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Graham & Doddsville

An investment newsletter from the students of Columbia Business School

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Issue XXXIV

Fall 2018

Tweedy, Browne Company



Clockwise from top left: Roger De Bree; Andrew Ewert '07; Frank Hawrylak, CFA; Jay Hill, CFA; Bob Wyckoff; John Spears; Tom Shrager; Amelia Koh '16

Tweedy, Browne Company is a value-oriented asset manager that manages domestic, international, and global equity portfolios for individuals, family groups, and institutions from all over the world. The firm was one of the few investment firms mentioned by Warren Buffett in his

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Scott Miller

Scott Miller, Greenhaven Road Capital

Scott Miller formally launched long-biased value hedge fund Greenhaven Road Capital in 2011. Prior to founding Greenhaven, Mr. Miller was the Co-Founder and CFO/Chief of Strategy of Acelero Learning, a Head Start education services company that has grown to over 1,200 employees. He was previously an Analyst at Litmus Capital, an Associate at NewSchools Venture Fund, and has further experience as a business owner-operator. Mr. Miller earned a B.A. in Political Science from the University of Pennsylvania, an M.B.A. from the Stanford University Graduate School of Business, and an

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Steve Tusa, Wall Street's GE Bear



JP Morgan's Steve Tusa is Institutional Investor magazine's #1 ranked analyst covering the Electrical Equipment & Multi-Industry sector. He has covered the sector since 1998, with lead coverage since 2005. In 2017, he gained notoriety for being Wall Street's lone outspoken bear on GE, when the stock was trading in

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Welcome to Graham & Doddsville



Meredith Trivedi, Managing Director of the Heilbrunn Center. Meredith skillfully leads the Center, cultivating strong relationships with some of the world's most experienced value investors and creating numerous learning opportunities for students interested in value investing.



Professor Tano Santos, the Faculty Director of the Heilbrunn Center. The Center sponsors the Value Investing Program, a rigorous academic curriculum for particularly committed students that is taught by some of the industry's best practitioners. The classes sponsored by the Heilbrunn Center are among the most heavily demanded and highly rated classes at Columbia Business School.

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We are pleased to bring you the 34th edition of Graham & Doddsville. This student-led investment publication of Columbia Business School (CBS) is co-sponsored by the Heilbrunn Center for Graham & Dodd Investing and the Columbia Student Investment Management Association (CSIMA).

Since our Spring 2018 issue, the Heilbrunn Center hosted the eighth annual "From Graham to Buffett and Beyond" Omaha Dinner. This event is held on the eve of the Berkshire Hathaway shareholder meeting and features a panel of renowned speakers. The Heilbrunn Center also hosted a presentation and book signing by best-selling author **Howard Marks** after the release of his new book *Mastering the Market Cycle*.

Our first interview is with Tweedy, Browne Company, one of the few investment firms mentioned by Warren Buffett in his 1985 speech *The Superinvestors of Graham & Doddsville*, from which this newsletter gets its name. We sat down with six of the seven

members of the investment committee: **Roger De Bree**, **Frank Hawrylak**, **Jay Hill**, **Tom Shrager**, **John Spears**, and **Bob Wyckoff**, along with a pair of CBS alumni who are currently working as analysts at the firm: **Andrew Ewert '07** and **Amelia Koh '16**. In the interview, we discuss the legacy of Ben Graham, the dynamics of international investing, the firm's investments in companies like Autozone, WPP, and Baidu, and changes in the equity markets since the firm's last G&D interview in 2010.

We sat down with **Scott Miller**, the founder of Greenhaven Road Capital, a long-biased value hedge fund. The fund's impressive track record since its founding in 2011 has drawn notable attention from the investing community. Scott discusses his background as a business operator, the prospects for autonomous vehicles, his philosophy on position sizing, as well as his investments in companies like Etsy, TripAdvisor, Schein Vineyards, and Fiat Chrysler.

As a sell-side equity research analyst at JP Morgan, **Steve Tusa** has gained notoriety as the lone bear covering GE. Since he first recommended an Underweight rating in May 2016, the stock has fallen more than 60%. Wall Street commentators have called it "one of the greatest stock calls of all time." Steve runs through his research on GE, the legacies of Jack Welch and Jeff Immelt, his preparation for TV appearances, and the importance of patience in an investing career.

Lastly, we continue to bring you stock pitches from current students at CBS. In this issue, Winter Li '19 and Shengyang Shi '19 present their long thesis on JD.com (JD), and Michael Wooten '19 shares his long idea in the semi-conductor company Qorvo (QRVO).

We thank our interviewees for contributing their time and insights not only to us, but to the investment community as a whole.

- G&Dsville Editors



Second-year Value Investing Program students chat with CBS Professor Kian Ghazi at the 2018 Value Investing Program welcome reception.



Meredith Trivedi with Professor Tano Santos, Faculty Director of the Heilbrunn Center for Graham and Dodd Investing.

“From Graham to Buffett and Beyond” Omaha Dinner 2018



Professor Bruce Greenwald presents at the annual Omaha dinner and shares some words of wisdom



Mario Gabelli '67 addresses the crowd



Professor Bruce Greenwald, Mario Gabelli '67, Jan Hummel, and Thomas Russo share a laugh



Professor Bruce Greenwald signs a copy of his book

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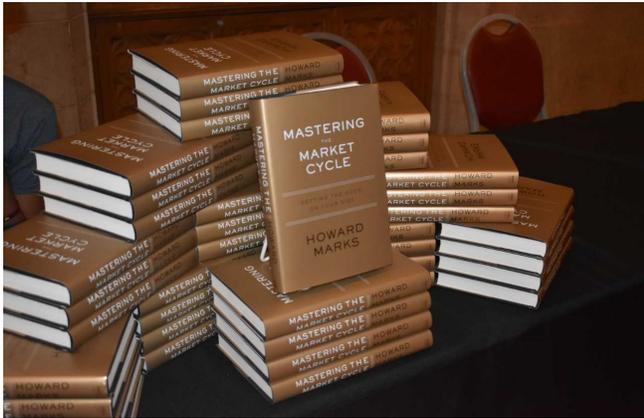
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Omaha attendees enjoy some downtime during the reception

Howard Marks' *Mastering the Market Cycle* Book Signing and Discussion



Mastering the Market Cycle, the newly released follow-up to Marks' highly regarded *The Most Important Thing*



Howard Marks discusses markets and cycles in a discussion moderated by CBS professor Ellen Carr



Professor Tano Santos introducing Howard Marks to an excited crowd of students and professionals at Columbia

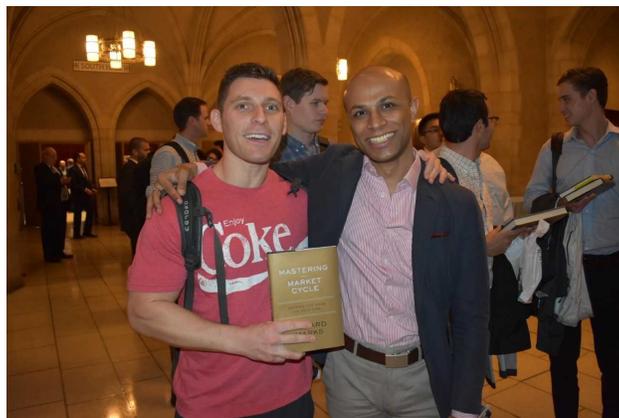


Howard Marks signing a copy of his book alongside his associate Caroline Heald

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Former *Graham & Dodd* editors Adam Schloss '18 (left) and Abheek Bhattacharya '18 with a copy of *Mastering the Market Cycle*



SAVE THE DATE

22nd annual Columbia Student Investment Management Association Conference

February 15, 2019

A full-day event featuring some of the most well-known investors in the industry, including keynote speakers:

Jan Hummel of Paradigm Capital,

Susan Byrne of Westwood Holdings Group,

and

Richard Pzena of Pzena Investment Management

Presented by:

The Columbia Student Investment Management Association

and

The Heilbrunn Center for Graham & Dodd Investing

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Tweedy, Browne Company

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1985 speech *The Superinvestors of Graham & Doddsville* from which this newsletter gets its name. Founded in 1920, Tweedy, Browne Company now has 53 employees.



Roger De Bree

Roger De Bree has been at Tweedy, Browne since 2000. He is the firm's Treasurer and a member of the Investment Committee. Mr. De Bree previously worked at ABN AMRO Bank and MeesPierson Inc. He holds an undergraduate degree in business administration from Nijenrode, the Business School in Breukelen, Netherlands, as well as an M.B.A. from IESE, the University of Navarre Business School in Barcelona, Spain.



Andrew Ewert '07

Andrew Ewert joined Tweedy, Browne in 2016 as an Analyst focused on global companies. He previously worked at Equinox Partners, L.P., Ruane, Cunniff & Goldfarb Inc., MTS Health Partners, L.P., and Bear Stearns. Mr. Ewert holds a B.B.A. from Emory University and an M.B.A. from Columbia Business School.



**Frank Hawrylak,
CFA**

Frank Hawrylak has been at Tweedy, Browne since 1986 and is a member of the Investment Committee. He previously worked in the investment department at Royal Insurance. Mr. Hawrylak holds a B.S. from the University of Arizona and an M.B.A. from the University of Edinburgh, Scotland.



Jay Hill, CFA

Jay Hill joined Tweedy, Browne in 2003 and is a member of the Investment Committee. He previously worked at Banc of America Securities LLC, Credit Lyonnais Securities (USA) Inc., and Providence Capital, Inc. Mr. Hill holds a B.B.A. from Texas Tech University.

Amelia Koh joined Tweedy, Browne in 2016 as an Analyst focused on global companies. She previously worked at Deutsche Bank Securities Inc. Ms. Koh holds a B.A. from Macalester College and an M.B.A. from Columbia Business School.

Tom Shrager has been at Tweedy, Browne since 1989. He is a Managing Director, a member of both the Investment and Management Committees, and President and Director of Tweedy, Browne Fund Inc. Mr. Shrager previously worked in M&A at Bear Stearns and as a consultant at Arthur D. Little. He holds a B.A. and a Masters in International Affairs from Columbia University.

John Spears joined Tweedy, Browne in 1974. He is a Managing Director, a member of both the Investment and Management Committees, and Vice President of Tweedy, Browne Fund Inc. Mr. Spears previously worked for the investment firms Berger, Kent Associates, Davic Associates, and Hornblower & Weeks-Hemphill, Noyes & Co. He studied at the Babson

Institute of Business Administration, Drexel Institute of Technology, and The Wharton School at the University of Pennsylvania.

Bob Wyckoff has been at Tweedy, Browne since 1991. He is a Managing Director, a member of both the Investment and Management Committees, and Chairman and Vice President of Tweedy, Browne Fund Inc. Mr. Wyckoff previously worked at Bessemer Trust, C.J. Lawrence, J&W Seligman, and Stillrock Management. He holds a B.A. from Washington & Lee University and a J.D. from the University of Florida School of Law.

Graham & Doddsville (G&D): How relevant is Ben Graham's philosophy today?

Tom Shrager (TS): I would argue that Graham's philosophy is still fully applicable today. He was one of the first investors to create an investing framework that made sense. Graham came from the credit side of investing and, as a fixed income investor at that time, your downside protection was either the collateral put up against the loan or the bond. He later applied that framework to equity investing and argued that the collateral value of an equity investment is the intrinsic value of the business. The value of the business could be its net asset value, it could be its book value, or it could be an earnings-based valuation.

By thinking in terms of

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Amelia Koh '16

business value and buying at a discount from that value, a diversified portfolio of undervalued securities should earn an adequate return. That framework hasn't changed. As markets have evolved, there are fewer net current asset stocks and book value stocks that you can invest in today. That said, we do find them from time to time in places like Japan and Hong Kong, but our current investments are overwhelmingly trading at discounts to an earnings type valuation.

G&D: What types of valuation metrics do you use?

John Spears (JS): We look for "a satisfactory owner earnings yield." For example, if you take a company's operating income after tax and divide that by its enterprise value, and that produces an owner earnings yield of 8-10%, you're getting a pretty good return.

Jay Hill (JH): Another recent change is that tax rates have been going down around the world. One advantage of this owner earnings yield metric is that it gives a company some credit for falling tax rates. All things equal, we believe that lower tax rates lead to higher net income and higher free cash flow.

G&D: How do you use NOPAT (Net Operating Profit After Tax) to EV (Enterprise Value) in evaluating opportunities? Do you compare it to long-term government bond yields?

JS: To an extent. We also look at it relative to other companies. If you rank 100

companies on EV to NOPAT, how does it shape up in comparison to deal valuations?

TS: However, we don't go much below an 8% owner earnings yield. You have to be reasonable and say, "If multiples in the market are 20x EBIT, we are simply going to pass on that because it doesn't make any economic sense, assuming some normalization in interest rates." The analysis is both absolute and relative.

"It became clear to us that value investing, at least empirically, appeared to work as well outside the US as it did domestically."

G&D: How is the process for earnings-based valuation different?

Bob Wyckoff (BW): Earnings are less predictable. In conducting our analysis on earnings-based businesses, we spend a lot more time today on qualitative factors, factors that might impact that earnings stream over time.

We try to estimate the earnings power of the business, the sustainability of that earnings power, and what the growth of that earnings power might look like over time. It does involve an evaluation of qualitative factors which might not have been as prevalent in our analysis 40 or 50 years ago.

Frank Hawrylak (FH): Previously, you didn't have to

do that. You could find a stock that was trading at 60% of net current assets, and you might glance at the annual report – which used to be 18-20 pages instead of 250 pages – to get an idea of what the business did. All you had to do was get comfortable with the inventory or accounts receivable.

G&D: How has this impacted valuation?

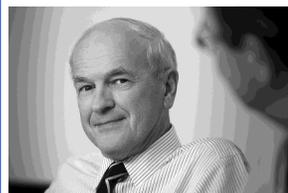
BW: The valuation framework remains the same – we're still trying to buy companies at significant discounts from a conservative estimate of the underlying intrinsic value of the business. We tend to be pretty conservative appraisers. Today, we often value businesses at 10-13x pre-tax operating income – compared to 6-8x when I first started at Tweedy in 1991 – and try to buy those businesses somewhere between 6-9x. The expansion in our valuation multiples is largely due to this march to the bottom in interest rates. In 1980, when I arrived in New York, the prime rate was north of 20%. You see what has happened since then. Interest rates, with a hiccup here and there, have been in decline for over 35 years, and that has had a significant impact on what people are willing to pay for a business. You see it in corporate transactions and the values people are willing to pay in acquisitions. Debt to EBITDA multiples in leveraged buyouts are very high today. Invariably, if interest rates are low, people are going to borrow a lot of money, and that's going to inflate multiples.

We've incrementally increased our appraisal multiples over

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Tom Shrager



John Spears



Bob Wyckoff

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time, although reluctantly and with a lag. I think a lot of people would still consider us relatively conservative on that front, and we demand a substantial discount off those appraisals.

G&D: What other recent changes have you seen in the markets?

BW: Over the past 25 years we've become more of an international investor – our client portfolios were primarily made up of U.S. equities up until the early '90s. You may have seen a booklet we put together called What Has Worked In Investing. That booklet was a compilation of 40-50 empirical studies looking at value-oriented investment criteria that, when back-tested, looked like very good predictors of outperformance. And about half of those studies were done in markets outside the United States. It became clear to us that value investing, at least empirically, appeared to work as well outside the US as it did domestically.

Today, most of our assets under management are invested outside the US, as we often find greater pricing inefficiency in non-domestic markets. Now, that's all evolving as the world becomes more global and more people begin investing in equities. But I think in general we continue to find the most opportunities internationally.

Another thing that has changed in the past half-dozen years is our increased allocation to technology stocks. We have owned technology stocks in the past, however, they were often businesses under

pressure that were trading at discounts to book value.

TS: Digital Equipment was one, I recall.

BW: Yes, DEC. We bought it after it had rolled over and was trading at a discount to book value. We didn't know it at the time, but we were basically buying a cigar butt. Luckily, we bought it pretty cheap and were able to make a little bit of money on it, but that isn't the way investors currently target technology stocks for growth. What has changed recently is that we have found some businesses with world-class technologies and long runways for growth – but the key is that we have been able to purchase them at prices that fit our valuation framework.

We bought Google in 2012 at a very attractive valuation – somewhere around 9-10x forward EV to EBITA and 12-13x forward earnings. It was also compounding its value at over 20%. It was cheap.

JS: Especially considering the cash on its balance sheet and the low tax rate.

BW: And we still own Google today, despite a higher valuation. It's what we call a compounder. Google is compounding its underlying intrinsic value at a very, very rapid rate, and in our view, there is still a reasonable relationship between the value of the business and its current stock price.

We also bought shares in Cisco – the router and switching company – about six to seven years ago. Cisco was

the Amazon of its day, back when the tech bubble was nearing its peak in 2000. It was the world's largest company – profitable, but trading somewhere around 180x earnings. Then the tech bubble burst in March of 2000 and, before long, Cisco was trading at a fraction of its bubble price.

We got an opportunity to buy our shares in 2011 and 2012 when it was trading at roughly 10x earnings with over \$40 billion dollars of cash on its balance sheet. It was still dominant in routers and switches at the time, even though growth had slowed significantly. It may not have been growing at a Google-type rate, but we thought that at the price we were paying, we were getting a lot of value. We paid an average cost around \$17-\$18 a share. Today, Cisco is trading in the high \$40s. We still own the stock. That investment has worked out for us, but again, it's a technology stock that we were able to buy at a very attractive valuation.

G&D: It sounds like you found a solid margin of safety.

BW: We did. We did not have to tie ourselves up in knots trying to develop a rationale for owning Cisco. Companies like Amazon and Netflix are a much harder proposition for us given the way we value businesses. They don't fit our framework. We also recently bought a couple of Chinese technology companies, including Baidu, which a lot of people refer to as the Chinese Google, and Sina, which is a holding company that owns a controlling interest in Weibo, one of China's most popular

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social media businesses. You might refer to Weibo as ...

TS: ... the Twitter of China!

BW: Exactly. Through our investment in Sina, we own an interest in Weibo at an attractive price. As with most of our tech investments, Baidu and Sina have advertising-based business models. That makes sense to us. It's not gadgets and software.

TS: And they're very profitable – insanely profitable.

BW: So that's another thing that has changed. We have a few more technology stocks today than we have had in the past, but we haven't had to abandon the framework or the valuation discipline to accomplish that.

Roger De Bree (RD): I want to add another thing that makes it significantly easier to invest large chunks of our personal money and our clients' money in non-U.S. equities. That is using forward currency contracts to hedge foreign currency exposure back into our base currency – the U.S. dollar – to get rid of most, if not all, of the foreign currency risk. Investing globally gives you more opportunities to find bargains, and by hedging, you can eliminate the risk that movement in exchange rates could severely dilute the local returns earned on your stocks. Our clients can choose whether to hedge their portfolios depending on if they want foreign currency exposure for diversification purposes.

TS: We launched an international mutual fund in

the summer of 1993 that hedged its foreign currency exposure, which was quite novel at the time. Even today, there are very few international funds that consistently hedge currency exposure. Investors tend to look in the rearview mirror, and since the dollar declined against most major currencies between 1986 and 1992, the general feeling in the summer of 1993 was that the dollar was toilet paper. People are driven to make investment decisions based on their most recent experiences.

“We own a few more technology stocks now than in the past, but we haven't had to abandon our valuation discipline to accomplish that.”

G&D: On the international side, are there additional measures you incorporate into your process?

JS: Yes. Japan, for example, is somewhat unique and has required additional analysis. For one thing, there are fewer deals in Japan.

TS: You also need some sign that they think the shareholders are alive. Japanese companies are often under-levered and carry too much cash on the balance sheet, which depresses returns. In our international portfolio, we want exposure to international markets – companies that sell their

products abroad and can compete in the international arena. If you research the Japanese market, you'll find a lot of cheap stocks that don't fit that criteria.

FH: Typically, Japanese companies aren't as profitable as other companies around the world based on return on capital. Ben Graham wrote an article in the 1930s about the US stock market when a lot of companies were selling way below book value. Essentially, the title was, “These companies are worth more dead than alive.” Liquidate them. They're not doing anything for the shareholder. In Japan, a number of companies fall into that category, but nobody cares. They don't buy back stock even though it's trading at a third of book value, half of which is cash. The culture is just different.

G&D: How do you get comfortable with international accounting and auditing?

TS: Good question. I remember when I first joined the firm, Will Browne said to me, “Tom, you're a foreigner. Start looking at these foreign companies.” I was overwhelmed because almost every country had its own accounting standards. Over time, I began familiarizing myself with the idiosyncrasies. When I studied British annual reports, I was continually struck by how optimistic certain accruals appeared. German accounting was, by design, very conservative. Their income statements and balance sheets were presented in a way that a bank would prefer. What you had to know

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Tweedy, Browne Company

was that located at the bottom of the income statement was an adjustment to reported earnings that was supposed to reconcile the underlying profitability with the reported profitability, but the adjusted economic profitability was invariably higher than the reported one. Swiss accounting, in the late '80s and early '90s, didn't tell you what operating income was. They only disclosed revenues and profits. They didn't even tell you what taxes were.

Unraveling international accounting used to be very difficult. It became a treasure hunt in the more conservative countries and an exercise in dodging land mines in the looser ones. Eventually, international accounting standards began to converge, but you still have cultural differences on a country-by-country basis even today.

As far as your question on auditing is concerned, it's OK in the developed world.

G&D: *What about China? Do you have any concerns there?*

TS: There have been these big scandals, of course, and that's one of the risks of investing in China. In our case, our companies have good auditors with international experience, but it's a different environment.

BW: China is a relatively new place for us to invest. We had to get comfortable with the different ownership structures. Andrew and Amelia partnered on the work in Baidu, which we thought was trading at an attractive valuation with a terrific runway for future

growth. We gained confidence because we used a similar valuation framework when we previously looked at Google, but we also had to get comfortable with Baidu being in a communist country where the government could potentially interfere.

Andrew Ewert (AE): The Chinese technology companies, even though they're listed in the United States, are deemed strategically important companies by the Chinese government. This means that non-Chinese citizens can't actually own them. The shares listed in the US represent companies that have contractual arrangements with Variable Interest Entities (VIE) in China. For example, Baidu has contracts with the VIEs to receive Baidu's economic rights instead of direct ownership in the company. So you, as a shareholder, own a structure with a contract. You don't actually own the underlying business.

TS: Like a non-voting share.

AE: Or a tracking stock even. You kind of own a synthetic company. It's not the real business. You're not a shareholder in the true sense of the word. This is a legal construct to attract capital without giving up direct ownership or control of the companies, because the Chinese government sees these industries as strategically important to their country's development. It's obviously difficult as a shareholder to think like an owner when you don't technically own what you're buying.

In some ways, these entities are the "national champions" of China. While they are quasi-protected – meaning we can't own them directly – the government does want them to succeed, and from a shareholder's perspective, perhaps there is a benefit to them being sanctioned monopolies. You just have to live with the compromise of not having direct ownership. Maybe those things balance each other out, but we also bought them at what we feel were very attractive valuations. These firms have high returns on capital. The advertising industry in China is more nascent than in the US and is growing at a double-digit rate. Search engines are a proven business model, given what we've seen with Google. To be able to buy this kind of company at a low double-digit operating income multiple – after adjusting for some of their money-losing subsidiaries – helped outweigh some of the compromises we were making. It wasn't easy though.

Amelia Koh (AK): We thought a lot about the Chinese government. Yes, it's a communist country, but it's also a very capitalist country. The internet sector is deemed strategically important by the government, and the government has recently been trying to promote Chinese technology and their domestic champions. If the government were to take actions that would jeopardize the VIE structure, they would severely limit the ability of these companies to raise capital and also undermine their international credibility. That is not an outcome they want.

Tweedy, Browne Company

G&D: How do you manage the risks of owning Chinese companies?

BW: We manage our risk by limiting our exposure to China, being very selective in the process, and being stingy on price. We've taken a roughly 1.5-2% position in Baidu. Our maximum position size is 3-4%. We like diversification by issue so we'll often start with a 1-2% position. We're not going to have a significant percentage of our portfolio in China, because of the risks.

JH: To add one final point: a lot of people are drawn to these internet-oriented companies for the moonshot subsidiaries – the businesses that haven't yet produced earnings but could or should at some point in the future. Our valuation of Baidu attributed no value to those secondary investments. We were really just valuing the search business and buying it at an attractive multiple.

TS: For a real business that made money.

BW: Right. The point we're trying to make here is that you can invest in technology companies and still be price sensitive.

G&D: Can you talk about your recent purchase of AutoZone?

JH: AutoZone is the largest aftermarket auto parts retailer in the US and has a fabulous long-term track record. When we study a company, one thing we like to examine is the long-term historical value compound of the business. Let's say we think AutoZone is

worth 12x EBIT. To find the value compound, take EBIT, multiply by 12, subtract the net debt, and divide by the number of diluted shares outstanding. We apply that same valuation methodology over say the last 10 years and observe how that value has changed over that period, and how much volatility there was from year to year. To avoid a flawed analysis, you need to make certain that the first year and the final year of the period do not represent trough or peak earnings. What you're essentially trying to determine is, if you owned this business

“People are driven to make investment decisions based on their most recent experiences.”

over a long time, how would the value have grown? In AutoZone's case, if you look over the previous 11-year period, its intrinsic value grew by 16% per annum, with a significant percentage of that growth driven by share buybacks. The historical record also revealed a stable and defensive business. Same store sales at AutoZone have grown in 19 out of the last 20 years, including in 2008 and 2009.

AutoZone has also historically produced high returns, with a 14% ROA (return on assets) and a roughly 30% lease adjusted ROIC (return on invested capital). The company communicates in a very transparent way – ROIC is

disclosed every quarter, along with all of the determinants of the numerator and denominator – signaling that management understands the importance of returns.

Free cash flow is important to us, particularly free cash flow conversion. One of the things we consider is how well a company converts its net income into free cash flow over time. We all know that income statements are full of assumptions and accruals. We also know that most growing companies, on a multi-year cumulative basis, generate less free cash flow than net income. At AutoZone, cumulative free cash flow has essentially been equal to reported earnings over the previous decade, which is indicative of high earnings quality.

We also like that they take every free dollar of cash flow and use it to buy back stock. From 1998 through 2017, AutoZone reduced diluted shares outstanding from 153 million shares to 29 million shares – an 81% decline. Combined with growing profits, these share repurchases have substantially increased shareholder wealth.

G&D: Does AutoZone pay a dividend?

JH: They do not. Management believes they can create more value, in a tax efficient way, by repurchasing shares. Avoiding a dividend is also beneficial for management's stock options because option strike prices are not adjusted lower for dividend payments.

G&D: How did you determine when to start building your

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stake in Autozone?

JH: In the first half of 2017, AutoZone's stock price fell from roughly \$800 to \$500, mostly due to Amazon concerns. AutoZone even reported negative organic growth one quarter – a rarity for the company. With the stock trading in the low \$500s, the business was trading 9.5x EBIT, 8x EBITDA and 12x earnings, yet M&A deals in this industry had generally been done at 13x EBIT. Applying a 12x EBIT multiple to AutoZone – a small discount from observed deal multiples – we thought the stock was worth at least \$750.

The narrative in the industry was that growth was slowing due to Amazon disruption. Amazon was not a new market entrant; they had been selling aftermarket auto parts for a long time. But we are all keenly aware of Amazon's willingness to forgo profits in the pursuit of revenue growth. Further, cursory research revealed that Amazon's prices were on average 10% to 20% cheaper on identical branded products.

We saw things differently, ultimately concluding that the slowdown was more likely the result of weather and car demographics than competition from Amazon. Amazon's major point of differentiation is price. But for AutoZone customers, there are a few factors that are even more important than price.

Consider the do-it-yourself segment which represents 80% of AutoZone's revenue. In this segment, there are three things more important to the customer than price. First is

the urgency of the need. If your car breaks down and you can't get to work, you need it fixed immediately. Two-day shipping from Amazon Prime is irrelevant to you. Second is the convenience factor. AutoZone has approximately 5,500 stores in the United States. 85% of the population lives within five minutes of a store. That's hard to beat, especially if your problem is unplanned and your need is immediate. Third is the technical assistance AutoZone provides. Most people know they have a problem with their car but have no idea how to fix it. Therefore, the expertise of an auto parts professional is highly valued. Moreover, for some repairs, a customer looking to fix her own car would have to buy expensive tools that she's only going to use once. AutoZone can lend you the tools and provide instructions on how to make the repair. In fact, for many of the parts AutoZone sells, an employee will just come out to the parking lot and fix your car for you.

The remaining 20% of AutoZone's revenue comes from the do-it-for-me segment of its business, which consists of selling parts to independent auto mechanics. This portion of its business concerns consumers who don't want to fix their own car but are looking to save some money relative to what a car dealership would charge.

In the do-it-for-me segment, the customer is typically a professional mechanic who cares primarily about inventory availability and speed of delivery. He calls up AutoZone and asks, "Do you have the part and how fast can you

deliver it to me?" His expectation is to receive the part within thirty minutes, not the next day. Even if Amazon has two-hour delivery in major cities, that is still not going to cut it, because the independent mechanic cares about turning over his service bays. He wants to repair as many cars as quickly as possible in a day.

G&D: Are there any contractual relationships between mechanics and AutoZone or are they all one-off transactions?

JH: They're all one-off transactions. The goal of the auto parts retailer is to become the first-call supplier, but having the needed part is a huge challenge because there are so many makes and models. The SKU proliferation is unbelievable, so the key to success is having custom inventory at every store that reflects which cars the locals drive.

To achieve this, you have to study the local car market demographics and identify, for example, whether people are driving Ford F-150s or Honda Civics. You also need to know the year and make of the models. Each store has an inventory that is customized to the local car mix. A large store network helps. Many areas have multiple stores that can share parts. If one store doesn't have a specific part but the one across town does, it will deliver it.

G&D: What do you believe were the real reasons for the industry slowdown?

JH: Weather was definitely a factor. Mild winters in 2016

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Tweedy, Browne Company

and 2017 hurt auto part retailers because extreme temperatures often lead to parts failure. The presence of snow and salt trucks is like Christmas for auto parts retailers. Those trucks create potholes, and the salt gets into the underbelly of cars and leads to rust. The combination of a more normal 2018 winter and improved growth at the auto parts retailers led us to believe that weather was truly part of the problem.

Another reason behind the slowdown was a car demographic problem. The sweet spot for spending on after-market auto parts is when a car is between 6 and 10 years old. Below 6 years, the car is probably still under warranty and the owner will go to the dealership. Between 6 and 10 years, the car is likely not on warranty anymore, but is still new enough to justify repairs. At some point, the car gets too old, and repairs end up costing more than the car is worth. If you look at 2017, cars aged 6-10 years old were cars that had been sold new between 2007 and 2011 – a period when new car sales collapsed because of the financial crisis. New car sales picked up dramatically beginning in 2012, making it a mathematical certainty that the 6-10 years-old cohort will grow in the next several years, which will benefit all of the auto parts companies.

G&D: *Could you tell us more about this idea that some companies can survive an Amazon threat because price is not the differentiating factor? Are there any other companies that fit that theme?*

JH: This summer we looked at the drug distributors: AmerisourceBergen, Cardinal, and McKesson. The stocks were down partly due to fears that Amazon would enter the drug distribution industry or the retail pharmacy industry. We knew Amazon was planning to enter healthcare in some fashion – it was already announced that Amazon was teaming with JPMorgan and Berkshire Hathaway to form a healthcare joint venture. Amazon was wreaking havoc among many traditional distribution businesses, and after a good bit of study we concluded that it was very possible that Amazon could disrupt pharmaceutical distribution.

“Don’t sell short the traditional, long-only way of investing. It’s not a lost art. As the world becomes more passive, we think the market will ultimately present more opportunities for people like ourselves.”

Pharmaceutical distributors make a lot of money selling generic drugs to retail pharmacy customers, but they make a disproportionate amount of money distributing products and services to independent pharmacies as opposed to national chains like CVS or Walgreens. With respect to generic drugs, we

learned that following Amazon’s purchase of online pharmacy PillPack, Amazon acquired the ability to eventually sell generic drugs to consumers at cash prices below the cost of a co-pay using insurance. When consumers realize they can cash buy generic drugs on Amazon at prices even lower than using insurance co-pays, retail pharmacies are at risk of losing some volume. In addition, a growing number of consumers now have pharmaceutical deductibles as part of their health insurance, which likely means they will shop around for the lowest price when purchasing drugs for chronic conditions. Since drug distributors ultimately sell to retail pharmacies, they could be negatively impacted.

Another key profit pool is independent pharmacies. Independent pharmacies do not make up a significant portion of pharmaceutical distributors’ revenues, but they account for an inordinate share of profits because they’re high-margin customers. Independents rely on distributors for additional services like business consulting and insurance reimbursement support. Independents are already slugging it out with Walgreens and CVS and there is evidence that they are slowly losing market share over time to the large chains. We concluded that Amazon’s recent entry into online pharmacy will likely speed up the demise of the independent pharmacy. It won’t happen overnight, but we think it represents a long-term headwind to the pharmaceutical distribution model.

(Continued on page 14)

Tweedy, Browne Company

AE: Another source of opportunity is technological disintermediation. We recently invested in WPP, a large advertising firm in the UK. To some degree, we got this opportunity from the market's fear of Google and Facebook disrupting the advertising industry. But after conducting analysis similar to our AutoZone research, we concluded this idea was a bit overdone.

Still, advertising faces issues on two fronts. First, marketing is increasingly moving online, because that's where the audience is. In the next few years, over half of marketing spend will be digital. Google and Facebook are a duopoly in digital, so advertising is not only moving online but it's moving exclusively to two players. Second, the internet has lowered the barriers to entry for many companies. A lot of WPP's clients are consumer branded goods companies that are currently experiencing increasing competition from smaller upstart brands. As a result, these large companies are cutting their ad budgets as their businesses slow.

Due to these headwinds, WPP trades at just over 9x earnings with a 5% dividend yield and an almost infinite return on capital (excluding goodwill). These financial characteristics are very attractive, provided the current issues are not secular and that clients will continue to deem agencies as valuable intermediaries to help them solve modern problems. Marketing is constantly evolving, yet agencies have always occupied the role of trusted advisor.

The perception is that agencies sell commercials, but in reality, they act more like consultants in helping clients define their audience, select appropriate messaging, and target customers. We think they will still fill this role in the future, but in a different way. A recent advertising book quotes the founder and former CEO of WPP, Martin Sorrell, saying, "75% of what we do has nothing to do with Don Draper. He wouldn't even recognize it."

Another issue is that Martin Sorrell has recently left the company, creating uncertainty about future management. As a result, the stock is selling at an attractive price, and we're willing to wait for things to improve. Are the threats to the industry temporary or secular? We're betting they're temporary. The agencies have evolved with their clients and are able to go where the business opportunities are. If they're not able to do this, then their clients won't see them as offering a valuable service. Mark Read just took over as the new CEO and has already announced some changes in strategy. Ideally, the management turnover will allow the company to focus more on making the necessary changes their clients need and want.

RD: Changes in the consumer goods industry have also affected advertisers. 3G Capital, which owns Heinz, Kraft Foods, and Anheuser-Busch InBev, moved to a model where companies ratchet up their prices, cut costs, including advertising, and choose the short-term over the long-term. The focus on

short-term profits was another blow to advertising agencies.

Anheuser-Busch InBev now sells 50% less beer in the United States than they did six or seven years ago. Part of that may be due to the rise in popularity of micro brews, but their decreased advertising budget was also likely a factor. This is a wind that has blown through the entire fast-moving consumer goods industry. Companies lose shelf space, business shrinks, and shareholders are unhappy. We think the pendulum will swing back, which will help WPP, whose biggest clients are companies like Unilever, Procter & Gamble, and Nestle.

G&D: You are long Unilever and Nestle, right?

BW: Yes, as well as Heineken. They've almost become semi-permanent holdings. We have owned them for 15-20 years. They have durable competitive advantages that allow them to compound their underlying intrinsic values at an attractive and predictable rate. It's a very tax efficient way to invest.

We'll sometimes trade around their intrinsic value, meaning we'll trim the position if the stock price moves ahead of intrinsic value and add to the position if the stock price drops below. These companies also give us exposure to faster growing parts of the world. When growing middle classes around the globe get more discretionary income, they want a better beverage and a better food product. These companies are serving that demand, which is growing all the time.

Tweedy, Browne Company

G&D: How do you handle disagreements on your investment committee?

TS: We would characterize the decision-making process as a consensus building exercise. The Investment Committee says yea or nay, but it's a process. An analyst or a partner starts the process by presenting an idea. Following that initial vetting, the analyst or partner begins the research process, which culminates in a written memo that includes a valuation model, a competitive analysis, a complete examination of the drivers of the business, and any other pertinent findings. The idea is then debated in a respectful and collegial manner with the entire investment team.

People often ask us, "How can you be efficient in reaching a decision by consensus?" We believe the process is similar to the College of Cardinals without the Pope. It's easier to reach an agreement when you look at the issue through the same lens. We might disagree on price, or someone may want additional questions answered, but we use a framework we all believe in. Also, most of us have type B personalities. It's easy to work together because we respect each other's judgment. If you have the good fortune of becoming a member of the Investment Committee, it means you've shown good judgment and have proven yourself over the years.

G&D: Do you have any advice for MBAs who want to break into the industry?

BW: In 2020, Tweedy Browne will celebrate its 100th birthday.

Though we are a small place, the organization has been through multiple generations, proving the efficacy of the value investing approach. This firm has lasted so long because people with the right temperament collaborated to implement an approach that works and is sustainable over the long term.

We have nothing against hedge funds – we think it's great that many investment partnerships have popped up over the years. Many are managed by very talented investors, and MBA students are obviously drawn to them. Yet our advice would be to not sell short the traditional, long only way of investing. It's not a lost art. As the world becomes more passive, we think the market will ultimately present more opportunities for people like ourselves.

You are coming out of a fantastic MBA program that firms like ours believe produces capable and passionate value investors. You have a material advantage over most people in the country in getting a job in a value shop. Our advice is to think long-term. If you do that, your competition will be more limited. Think about getting rich over a lifetime by doing something that's repeatable and sustainable. Investing on a highly concentrated and leveraged basis may allow one to beat the market by a substantial margin from time to time with great subsequent reward, but the risks and stress are considerable and sometimes consequential. At firms like ours, you can spend a lifetime building wealth by doing what you like to do. It's

hard and challenging work, but the risks are reasonable, and the stress is manageable. It's also incredibly rewarding, more stable, and allows you to have a nice balance between your professional and family life.

FH: To echo what Warren Buffett has said to countless numbers of students: integrity matters. At Columbia, there's plenty of intellectual horsepower and there's tremendous energy. We have a culture in which honesty and humility are important elements of our success. When you're given difficult choices, take the high ground.

TS: Coming back to success. First, you have to be lucky. It's better to be lucky than smart. Next comes hard work. It means working as hard as you possibly can, finishing before you are expected to, having all your t's crossed and all your i's dotted. It means having a passion for what you do, even if you may not be initially rewarded.

JH: I would add: be persistent. Several of us got to Tweedy, Browne by writing a letter or contacting somebody cold. Don't just contact once. We try to make it a point to help people who contact us, but we can't get back to everyone, or sometimes we forget about it. But the people who are persistent, who circle back with the second email or third voicemail, those are the people we eventually call back. Those are the people we think really want it. I wouldn't worry about bugging somebody. Worry about not being persistent enough.

Tweedy, Browne Company

RD: The greatest gift is just curiosity about what the dynamics of the business are. This keeps you going during dry patches, instead of simply thinking that you have to find a stock to buy or sell. Discipline is essential. If you can combine that sort of curiosity with the right temperament, you're in a lucky spot.

G&D: Thank you for your time.



Winter Li '19

Winter is a 2nd year student at CBS. Prior to CBS, Winter was an Investment Associate at MFS Investment Management, where he also interned this summer. At CBS, Winter is a member of the Value Investing program and serves as the Co-President of the investment management club (CSIMA).



Shengyang Shi '19

Shengyang is a 2nd year student at CBS. Prior to CBS, Shengyang was an Investment Associate at Baring Private Equity Asia. This summer, he interned at Mercator Fund and Cath Kidston, a portfolio company of Baring. At CBS, Shengyang is a member of the Value Investing program and the Private Equity Fellows Program. Shengyang also leads the Investment Ideas Club (IIC) within the investment management club (CSIMA).

Primary Research:

1. Ex-external consultant to Alibaba and JD
2. Advertising agency executive
3. Ex-JD senior executive
4. Expert in Chinese e-commerce
5. Senior executive within a large global merchant
6. E-commerce manager at an international apparel brand

JD.com (NYSE: JD) - Long

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Recommendation

We recommend a long position on JD.com (JD) with a price target of \$80 in 2022 or 27% IRR. We believe the recent sell-off in the stock is an overreaction and the current risk/reward is extremely attractive. Our valuation is based on a sum-of-the-parts analysis. After stripping out JD Finance, JD Logistics, other investments and net cash, JD's core business is only trading at 5x owner's earnings (assuming 3% normalized net margin), which grows at 20-30%. We believe JD's core retail and advertising business deserve to trade at 15x and 12x EV/

EBIT, respectively, at maturity. We sanity checked that valuation against justified multiples and other peers.

Key Trading Statistics (USD Millions)			
Share Price (\$/sh)	24.45	ADTV (50 day)	20
FDSO (M)	1,437	P/E ('19)	29.2x
Market Cap	35,135	EV/EBIT ('19)	27.2x
Debt	2,288	Net Debt/EBITDA (LTM)	Net cash
Cash	6,049	Chairman Ownership	16.6%
Enterprise Value	31,374	Short Interest (% of float)	4.8%

USD \$M	Historical			Projected				
	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
Revenue	26,660	38,263	53,284	70,202	89,340	108,605	128,368	149,833
Y/Y Growth	58%	44%	39%	32%	27%	22%	18%	17%
EBIT	(138)	277	547	694	1,236	2,036	2,756	3,611
EBIT Mgn	-0.5%	0.7%	1.0%	1.0%	1.4%	1.9%	2.1%	2.4%
EPS (USD/sh) \$	(0.07)	\$ 0.11	\$ 0.52	\$ 0.50	\$ 0.84	\$ 1.32	\$ 1.78	\$ 2.32
P/E			46.6x	48.7x	29.2x	18.5x	13.8x	10.6x
EV/EBIT			61.5x	48.5x	27.2x	16.5x	12.2x	9.3x

JD & Chinese E-Commerce Overview

JD.com is a \$35B market cap B2C online retail company serving the vast and growing Chinese consumer market. It is the largest online direct retailer (1P) and second largest e-commerce company in China. Relative to other e-commerce players in China (e.g. Alibaba), JD has a reputation of selling a diverse selection of authentic products at competitive prices. JD is differentiated through product quality and its own distribution infrastructure that results in speedier deliveries. Its main revenue sources are: 1) online direct sales (1P business; main categories include electronics, appliances, apparel and FMCG), 2) online marketplace (3P business; commission-based), and 3) advertising (cost-per-click model and long-term brand advertising).

When e-commerce began in China, offline retail had low market coverage and was highly fragmented (53% of grocery sales were from mom and pop stores vs. 18% in the US; also, the top 20 traditional retailers in China only had 12% market share). The fragmented nature of the industry paved the way for growth of e-commerce platforms. Online penetration rate has grown at over 50% CAGR over the last few years and is expected to grow from 20% today to 30% by 2022. Euromonitor estimates China online retail sales will grow at mid-teens CAGR over the next five years. That projection is on track as online retail sales grew 29.3% y/y in H1 2018.

Investment Thesis

1) Underappreciated business model: Many investors think that Alibaba (BABA) has already won the e-commerce war in China and that e-commerce is a winner-takes-all market. From conversations with merchants and ad agencies, we believe there is room for multiple players. Merchants have a vested interest in supporting multiple platforms. Additionally, many higher-end and foreign brands prefer to be on JD over BABA because of JD's reputation of selling higher quality, authentic goods with faster distribution.

Investors often pick between JD and BABA to gain exposure to the Chinese online retail growth theme. Many investors prefer BABA's asset-light business model relative to JD's. We believe investors underappreciate the value of JD's business model. JD has spent over a decade building a national logistics distribution network that covers over 99% of districts in China. JD's logistic network differentiates it from other Chinese e-commerce players through faster delivery and superior customer experience, which are important to succeed over the long-term. In China, a regular work day is extremely fast-paced with little down time during or after work. As such, speed of delivery and the shopping experience are crucial, especially in top-tier cities, where JD is the preferred online retailer. As China continues to urbanize, we expect even more people will switch over to the "JD experience". While not completely comparable, JD is built similarly to Amazon whereas BABA is more like eBay.

2) Variant view on margin expansion potential: After its growth stage, JD can raise profitability by increasing margins via multiple methods such as less discounting to suppliers, similar to what Amazon did. A more overlooked margin growth driver is advertising revenue growth. We expect advertising to grow faster than consensus expectations, and the mix shift should contribute to margin expansion. Ad revenue only accounts for 3% of consolidated revenue and is thus often lumped in to "other revenue" and ignored by the investment community. Given advertising's margin profile (~50%), it accounts for 11% of gross profit despite only 3% of total revenue. That deserves a deeper dive, which is what we've done in our primary research.

E-commerce platforms in China are also enjoying macro tailwinds in ad revenue share. We've seen e-commerce websites take a bigger share of the growing advertising revenue, mostly at the expense of search engines, and that trend is widely expected to continue.

JD.com (JD) - Long (Continued from previous page)

JD's ad revenue as a % of GMV is at 1.2%, meaningfully lower than both Alibaba's and Amazon's. JD only began charging ad fees in 2014. Per our conversations with ad agency execs, JD's ad revenue is lagging Alibaba's primarily because of technological differences in the magnitude of three to five years. But there is no reason why JD cannot catch up. Beginning in the second half of 2016, JD started to invest aggressively into advertising capabilities including investments in a team of externally-recruited engineers, AI technologies, a real-time bidding platform, and tools and analytics for merchants. Subsequently, cost-per-click revenue has been growing triple-digits over the last few quarters. There is still low-hanging fruit left. For instance, T-mall of Alibaba requires its merchants to place ads in order to be listed on its platform. JD initiated a similar initiative in 2017 and is only charging 30% of what Alibaba charges on those ads. JD has set up strategic partnerships with Tencent, Baidu, NetEase, Qihoo, and Toutiao to reach 100% of online consumers in China via multiple platforms including WeChat, search engines, media, video streaming and gaming. JD's broad coverage makes it an attractive platform to advertise on.

In our base case, we assume JD's ad revenue as a % of GMV will increase to 2.1% in five years, still lower than BABA's current 2.5% and lower than Amazon's projected percentage. Should that scenario play out, JD's ad revenue would become 5% of revenue mix and 17% of gross margin mix by 2022E. The advertising segment is asset-light and trades at a higher multiple. If JD's advertising grows, the mix change should also result in multiple expansion.

	2014	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
Revenue Mix %									
1P Revenue	94.4%	92.5%	91.4%	91.6%	90.7%	89.7%	88.9%	88.2%	87.5%
3P Revenue	3.7%	4.3%	3.8%	3.6%	3.4%	3.5%	3.6%	3.6%	3.6%
Ad Revenue	1.1%	1.9%	2.4%	3.1%	3.6%	4.1%	4.6%	4.9%	5.1%
Logistics & Other	0.8%	1.2%	2.4%	1.7%	2.2%	2.6%	2.9%	3.3%	3.9%
Gross Profit Mix %									
1P Gross Profit	56.6%	50.0%	50.9%	57.0%	61.2%	61.1%	59.7%	59.1%	58.3%
3P Gross Profit	30.4%	30.8%	23.6%	22.8%	21.8%	22.1%	22.0%	21.8%	21.5%
Ad Gross Profit	4.6%	7.1%	8.0%	11.2%	12.9%	14.4%	15.7%	16.3%	16.9%
Other Gross Profit	8.4%	12.1%	17.5%	9.1%	4.1%	2.4%	2.5%	2.9%	3.2%
Ad rev as a % of GMV	0.5%	0.8%	1.0%	1.2%	1.5%	1.7%	1.9%	2.0%	2.1%

3) JD's core retail business is undervalued after backing out JD Finance and JD Logistics: JD's long-term competitive advantage lies in its integrated model of retailing + logistics + finance. However, the market is penalizing the company for its negative profitability and low cash flow because the latter two segments (logistics + finance) are dragging down overall financials, as the Street has failed to clearly separate out these two loss-making segments. After backing out JD Finance (\$5.0/sh), JD Logistics (\$7.6/sh), other investments (\$2.2/sh), and net cash (\$1.4/sh), the core retail business is only trading for \$8.2/sh (~\$10bn). This is very cheap considering the core generates \$70B revenue in 2018E and is growing at 30% a year. For reference, Amazon is trading at 4x 2018E revenue with a similar growth profile. With an assumed 3% owners' earnings margin (conservative), JD's core retail and advertising segment is trading at 5x earnings. We believe JD's long-term true earnings power could be even higher than the assumed 3%. Value could be unlocked if the company separates out segment financials and investors start seeing the true performance of all business segments. Alternatively, JD could spin-out one of the non-core segments to realize its market value and highlight the mispricing in the remainder of the business. *Note: JD management has publicly discussed divesting JD Finance/Logistics, partly to surface the value of the underlying business.*

Valuation Method	Metrics (US\$m)	Multiple	Val. (US\$m)	JD stake	JD Val. to JD (US\$m)	US\$/share	as % of Total	Comments	
JD Retail (1P+3P)	EV/EBIT	3,321	15.0x	49,821	100%	49,821	34.3	47%	Assumes breakeven for 1P and 15x on 3P 2022E EBIT of \$3.3bn (62% EBIT Margin)
JD Advertising	EV/EBIT	2,838	12.0x	34,057	100%	34,057	23.5	32%	12x on 2022E Advertising EBIT of \$2.8bn (38% EBIT Margin)
JD Core	EV/EBIT	6,159	13.6x	83,878	100%	83,878	57.8	80%	Blended 13.6x on 2020E EBIT Margin of 2.4%
JD Finance	Market Value			20,000	36%	7,200	5.0	7%	Financing round in Jul 2018 (CICC Capital, CITIC Capital and Bank of China's Investment Arm) valued it at US\$20bn
JD Logistics	Market Value			13,500	81%	10,989	7.6	10%	Financing round in Feb 2018 (Hillhouse and Sequoia) valued it at US\$13.5bn
JD Cloud	P/S	110	10.0x	1,099	100%	1,099	0.8	1%	10x on 2022E JD Cloud revenue; Ali Cloud's valuation estimate of \$67bn (MS Research) is 33x on its 2017 revenue of \$2bn
Minority Investments	Market Value					2,623	1.8	2%	Farfetch (\$0.8), Yonghui (\$0.7), Bitauto, VIPShop, Tuniu, Kingdee, Dada Nexus
Net cash						10,937	7.5	10.4%	Accumulated \$10.9bn of net cash by 2022E; Currently JD has net cash of \$3.8bn
Market Cap and Target Price						116,725	80.4		

Valuation

We used sum-of-the parts to value JD as it best captures the value of each segment. For the core business, we assume breakeven for 1P and 62% EBIT margin for 3P (blended EBIT margin of 2.4%) in 2022E and apply a 15x EV/EBIT multiple. We also apply 12x EV/EBIT on 2022E ad EBIT of \$2.8bn (38% margin). These multiples are calculated based on justified multiples and relative to peers, with a conservative bias. We derive our target price of \$80 (or 27% IRR) when we add together JD core's 2022E value (\$57.8/sh) and other parts of the business in current market value (JD Finance, JD Logistics and other investments) as well as net cash accumulation through the five years. At the current price of \$24.5/sh and based on JD's current net cash position, JD's non-core businesses (finance/logistics/cloud/minority investments/net cash) add up to \$16.2/sh, implying JD's core (1P/3P/advertising) is worth only \$8.2/sh (or 5x earnings assuming 3% normalized net margin), which we consider to be meaningfully undervalued.

Major Risks

Key man risk: JD has a dual class share structure, where Richard Liu, Chairman and CEO, controls 80% of the voting rights. The bench after him is rather shallow. Mr. Liu was arrested in Minnesota on suspicion of criminal sexual misconduct on August 31, 2018. Although he was not charged with any offense at the time and was released the next day, JD has lost \$10bn of its market cap (\$7/sh) due to concerns over losing him if he is convicted. We think a \$10bn loss in market cap more than factors in this key man risk and that further downside is limited. Even if JD loses Mr. Liu, its shareholders might actually benefit with a more returns-focused management team, as Mr. Liu has focused more on growth and less on returns on invested capital and profitability of the company.

Intensified Competition: Major competitors such as Alibaba and Suning have large offline presences and are competing against JD across all major categories with the "New Retail" omni-channel initiatives. New competitors such as Pinduoduo compete against JD aggressively in lower-tier cities and rural China. However, we believe JD's advantage lies in its integrated retail model with powerful economies of scale. Its logistics and distribution network, which took over a decade to build, cannot be easily replicated.



Michael Wooten,
CFA '19

Michael Wooten is a 2nd year student at CBS and a member of the Value Investing Program. Previously, he worked as an Associate at Corrum Capital Management and as an Analyst at Reicon Capital. This summer, Michael was an intern at WEDGE Capital in Charlotte.

Qorvo Inc. (NASDAQ: QRVO) - Long

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Key Trading & Operating Statistics				(USD Millions)					
Ticker	QRVO	Market Cap:	\$ 9.0B	ROIC (FY18 Adj.)	12.6%	Revenue	\$2,974	\$3,301	\$3,824
Industry	Semiconductors	Net Debt:	\$ 0.2B	ROE (FY19E)	13.3%	Growth	-1.9%	11.0%	15.8%
Share Price:	\$ 71	Enterprise Value:	\$ 9.1B	4Y EBITA Margin	22.4%	Operating Income	717	868	1,214
Intrinsic Value Est.	\$ 106			4Y Revenue Growth	26.9%	Margin	24.1%	26.3%	31.7%
Total Return Potential	48%	2018 A Adj. EBITDA	\$ 0.7B	2020 Forward Multiples		EPS	\$ 4.77	\$ 5.93	\$ 8.35
Target Range:		Net Debt/EBITDA	0.2x	P/E	10.0x	Growth	NA	24.3%	40.8%
Low <-> High	\$ 52 \$ 150	S/O (millions)	125.6	EV/EBIT	8.7x				
	-27% 110%	Short Interest %	5.4%	EV/EBITDA	7.2x				
Upside/Downside	4.1x	YTD Total Return	7%	P/FCF	8.0x	EV/EBITA	12.9x	10.7x	7.6x
Base/Downside	2.0x			Dividend Yield	0.0%	P/E	15.0x	12.0x	8.6x

Investment Thesis

Qorvo Inc. ("QRVO", or the "Company") currently represents an attractive investment opportunity within the semiconductor sector given its unique position in radio frequency ("RF") technologies and idiosyncratic operating tailwinds which should drive increased profitability and strong cash flow generation over the next 5-10 years. Despite significant sector tailwinds, historical operational issues, customer concentration concerns, and cyclicality fears have largely held back investor sentiment. My contrarian view is that the above factors have created an opportunity for a patient investor to buy a quality and improving business **50% below intrinsic value** at a time when strong secular growth and industry positioning provides a sufficient margin of safety.

Investment Summary

1. Secular tailwinds in high-growth parts of the RF industry: 5G, 4G LTE, and Internet of Things ("IoT")
2. Idiosyncratic tailwinds: drive margins higher while winning back market share
3. Limited number of true competitors: Oligopolistic market with increasing demand for RF solutions
4. Favorable Risk/Return profile: 40-50% undervalued, 4.1x up/down ratio, and healthy balance sheet

QRVO stands to benefit from its position in high-growth segments of the complex radio frequency market, which will be primarily driven by 5G adoption, 4G LTE expansion in China, and increased defense spending (proliferation of gallium nitride), and to a lesser extent, IoT, advanced automotive connectivity and Infotainment, and the development of Smart Homes. 5G represents a global economic catalyst for devices requiring RF components with data rates 100x faster than 4G, extremely low latency and the capacity to support billions of networked things.

QRVO has numerous company-specific factors which should drive organic operating margin growth going forward. These include: 1) higher utilization at its fabs after hiring a new Head of Global Operations, rationalizing its manufacturing footprint and outsourcing non-core product components; 2) increasing wafer sizes for its filters (6" to 8") and gallium nitride (4" to 6") chips which will expand gross margins; 3) revenue mix shift to higher margin products; 4) economies of scale/operating leverage given duopolistic/oligopolistic positioning in a growing industry; and 5) the adoption of Lean practices.

QRVO offers differentiated and integrated connectivity solutions to solve some of its customers' most complex problems. These solutions are critical functional components in their respective devices and customers have historically shown a high willingness-to-pay for best-in-class technologies due to rising expectations from end-consumers and pressures applied by carriers, whose brands are at risk with end-consumers. In high-end 4G smartphones, RF content has replaced the baseband (where Qualcomm dominates) as the most critical and difficult component of phone development and it now commands premium prices.

QRVO's early adoption and heavy investment in the development of two key technologies has created a competitive advantage relative to QRVO's closest competitor, Skyworks Solutions ("SWKS"), who does not currently have these capabilities, as new wireless devices will require exponentially more RF content that is smaller, more powerful, more energy efficient, while operating at wider range of frequencies. These technologies are **broad acoustic wave ("BAW") filters and gallium nitride ("GaN")**; both are expected to deliver strong growth from 5G. Based on recent design wins and consistent quality of customer feedback, I believe QRVO has a superior technology portfolio and is well positioned to win back market share in next-generation connectivity products.

QRVO trades at an attractive valuation based on forecasted FCF estimates and current multiples of 11-12x NTM P/E relative to the broader semiconductor industry. **This opportunity exists for three primary reasons:** 1) QRVO has suffered from execution mishaps since the 2015 merger between RF Micro Devices and TriQuint Semiconductors and investors are skeptical about management's ability to hit margin guidance; 2) The Company has significant customer concentration risk with approximately 36% of its revenue coming from Apple (or known Apple suppliers), and roughly 50% of its revenue coming from its top three customers;

Qorvo Inc. (QRVO) - Long (Continued from previous page)

and **3**) the company operates in the notoriously cyclical business of mobile phones.

Company Overview

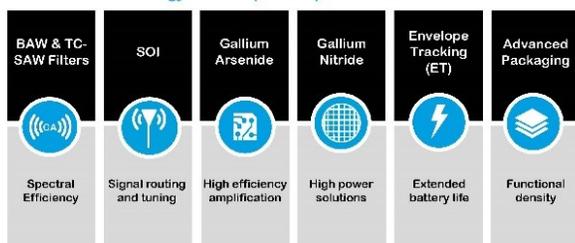
QRVO offers a broad portfolio of RF solutions, differentiated analog semiconductor technologies, deep systems-level expertise, and scale manufacturing to customers in high-growth markets, including: smartphones and other mobile devices; defense and aerospace; Wi-Fi customer premises equipment; cellular base stations; optical networks; automotive connectivity; and smart home applications. The Company focuses its efforts on the most complex and fastest growing segments of the RF market. QRVO competes with SWKS and Broadcom in the RF space.

The Company operates in two segments, Mobile Products (“MP”) and Infrastructure & Defense Products (“IDP”). MP is the Company’s largest market (~70% revenue), in which it provides cellular RF and Wi-Fi solutions into a variety of smartphones, notebook computers, wearables, tablets, and cellular-based applications for IoT. 5G phones are expected to have substantially higher content values than current premium generation 4G LTE phones. IDP (~30% revenue) is a leading global supplier of RF solutions with a diverse portfolio of solutions that “connect and protect,” crossing communications and defense applications.

IDP contains six of the Company’s seven strategic end markets: **1) Defense and Aerospace** - Capabilities include satellite, radar, electronic warfare and communications systems, such as found on submarines, navy battle ships, or F-35 fighter jets. The DoD has certified QRVO’s GaN fabrication and production capabilities at Manufacturing Readiness Level 9, the highest in the industry; **2) CPE Wi-Fi**; **3) Cellular Base Stations** - 5G network will require exponentially more base stations and RF solutions than previous generations; **4) Optical**; **5) Automotive Connectivity** - More connected device with the addition of multiple RF-based connectivity solutions such as satellite radio, in-car infotainment, and LTE connectivity solutions; **6) Smart Home**.

The Company was formed by the merger of RF Micro Devices, Inc. and TriQuint Semiconductor, Inc. in 2015 to achieve: economies of scale; competitive advantages in manufacturing; better financial performance from ~\$150M of expected cost synergies and best practices sharing; and leveraging one another’s unique technologies to create the most comprehensive portfolio of RF solutions to mobile and infrastructure customers. Since the merger, operating margins for the whole industry have substantially improved due in part to better supply/demand dynamics.

Product and technology leadership where performance matters



	Filters		Power Amplifiers				ET PMIC	Tuners	Switches
	SAW	TC-SAW	BAW	GaN	GaAs	Silicon	CMOS	SOI	SOI
Qorvo	Q	Q	Q	Q	Q	Q	Q	Q	Q
Competitor A									
Competitor B									

*Competitor A is Skyworks and Competitor B is Broadcom

Despite having the most complete portfolio of RF technologies, BAW and GaN are expected to be QRVO’s main growth drivers. BAW demand is expected to escalate in the future as the shift to 4G LTE and 5G will require more band width at the higher end of the spectrum above 2 Gigahertz, where surface acoustic wave (“SAW”) is unable to perform. GaN is used in QRVO’s IDP segment in place of silicon when high-power and high-frequencies are required, and quality performance is more important than cost efficiency. GaN has historically been used in the defense and aerospace sector (fighter jets, satellites, etc.) but is being adopted at a greater pace into other infrastructure applications like base stations given the increased performance needs at high-power/high-frequencies due to increased data traffic.

Valuation

I arrived at my valuation **target range of \$100-\$110 (40%-54% upside)** through a combination of DCF scenarios and a sum of the parts valuation based on MP & IDP’s 2020E operating incomes. In my base case, QRVO generates a 10.7% topline 5Y CAGR while through-cycle operating margins expand from the idiosyncratic tailwinds described above. I believe this is a conservative forecast compared to the 10-15% expected industry growth rate and operating margins generated by close competitors.

The valuation implies a **9.0x 2020E EBITDA** of \$1.5B and **13.0x 2020E EPS** of \$8.35 vs. consensus \$7.11. In the sum of the parts valuation I assign IDP a higher 2020E EBIT multiple of 16x vs. a 10x multiple for MP given IDP’s more attractive fundamentals and sticky business. 2020E FCFF of \$860M implies a **9.3% FCFF Yield** based on QRVO’s current enterprise value. The weighted average of my bear cases (\$60 target) represent a 16% decline while my bull case (\$150 target) represents 110% upside to intrinsic value.

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Scott Miller

M.A. from the Stanford University Graduate School of Education.

Graham and Doddsville (G&D): Scott, could you start by introducing yourself, including how you first got into investing?

Scott Miller (SM): I majored in political science at the University of Pennsylvania and graduated into a recession in the early 1990s. Between my poor job searching skills and the economic environment, the only job I could get was managing a small family-run manufacturing business. Instead of doing the typical two-year analyst program at Goldman Sachs, I did four years in a paper bag factory in Yonkers, New York. Given my background, I probably have more operating experience than the typical portfolio manager. Spending four years in the retail packaging industry gave me a front row seat to how a bad business operates – one with low barriers to entry, cyclical, anemic margins, and commoditized products. Not the type of business I would invest in today.

I eventually helped sell the manufacturing business, which I guess was a good enough story to get me into Stanford Business School, where I went through the value investing track with Professor Jack McDonald. After Stanford, I worked for a venture philanthropy nonprofit called NewSchools Venture Fund, which was founded by John Doerr and Brook Byers from Kleiner Perkins. It was double bottom line investing before it was trendy. Our primary mandate was social return.

One of my first tasks there was to take the Kleiner Perkins frameworks for evaluating investments – looking at product, market, team, and execution risks – and apply them in a social context to education businesses like charter school management organizations and various educational software companies. Those frameworks were very helpful in organizing a set of investing principles, and I still use them today.

Around the same time, I also started investing in the public equities market, applying what I had learned at Stanford and what I was learning at NewSchools. I had a fair amount of success investing my personal account. I was concentrated, owned the right companies, and was compounding at multiples of the market. I remember one year where I was up over 40% in my personal account while my roommate from college, then working at a big fund, was up 15%. My numbers were basically 3x as good as his, yet he still took home \$4 million that year – many multiples of what I made. That's when I decided I wanted to work at a fund and invest more than my own capital.

At this point, I was thinking more about investing than my main job. I wanted to invest professionally. But even though I had a prestigious business degree and an outstanding personal track record, I was still coming from an operating role, and no fund wanted to hire me. I reached out to two former Stanford classmates – Dan Carroll and Keith Fleischmann – who had recently founded Litmus

Capital. They actually valued a non-cookie cutter background, took a chance, and hired me. Dan and Keith are very talented investors and opened my eyes to the opportunities in special situations.

I loved my experience at Litmus. Unfortunately, my timing, yet again, was not great because I was there for the financial crisis. Afterwards, Litmus didn't need me anymore, and I predictably couldn't get a job in a post-crisis hedge fund market with too many analysts and far too few job openings.

After some outstanding returns in my personal account in 2009 and 2010, I finally said, "I can do this myself." So, in 2011, I cobbled together ten limited partners (so it wouldn't just be my personal returns anymore) and for the first four years ran the fund on the side while I had a day job in an operating business that I co-founded. While I knew how to invest on the side and was having success, I was not raising any additional capital while holding an operating job. About three years ago, I decided to pull back to an advisory role at my business and transitioned to make investing my full-time focus. For students wondering how they are ever going to start a fund: if you invest in a concentrated manner with low turnover, it is possible to form a partnership on the side for friends and family and develop a track record. You can even get this data audited at a later date, or at least have it in a useful form for any investor who wants to do some due diligence. It de-risks the process.

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G&D: What was the biggest lesson you learned at Litmus?

SM: I learned how important it is for your investor base to be aligned with your investing strategy. At Litmus, our two primary LPs had very generous liquidity terms – they could effectively pull their money whenever they wanted to. When the world was blowing up in 2008 and 2009, and people were taking liquidity wherever they could find it, we became very concerned that the LPs would pull their capital. This shortened our investment horizon. I couldn't present an idea that I thought would work in three to five years because we didn't feel like we had three to five years. I started looking for ideas that could work very quickly, such as those focused on earnings beats and misses. The terms of our money at Litmus ultimately encouraged us to play a very difficult short-term game, a style I am not suited for.

The way I set up and have grown Greenhaven Road was informed by my reactions to the Litmus experience. We don't have "hot" money. Greenhaven Road has about 140 LPs, a majority of whom are high net worth individuals such as portfolio managers and former portfolio managers. We do no outbound marketing, active follow-up, capital introduction, networking, or cold calling. People read the letters and can go on our website (www.greenhavenroad.com) to fill out a form requesting more information. They choose to invest because the thought process and philosophy resonate. It's a very stable capital base – nearly all of our

investors have subscribed to a three-year lock up. The arrangement is ideal because the stickiness of our capital allows me to buy low liquidity names with confidence and minimal distractions. Many companies we own are devoid of short-term catalysts but are attractive long-term opportunities. I make no promises to my investors

“The ability to be comfortable with a divergent opinion, the ability to not panic...I think you either have those qualities or you don't.”

about short-term performance, instead focusing on longer-term returns and the power of compounding. The strategy and the capital base are well-aligned.

G&D: Can you touch on your investing philosophy and if anything has changed since you've started investing?

SM: At my core, I'm a value investor. When I first started, I loved 50-cent dollars – situations where the valuation gap may close by the dollar declining in value – but as I've evolved, I've become more enamored with higher quality companies that I can hold for longer. I'm attracted to network effects, two-sided marketplaces, and platform companies – these are the modern monopolies – as well as businesses with high insider

ownership, recurring revenue, and operating leverage.

Today, there are increasingly better tools out there that make it much easier to access and process information. Communities like Manual of Ideas, SumZero, Value Investor Club, Corner of Berkshire and Fairfax, and even Seeking Alpha have exponentially increased idea flow relative to when I started. Along with my greatly expanded personal network of incredibly talented investors, these resources give me a torrent of idea flow to sift through – far more than was available when I first started out.

In terms of sizing, my sweet spot is between 12 and 18 companies. If my mandate were to outperform the market by the most dramatic amount possible, I'd own one stock. But I wouldn't sleep at night. This is still very concentrated by most standards, but given that I generally hold names over longer time periods, I can be extremely selective about where I actually deploy capital.

Overall, I believe that having the right temperament is critical for investors, and I don't think that changes over time. The ability to be comfortable with a divergent opinion, the ability to not panic, the ability to buy more if there is an overreaction to prices – I think you either have those qualities or you don't.

G&D: In addition to having your traditional fund, you also manage a fund of funds. What is the Partners Fund?

SM: The Partners Fund is a

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boutique fund of funds focused on emerging managers whom I believe are talented, underappreciated, and well-positioned for long-term success. The data suggests that smaller managers outperform larger managers, but the dynamics of capital allocation make it so that some really talented portfolio managers are running peanuts and, for a variety of reasons, investors don't want to take the headline risk. But, ironically, that's where the opportunity is. I'll take hungry over fat and happy any day. The Partners Fund invests in managers that are similar to Greenhaven Road in that they meet the following criteria: an investment committee of one, concentrated holdings, reasonable AUM, significant personal investment, original thinking, and a mindset where getting rich is not the point.

Now, a fund of funds focused on small managers is not a very good business – charging a few basis points on relatively modest amounts of capital is not a great set-up. Thus, most funds of funds want scale. They need hundreds of millions of dollars to make the business work, which means they need to invest larger checks in larger managers. I didn't launch the Partners Fund to make money on fees; I launched it to formalize my relationship with select other managers and give my LPs access to them as well.

For me, the Partners Fund allows me to collaborate frequently with whom I consider to be some of the most promising investors of my generation. If I get one good idea a year that finds its way into our main fund, that is

time very well spent.

G&D: Are there synergies for idea generation from the Partners Fund?

SM: It was a combination of a glaring opportunity that I didn't think others were seizing – investing with small managers in a fund of funds structure –

“I often compare performance and quality of ideas against AUM and generally find a disconnect. I don't believe allocation of assets to fund managers is as efficient as it should be.”

an opportunity for diversification for my family, and a potential source of ideas. It didn't hurt that I thought it would be fun and interesting.

G&D: Why do you think the market for allocating to funds is skewed such that larger funds get the vast majority of the assets?

SM: I often compare performance and quality of ideas against AUM and generally find a disconnect. I don't believe allocation of assets to fund managers is as efficient as it should be.

Part of the challenge is if you are a gatekeeper, the accepted strategy is to wait until the statistical evidence is incontrovertible – when the performance of a manager is

so good for so long, and the fund has enough AUM. Nobody gets fired for investing with a billion dollar hedge fund. The incentives are to keep your job and not stick your neck out for an emerging manager. Interestingly, when people are investing their own personal capital, the calculation is different. For example, one of my LPs runs a multi-billion dollar family office. He is comfortable putting his money in the fund, but not that of the family he works for. Part of what we're doing in the Partners Fund is accepting some of the risks that come with smaller managers in exchange for hopefully outsized returns. My diligence process for the Partners Fund is also much different than that of many allocators. It is less quantitative and more focused on individual ideas and the entire thought process. I would much rather have three years of investor letters than return statistics.

G&D: In general, what's your research process like from sourcing ideas to making an investment?

SM: The research process depends on both the source of the idea and how close it is to something we've done in the past – effectively how much domain knowledge I have. In general, I'm trying to get comfortable with product, market, team, and execution risk.

I look for certain attributes to filter ideas quickly. For example, I prefer high insider ownership, asset-light business models (even though Fiat Chrysler – which we own – is not asset-light) recurring

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revenue, expanding margins, and the potential for operating leverage.

The other piece is what Murray Stahl calls invisible companies – companies that don't screen well, aren't necessarily telling their story well, and aren't covered by analysts. In those cases, the research process is initiated by other people explaining the idea to me. Then it becomes, "What are the pieces I have to fill in?"

G&D: What are some themes you're seeing in the market today, and where are you finding opportunities?

SM: We're nine years into a bull market – it's expensive. However, I've found opportunities in companies that are under-monetizing either assets or transactions in some way. Under-monetized companies can be attractive because you can have earnings growth without a significant increase in capital spending or SG&A. Success is dependent on making tweaks to existing products or pricing. Additionally, fixing monetization generally has lower execution risk.

G&D: Your Etsy investment aligns with this under-monetization theme. Can you discuss your thesis there?

SM: Prior to this year, Etsy's commission fee has been set at 3% of sales since the company's launch. A big part of the stock's appreciation this year was driven by the company's decision to raise its commission fee from 3% to 5% with no expected decline in the number of sellers on the

platform, as the 5% rate is still very competitive compared to alternatives. A potentially greater than 50% increase in revenue with no associated expense increase is a great set-up. However, the increase in revenue won't immediately drop to the bottom line, as Etsy will reinvest a significant portion of the revenue into building out the demand side of the platform.

At the end of the day, Etsy has a very attractive, niche business that can grow many multiples of where it is today. There is room in the world for an Amazon alternative. Last year, I needed an outfit for an

"The opportunity for improved earnings without massive spending—taking what you have and just monetizing it—is attractive and carries less execution risk."

'80s costume party. Naturally, I searched "80s costume" on Amazon Prime and received my shipment in two days. It couldn't have been more convenient. The only problem was that every other guy at the party did the same thing. One guy had the exact same costume as me, and I recognized the costumes of a dozen other people. I don't shop on Etsy for every purchase, but if I want something special, I go there. They operate in huge verticals

and have an asset-light model with real barriers to entry.

G&D: What are some other examples of under monetization?

SM: TripAdvisor only monetizes somewhere around 1% of their traffic. Now, some of that traffic they *can't* monetize; for example, if a traveler searches for best places to take a hike in a specific destination. But TripAdvisor is working hard to get bookings – restaurants, museums, attractions – done directly on the site, so I think it's quite likely they'll succeed in increasing monetization rates with attractions.

Like Etsy, they sit between consumers and businesses. It's a very valuable resource, and TripAdvisor has an excellent ecosystem with the most downloaded travel app and the deepest reservoir of content related to travel. The question is: can they get more booking activity on their site? If they can improve the monetization of their existing traffic, I think the investment will work out quite nicely.

G&D: Is under-monetization the main theme in your portfolio?

SM: Since I have the vast majority of my life savings in the fund, my interests are highly aligned with my investors, so I don't want to only own companies that are under-monetizing.

I see value in diversification across investment theses, market caps, and even geographies, but I do think under-monetization is one of

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the current main themes. The opportunity for improved earnings without massive spending – taking what you have and just monetizing it – is attractive and carries less execution risk.

We own Scheid Vineyards which is a growing sum-of-the-parts story. It is a family-controlled wine company where the land value is worth 2x the share price. So, this is an example of a 50-cent dollar, but what's interesting is that they are transitioning from selling grapes to selling their own branded products. They have gone from a standing start to selling 600,000 cases of finished goods per year. They have the capacity to produce approximately two million cases with minimal incremental capex. If they are successful in their continued path towards selling more branded products, the economics should work out well for shareholders.

G&D: Fiat Chrysler is one of your top five positions. Can you walk us through your thesis?

SM: Let me start by saying this idea lacks some of the criteria I discussed before in terms of recurring revenue, but it does have high insider ownership and operating leverage. I have owned Fiat Chrysler since it was just Fiat and traded only in Italy. Despite returning multiples of our original purchase price already, I still believe it is very attractively valued. This is a company that has a portfolio of valuable brands yet is also a turnaround story with legs. They are making a very accretive shift in manufacturing capacity away from low margin Fiats and

Lancias to high margin Jeeps and Alfa Romeos. The margins on a Fiat Panda are sub-5% while the margins on a Jeep Wrangler – although the company doesn't disclose them – are probably around 35%. If you focus solely on car volume or top-line and don't want to focus on the mix of what those cars are going to be, you miss a major part of the opportunity. Fiat Chrysler is reducing the low margin fleet business by getting out of sedans and focusing on SUVs, aligning themselves with customer preferences and higher margins. They are also going to either spin off or sell their parts division. If you back out the parts business, you're getting the core business for less than 3x earnings excluding net industrial cash and the parts business. That's an attractive multiple for a growing earnings stream and a business that should remain profitable even if US new car sales decline by 30%.

G&D: You mentioned in your last letter the importance of understanding the motivations of key actors. Can you expand on that in the context of Fiat Chrysler?

SM: A large part of this job is trying to put the puzzle together – trying to understand what the key players' incentives and preferences are. Fiat Chrysler is controlled by the Agnelli family. Their holding company, Exor, holds 30% of the stock.

John Elkann inherited the Fiat holding from his grandfather. However, the investments that John has initiated during his time as chairman of Exor are decidedly not industrial. He

clearly prefers asset-light businesses as he has invested in media, reinsurance, and now startups. I don't think Elkann ultimately wants to own Fiat Chrysler or its parts unit because it's not a great business—it's cyclical, and over the cycle it should have relatively low returns on capital. I think spinning off the parts business makes it easier to sell the entire company.

Charlie Munger discussed that over a 40-year period, returns start to mirror return on invested capital, regardless of what you pay for the company. I think Elkann wants to reset what they're invested in. He won't give Fiat Chrysler away, but I suspect that over the next couple of years, Elkann will be out of the parts business and will sell the core auto business to another OEM so that he can redeploy the capital at higher rates. Keep in mind – combining large OEMs will yield enormous savings.

G&D: You mentioned that you really admired late Fiat Chrysler CEO Sergio Marchionne. What specifically did you like about him?

SM: To me, Sergio was like a five-tool player in baseball. Those are the guys that can hit for power, hit for average, run, throw, and field. At Fiat, he executed at the highest level. He led the acquisition of Chrysler without having large-merger experience. He spun off Ferrari and articulated a vision for increasing volumes and expanding margins. He created so much value over his time. Shareholders got over a 30x return. I also found his speaking on conference calls to be operatic. He was

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CBS students Matthew Stevenson '19, Jade Hu '19, and Victoria Gu '19 socializing at the 2018 Value Investing Reception

enthusiastic, dismissive, and honest in a way that felt authentic. You don't see that very often. He would be on my Mount Rushmore of CEOs.

G&D: Given your position in the auto industry, do you have any views on autonomous vehicles?

SM: I'm very skeptical about autonomous vehicles. People have this vision that eventually we are not going to own cars because there are going to be on-demand fleets. As it stands, autonomous vehicles don't work except for in the most mundane conditions, such as in Arizona where there are no pedestrians, snow, or rain. In addition to the technical challenges, there are also economic challenges because the LIDAR (Light Detection and Ranging) components are not currently cost-effective. Assuming you solve the technical and financial issues, there are still regulatory hurdles, consumer preferences, and execution risk surrounding production. Last year, the former head of Waymo (Alphabet's autonomous driving subsidiary) forecasted no legal autonomous level-five vehicles before 2030.

I'm currently teaching my 16-year-old daughter how to drive. Believe me, I wish we had fully autonomous today. Fiat Chrysler will be sold long before the autonomous fleets are swarming our streets.

G&D: Can you run through your Yelp thesis?

SM: The thesis on Yelp is straightforward. When Yelp started, their primary

competitor was the Yellow Pages, which was sold on twelve-month contracts. Initially, Yelp matched this time frame and went to small businesses saying, "Don't

"If you're just investing to make money, the guy who loves investing and is thinking about his portfolio while he's in the shower and while he's walking his dog is probably going to kick your ass."

advertise in the Yellow Pages. Give us \$3,000 or \$4,000 and advertise on Yelp for the year." That's a fairly big ask depending on the size of the business. Eventually, Yelp started testing month-to-month and even day-to-day advertising and found that shorter, more flexible time periods returned greater customer lifetime value than annual contracts. This effectively reduced the cost and risk of a trial period and, not surprisingly, more businesses turned to Yelp. They knew that churn would go up, but bet that would ultimately be outweighed by the increased number of advertisers. Yelp has also started rolling out a non-term model this year. As penetration increases, I think there is an ongoing opportunity to radically increase both the number of

advertisers as well as the lifetime value of those advertisers. They have a long runway.

G&D: That's the type of thing a quant model would not pick up on, as you discussed in your letter, because the historical data doesn't give any indication that it's occurring. How do you evaluate a business that's growing intrinsic value per share that doesn't show up in GAAP financials?

SM: In general, most of the companies we invest in have progress that doesn't necessarily show up on the earnings line. We own a marketing automation software company SharpSpring that is acquiring customers at one-sixth of their lifetime value. I think the most rational way to operate that business is to acquire customers. The ROI on marketing is fantastic. As long as marketing efficiency does not deteriorate, they should acquire, acquire, acquire. In fact, I would borrow money to acquire customers, which is what they eventually did. However, this company will screen poorly on traditional value metrics. Earnings? They have none. Book value? Their main asset is their customer base, which is not valued on the books at all. But, there is enormous value in the customer base if their lifetime values are anywhere close to right. With these technology companies, I end up looking more at customer retention rates, net dollar retention, customer acquisition costs, and growth rates.

G&D: I notice you've been a lot more active on the long side in recent years. How do

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you allocate your time, in terms of idea sourcing, between long ideas and short ideas? Is there a systemic reason why you're not as involved on the short side recently?

SM: We've historically had a long bias. Our longs can be 15%+ (as a percentage of the portfolio) positions. For an individual company short, we tend to take a 1% or 2% position. The upside on a long can hopefully be 5x, while the upside on a short is a double – at best – if it goes to zero. We end up spending a lot more time on the longs. I'm not trying to be market neutral.

G&D: Do you short indices? If yes, can you talk about why and how?

SM: There are a couple reasons why we may short indices. Sometimes we want to take risk off without triggering a tax event. We are heavily long-biased and own many positions with large embedded gains. It's not a perfect hedge, but shorting indices versus selling and going to cash allows me to sleep better. We don't take on a lot of leverage – we might be 110% long and 12% short. It's pretty slim; it's not our core business.

G&D: Any advice for students who are trying to get into the investment industry? How would you suggest they develop their investment philosophy?

SM: In my experience, the hiring process is very idiosyncratic, so I would not read too much into inevitable rejection. If you think you really like investing, the most

important thing to do is to invest your personal account. You learn far more from owning stocks than anything else.

I would also say, quite frankly, that there are higher callings in the world. If investing doesn't really compel you and keep you up at night and excite you, go do something else. There are a lot of ways to make money. If you're just investing to make money, the guy who loves investing and is thinking about his portfolio while he's in the shower and while he's walking the dog is probably going to kick your ass. Only do it if it absorbs and compels you.

G&D: Thank you so much for your time.

Wall Street's GE Bear

(Continued from page 1)



Steve Tusa

the \$30s. After the stock dropped by more than 60%, some Wall Street commentators labeled the call “one of the greatest stock calls of all time.”

Note: This interview occurred on September 5th, 2018.

Graham & Doddsville (G&D): In May 2016, you went from having a No Rating on General Electric to an Underweight rating. Can you talk about your research process and what prompted the call?

Steve Tusa (ST): Absolutely. I got the senior position [at JP Morgan] in 2005, and we have been covering GE since then. We went on restriction because JP Morgan Investment Bank helped them divest most of GE Capital, so that's why we didn't have a rating in 2016. Actually, right before they announced the GE Capital divestiture, we put out a presentation that was one of our “Where we could be wrong” reports. The report basically said, “Look, we're negative today. We understand the stock is cheap. We're trying to get positive, but here are the reasons why we can't.”

A few weeks after we put out that report, GE announces the GE Capital transaction. The stock goes up a lot because the negative thesis on GE in the past was that they have a big finance arm that nobody understands, which is a big risk, and therefore the stock deserves a significant discount on earnings. That had been the drag on GE forever. When they announced they were getting out of GE Capital, the market reaction was, “Okay,

the shackles are off.” The bulls were saying that the divestiture was going to unmask all the great things about GE Industrial.

We went on restriction because of the deal. You're not allowed to do much when you're on restriction because of the wall between banking and research, but you can watch the stock and you continue to maintain a model. You certainly don't send that model out, and you certainly don't talk to clients, especially about things other than pure facts. But it was instructive being on the sidelines and just watching for the better part of a year.

After GE unloaded GE Capital, the company started talking a lot about their digital platform – that's when IOT started to emerge on the scene, and GE was making a big pitch around IOT – which many investors were buying into. Since we were on the sidelines, we got to really step back and absorb what was going on with related expectations. Yes, they were losing a lot of earnings and cash flow with GE Capital, but they said they were going to backfill some of those earnings and cash flow with buybacks and capital deployment, meaning less dilution, while their positioning in IoT would drive a higher multiple.

What we saw was a growing discrepancy between a) earnings expectations and what the end markets were suggesting, and b) earnings expectations and cash generation. Back then the big expectation was \$2 in earnings per share (EPS), and everybody believed GE could get to \$2 in

EPS through cost cuts, capital deployment, and end market growth. The stock was in the high \$20s at the time, and the bull case applied a 20x P/E multiple to \$2 in EPS to get to \$40. What we noticed was the industrial cash flow was not growing as fast as the earnings suggested.

At that time, our tagline was, “Estimates are too high and cash is too low.” We basically thought that their EPS would come in closer to \$1.80 than \$2, of which cash flow would be closer to \$1.50-\$1.60. That may not sound like a big miss, but in the context of my coverage universe, where a lot of companies were beating numbers and many had above 100% conversion of cash flow on earnings, we thought that either the stock was dead money on a modest earning miss, or it could drop by 10-20% on a more significant earnings miss.

Our process for GE was not typical for most of the Street. Our initiation report was 200 pages because a) a lot had happened between the time we went on restriction and the time we came out Underweight, and b) when making a call like this, it's important to be extremely open and honest with clients and the company. Lay it all out there. Show them your work so they can agree or disagree.

That 200-page report was just the start. You start by pulling a little bit of string, but soon you try to pull as much as you can. The more you pull that string, the more your knowledge base enables you to understand data points and news flow and put them in the proper context.

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For example, we had a couple meetings with financial services people regarding GE Capital and its downturn, and I could tell right away that its scope was beyond me. But I had enough of a background to know exactly where to dig and go deep, and soon enough I became like a financial services analyst. With GE and the size of its legacy financial services business, mastery of the balance sheet becomes crucial; you have to understand the complexity of how it all fits together. As you go through the process – we've written 1500 pages on GE in the last two years – it allows you to recognize the next step of the process because you've done the work. But again, the point is that we didn't know everything in 2016. You begin to see the whole picture as you work through it, and this time, probably the biggest swing factor has been the Power business. Here, because of the work we've done, executives from GE's competitors like Mitsubishi Heavy and Siemens will read our work, and they actually start emailing and calling us to talk about the industry.

The research builds on itself in so many different ways. The key to it all is learning; if you're still learning something, you keep going. You don't know when it's going to pay off, but the depth always pays off at some point. For example, a bunch of Power data points have come out in just the last three or four months, and we've written three reports in the last three months about how Power is going to get worse before it gets better. And just today a competitor came out essentially reiterating

our research and cut his price target by 20%. The key is to be out in front of those guys.

G&D: Was the rest of the Street bullish when you came out with that first Underweight rating in May 2016?

ST: Everybody was, yeah.

G&D: What kind of pushback did you get?

ST: The pushback was interesting because there were a lot of generalists in the stock, and generalists don't tend to dive as deep as the analysts do. Our initial call was on cash

“Understand that this is a very long game. Nothing comes in the first several years. I think it takes six years, almost a full cycle, for somebody to really learn the business.”

flow. When GE sold GE Capital, they sent all the cash from those sales up to the parent as a dividend, and their cash flow guidance included those dividends. If you were just looking at Bloomberg you would've seen about \$25 billion dollars of free cash flow, but that included the massive dividends from GE Capital. Inherently, that was a one-time item. So, if you were a generalist and you were looking at GE on Bloomberg, you would've checked the box on free cash flow and said, “Yeah. Okay. Fine.” I remember explaining to

people, “No! Here's how you walk to my free cash flow numbers.” I wasn't even talking about a dramatically differentiated view, I was just explaining the numbers and reporting structure. I mean, even as recently as last year, there were competitor reports showing historical free cash flow conversion that included a GE Capital dividend.

The other big pushback was that I was too negative on the oil and gas market. Looking back, that was probably the easiest layup in this whole analysis. The rest of the stuff was a little more nuanced.

G&D: When a company is cutting costs, how can you tell if they have cut too far?

ST: You have to know the business well enough to be in touch with the channel. Feedback from the channel will either reveal a dip in service quality or a lack of buzz around new products. Often, you'll see it in growth rates versus peers, sales per employee versus industry-specific peers, and SG&A as a percentage of sales. GE was pitching SG&A reductions, but their SG&A was around 12% while peers were around 20%, and a big part of SG&A was pension expenses which is not really something you can cut. Again, if you know the channels you're going to hear feedback regarding the quality of the service, and you can judge from that whether they need to spend more money.

G&D: What were Jeff Immelt's major missteps before he stepped down?

ST: I think everybody would

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agree that when you come in as a new CEO and replace a legend like Jack Welch, it's very hard to walk the fine line of not "resetting." I don't think there was a real reset. He must have known that Welch's performance was unsustainable. A wise man once said that being CEO of GE is like being a head of state. It's a very hard, complex job with many different constituencies.

I think one of the big issues was the culture. Most people who worked there will tell you that bad news was not tolerated, and if bad news were to arise, they would try to do something to make it look better. For example, GE's Alstom purchase, as part of the Power business, was not a good strategic decision – \$10.5 billion of cash they really could have used is currently generating negative cash flow. Same thing, quite frankly, with their Baker Hughes acquisition. Baker Hughes cost them \$7 billion of cash to try to patch up the oil and gas segment as that market collapsed on them. I think those moves are probably a result of the cultural mindset. I wasn't covering the company when Jack Welch was there, but the culture probably needed to change over time. Their new management has acknowledged that. They're working to change it, but it's a hard problem to address with a 300,000 employee company, and it's especially hard to address over a nine-month period when you are constantly putting out fires like internally-sourced CEO John Flannery was.

I've been vocal in our research

about GE's lack of external hires. It's hard to change a culture with people that have been there for decades. I'm skeptical that they can change quickly without some fresh blood. Now, 30% of the board is new, so they've got fresh blood there. And I really admire Larry Culp – I think he's the best CEO our sector has ever had – but I think it takes more than a couple of board members to change the culture of a large organization. That's going to be a long, long process.

G&D: Didn't they reduce the size of the board too?

ST: Yes, they reduced the size of the board as well. It's hard to make quick decisions with a board of 18 people. The old

"The point is that GE went everywhere to grow revenue just to justify the multiple. When you do that, you move further and further out on the risk curve."

board had some very legendary people on it, but I think the new board is much more lean and agile.

G&D: Here's a quote from one of your reports: "Put simply, poorly timed investments to catch up in emerging markets, optimistic growth assumptions for resource-rich countries, and a corporate imperative for market share have left the

company with structural overcapacity, mostly in Power, oil and gas, and transportation." Can you expand on that?

ST: At GE's peak in 2000 – when Jeff took over – GE was trading at around 40x earnings. That was clearly unsustainable. How do you take a \$150 billion company and grow it into something that can actually sustain that multiple? They started moving further out on the risk curve by placing bigger bets in very visible ways. Typically, those bigger bids are going to be more competitive. GE went into Saudi Arabia to try to help them build their Power infrastructure, but Mitsubishi and Siemens were there in the same conference room, bidding for the same projects. GE winds up announcing a \$5 billion deal to build the facility, and they hire 700 locals to get the deal done.

Now what happens to that business? If there's no follow-on order in the next two years, or if there are a bunch of follow-on orders followed by a collapse in oil, you know that they have set up shop for 50 years but ultimately probably only have enough to fill up half of it. You have to go through each press release and understand what the makeup of each deal is, and then you have to watch to make sure there are follow-on orders, and you have to track the returns over time. The Middle East was 35% of demand for gas turbines for several years, while GE is sitting there with this plan to build and service gas turbines that suddenly aren't being ordered. Again, you have to track

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everything. Everybody is probably bullish when that press release comes out. But you put that in the back of your mind and say, "Saudi Arabia, is that really sustainable? Is it dependent on oil prices?" And ultimately, when oil prices go down and people are worried about selling Schlumberger, you think in the back of your mind, "Wait a second, didn't GE have to build that plant and book that order in Saudi Arabia? How much demand was that for them?" You start connecting the dots and realize, "Wow! That's probably not going to end up looking like a good investment." And sure enough, there was an announcement in the press two months ago that Saudi Arabia is now bidding out the service work on GE's gas turbines in the Kingdom, which is the more profitable part.

The point is that GE went everywhere to grow revenue just to justify the multiple. When you do that, you move further and further out on the risk curve.

G&D: What are your big takeaways from covering GE for the past two years?

ST: Read everything you can. Know the balance sheet and the cash flow statement inside and out. Most companies are not this complex and don't have this many moving parts. GE's 10-K is 270 pages, whereas most 10-Ks are closer to 100 pages. Talk to everybody in the channel. Learn about the business and do your own work.

Management teams are going to be bullish about their

businesses. They're leaders, and they're optimistic people by nature. But you're in a seat to take a differentiated view, and if the numbers show you something different, go with it. Don't worry about what other people are saying or what's driving the stock's initial return. If your thesis is right, the stock is going to go where it's supposed to go.

When you have a better base of knowledge than anyone else, go all in and be as vocal as possible. I don't want to overstate the drama, but that's it. And by the way, GE's stock didn't go down until about one year into the call. But by the time something finally started happening in the second quarter of last year, we had already developed a honed-in view of the power market and were able to see through the noise. When they made cautious comments on the second quarter 2017 call, we knew right away what the issue was. I remember pinging my associate Rajat, saying, "Wow, this is it. It's happening." Meanwhile, most of the people recommending the stock probably just asked the company about it and were told something like, "Well, we're still in good shape, and this is temporary." But we knew exactly what was happening. Again, we had read through utility filings to figure out what they were doing with their Power upgrades and how the accounting works. Fundamental research – in-depth fundamental research – absolutely works.

G&D: Do you think GE was ripe for a differentiated view because of how complex the company was?

ST: Yes, 100%. They're a very good marketing company – ecomagination is brilliant, right? Those leading digital industrial TV commercials are great. Outside of marketing, you have this financial beast with three different balance sheets. When you combine complexity and marketing – I don't think we'll ever see this confluence again. Look at Apple – they're not that complex, right? You just need to predict how many iPhones they will sell. Stock going down in a company the scale of GE – this has been a confluence that I don't think I'll see again in my lifetime.

G&D: How do you prepare for a media appearance on CNBC where you only have three minutes to deliver your pitch? What is your mindset?

ST: Well, I'm supposed to wear a suit and tie, but I always change into a golf shirt and vest. Just kidding. No, I just make sure I have the talking points in my head. When you talk about something that you know, you don't need to prepare. This job is a lifestyle. It doesn't consume me all the time, because I love my family and there are other things I like to do, but it does fill the gaps. I was a radio host in college and like to talk, so that also helps.

I interviewed at another bank a long time ago, and the product manager there had a great saying: "Make 'em think, make 'em laugh, make 'em money." I think that's the key to this job. There are a lot of people who are fun who you wouldn't mind grabbing a beer with. Then there are some people who do really good work who

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can make you think. But there are very few who can really make people money.

But if you can do all three of those? That's what I try to do. I didn't go to an Ivy League school which I think gave me a little bit of a chip on my shoulder. That kind of drives you to work harder than the other guy. And I do believe this GE call has been about hard work. It's not about me being brilliant – you should see how I handle my personal financial statements. It's not pretty.

G&D: We usually close by asking for general advice for MBAs heading into the investment management industry.

ST: Wow. Pray that fees stabilize. Just kidding, don't write that. I think intellectual curiosity is key, because that's ultimately what will drive you. Be intellectually curious, but also understand that this is a very long game. Nothing comes in the first several years. I think it takes six years, almost a full cycle, for somebody to really learn the business. I got the senior job at JP Morgan in 2005 and have been covering this group since 1998. It would have been very hard to make a call like this in 2008. So, don't sacrifice the long term for the short term, and build a strong base of knowledge so that when the time does come, you're dangerous. I can look back and think about all the different paths I could have taken, but this is the only path that would have led me to this call. It comes down to your body of knowledge, the team you build, the support from your

managers, all that stuff. I really do believe though, that if you work hard for a long period of time in this business, it's worthwhile.

“When they made cautious comments on the second quarter 2017 call, we knew right away what the issue was...

Meanwhile, most of the people recommending the stock probably just asked the company and were told something like, “Well, we're still in good shape, and this is temporary.”

[Editor's Note: The initial interview occurred on September 5th, 2018, before Larry Culp was named CEO. The following comments were provided to G&D on October 15th.]

G&D: What are your thoughts on the recent development of Larry Culp replacing John Flannery as GE CEO?

ST: As I highlighted back in September, Larry Culp is one of the best CEOs ever in our sector. However, this is a big, complex ship to turn, and the

job in front of him is nothing like the one he had at Danaher. That was all about how effective he was at deploying an abundance of available cash from operations and the balance sheet, as well as building on good businesses and a great operating culture. This is the exact opposite – essentially a work out situation with 50% of the businesses highly challenged and generating negative cash flow, and a highly levered balance sheet that needs to be unwound from years of cultural financial engineering.

Once again, the Street is getting bullish simply because there's a new CEO. We haven't even seen how bad the numbers are, and we have to note that GE further cut already-low guidance when announcing the new CEO. Weak free cash flow and high leverage is a bad combination that we think will ultimately resolve itself in a dilutive way for shareholders. The new CEO is a start to the healing process, but unwinding this financially engineered ecosystem is going to require more than just cost cuts. It's going to take time, and probably much more capital. In the end, we think things get materially worse before getting better.

G&D: Thank you.

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