales for years.







Time of Troubles [2000-2010]

Maturing PC Industry

- By the **mid-2000's** the Global PC demand on the consumer front was reaching its limits
- Consumers began consolidating their number of computers, and began keeping their computers for longer time periods

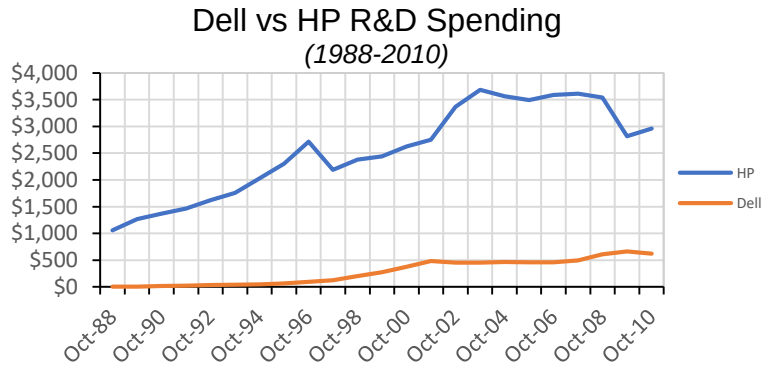
2002	**2008**
~2 Years	**5+ Years**
Computer Life	*Computer Life*

Management Changes

- Michael Dell stepped back from his CEO position at Dell in 2004, and was succeeded by his COO ***Kevin Rollins***
- Rollins invested millions to developing new customer service centers in Canada and India
- This ultimately took further funding away from R&D, which Dell needed to compete against Lenovo and HP's more innovative products
- Increased headcount of Dell employees by **~8,000+** going into the 2008 Financial Crisis

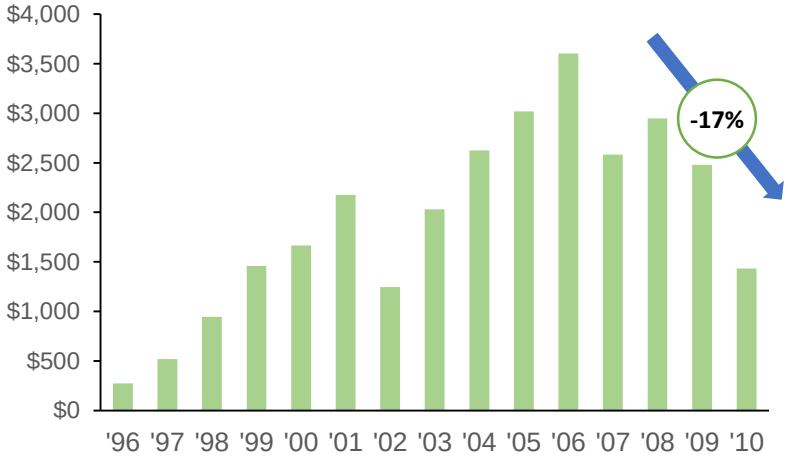
Heightened Competition

- By 2006, o**mid-2000's**ther PC manufactures were emulating Dell's supply chain strategies, and could provide more innovative products for similarly low prices



Dell Net Income (in millions)

- Dell's Net Income fell drastically following 2016, falling by **-17% CAGR** from 2006-2010

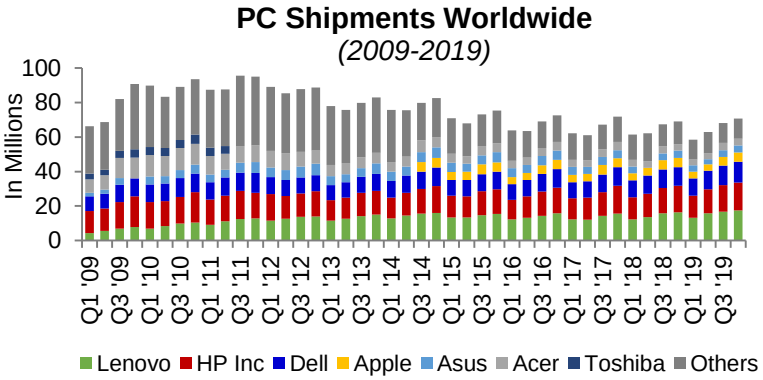


PC Industry Nowadays [2010-Present]

New PC Purchases

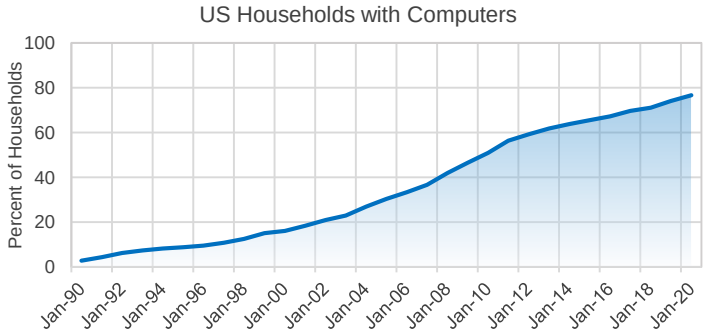
- PC Purchases have trended steady/downwards over the past **~8 years**
- This is due to product consolidation within the PC consumer base, where consumers own fewer distinct computers

"The PC market continues to show pockets of resiliency as PC usage experience evolves and improves"



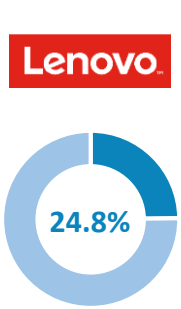
Demand

- The new PC industry is dependent on Corporate PC sales, while consumer purchases continue to decline
- Recent Windows 10 updates have spurred new PC Shipments, as Windows 7 was discontinued forcing corporates to repurchase

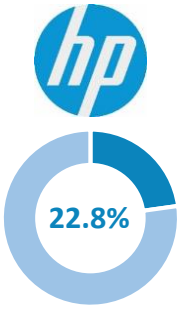


Competition

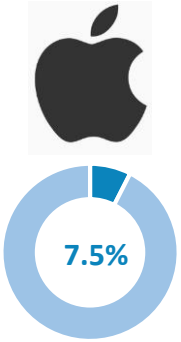
- Dell competes primarily with other PC development/manufacturing firms, such as HP, Lenovo, Apple, and Acer
- Dell the **3rd largest** as of 2019



$51.1 B
2019 Revenue



$58.5 B
2018 Revenue



$25.7 B
2019 Revenue

Private Company Turnaround Successful

Dell was taken private on October 29th, 2013 in a $24.9bn deal by Silver Lake, a private equity firm, and Michael Dell. Dell Subsequently acquired EMC in another $67bn transaction

What were the problems?

- Dell's share of an already **contracting PC market** slipped from 16.6% in 2007 to 10.7% in 2012
- Asian rivals in forced PC margins to razor-thin and **margin and market share** for servers continued to shrink
- The PC business, despite the decline, is still generating **substantial cash flow of $5.5bn**
- 31 percent **fall in share price** over 5 years

Take-Private in 2013

MSD ~70 %

~30 % SILVERLAKE

Denali (Holding Company)

Dell

- **End-User Computing**
- **Enterprise Solutions Group**
- **Dell Software Group**
- **Dell Services**

Going Private Is Paying Off for Dell

A year later, we're able to focus on customers and the long term, rather than activist investors.

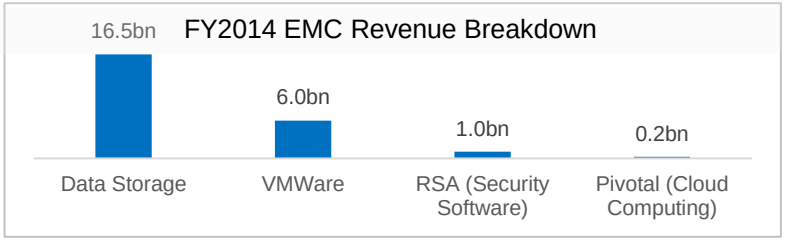
By Michael Dell
Nov. 24, 2014 6:47 pm ET

SAVE PRINT TEXT

WSJ | OPINION

Acquisition of EMC in 2015

- EMC is an American IT and data storage company founded in 1979
- VMWare is a software company that provides cloud computing and virtualization software



Rationale:

After the take-private, Dell is undergoing a significant makeover

- EMC allowed Dell to **diversify** into data centers, cloud computing, servers, software, services, security and system management
- Also allowed Dell to exploit the **converged infrastructure** pioneered by EMC

Brand New Business

Dell has experienced a successful turnaround, resulting it to be a much better business

VMWare

- Virtualization and cloud infrastructure solutions: broad portfolio of virtualization technologies across three main product groups: software-defined data center; hybrid cloud computing; and end-user computing
- **23.6x trailing EV/EBITDA** as of today

EMC (ISG)

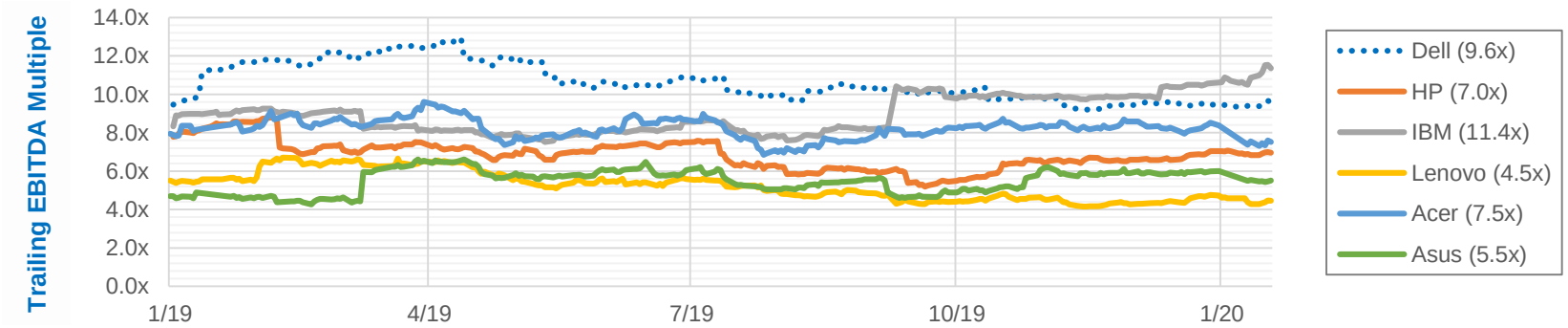
- EMC's Information Storage segment (storage solutions) and Dell's legacy Enterprise Solutions Group (server and networking solutions)
- 50% of revenue comes from Americas, with the rest coming from EMEA and EPJ.
- Hovers around **10x trailing EV/EBITDA** multiple in 2014 and 2015

PC (CSG)

- Branded hardware: desktop PCs, notebooks, and tablets, and branded peripherals, such as monitors, printers, and projectors
- 50% of revenue comes from Americas, with the rest coming from EMEA and EPJ
- Should trade in line with other pure-play PC manufacturers **(Lenovo at 6.3x, Acer 9.7x)**

Post-Buyout

Pre-Buyout



Source: Bloomberg, IAG Analysis

Dell Rising Back to Relevance

Dell 2.0

- After restructuring themselves while private, Dell has emerged as a more efficient company
- The company has reinvested substantial time and money into repairing its supply-line efficiencies, while slimming labor costs by cutting unnecessary jobs
- Improved Free Cash Flow generation

In Millions	8/3/2018	11/2/2018	2/1/2019	5/3/2019	8/2/2019	11/1/2019
EBIT	(13.00)	(356.00)	331.00	550.00	519.00	836.00
(-) Income Tax	(2.73)	(74.76)	69.51	115.50	108.99	175.56
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(-) CAPEX	288.00	300.00	297.00	610.00	473.00	529.00
Unlevered FCF	**4,738.73**	**(49.24)**	**6,114.49**	**2,430.50**	**3,315.01**	**4,204.44**

Early Market Returns

Best Selling Laptops

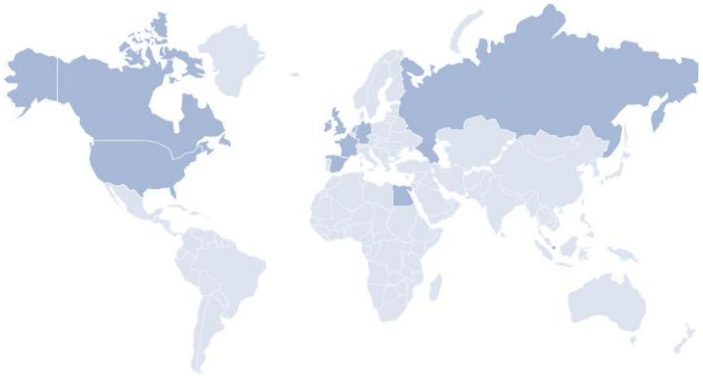
Dell XPS 13

- 4.5/5.0 Avg. Stars
- Top selling laptop model for 2019
- Beat out HP Spectre x360 and Lenovo Yoga C930

"One of the most powerful and best designed ultraportables laptops you can buy"
~PCMag "Best 2019 Laptops"

Global Outreach

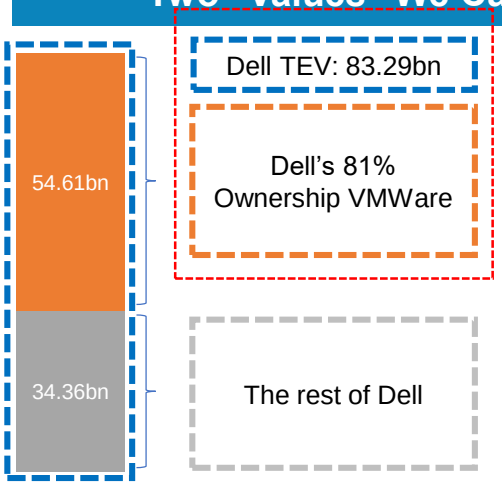
- Dell has significant markets where it has a large manufacturing presence, gaining firm market shares in the below countries



Valuation: Getting the Discount on VMWare Ownership

Dell's 81% ownership of VMWare is discounted by the market due to illiquidity; we want to figure out by how much

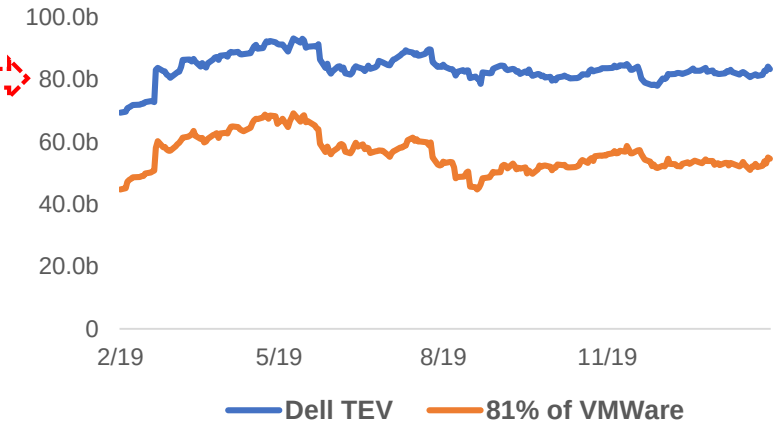
Two "Values" We Care About



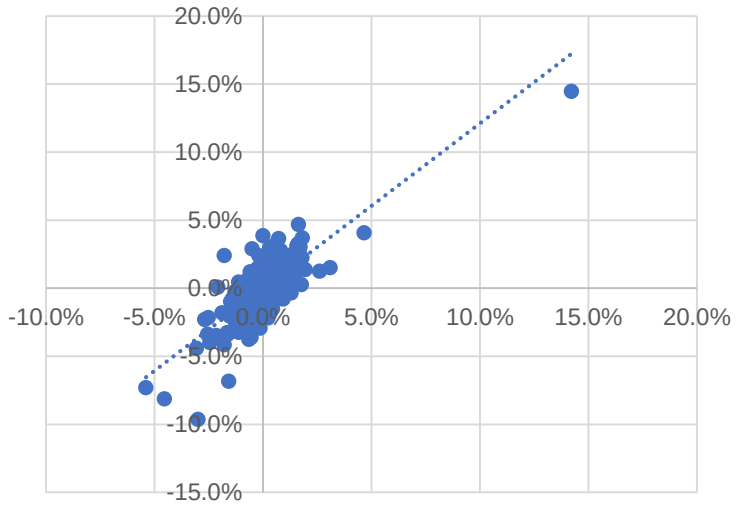
Market Cap of VMWare * 81%

Dell Total TEV – VMWare Market Cap VMWare * 81%

Charting the Two "Values"



Daily Change Regression



Regression Results

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.0003	0.0005	0.5257	0.5996
X Variable 1	0.5274	0.0251	20.9728	0.0000

$$\frac{81\%\ of\ EMWare}{TEV\ of\ Dell} = 65.6\%$$

$$Discount = 65.6\% - 52.7\% = 12.9\%$$

What it should be in an ideal world

How market perceives it

How much market is discounting it by

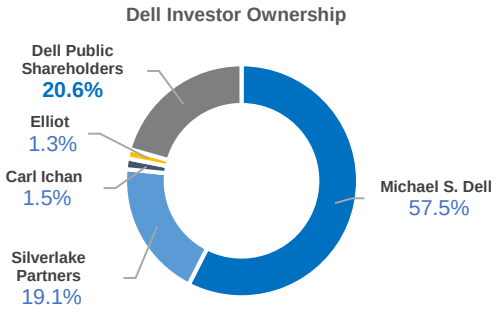
Value Realization Event: VMWare Spin-Off

VMWare Partial Spin-Off Event

- When considering a sum-of-the-parts discounted valuation, it is very important to consider a strong catalyst
- A catalyst in equity markets is an event or other news that propels the price of a security dramatically up or down
- For Dell there appears to a strong catalyst opportunity in 2021, when the company can spin off partial control of VMWare to show the core-Dell discounted valuation

Silver Lake Exit Opportunity

- Silver Lake will need to exit its position on Dell
- The firm is allowed to exercise their position of Class B shares into publically traded Class C trades
- Silver Lake hasn't liquidated their position, as they still hold 19.1% of Dell's shares



Tax Free Event

- On September 30th, 2021 Dell will be able to spin-off its stake in VMWare on a tax-free basis
- Elliot Management, an activist fund, has invested heavily into Dell with the stated goal of wanting to see a spin-off event for value recognition