

FEG INSIGHT

SEPTEMBER 2020



TOMORROW'S TECH,
TODAY'S INVESTMENTS

It's no secret that technology is impacting our lives; tablets act as handheld computers, vacuum cleaners are automated, and Alexa can even order your groceries. But as we live through the worst pandemic in a century, technology's benefits have gone far beyond convenience. We have seen technology help to keep our economy afloat and prevent greater spread of disease and loss of life because of virtual connectivity.

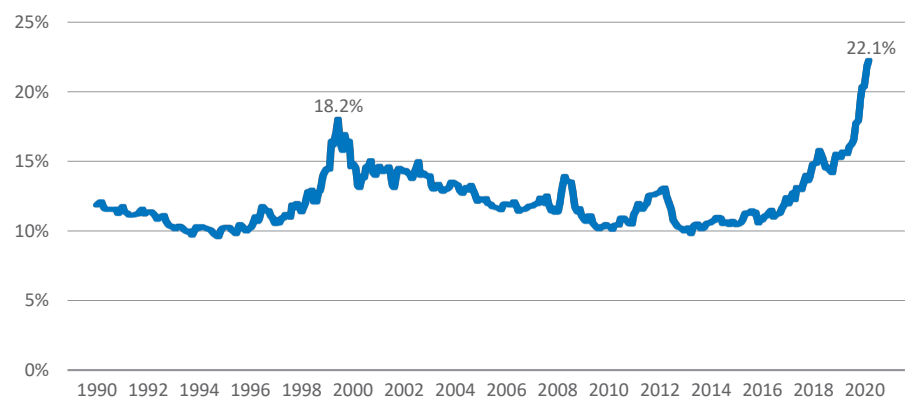
What is a relatively newer phenomenon; however, is the outsized impact the technology sector is having on financial markets. Never have we seen so much concentration in just five stocks, which have come to dominate the markets, all of which are either technology or technology-enabled companies: Microsoft, Facebook, Apple, Amazon, and Google (Alphabet).

Nearly a decade ago, Marc Andreessen famously said, "Software is eating the world." Today, one can safely say that software and technology are effectively eating our stock indexes.

TECH IS EATING THE WORLD

These stocks have grown to mammoth proportions in the indices because, in a low-growth world, investors have been willing to pay ever-increasing prices for these higher-growth, higher-margin businesses. The physical shutdown caused by COVID-19 has only served to make these companies, which exist mostly online and in the cloud, even more valuable. Near-zero interest rates and quantitative easing unleashed by the Federal Reserve in reaction to the global pandemic has poured gasoline on an already intense fire of investor interest in technology-related stocks.

COMBINED WEIGHT OF FIVE LARGEST S&P 500



Data source: Strategas; data through July 31, 2020.

Investors may feel that they have not jumped far enough into the waters of technology and may find themselves intimidated, wondering which strategies will garner the best long-term results, and whether tried-and-true approaches to evaluating stocks will work on something as different and seemingly ubiquitous as technology.

The first and most obvious thing to point out is that today's burgeoning tech market is not perfectly analogous to the Tech Bubble and that Amazon is no Pets.com. Although technology stocks can seem overpriced based on many long-term valuation metrics, these are real companies that generate real cash flows and dominate their respective industries.

During the summer months, the markets seemed to have deemed valuation less important in the short term than other factors, such as growing earnings and competitive power amid an unprecedented period of pandemic-driven economic weakness. Valuations clearly have relevance and are indicative of long-term return potential, but the impact of valuations can take years to fully play out. Nevertheless, high valuations present the risk of reverting to the mean, and the volatility in technology stocks during the first half of September points to this risk.

Further, most institutional investors already have substantial exposure to these stocks. Most U.S. equity strategies follow the benchmarks that these stocks dominate, so by design, these stocks already comprise a meaningful portion of many U.S. equity portfolios.

Instead, investors should be concerned with finding ways to benefit from the technologies of the future throughout the rest of their portfolios without having to chase an increasingly-narrow list of U.S. mega-cap growth stocks.

Technology can take many forms, from software as a service (SaaS), the Internet of Things, biotech, datacenters, and even the remaking of retail into a tech-enabled consumer receiving goods from the warehouse to the front porch. Similarly, investing in technology can take many forms and spans all the major asset classes.

PRIVATE EQUITY

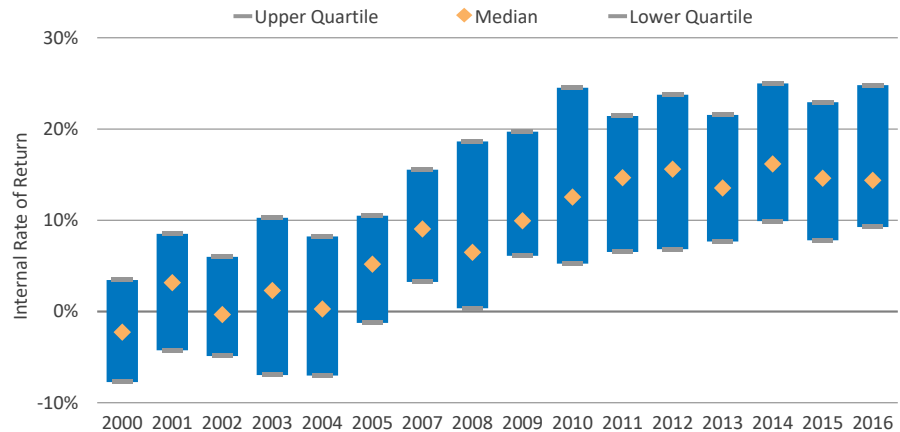
Technology has been a long-time component of the private equity industry with a wide range of entry points. Early-stage venture capital funds typically invest in a company during formation—sometimes even before a working product is sold. Growth equity funds frequently invest in technology companies that have product/market fit but are seeking a capital partner to help bring material scale to the business. Buyout funds commonly invest in more-established technology companies in need of operational improvement to grow or to become attractive acquisition targets for the large technology companies. Technology specialists exist across the private equity spectrum. Crossover investors, such as hedge funds and mutual funds, also may participate in private financing rounds as they seek positions in fast growing companies that might become public.

Private equity funds have benefitted from the strong performance of the technology sector in the public equity markets over the last decade, as this performance has translated into higher valuation multiples for private technology companies.

This is true for buyout funds as well as venture capital funds. Venture capital had been pronounced “dead” in the mid-2000s following the speculative Tech Bubble yet has produced strong returns since that declaration.

VENTURE CAPITAL PERFORMANCE

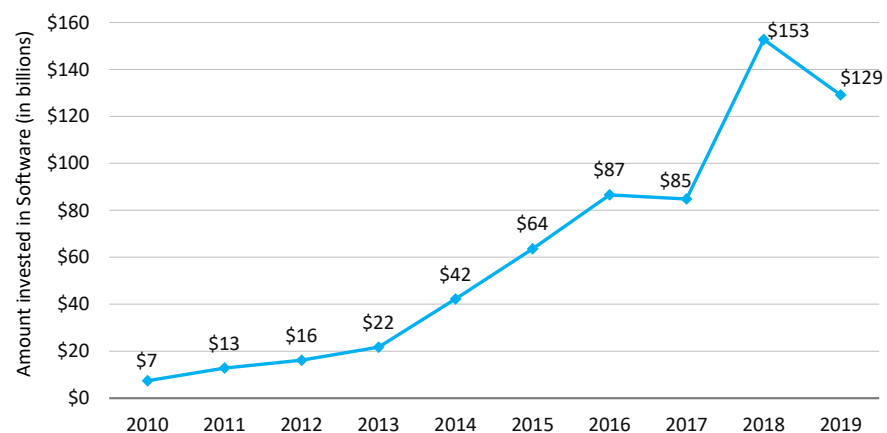
As of March 31, 2020



Data source: Thomson One

Technology companies can offer attractive business model characteristics such as strong growth rates, low fixed costs, and high profit margins relative to other industries, which has not gone unnoticed by the private equity sector. With fund managers seeking growth and the opportunity for returns, private equity investments in technology companies has become an increasingly meaningful segment of the private equity markets. Software specifically, has grown from \$7 billion in 2010 to a peak of \$152 billion in 2018. This is not only in the traditionally technology-focused areas of venture and growth equity, but also heavily within buyout, and encompasses all private equity investing.

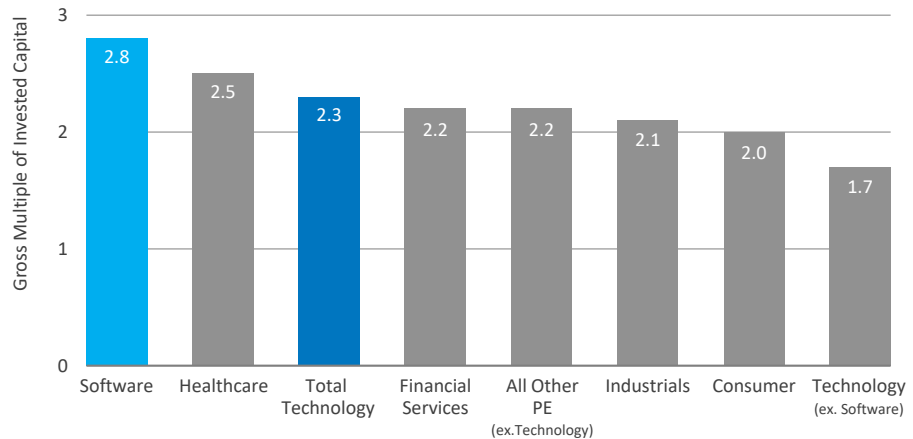
SOFTWARE PE INVESTMENTS GREW NEARLY 20 TIMES IN THE LAST DECADE



Data source: Pitchbook. Data 2010–2019.

The strength of software companies was the key contributor to the performance of private equity and the technology sector. Among fully realized buyout deals from 2010 to 2018, software outpaced all other sectors while the technology sector excluding software lagged everything else.

SOFTWARE EXCEEDS OTHER SECTORS 2010–2018



Data source: Bain & Company Global Private Equity

As investors consider whether the strength of software performance can persist, many of the factors that have driven past returns in these companies remain. These include the digitalization of data, remote working, the need for security, data analytics, and the pressure for higher productivity—which is often facilitated by technological innovation.

In addition to the attractive business characteristics previously mentioned, software companies have been relatively resilient in weathering the current economic crisis. Because these companies run on intangible assets, they have less capital intensity, and do not need to raise capital in the public markets as did the tangible-asset-heavy companies of yesteryear. To a certain degree, that leaves the superstar companies in the public markets, and the up and coming—and often acquired—companies in the private markets. Nevertheless, these attributes and trends come with the risk of the same high valuations witnessed in the public equity markets, with multiples now at all-time highs.

Because of the popularity of technology in private capital funds, investors should take a thoughtful approach to allocating capital. Approximately 20% of private equity fund investments in 2019 occurred in technology companies, some that will succeed and some that will fail, with the majority of that capital being allocated to software companies.

Investors should understand the observed growth trends and business attributes of software companies that can provide opportunities for outsized returns from companies not available in the public markets; however, valuations and market competition increase the risk of poor returns if companies do not achieve their targeted revenue and profitability growth rates. For these reasons, as well as the substantial fundraising in private equity, we believe manager selection is a key to success in the private markets.

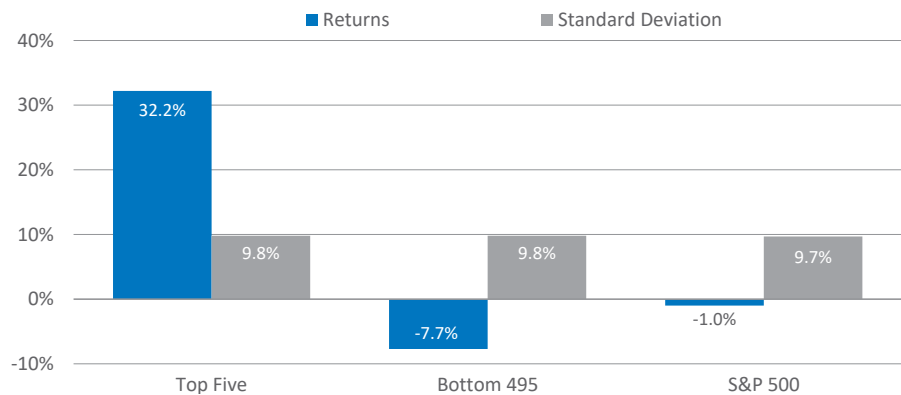
PUBLIC EQUITY

In the years since the Global Financial Crisis (GFC), technology stocks have been a major driver of earnings growth and strong market returns in a period where economic growth was generally lackluster. The success of these technology and tech-enabled companies has meant that growth stocks have experienced consistent and prolonged leadership over value stocks throughout the past decade.

This strong performance has led to elevated valuations versus historical averages that are used to estimate long-term equilibrium. Given the significant size of these large technology companies, valuation metrics for the broad market have skewed higher, but many of the stocks outside these select few technology companies trade at more reasonable valuations, especially when accounting for dynamics of the economy, such as historically low interest rates and low, stable inflation. Further, the shift to greater intangible assets of data, research and development, and the intellect of human capital have altered the way many value investors, Warren Buffett for example, evaluate price when investing in technology and even define value.

WITHOUT THE TOP 5, PERFORMANCE SUFFERED

Top 5, Bottom 495, and the Overall Index YTD Performance



Data source: Strategas; data through July 17, 2020.

FORWARD P/E RATIO

S&P 500 and S&P 500 ex-FANG*

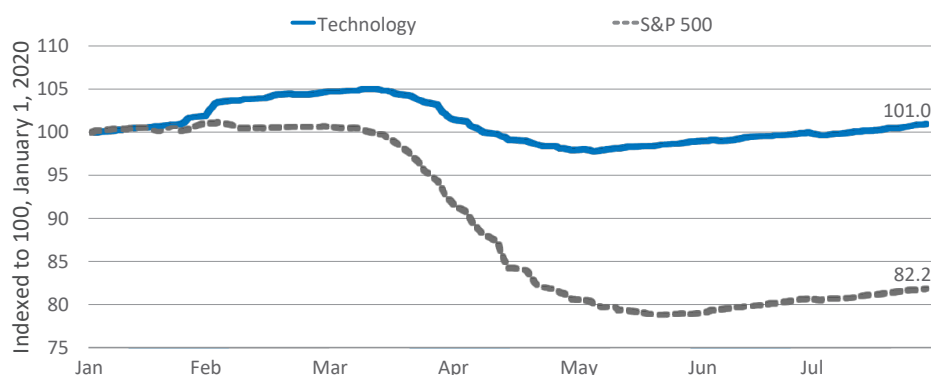


*Facebook, Amazon, Netflix, and Google (Alphabet)

Data source: Strategas; data through July 17, 2020.

Although momentum has been strong for these stocks, the significant price movements have often been supported by strong earnings. This trend persisted through the onset of the COVID-19 pandemic, which brought about the worst drawdown the U.S. equity market experienced since the GFC. The pandemic forced many businesses to adapt to remote settings to survive, which proved to be dramatically positive for many technology companies. The economy's dependency on technology essentially exempted many of these companies from some of the stresses that many other businesses felt during the peak of economic inactivity. Consequently, earnings for technology companies have been more resilient, and these companies continue to grow in importance to the U.S. equity market's earnings and market capitalization.

STABILITY OF TECH HAS CONTRIBUTED TO OUTPERFORMANCE



Data source: Strategas; data through July 20, 2020.

SECTOR CONTRIBUTIONS TO INDEX EARNINGS AND MARKET CAP

	EARNINGS CONTRIBUTION	MARKET CAP CONTRIBUTION	DIFFERENCE
Financials	18.7%	10.0%	8.7%
Industrials	9.5%	8.0%	1.5%
Consumer Staples	8.0%	7.0%	1.0%
Health Care	15.5%	14.9%	0.6%
Utilities	3.5%	3.1%	0.4%
Materials	2.6%	2.6%	0.0%
Communication Services	10.4%	11.0%	-0.6%
Real Estate	2.1%	2.7%	-0.6%
Energy	0.7%	2.6%	-1.9%
Consumer Discretionary	7.9%	11.0%	-3.1%
Technology	21.1%	27.0%	-5.9%

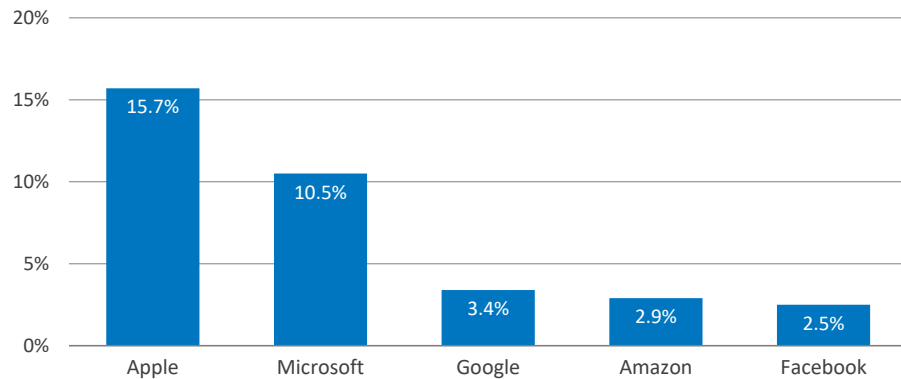
Data source: Strategas; data through July 20, 2020.

U.S. large cap technology companies have a dominant position and account for most of the global equity market's technology exposure, approximately 75% of the technology sector within the global stock index, MSCI ACWI, which covers both developed and emerging nations. However, significant foreign competition remains, presenting opportunities for technology investment in developed and emerging Asian countries, which occupy a significant share of the technology space.

Taiwanese, South Korean, Japanese, and Chinese companies such as Taiwan Semiconductor and Samsung are leaders in the semiconductor industry. Japanese companies, such as Sony and Nintendo, are long-time players in the electronics industry. India has become a competitor in information technology services. Even outside of Asia, in the frontier markets in Africa, newer companies have emerged in the financial technology (fintech) revolution, such as Safaricom in Kenya.

The U.S. continues to be the innovation, research, and development leader, supporting growth and dominance of the U.S. in technology. That dominance, however, is not built solely upon domestic business. The same large cap U.S. technology companies that have been key drivers for U.S. markets generate meaningful revenues in markets outside the U.S., including within one of the largest rivals to U.S. technology leadership, China.

S&P 500 FIVE LARGEST WEIGHTS REVENUE EXPOSURE TO CHINA



Data source: Strategas; data through July 20, 2020.

As China increases its presence as a global leader, technology will clearly be one of China's competitive arenas. Whether it is the race to be a global leader in 5G, artificial intelligence, or ecommerce, China has set its sights on investing and growing its presence in technology. With Chinese domestic markets increasingly more accessible to foreign investors and becoming a significant part of equity indices, investors have an expanding opportunity set to gain exposure to technology in China.

Political and economic tensions will likely influence the relative attractiveness of investing in Chinese technology stocks, but the Chinese government and Chinese businesses will continue to grow their technological presence regardless, creating interesting opportunities for equity investors globally.

REAL ASSETS

Real assets can be viewed through the lens of three broad categories: real estate, infrastructure, and natural resources. Technology influences all these areas on many levels; however, certain sub-sectors are uniquely positioned to benefit in the current environment.

Growth in data consumption by consumers and businesses is a trend that has been accelerated by the move to remote working in the wake of the COVID-19 crisis. Digital infrastructure comprises those assets necessary to support connectivity, transmission, data storage, applications, and communications, and is expected to play an increasingly important role as rising global demand for data drives substantial infrastructure requirements.

Two segments of the digital infrastructure space—data centers and cell towers—offer intriguing value propositions at present. These sectors are unique because they sit at the intersection of real estate, technology, and infrastructure providing the “backbone”

support that allows for the functioning of nearly every aspect of technology—cloud storage, streaming services, data access, applications, and communications.

Not surprisingly, capital flows into these assets was growing significantly pre-COVID-19 and has accelerated this year as investors respond to the impact of the virus on various sectors of the global economy. Along with specialists, data centers and cell towers are becoming a larger component of infrastructure funds, private equity funds, and other large pools of institutional capital, including pension plans and sovereign wealth funds.

DATA CENTERS

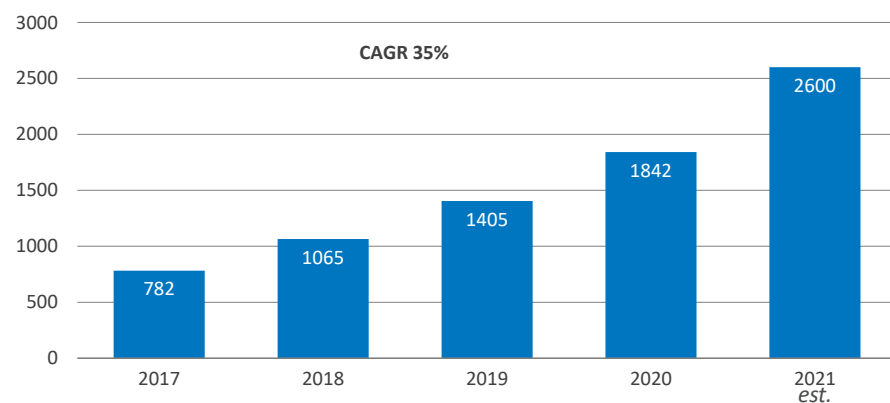
Within the real estate markets, data centers continue to experience strong fundamentals and have proven to be resilient through the recent downturn. As of June 30, 2020, the data center sector of the FTSE NAREIT All-Equity Index was up 19% year-to-date and had an annualized three-year return of almost 16%.

The underlying tenants have continued to experience favorable demand and data centers are proving to be a defensive asset class compared to other real estate property types. Growth in data consumption will likely continue for the foreseeable future, irrespective of economic conditions. Demand has increased from all major users of data: enterprise users, hyperscale cloud service providers, and colocation tenants.

Demand growth is supported by the shift to a more socially distant, contactless economy and remote working. Therefore, data centers have proven to be less impacted by the downturn compared to other real estate property types. Further, resiliency is supported by an environment where businesses' mission-critical technology infrastructure is dependent on data centers.

Global data storage has experienced some strong growth trends well before the pandemic. The major cloud providers and technology companies have made substantial investments in their global data center networks—including building and leasing new facilities—to satisfy current business requirements and meet projections for user demand. Data center owners are also benefitting from a trend among corporate users who are expected to continue outsourcing an increasing share of their data center requirements by leasing space from third party providers who specialize in the ownership and operation of data centers.

GLOBAL DATA CENTER STORAGE CAPACITY (EXABYTES)



Data source: IPI Partners

CELL TOWERS

Closely related to the data center sector is the cell tower industry, which represents a significant growth segment within digital infrastructure. The industry is characterized by a handful of private equity players along with a small number of publicly traded REITs. In fact, cell tower companies comprised nearly 20% of the FTSE NAREIT All Equity REIT Index as of mid-year 2020.

Given the world's insatiable appetite for data, towers have a strong backdrop of growth. In the economic downturn, towers have had almost the complete opposite experience of other real estate sectors. Rents continued to increase due to contractual rent escalators as well as new leases at higher rent levels to account for the increased equipment necessary to support emerging 5G networks.

First generation wireless networks (1G) were designed to improve voice clarity, with limited ability to transfer data. Today, this technology sits in its fourth generation (4G) and can provide data transfer speeds of up to 100 megabytes per second (mbps) as well as facilitate high definition video streaming. Following consumer demand, the fifth generation (5G) of this technology is currently being rolled out and will not only ensure faster data but will offer the potential to interconnect and power multiple devices. As the population continues to increase its dependence on technology, more data will be consumed, supporting demand growth. Wireless data usage in the U.S. is expected to grow nearly 7x between 2017 and 2023.

Long-term risk for tower companies should be lower than other real estate segments, given the secular demand for data in the decades to come; however, the greatest risk in the short term is valuation. Alternatives to the traditional cell tower exist—e.g., satellites, small cells/distributed antenna system—but none of these options have the reliability, economics, or security offered by cell towers. For instance, the network operational expense for satellites is greater than terrestrial-based networks and the capacity is lower. As technology evolves, towers are expected to remain the core of wireless networks for the foreseeable future.

In summary, the data center and cell tower segments of real estate—including other technology and connectivity-related assets—are poised for ongoing growth and benefits from unique characteristics that create a compelling investment opportunity.

FIXED INCOME

Although technology investments are traditionally associated with equities, technology-related investments via publicly traded corporate bonds as well as through private debt investments have been growing.

In the public markets, nearly \$2 trillion in investment-grade corporate bonds is forecast to be issued by the end of 2020. Of the issuance thus far in 2020, nearly 9% has been technology-related, with a year-end estimate of \$160 billion, which is a 40% increase from 2019 technology-related issuance.

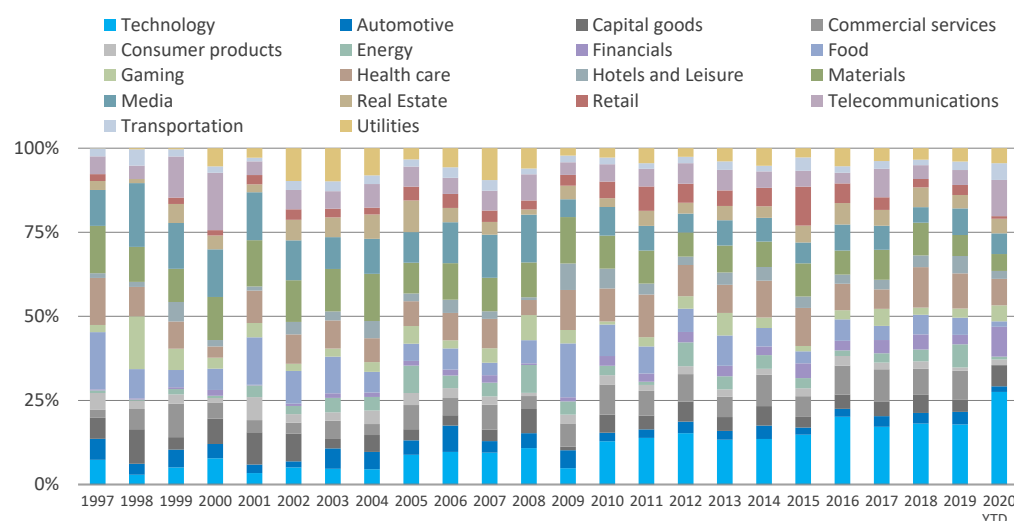
Technology is also a part of the below-investment-grade universe, accounting for over 4% (\$7.9 billion) of the face value of the BAML High Yield Index and an impressive 28% (\$25.9 billion) of leveraged loan issuance.

The amount of technology-related new issuance in the leveraged loan market is at first glance alarming—and is in fact up from 18% in 2019—however, technology-related new issuance in leveraged loans as a percentage of total issuance has previously been in the teens to as high as 20% in 2016.¹ Additionally, a high degree of reissuance gets picked up in the new issuance numbers.

There are several reasons behind technology's heavy reliance on the leveraged loan market. First, technology companies seek flexible capital structures, likely because they tend to grow faster than the average company—either organically or through mergers and acquisitions. As such, their debt issuance tends to be more prevalent in the leverage loan or convertible market, which allows them to more easily refinance and reissue the debt—loans are pre-payable, whereas high yield bonds have steep pre-payment penalties known as call protection.

Finally, below-investment-grade technology companies tend to be of smaller size—i.e., below a few hundred million in earnings before taxes, depreciation, and amortization (EBITDA)—compared to other sectors, leading to less complex capital structures.

LEVERAGED LOANS



Data source: BofA Global Research. Data as of June 2020.

Technology stands out from other sectors in that it is more challenging for traditional lenders to evaluate the underlying collateral of the company before making a loan. Over the years, lenders have been challenged by the hardware versus software dilemma, as hardware-driven companies initially appealed to lenders because they represented a fungible asset that a lender could touch and feel.²

Due to their risk of obsolescence, lenders found software companies more challenging, and only a few traditional banks were willing to lend against the collateral of software companies, specifically focusing on those believed to be mission-critical and which showed the ability to generate repeating and sustainable cash flow. Over time, both asset-based and cash flow lenders grew more comfortable valuing the collateral of software companies and lending to software companies consequently became much more commonplace.

Fixed income investors seeking a higher risk/higher return profile from technology-related debt investments may consider investing in the private debt markets. There are several ways investors can gain exposure to these markets. One option is to invest with a private lender who makes loans to technology companies in a well-diversified manner. Similar to those reasons mentioned earlier, many of these loans will be senior secured, first lien loans with little to no additional debt behind them.

While most investors prefer to diversify their risk, some investors will favor technology-focused mandates such as venture debt or middle-market technology loans. Others will find technology-related opportunities in asset-based lending funds. Alternatively, investors may look at fintech as a way of using technology to their advantage to find unique lending opportunities. Each of these strategies or approaches are viable in their own right, and each come with unique risk/return potential.

DIVERSIFYING STRATEGIES

Technology provides an opportunity for managers of diversifying strategies to do something different. Some investments differ substantially as uncorrelated and opportunistic, such as the Federal Communication Commission's upcoming auction of spectrum, specifically mid-band frequencies, expected to provide support to 5G. Other strategies, such as hedged equity, do not just seek the winners in technology, but know that there are both winners and losers.

RETURN DISPERSION

	+/- 1 STANDARD DEVIATION					
	1-MONTH RETURNS			3-MONTH RETURNS		
	CURRENT AUG 17	30-YEAR AVERAGE	HISTORICAL PERCENTILE	CURRENT AUG 17	30-YEAR AVERAGE	HISTORICAL PERCENTILE
S&P 500	16 pp	17 pp	63%	38 pp	29 pp	85%
Consumer Discretionary	19 pp	17 pp	78%	53 pp	29 pp	99%
Industrials	15	14	68	36	23	94
Real Estate	11	9	76	31	15	93
Energy	17	14	78	37	25	93
Utilities	17	10	89	27	18	90
Materials	17	15	74	35	25	90
Health Care	16	15	67	30	26	81
Financials	11	13	53	27	22	78
Communication Services	11	15	32	28	26	70
Information Technology	20	20	60	35	35	61
Consumer Staples	9	13	13	17	22	23

Data source: Goldman Sachs. Data as of August 17, 2020.

What makes technology truly remarkable is that it reaches outside its own sector and heavily influences the performance of other sectors as well. The healthcare sector is being transformed by biotechnology and novel therapeutics. The financials sector is being transformed by payment companies as society moves away from cash payments. These evolutionary changes create opportunities for discerning investors.

Despite a company operating within high growth areas of the market, there are no guarantees of success, and consequently there are not potential short opportunities. One extreme example, Wirecard, a German payment processor, saw its share price fall from €112 at the beginning of 2020 to around €1 after the business was revealed as a fraud. Several well-known funds were beneficiaries of this due to their ability to short.³ Other examples are those businesses that unfortunately cannot sustain themselves or grow, and harken back to memories of Pets.com.

CONCLUSION

From the underlying backbone of data centers, to online retail and new software solutions, technology clearly is eating the world. While the top five stocks may be highlighted most often, we believe the world is broader and provides investors with a multitude of options for benefiting from technology's progression.

Technology, like all other industries, will have winners and losers and we believe a prudent investment strategy will involve diversification in multiple sectors as well as multiple regions around the globe. There is no retreating from technology's influence, it is here to stay and will likely become a more and more pervasive part of our lives and our investment portfolios, and the future will often lie in discerning good technology opportunities from bad.

¹ BofA Global Research

² ABF Journal. September 4, 2018. https://www.abfjournal.com/%3Fpost_type%3Darticles%26p%3D76557

³ <https://www.wsj.com/articles/short-sellers-made-2-6-billion-off-wirecards-plunge-but-not-without-scars-11592654586>

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