As individuals and industries come to rely more on digital connectivity, opportunities for growth and disruption follow

For years now, we have been finding companies whose breakthrough technologies have allowed our clients to participate in extraordinary growth. These include not only the familiar tech giants that have driven the public equity markets for years—Apple, Google, Amazon and the like—but also privately held firms such as Skype, Dell, Space-X, Spotify and Uber, to name a few. Whether public or private, large or small, technology companies are expected to continue disrupting industries as diverse as healthcare, transportation and media. Over the past two decades, revenues generated by technology companies in the United States alone have risen tenfold. Much of that growth can be attributed to the incorporation of technology in retail, healthcare, auto and financial services. All of these industries have become tremendously reliant on technology to meet their growth objectives. Moreover, individuals in the developed world are logging on to the internet en masse, while the “Internet of Things” connects devices ranging from televisions to thermostats, to cars.

TECH SECTOR BY NUMBERS
To get a sense of the opportunities presented by the tech sector, consider the trends:

60% of the world’s population will be internet users by 2022, up from 45% in 2017.

$54.5B total spending for information security and risk management in 2018. This is expected to grow at a CAGR (2017-2022) of 8.6% to $74.3B by 2022.

45x global growth of data and communication flow from 2005 to 2014. Projected to grow an additional nine times by 2019.

11 hours connected to media
4 hours on mobile

3x projected growth of cloud data center traffic per year from 2015 to 2020.

4.7 zettabytes in 2015
15.3 zettabytes in 2020

1 zettabyte equals approximately 1 trillion gigabytes

95% of electronics will contain Internet of Things technology by 2020.

INVESTMENT STRATEGY
The future looks bright for technology companies—and their investors
In a recent piece, we focused on the impact technology is having on healthcare and where it is driving progress in areas including diagnostics, genomics, nano-robotics, wearables, DNA sequencing and patient records stored using blockchain. Many of these breakthroughs would not be possible without the progress made in artificial intelligence, machine learning, and virtual and augmented reality, along with huge gains in supercomputer processing power and the increased connectivity among corporate and government research centers.

In the retail space, E-commerce and digital payments have radically altered the consumer shopping experience. In the industrial sector, drones and robots are becoming mainstream, driving efficiencies and improving product quality.

The automobile industry, too, faces significant technological disruption. The car of the future will likely drive itself, communicate with other vehicles, and be powered by an electric or hybrid engine. Moreover, most drivers probably will not own their vehicles; they will share them with the help of a mobile application that connects cars to multiple users. In the not-too-distant future, commuters will likely sit back in their shared vehicles, relax and enjoy the latest episodes of their favorite shows or participate in a video conference with colleagues on the other side of the globe.

The incorporation of these advanced technologies will also require enormous investments in “digital highways”—the infrastructure that includes cellular towers, fiber cables, mobile networks, data servers, etc.—which will create the backbone of the digitalized revolution needed for vast amounts of data to travel seamlessly between connected devices.


THE REIGN OF SOFTWARE AND DIGITALIZATION

Software is the linchpin that allows the technological transformation of our everyday lives. The rapid adoption of technology in healthcare, media and other non-tech sectors has been fueled in large part by increased connectivity, the growth of the Internet of Things, and innovation and application of software.

Software has become the key engine for most industries, and business functions such as operations, process management, workflow automation and data management have become increasingly digitalized. Executives rely heavily on software to wring inefficiencies from their companies, and they have increased their commitment to a digital infrastructure in nearly all aspects of their operations.

Moreover, software-driven cloud technology, which enables us to store, process and share data away from our desktops and local networks, is fast becoming one of the biggest global markets. For investors, software businesses are expected to deliver 22% net margins in 2019, nearly double the margins of the S&P 500.\textsuperscript{10}

Additionally, software companies are increasingly moving to a recurring revenue model (i.e., subscriptions-based or “pay-as-you-go”), creating more predictable and stable revenue streams, and likely to yield more interesting investment opportunities.

What’s more, software companies are staying private much longer, sustained by an influx of capital into private technology companies. This new dynamic calls for different investment models for early- and late-stage investors, as well as different funding approaches for companies. Of the approximately 85,000 software companies in the world, only about 3% are public.\textsuperscript{11}

These private companies are growing quickly: A number of them have reached a $10 billion valuation without tapping the public markets.

PRIVATE BUILDUPS

Software firms are increasingly reaching $10 billion in value without going public.

Source: McKinsey & Company, “Grow fast or die slow: Why unicorns are staying private,” May 2016. For illustrative purposes only.

\textsuperscript{10} FactSet, October 2018.
\textsuperscript{11} Gartner, October 2017.
\textsuperscript{12} Gartner, February 2017.
\textsuperscript{13} Gartner Consulting.
SECURING THE INTERNET

As connected devices become more ubiquitous and our reliance on internet access, data security and the cloud increases, threats to our security rise as well. The annual cost of cybercrime is forecast to hit $6 trillion by 2021, according to Cyber Security Ventures, double the figure for 2016, in part because the scale of cyberattacks has grown. In 2017, occurrences of high-profile data breaches (50,000 or more records stolen) increased by 28% year-over-year around the world.14

CYBERSECURITY BREAKDOWN
(total addressable market)

As the need for cybersecurity solutions grows, so do the possible investment opportunities within that industry. In the 1980s, cybersecurity consisted of just a couple of companies offering rudimentary antivirus products. Today, there are dozens of companies countering diverse threats (see Cybersecurity Breakdown, below left), with each seeking its share of a roughly $54 billion addressable market.

Alongside cybersecurity, data privacy is also top of mind. In a report published by our Global Investment Opportunities Group, we argue that as data privacy concerns grow, software companies trying to address consumers’ privacy concerns could reap strong gains, particularly as the cost of noncompliance with regulators’ data privacy mandates increases. Potential winners in this new regulatory environment could be software and information technology service providers, specifically those addressing identity theft and data access control, which are key to data privacy compliance.

THE TECH SECTOR: STILL A SOURCE OF OPPORTUNITY

The recent volatility in financial markets and the broad selloff in technology names notwithstanding, the future of the sector looks bright. Strong secular growth, the digitalization of almost every aspect of our lives, and the spread of technology across multiple non-tech sectors bode well for technology firms and their investors. Opportunities may exist in companies of all stripes. Private investments, in particular, have longer time horizons and are less volatile than the public markets. The private markets are also home to smaller companies on the forefront of some or many of the most innovative breakthroughs. Of course, investing in such a complex and rapidly evolving sector is not without its challenges, which is why we favor actively managed solutions in this space.


VALUATIONS AND PROSPECTS

Is the technology sector expensive? The answer depends on the growth potential versus the price paid for that growth. Consider the following:

- Technology companies have consistently been the biggest drivers of S&P 500 earnings growth. From 2007 to 2017, tech’s contribution to overall earnings growth in the S&P 500 increased from 21% to 40%.

- Quality of earnings is improving as the sector transitions from cyclical to more secular, there is a declining variability of sales growth, and software companies shift to a subscription model.

- High cash balances provide a valuation buffer as well as dry powder for new investments and stock repurchase programs.

- Technology investments as a share of total U.S. fixed investment surged from 10% in 1965 to 28% today, a trend expected to continue.\(^{15}\)

- Margins in the tech sector are twice as high as the broader index (22% versus 11%). The three information technology industry groups all rank in the top four among S&P 500 sectors on margins, with semiconductors at 31%, software and services at 22%, and tech hardware at 20%.\(^{16}\)

These characteristics paired with tech's more defensive attributes, such as sustainability of earnings and high cash balances, keep us positive on the tech sector's long-term prospects.

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\(^{15}\) BEA, Goldman Sachs Global Investment Research, October 2018.

\(^{16}\) FactSet, October 2018.
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