2018 2H Performance

Our gross return for 2018 was -4.54%, which slightly underperformed the S&P 500 gross return of -4.39% (including reinvested dividend). Our annual compound rate since inception is 11.3%. Our portfolio performance was relatively stable until December, when global stocks were sold off dramatically on fears of rising interest rates and trade wars. At one point the S&P 500 dropped 15% for the month alone. The market plunge results the worst final month for S&P 500 since 1931. By the end of December, we lost about 6.98% in for the month, compared to the S&P 500's loss of 9.04% during the same period. Our historical results since inception in 3Q/2015 are as follows:

	1Q	2Q	3Q	4Q	Full year	Vs	S&P 500
2015	NA	NA	-4.42%	9.51%	4.67%		1.40%
2016	0.39%	-0.07%	1.95%	10.03%	13.87%		11.96%
2017	3.82%	5.45%	6.32%	9.75%	27.77%		21.87%
2018	-0.58%	5.08%	1.05%	-10.05%	-4.54%		-4.39%

For the second half of 2018, Berkshire Hathaway, Broadcom and T-Mobile contributed to the majority of our gains. Facebook, Tencent and Wells Fargo negatively impacted our portfolio. During the second half and especially during December, we did what value investors should do during a market turmoil, prioritize opportunities and buying the most attractive stocks. We significantly increased our position in Alphabet and initiated a large position in Alibaba. We also built a mid-size position in Bank of America and a small position in Micron. We trimmed majority of Facebook slightly below our costs and sold Synchrony at a break-even price. We allocated the proceeds to our new holdings. By the end of 2018, we held 12.1% in cash. Below, we will discuss the main thesis behind the net add and net trim for our holdings:

Existing Holdings:

- ***Net Add:***

Alphabet: (GOOG)
We significantly increased our position in Alphabet during the second half. The average price we have paid for Google is now $1001. While both Google's core business and its long-term bets are as promising as ever, the share price largely unchanged throughout 2018. At $724 billion (as of 2018), Google is sitting on close to $110 billion of cash and generates more than $30 billion of operating income, which is growing above 20% CAGR. In addition, we think that Alphabet's core earning power far exceeds its reported earnings due to share-based comp and investments in adjacent businesses.

Alphabet's long-term success depends on its ability to extend the lead in artificial intelligence (AI). We believe that Alphabet's lead in AI innovation is widening in a manner similar to compound interest. By feeding data into the best AI model, Alphabet is constantly improving its global-scale service. Below are just a few AI products that are emerging under Alphabet's umbrella:

Google Assistant: Google Assistant quadrupled its users in 2018 and is among the fastest applications to achieve more than one billion users globally. To put this growth into context, the widely successful Amazon Alexa sold about 100 million devices accumulatively. Google Assistant is now active in 80 countries and serves 30 different languages. During Google I/O 2018 and CES 2019, Google Assistant debuted several exciting features: the ability to understand two languages at the same time, provide real-time translation in 27 languages, make reservations through AI Robot and much more. The application was also been integrated into many consumer and industrial products. We believe that the rise of Google Assistant will be a main contributor to Alphabet's core search business in the long run.

Google Hardware: After years of stumbles and improvements (the acquisitions of Motorola in 2011 and the Pixel phone series in 2015), Google Hardware has finally started to gain critical mass. In 2018, street analysts projected that Google will generate $8 billion in sales and up to $20 billion in revenue by 2021. Among Google's numerous hardware products, Pixel phone remains the largest contributor. The newly launched Pixel 3 integrates hardware and cutting-edge AI software. The advanced AI technology allows Pixel 3 to take photos that are the same quality as (or better than) iPhone, even though it has only one lens. The Night Sight mode in Pixel 3 can magically lighten up low-light photography. In the long run, we think that Google can do lots of amazing things—from photos to AR—with its AI phone.

Waymo: As quoted by Apple CEO Tim Cook, "a self-driving car is the mother of all AI." Waymo started to develop self-driving cars back in 2009 and has amassed a group of talented engineers in software, semiconductors and vision/perception (more information is available at https://bit.ly/2AuPIkJ). While many autonomous car ventures encountered development challenges or were involved accidents in 2018, Waymo continued to innovate in a responsible way. In 2018, Waymo launched its first commercial self-driving car services in Phoenix. The company also formed a commercial trucking business partnership in Atlanta. We strongly believe that there is a vast, addressable market, including self-driving cars and taxis, trucking, and city management, that Waymo can tap into overtime. Some street analyst put Waymo's future valuation at $200 billion, which is a value that is not reflected in Alphabet's current valuation.

- **Net Trims:**

Facebook: (FB)
2018 was a very tough year for Facebook. The pressure that Facebook faced primarily arose from a combination of different challenges. To highlight, firstly, a series of data misuse instances have significantly damaged Facebook's reputation and drawn heated media exposure and regulatory attention. Secondly, the social frictions have arose globally that present a challenge to democracy. While Facebook's management is spending significant amount of

capital to battle misinformation, it is finding it difficult to balance what policies are right and wrong, which is, in turn, slowly impacting Facebook's ability to innovate. And lastly, while "stories" (i.e., short videos) is widely successful product cross Facebook's key platforms, they are harder to monetize than traditional "News Feed" products.

Apparently, we underestimated the financial impact of these challenges when we first built up our position. Luckily, we have been able to trim more than ¾ of our position at an average price at $163.3, which is slightly below our cost ($175). We allocated the majority of the position to other opportunities as we saw a better risk/reward scenario.

Not everything is bad at Facebook. Despite the political storm, the company has continued to grow its user population and now has over 2.5 billion MAU globally. Several key developments took place during the second half: 1) Instagram is firing on all cylinders and is now estimated to contribute half of the incremental advertising revenue for the company; 2) the management finally decided to monetize its vast user base on Whatsapp and Messenger, after the short video format "Stories" flourished on the two platforms; 3) new ventures, such as Facebook marketplace(800 million users) and Facebook Watch (300 million users), also saw rapid adoption after several new rollouts.

We continue to monitor the situation closely as Facebook trades below market multiples. Nonetheless, our capital has not been compounded since we first started to build the position. We will be more careful in the future when building a position in controversial ideas.

Tencent:
Similar to Facebook, Tencent also encountered tremendous business headwinds in 2018. Firstly, in 2018, the Chinese government froze all gaming approval. Tencent was significantly affected because its largest game, "PUBG mobile," has not been able to generate revenue. Secondly, Tencent is facing strong competition from ByteDance. Tiktok, ByteDance's short video platform, has quickly become a global phenomenon and the company is much more efficient at monetizing web traffic than Tencent. Lastly, Tencent's main competitors, Alibaba, is ahead of Tencent in transforming itself into a data-driven business. The competitive edge of the data-centric model become more apparent in the long run.

Things have recently started to move in the right direction for Tencent. In December 2018, the Chinese government restarted its gaming approval for the full industry. Tencent was recently approved for two of its new games (Jan/24). While it is uncertain whether Tencent will gain approval for making money in its largest game, PUBG, the company has an exciting pipeline of games in 2019(such as DNF mobile) and we expect the company's gaming business to return to growth in 2019.

More importantly, Tencent decided to restructure its multiple business units to better compete with Alibaba and ByteDance. During the process, Tencent consolidated its previous seven business groups into six by putting more teams to work on digital advertising and cloud business.

We view the two developments as very positive developments for Tencent. Despite the recent challenges, Tencent's core platforms, such as Wechat and Tencent Video, are still very vibrant and show strong year over year growth. Tencent Cloud also logged 10B RMB in revenue in its trailing 12 months and are showing strong growth. We remain optimistic about the company's future roadmap.

In the second half, we slightly trimmed our position in Tencent and allocated the proceeds to Alibaba. Looking back, in early 2018 we made the mistake of not trimming Tencent when the valuation was at the high end of its range. Part of the reason we did not sell is because we want to avoid the large federal tax as our initial purchase price of Tencent was low. We will be more price cautious in the future and be more decisive in switching less attractive ideas into better risk/reward opportunities.

- **Other Holdings:**

Berkshire: (BRK)
We slightly trimmed our position in Berkshire in the second half. Berkshire's core business (insurance, railroads and manufacturing) continued to perform solidly under the strong U.S. economy. However, several of Berkshire's largest stock holdings underwent a dramatic sell-off during the second half: Apple (-14.2%), WFC (-15.7%) and KHC(-31.3%). We think that most of Berkshire's stock holdings are strong companies with reasonable valuation (single digits to low teens forward multiples). The majority of Berkshire's holding has ever-growing larger capital return programs. We believe Berkshire's collective holdings will generate both large capital gains and generous dividends in the long run.

In 2018, we expected Berkshire to generate $22 billion pretax income from core operations (excluding insurance underwriting), $5.5 billion from dividends and interest on investment holdings, and another $5 billion from insurance float. All three profit centers are growing at a high single-digit rate. We do not think that the market has assigned a fair value on either Berkshire's operating businesses or its investment portfolios. During December 2018, Buffett protégé Ajit Jain also bought $20 million of Berkshire stocks at $198, thus casting a vote of confidence for the current shareholders.

Broadcom: (AVGO)
We also slightly trimmed our position in Broadcom during the second half. Broadcom's share dropped substantially when the CA acquisition was first announced as investors doubted the rationale of a semiconductor company acquiring a legacy enterprise software provider. The share gradually recovered its ground as the financial benefit of CA acquisition become clear to investors. In its most recent quarter, the management presented a plan to transition CA from a perpetual license business model to a licensing model. In the meantime, Broadcom will lay off most of CA's non-mainframe business (60% of its workforce) in order to focus on its most profitable segments. Combining the two actions is expected lift CA's operating margin to 71% by 2021 ($2.5 billion operating profit on a $3.5 billion revenue run rate). While we are uncertain

that such dramatic move will impact CA's ability to innovate, the financial benefit is clear. In addition, the acquisition will create a large amount of intangible asset on its balance sheet, which can be amortized over time. Such a classical M&A play will significantly reduce Broadcom's annual tax liability for the next few years.

Other than the CA acquisition, Broadcom's core business continues to perform solidly. In fiscal year 2018, Broadcom increased its gross margin and operating margin to 68.4% and 52.5%, one of the highest in the technology industry. The free cash flow is expected to reach $12 billion by 2020. The company has publicly stated its intention to return 50% of its free cash flow to investors through dividends and repurchase. The company recently raised its dividend to $2.65/S per quarter, a 51% increase, implying a more than 4% dividend yield. Broadcom's repurchase in fiscal 2018 also reached $7.2 billion (7% market cap). Given its low multiples and large capital return program, we think Broadcom is more attractive than most semiconductor peers. Over the long run, we will be more focused on whether Broadcom can successfully transition itself from a semiconductor company to a technology infrastructure company. We will adjust our position accordingly depending on its progress.

T-Mobile: (TMUS)
Our position in TMUS performed well during the second half as its business fundamentals remained strong and the odds of the Sprint deal becomes clearer. On the business side, TMUS continues to sign up new users at a rapid rate. In its latest quarter (3Q/18), TMUS signed up more than 774K of postpaid phone subscribers and more than 1.6 million total new customers. T-Mobile's latest un-carrier move, "Team Expect," provides customers with a quick and dedicated real person service rather than the legacy robocalling. We believe that TMUS will maintain its growth rate for a long time as it has gained enough scale to implement its "customer-centric" model in a profitable way. A classical "Amazon flywheel model". In addition, TMUS' plan to integrate Sprint is also in its late cycle of gaining government approval. We strongly believe that the wireless market dynamics has changed dramatically since 2014 and there are much better odds of the government approving the deal.

Wells Fargo: (WFC)
We trimmed more than a third of our WFC position during July/2018 at an average price of $58.6 as we were buying new ideas. The stock experienced a large sell-off during December along with the market. The stock ended 2018 at $46.1 at a $220 billion market cap. We took the opportunity to add WFC as its risk/reward become very attractive. In 2018, WFC remained extremely profitable with $22.4 billion of net income, despite operating under the federal asset cap and heightened expense ratio. WFC is on track to complete its $4 billion expense reduction in 2019 and we expect the company to be more profitable going forward. As discussed in our previous letter, WFC has one of the most attractive capital returning plans in corporate America. The bank repurchased $17.9 billion of its shares and paid out an $8 billion dividend in 2018 (12% of its year end market capitalization). Even after the large capital return program, WFC still sits on a large amount of excess capital. In January 2019, WFC yet again increased its dividend from $0.43 to $0.45 per quarter. We believe that WFC's purchase of its own stock at a single digit PE is very delightful for long-term shareholders.

<u>New Holdings:</u>

Alibaba: (BABA)

Alibaba stocks dropped substantially in the second half of 2018 as China's macro economy worsened and trade war worries intensified. While such concerns are certainly validated, we do not think that the current price reflects BABA's core earning power. We gradually built a large position in Alibaba (>10%) at an average price of $167. While our position is under water, we remain very bullish about Alibaba's long-term potential.

Similar to Amazon, Alibaba is the early adopter of cloud computing. Since 2010, BABA gradually transformed itself into a "data-driven" company and has since build up one of the strongest technology infrastructures in the world. The underlying technologies are very sophisticated and are quite challenging for competitors to duplicate in a short period of time. For example, during the Double 11 sales promotion, Alibaba handled more than $3 billion in transactions in the first five minutes – the same volume that equals a full day of sales for Amazon (Amazon's system crashes for several hours, even on a much smaller scale).

Today Alibaba generates more than $18 billion EBITA from its core commerce segments, which are expected to grow at least above 20%. At a valuation of $357 billion by the end of 2018, Alibaba is slightly above market multiples based on its core business earnings. We do not believe that the street has given credit to several significant businesses that Alibaba has built up in the last several years:

New Retail: Alibaba first announced its New Retail strategy in 2016 amidst tremendous market doubt. Since then, the company successfully acquired Eleme (one of the largest food delivery networks in China), build up Hema stores (one of the highest-grossing grocery stores in China), and implemented cutting edge technology in investees such as Suning and Sunart. While buying one of the companies may seems easy, it is extremely difficult to integrate a combination of them under one umbrella. We believe that Alibaba's core digital infrastructure plays an essential role in such a transformation. Today the "New Retail" is widely emulated by its competitors around the globe.

Alicloud: We think that one day Alicloud will become one of the largest businesses—not only within the Alibaba group, but also globally. On the technology side, Alicloud now offers customers some cutting-edge technology such as PolarDB and Blink. On the business development side, Alicloud has now expanded globally to southeast Asia and Europe. It is now the third largest public cloud provider in the world. One distinct difference of Alicloud in comparison to its global peers is its large government exposure. In 2018, Alicloud formed numerous state and local government partnerships across China. For example, through the City Brain 3.0, a pilot program in Hangzhou, Alicloud can now analyze up to 1.3 million cars in the city real time and provide them with optimal parking decisions. Such a centralized city management program has a large demand in China and the ruling party is also in favor of speeding up its development.

Ant Financial (33% owned by BABA): Ant Financial is one of the very few apps that defy the traffic slowdown in China. Most recently, Ant Financial surpassed 1 billion global users, more than doubling its users over the last two years. This page is too short for us to explain Ant Financial's very large and dynamic businesses, which now range from payment and wealth management to consumer loans, financial cloud services and so on. One thing we want to highlight is Ant Financial's significant capital-raising ability. In June 2018, Ant Financial raised $14 billion from a group of global investors. With the newly acquired capital, we feel that Ant Financial can help BABA to compete in some of its most competitive markets, such as global payment and food delivery market.

Bank of America: (BAC)
During December, we again initiated a mid-size position in Bank of America (>5%) at an average price of $24.9 (we previously brought BAC shares in early 2016 and sold them after the Trump election). During January 2019, we continued to build up our position. While there are many concerns regarding the ownership of bank shares, such as the Fed not raising rates, late cycle fears and trade war worries, we try to estimate the stock's intrinsic value rather than the factors that are moving stock at any given time. We think that it is relatively easy to realize that BAC is significantly undervalued at its current valuation.

After years of investment and expense cuts, BAC has created substantial operating leverage and now generates one of best-in-class business metrics in the U.S. banking industry. In 2018, Bank of America generated more than $28.1 billion in net income with an ROTCE of 16.3%, a metric that was almost unimaginable five years ago. Below is a simple chart that highlights the accomplishments of BAC's management over the last five years. When the universal banking model works, it works beautifully.

	2013	2014	2015	2016	2017	2018
Pre-tax Earning	$16,172	$6,855	$22,070	$25,153	$29,213	$34,545
Efficiency Ratio	77.1%	88.3%	68.9%	64.9%	62.7%	58.5%
CET 1 Ratio	9.6%	9.6%	10.2%	11.0%	11.5%	11.9%
Net Charge-offs	$7,897	$4,383	$4,338	$3,821	$3,979	$3,763
Dividend (common)	$428	$1,262	$2,091	$2,573	$4,027	$5,400
Repurchase	$3,220	$1,615	$2,374	$5,112	$12,814	$20,100
Average Diluted Share outstanding	11,404	11,273	11,213	11,035	10,778	10,237

Similar to Wells Fargo, Bank of America has accumulated a large amount of excess capital in the past. Since the 2017 CCAR (stress test), the bank was allowed to return excess capital to investors. During the 2018 CCAR cycle, BAC is going to return $20.6 billion of repurchases and $5.8 billion of dividends to shareholders, which accounts for more than 10% of its market capitalization by the end of 2018. We believe that such a generous payout can be sustained for period because of its strong core profitability. By repurchasing its own stocks at am amount that is less than 10 times its earnings, we believe that BAC will create significant shareholder value over time.

Micron:
We also built a small position (>2%) in Micron during December at an average price of $31.6. Micron's stock declined sharply in its most recent fiscal quarter as weak demand from continued to weigh down the industry. We have followed Micron since the company acquired Elpida in 2013. While the memory industry is dealing with excess inventory, we think that Micron is fundamentally a different company than it was five years ago. We find Micron to be a structurally more profitable business due to the favorable long-term trend on both the demand and supply side of the businesses.

- Cutting-edge technology and lower industry supply: Before the Elpida acquisition, Micron was two nodes behind Samsung in both DRAM and NAND manufacturing capabilities. After the acquisition, the management executing extremely well on its technology roadmap. Today, Micron is on par with the leader on DRAM technology (1Y nm). In the NAND business, Micron has the most advanced fix-gate 3D NAND stacking technique (96 Layer QLC). The advanced technology gives Micron an attractive cost structure, even during an industry downturn. As the technology migration to a lower node become more complex and capital intensive, we believe that the industry is headed to a sustainable lower supply and higher margin businesses. This "new memory paradigm" thesis is well explained by Alliance Bernstein's analyst Mark Newman and we recommend interested readers to follow.

- Diversified products and secular demand growth: Memory products have become extensively diversified in the last five years as demand for data center, AI and automotive ballooned. In DRAM, products have diversified away from PC and Mobile to many high-end products such as AI related servers and High-Performance Computing (HPC). In NAND, 50% of Micron's NAND products are already in high-value solutions and the segments logged in a 45% gross margin in their most recent quarter despite industry oversupply. Micron also recently brought its stakes in IMSF from Intel for $1.5 billion, allowing the company to extend its solution to enterprise customers.

In its fiscal second quarter 2019, amid industry downturn, Micron is still expecting to generate a 50–53% gross margin, a number that was usually negative in the previous down cycle. Recently, we have also seen encouraging signs as major industry players cut back on aggressive capacity to reduce inventory pressure. For example, memory bookings as a percentage of system wide sales in ASML declined from 64% in 3rd quarter 2018 to 20% of system wide sales in 4th quarter 2018.

We are well aware that Micron operates in a cyclical industry and the price of Micron can significantly fluctuate. Our purchase price is slightly above its book value (105% P/B) and has enough margin of safety. Micron is also returning substantial free cash flow to investors, including a $10 billion repurchase plan and 50% free cash flow to shareholders. At the current depressed value (less than 5 times forward earning), we believe that the buyback will create substantial shareholder value.

Thoughts on Technology:

Since the first investor letter, we have consistently discussed the long-term benefits of technology companies penetrating adjacent industries. The technology firms that did well in this transition are now becoming significant "technology infrastructure companies" that power everything from B2C business to B2B business. The most apparent winners in this race, in our view, are Amazon, Alibaba and Alphabet.

While tech giants' investment in adjacent industries will provide them with long-term financial returns, in the short run, it substantially reduced their reported earnings. For example, we think that our two large investments, Alibaba and Alphabet, are trading at market multiples for their core business earnings – which is not fair to begin with, given their far higher growth rate. In addition, the market has generally failed to give credit to tech giants' biggest investment. Most market participants have not realized that is has taken almost a decade of painful money losses for the tech giants to build up services such as Alicoud and Waymo. Such businesses now either have a very large business scale or significant technology lead. We believe business like Alicloud and Waymo are in their first inning to create a substantial lift to their bottom line in the next few years.

	Reporting Operating Income	Non-GAAP operating Income	Non-GAAP operating from Core business
Alibaba (2018 Fiscal) (Dollar to Yuan at $6.875)	$10.1 Billion	$14.1 billion	$17.3 billion
Google (2017)	$25.9 billion	$28.9 billion	$39.9 billion

Another item affecting tech giants' earning is their large stock-based compensation. While one can argue that stock-based comp is a true expense, the companies we invested in have generally managed their total shares well in recent years as they repurchase the majority of their new shares to offset the dilution. The dilution rate of our holdings is far lower than the majority of growth technology names.

In millions shares	2014	2015	2016	2017	2018	Annual dilution rate
Alibaba	2,332	2,500	2,562	2,573	2,610	2.3%
Alphabet	681	687	691	695	703	0.6%
Vs						

Salesforce	598	624	661	700	734	4.2%
Splunk	105	120	127	134	140	5.9%

<u>Conclusion:</u>

In the past we followed a simple method of buying strong companies that 1) have a strong position in the industry, 2) have reasonable multiples and 3) are shareholder friendly. We believe that owning a group of such companies will give us satisfiable returns over time. Along the way, we might find one or two great opportunities. As before, we are grateful to all the investors that are supportive during the market turbulence. We look forward to reporting to you once again in the first half of 2019.