2019 2nd Half Investor Letter

Our gross return for 2019 was 26.8%, below S&P 500's return (including dividends) of 31.5%. Since inception, our annualized return has been 14.6%, which is greater than S&P 500's 12.8%.

	1Q	2Q	3Q	4Q	Full year	S&P 500 (including dividends)
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%
2019	12.86%	1.36%	0.01%	10.65%	26.6%	31.49%
Total Return					84.4%	72.0%
Annualized Return					14.60%	12.80%

During 2H/2019, all of our positions increased in value as the market rallied. Our financial holdings bounced back significantly after the Federal Reserve paused interest rate cuts. Technology holdings, such as Alibaba and Alphabet, also performed well. However, our largest holding, Berkshire Hathaway, lagged behind the S&P 500 by 4.7% in 2H/2019. At the end of the year, cash accounted for 16.1% of our portfolio. Our large positions in Berkshire and cash were the major reasons we underperformed the market in 2019.

Throughout 2H/2019, we trimmed our position in financial holdings as prices bounced back. We continued to increase our position in Berkshire Hathaway, because we see the company as materially undervalued. We initiated positions in several software companies, such as Elastics NV, Microsoft, and Workday.

In this edition of our biannual letter, we discuss our existing and new holdings as usual, and share some recent observations on technology trends.

Existing Holdings

- **Berkshire Hathaway:**

We continued to increase our position in Berkshire Hathaway throughout 2H/2019. Berkshire now accounts for 19.1% of our portfolio. Our rationale is straightforward: The difference between Berkshire's market value and its intrinsic value is getting wider.

Berkshire's equity holdings had a banner year in 2019, with its equity porfolio growing from $172.5 billion to $237.7 billion (estimated), led by Apple (89.0%), Bank of America (47%), and American Express (32.5%). Described by Buffett as an "ideal form insurance," Berkshire's collection of insurance businesses also performed exceptionally well in 2019, with an underwriting pretax margin of 4% and its float exceeding $127 billion (3Q/2019). Operating earnings from Berkshire's fully owned business edged up steadily in 2019, amid the headwinds from the industrial slow down.

The current pessimism over Berkshire's valuation is due mostly to concerns about a) Buffett's reluctance to deploy its vast $128 billion cash pile and b) Buffett's succession plan. To address the first concern, we estimate that the intrinsic value Berkshire derives from its insurance (including equity investment) and operating business already well exceeds its current market value ($554 billion). We do not think that Berkshire needs to close a major deal for its stock to move up meaningfully. Berkshire's incoming cash is growing faster than its operating earnings for several structural reasons: its growing insurance float, the lower cash tax rate, and the meaningful increase of dividends from its equity holdings. It took decades for Berkshire to couple a large insurance business with a scalable utility business that unleashed the benefits of float and production tax credits. We think the market has underestimated the design genius of Buffett's efficient capital structure.

Regarding Buffett's succession plan, new management was installed in 2018, with Ajit Jain and Greg Abel overseeing Berkshire's insurance and non-insurance business, respectively. Recently, Todd combs, one of Berkshire's two investment managers, was named as CEO of Geico. All managers of Berkshire's largest business have strong track records in their operations. And we see growing evidence of its top executives collaborating closely, to embrace digital transformation. Several of Berkshire's large businesses also have further room to improve their operating efficiency under new management, which Buffett has largely ignored in the past. We have strong confidence that Berkshire's management team will succeed long after Buffett is gone.

- **Financial Holdings:**

Bank of America's (BAC) price increased another 21% in 1H/2019, bringing its 2019 return to 43% (excluding dividends). On the macro side, the Fed paused its interest rate cut, intervened in the repo market, and expanded its balance sheet, which were all short-term drivers for the banking sector in 4Q/2019. We are not macro traders; the two primary reasons we bought BAC shares are a) it is a solid business at a reasonable valuation and b) its fintech platform. We believe that these two reasons continue to support our position in BAC.

On the fundamental side, BAC reported another set of stellar results in 2019, as it has consistently done over the last decade, under the management of Brian Moynihan. Its deposits grew 5%, loans grew 6%, NIM stabilized at 2.35%, NCO remained low at 0.39%, total expenses stayed flat, and the list goes on. Most important, BAC returned $34.3 billion to shareholders in 2019, including $28.1 billion in stock repurchases. As a result, BAC's total diluted shares were reduced by 9% in 2019. With a tangible book value of $19.4 and ROCTE above 15%, we believe BAC continued to be undervalued and its management's commitment to repurchases will continue to improve shareholder value.

As laid out in our midyear investor letter, another key reason we invest in BAC is that we regard money centers as winners in this era of digital disruption. In 2019, BAC's consumer AI agent Erica surpassed 10 million users in 18 months, Zelle payment volume grew 71%, and digital mortgage origination surpassed $11 billion. Despite increased investments in tech, BAC was able to hold its total expenses flat. We think that, with their continuous technology investments, BAC's competitive advantage over smaller regional banks will widen considerably over the next decade. While money centers will always be subject to economic cycles, leading banks such as BAC have the opportunity to get a meaningful revaluation as their businesses evolve into fintech platforms.

On a separate note, we sold our position in Wells Fargo at an average price of $51.8 during 2H/2019 and Jan/2020. We realized a small profit of 4% (excluding dividends) on our remaining shares. We underestimated the impact of prolonged regulation on Wells Fargo's core businesses. Though the bank's shares bounced back after the Fed's decisions, we thought our fund could be better used for other ideas; thus, we exited our position.

- **Existing Tech Holdings:**

Our existing position in tech stocks collectively performed better than the S&P 500 in 2H/2019. With Alibaba leading the gains at 25.2%, Alphabet up 23.7%, Salesforce up 7.1%, and Amazon down 2.4%, we kept our positions in Alphabet and Alibaba stable, added slightly to our position in Amazon, and more than tripled our position in Salesforce.

During 2H/2019, Alibaba continued to show strong user engagement in its core eCommerce business (Taobao & Tmall) as the recommendation feed took off on a large scale. Alicloud aggressively rolled out new versions of high-margin cloud-native solutions, such as PolarDB and OceanBase. Alibaba also took a different approach to competing more effectively with Meituan on "local services." Rather than spending heavily on subsidies through its Eleme platform, Alibaba now tightly integrates local services into its ecosystem. Alibaba various businesses, such as eCommerce, financial services, new retail, and travel businesses, all allocated part of their traffic to promote local services. Alicloud also launched PaaS/SaaS functions to help offline companies digitize themselves more easily. Ant Financial's CEO was named chairman of local services, in charge of implementing the overall strategy. In Nov/2019, Alibaba successfully pulled off its Hong Kong IPO, raising $12.9 billion. Ant Financial is expected to hold its IPO in 2020. We think that, with additional funding and an integrated strategy, Alibaba can scale its local services amid strong competition.

Alphabet's shares performed well in 2H/2019 as its cloud businesses began to show signs of taking market share. Under the leadership of Tomas Kurian, Google Cloud has won several high-profile cloud deals. In January/2020 alone, Google Cloud won deals with Activision, Lufthansa, and Sabre. Our original thesis for investing was that Alphabet's competitive advantage in AI would compound over time. That thesis remained unchanged during 2019. In Oct/2019, Google initiated one of the biggest updates (BERT) to its search algorithm, so that it can better understand natural language. Some of Alphabet's long-term AI projects also started to bear fruit. For example, Google Health announced that its Deepmind AI platform is more effective at spotting breast cancer than human oncologists. Waymo formed a partnership with UPS to test self-driving delivery. Google's potential for using leading AI solutions to transform traditional industries is enormous and wasn't priced into Alphabet's current valuation.

We materially increased our position in Salesforce, and it is now one of our largest positions. Our average cost of Salesforce is now $154.7. As we laid out in the 1H/2019 investor letter, we think Salesforce will be a market gainer in the “new software stack.” We gained more confidence in our position after Salesforce’s investor day, when its management disclosed a new long-term revenue target to double its FY24 revenue to $34-35B. The new guidance implies a 19-20% CAGR, a growth rate very few companies can sustain over the long term. Although many investors previously doubted Salesforce’s acquisition strategy, its management revealed that past acquisitions, such as those of Demandware and Mulesoft, have either maintained or reaccelerated growth under the Salesforce platform. A similar growth trajectory is expected at Tableau. At the end of 2019, Salesforce was trading at a discount, compared to smaller rivals that have a similar growth rate. Given that Salesforce’s free cash flow is expected to balloon over the next few years, we see limited downside risk and a very favorable risk/reward ratio.

Our position in Amazon, however, lagged behind the S&P 500 in 2019. We increased our position in Amazon by 10% during 2H/2019 and Jan/2020. Amazon’s underperformance was due to a) AWS’s intensified competition with Microsoft Azure and Google Cloud and b) Amazon’s large investments in consumer business through Prime One Day. We think the market is overly concerned about the two-bear thesis. On the cloud business side, AWS’s core technology infrastructure runs very deep. During AWS re:Invent 2019, Amazon CTO Werner Vogels unveiled secrets about how AWS’s redesigned computing platform “Nitro System” helped the company innovate faster with EC2 instances. AWS also developed new edge computing solutions, such as Outpost, that allow enterprise to run latency-sensitive workload on premises with build-in cloud architecture. There are countless innovations at AWS. We think that TAM for cloud services is almost unlimited. We are still confident that, even with Azure and Google Cloud gaining momentum, AWS can continue to grow substantially over a long period of time, as long as it focuses rigorously on product innovation and customer service.

Regarding Amazon’s consumer business, Prime One Day is a massive hit among consumers. In 2019, online sales reaccelerated meaningfully on a very large scale. More important, the success of Prime One Day also helped Amazon accelerate its higher-margin businesses, such as its third-party services, subscription business, and advertising business. During 4Q/2019, its third-party services, with $17.4 billion in revenue, reaccelerated to 31% growth, compared with 28% growth a year earlier. In its subscription business, the number of Prime subscribing members surpassed 150 million in 2019, with revenue from subscriptions topping $5.2 billion in 4Q/2019 alone. To put things in perspective, Amazon’s 4Q/2019 subscription revenue was 56% more than Costco’s full-year 2019FY membership revenue ($5.2 vs $3.4 billion). Amazon’s advertising business is also taking shares in the emerging triopoly of digital advertising, with its 2019 revenue surpassing $14 billion and a growth rate of 39%.

New Holdings

During late summer 2019, SaaS sector as a whole experienced significant price decline due to market rotations and concern over high valuation. We took advantage of the selloff to initiate two positions that we have followed for a long time. In addition, we also reinitiated a position in Microsoft. Collectively, the three holdings account for close to 10% of our portfolio.

- **Workday:**

We initiated a midsize position at Workday, at an average price of $164.1. The cloud company saw its shares fall 32% from $224 (July/2019) to $152 (Oct/2019) in a matter of a few months. The sharp drop was due mostly to concern that Workday's core HCM (human capital management) product sales are slowing down as competitors such as Oracle, SAP, and ServiceNow launch competitive cloud-based HCM products.

While HCM is certainly maturing, we think 2020 will be a transition year for Workday. Started in 2005 by former founder/senior management at PeopleSoft, Workday was one of the first SaaS companies to focus on cloud HCM for large enterprises. Workday introduced its financial management product in 2007, and the segment slowly started to take off. Workday's financial solution is now growing 50% annually and accounts for 20% of Workday's total revenue.

Like Salesforce, in recent years, Workday has started to evolve into a platform company through organic investments and acquisitions. Regarding its organic growth, Workday has consistently spent around 30% of its revenue on R&D. In 2020, Workday is expected to introduce its long-awaited Workday Cloud platform and other important functions, such as people analytics, accounting centers, and blockchain for HR functions. On the M&A side, in 2018, Workday acquired Adaptive Insights, a cloud-based financial planning firm focused on medium and small businesses. In Nov/2019, Workday acquired the online procurement platform Scout ERP right after it announced its entry into the procurement market at its developer conference (Workday Rising) in Oct/2019.

The financial impact of Workday's new products will not be material in 2020. Over the long-term, however, we think that Workday will leverage its platform strategy to gain material market share in several large new markets (Financial, Analytics, Procurement, etc). Its customer satisfaction is also consistently above 95%. At $38 billion valuation (end of 2019), Workday forward P/S was around 8.5 times, well below its historical average. We think the risk/reward for Workday is favorable at current price.

- **Elastic NV**

We started a position at Elastic NV at an average price of $65.2. We started following Elastic NV (also known as Elasticsearch) in early 2015, when we were writing a research paper on Splunk. Built on the Apache Lucene Library, Elasticsearch quickly emerged as the most popular open-sourced enterprise search engine among developers, far ahead of its competing solutions Splunk and Solr. Like many other open-sourced software companies, Elasticsearch generates revenue primarily by selling subscriptions to customers who need proprietary features on top of its free version. In the last few years, Elasticsearch has also seen revenue from Elastic Cloud(SaaS) rapidly ramping up.

The main reason we bought Elasticsearch is that we are witnessing the company leveraging its strength in enterprise searches to become more of a big data platform company. During 2019 alone, the company added functions, such as app search, SIEM, and endpoint security. Elastic

Stack now includes many key solutions, such as logging, enterprise searches, APM, SIEM, etc. We think Elastic's platform strategy is highly scalable over time. In 2Q/2020FY, Elastic's revenue grew 63% (CC) to $101 million. Its net expansion rate remains above 130%.

One big concern about Elastic Search is its competition with AWS (Open Distro). The open source battle over AWS has long been a hot topic in the tech community. Elastic's management has commented that the direct competition from AWS is a key motivation for the company to innovate beyond its search solutions. Other than AWS, Elasticsearch has formed partnerships with all of the major public cloud vendors, including Azure, Alicloud, Google, and Tencent.

After briefly reaching $103 in mid-August, Elastic's stock quickly dropped to the low $60s, due to a) a general sell-off in the SaaS sector and b) a delayed government contact. We frequently attend Elasticsearch's user conference, in US as well as in China and have observed that its developer ecosystem continues to widen. With a valuation slightly over $5 billion and forward revenue for 21FY well over $550 million, Elasticsearch's valuation is materially lower than that of its peers. We built a small position and will keep a close eye on the execution of its platform strategy.

- **Microsoft:**

We reinitiated a medium-size position in Microsoft at an average price of $140.7. We made a terrible mistake when we exited our Microsoft position in Jan/2017 at $62.2 for a quick 27% gain. We think that, even after appreciating more than three times since our initial investment, the risk/reward profile for Microsoft continues to be favorable at the current price.

Two secular trends will benefit Microsoft over the next decade. The first secular trend is tech spending as a percentage of GDP. Microsoft CEO Satya Nadella stated that the figure will double over the next ten years. Moreover, Microsoft is the only enterprise software company to capture the need for all layers of the technology stack (IaaS, Paas, and Saas). In the most recent quarter, Microsoft grew its intelligent cloud by 28% in constant currency, driven by reaccelerated growth at Azure (64%) and the strong performance of its server product (12%). Its productivity business also grew 19% in constant currency, with Microsoft Teams adoption exceeding 20 million DAU.

The second secular trend is the democratizing of software tools in non-tech companies. The first year that the number of developers in non-tech companies surpassed tech companies was 2017. Developer momentum is particularly strong within the Microsoft ecosystem, as the company innovates many new functions for Azure DevOps, Github, Visual Studio, and Power Platform. By utilizing Microsoft's developer platform, millions of "citizen developers" are able to design apps quickly and automate business processes without any coding experience. While relatively small in revenue, Microsoft's big bet on developer platforms will be the key to strategically upselling Microsoft Azure and Office products to clients.

Because Microsoft focuses on mostly enterprise software and has less exposure to consumer business, its capital intensity is also relatively low, compared to other tech giants like Amazon or Alibaba. As Microsoft's commercial cloud business scaled up, the company operating margin has improved dramatically over the last few years, from 23.7% in FY2016 to 38.0% in 1H/2020FY. Microsoft returned most of its excess cash to investors through smart repurchases, creating substantial shareholder value. We still think Microsoft's best days are ahead, and we will use market opportunities to gradually build up our position.

Technology Trends

When we first started the fund, we were lucky to recognize that four secular technology trends were converging at the same time and would unleash a wave of digital disruptions. The four trends include public clouds, 3D NAND, faster networking speeds, and big data/AI software. We positioned our fund's new holdings majorly around tech giants, which we expect to be the biggest beneficiary of this digital disruption.

Looking forward, with the arrival of 5G technology, the data explosion is just getting started. New computing architecture and software tools are needed to move data efficiently, reduce latency, and provide insightful analytics. With the majority of incremental data generation expected to run through public/hybrid networks, we have identified several emerging technologies that are essential for 5G/Cloud transition.

- **5G Rollout:**

A buzzword for a long time, the 5G network started commercial rollout in 2019. In the United States, Verizon and AT&T launched their 5G service in 30 cities using mmWave, while T-Mobile started with 600MHZ (low band), and Sprint started with 2.5GHZ (mid-band). In China, China Mobile, China Unicom, and China Telecom launched their 5G service in Oct/2019 utilizing sub-6GHZ. Handset makers are also aggressively shipping 5G phones, with shipment expected to top 250 million units in 2020.

While the kickoff of 5G will be lumpy and it will take another several years for people to fully experience the benefits of 5G, we remain optimistic that 5G will be a key economic driver in time. As Bill Gates pointed out long ago, "We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten."
In an optimized 5G network, communication quality will dramatically improve, with a download speed of 20Gb/s in 5G versus 1/Gb in 4G, latency less than 1ms versus 10mn, and connection density over 1million/km2 versus 100K/km2. A wave of innovations, such as autonomous driving, smart cities, and cloud gaming, will be possible. Cloud giants, such as AWS and Azure, are aggressively forming partnerships with large telecoms to build up their 5G ecosystems.

- **Edge Computing:**

Edge computing is not a new concept. It is a distributed computing paradigm that brings computation and data storage closer to a location near end users, thus improving response times and saving bandwidth. However, traditional edge locations have had to serve many different types of computing OS, reducing their performance. With the rise of public clouds, many edge locations have begun to serve a homogenous cloudOS, such as AWS or Azure. Pushing abstract layers of machine learning models and lightweight databases to the edge infrastructure minimizes the latency involved in making a round trip to the cloud is minimized. As a result, cloud developers can dramatically improve the end-users' experience. This so-called "cloud edge computing" is now widely adopted among technology infrastructure companies.

- **Serverless Computing:**

Pioneered by AWS in 2014 (AWS Lambda), serverless computing is a cloud-native computing architecture that allows developers to build and run applications and services without thinking about servers. It eliminates infrastructure management tasks, such as server or cluster provisioning, patching, operating system maintenance, and capacity provisioning. Serverless computing has gained tremendous popularity among tech start-ups and enterprises, with all major cloud providers investing heavily in this space.

In the last two years, there has been growing evidence that tech companies are leveraging both edge computing and serverless computing to provide a better user experience. The key benefits of "serverless at edge" computing include low latency, the ability to scale globally without provisioning, and better security. One classic example of "serverless at edge" computing is mobile AR apps like Google Lens, which enable consumers to run data-intensive visual analyses in real time.

- **Cloud-Native Architecture:**

In our last investor letter, we discussed the emergence of the "new software stack." The components of the new software stack include NoSQL databases, APM and log analytics, and low-code app platforms. As a collection, the new software stack is on track to reach $136 billion by 2030. The majority of the new software stack's services are expected to be cloud-native, which refers to services that are built specifically to exist in the cloud.

We attended several cloud conferences in 2019 and are gradually seeing more cloud-native companies build their solutions based on "serverless architecture." Acquisitions of cloud-native serverless start-ups were frequent in 2019, particular in the security and APM (Application Performance Management) space. For example, in June/2019, Palo Alto Networks acquired PureSec, a leader in serverless security. In August/2019, VMware aquired serverless security start up Intrinsic. In Nov/2019, New Relic acquired IOpipe for serverless monitoring. In Dec/2019, Check Point acquired serverless security provider Protego.

- **A Snapshot of Cloud Giants' Positions:**

Below is just a snapshot of cloud providers' positions in each of the tech trends we discussed. While large cloud providers have a built-in advantage to ride the secular trends, we are also witnessing many SaaS companies repositioning themselves to embrace the tech trends (edge computing/serverless computing/cloud-native) discussed above. More important, we expect traditional enterprises that prioritized cloud strategies to emerge as winners in their industry.

	AWS	Azure	Google Cloud	Alibaba
5G Partnerships	Verizon	AT&T	Sprint Softbank	China Tower
Edge Computing	AWS Outposts AWS Local Zones	Azure Intelligent Edge	Edge TPU	Edge Node Service
Serverless Computing	AWS Lambda	Azure Functions	Google Cloud Functions	Function Compute
Cloud Native Solutions: Database: Data Warehouse Business Analytics Work Collaboration	 AWS Aurora AWS Redshift AWS QuickSight Amazon Chime	 Azure Cosmos DB Azure Synapse Power BI Microsoft Teams	 Cloud SQL Google Big Query Google Looker Hangouts Meet	 Aliyun PolarDB MaxCompute Quick BI DingDing

Conclusion

As we go into 2020, the stock market has already experienced considerable volatility, due to several black swan events, such as the US/Iran conflict and the coronavirus in China. Regarding the coronavirus, while the virus is easy to spread (probably by people without symptoms), the mortality rate for coronavirus is considerably lower than it was for the SARS outbreak. In particular, we are impressed with the government's centralized actions to contain the virus. While we have no way to measure the short- or long-term impact of the coronavirus's impact on Chinese economy, we have full confidence that China will eventually recover from the virus outbreak. As value investors, we do not trim our positions due to geopolitical events, nor do we buy momentum stocks to chase market highs. We stay focused on finding the best companies that are likeliest benefit from secular technology trends and at a sensible price. We look forward to reporting back to you in midyear 2020.