Aquaa Partners Investment Research

The Death of Value Investing and the Dawn of a New Tech-Driven Investment Paradigm

Investors should consider this report as only a single factor in making their investment decision.

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Overview

For almost a century many institutional investors have pursued value-oriented investment strategies centred around an investment paradigm of buying securities, typically of non-tech (and legacy tech) companies, that appear under-priced by some form of fundamental analysis.

In this, the first in a series of research papers by Aquaa Partners, we employ quantitative analysis to examine the shortcomings of this value-led approach and demonstrate how these strategies undervalue the critical role technology companies now play in delivering investor returns.

Our evidence highlights the changing nature of tech stocks and their increasing capacity to confound traditional investment expectations by delivering significant returns compared to traditional stocks. These superior returns, coupled with lower volatility, demonstrate how the fundamental risk-reward relationship in finance is now consistently being broken.

> “…These superior returns [from tech companies], coupled with lower volatility, demonstrate how the fundamental risk-reward relationship in finance is now consistently being broken.”

The long-term perspective

Much investing today continues to be achieved through the rear-view mirror of accounting rather than through the windshield of technological change. However, investing is about the future. Assuming you are not investing on a quarter-to-quarter basis, which is essentially trading, then investment decisions should be made with a long-term view. Indeed, this is the approach pursued by the likes of Warren Buffett and Charlie Munger.

If you thought of the long-term in 1990 you wouldn't have necessarily thought of technology as a driving force. There were PCs, semiconductors, mainframes and various software solutions but the array was limited. No mobile phones, internet or email. 'Tech' was a small, niche sector. Today, tech is the largest of all the sectors and it looks set to continue growing larger because technology is growing exponentially, and into every sector.

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Exponential Growth and Total Shareholder Returns (TSR)

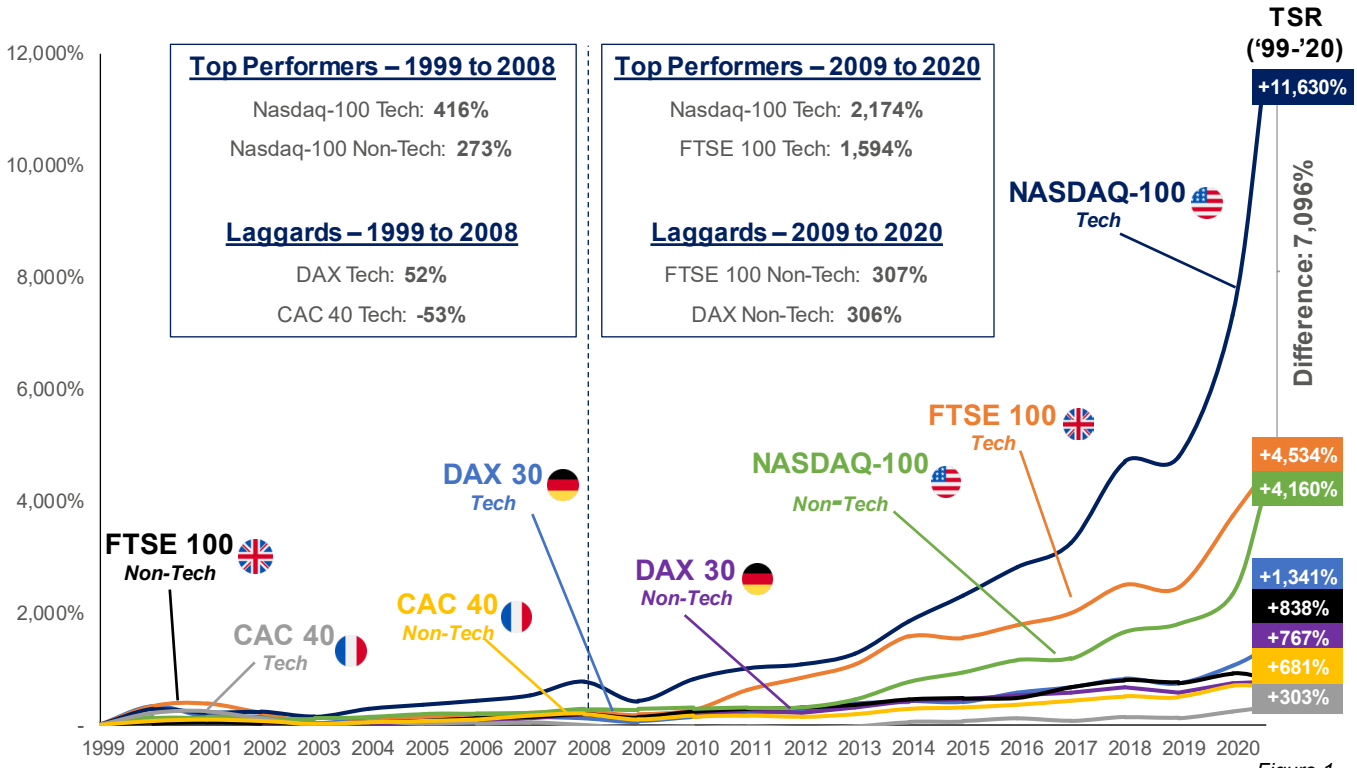
As an investor today, exponential growth is the most fundamental premise you can apply. Compounded total shareholder returns (TSR) demonstrates this. TSR represents capital growth in price plus dividends and stock splits. Figure 1 below illustrates TSR since 1999 of the key tech and non-tech indices[1]. In the 22 years since 1999, the Nasdaq 100 Tech index has delivered a TSR to investors of 11,630 per cent.
This compares to the Nasdaq 100 non-tech index TSR of only 4,543 per cent (despite this non-tech index including Amazon and Alphabet).

The TSR since 1999 of the Nasdaq 100 Tech Index was almost 13 times greater than the TSR of the FTSE 100 Non-Tech index (838 per cent).

Figure 1 also illustrates how these differences have become even more pronounced since 2009 as tech began to pick up exponential speed. The TSR of the Nasdaq 100 Tech Index from 2009 to 31 July, 2020 was six times greater than that of both the FTSE 100 Non-Tech index and the DAX Non-Tech index.

To consider a simpler view of the returns of tech companies versus non-tech companies during different time periods, we can compare the Nasdaq 100, a tech company-heavy index (including Amazon and Alphabet), to the comparatively non-tech company-heavy European indices: FTSE 100, CAC 40 and the DAX 30.

Compounded TSR By Index For Non-Tech vs Tech Companies – 1999 to 2020[(1),(2)]



Source(s): Aquaa Partners, Refinitiv

Figure 1

Note(s): Base 100 as of January 1999. Yearly performance as of 31 December for each year from 1999-2019, and as of 31 July for 2020; (1) TSR - Total Shareholder Return (including capital growth, dividends and stock splits); (2) Tech and non-tech components for the indices are defined by Refinitiv according to each constituent's GICS classification

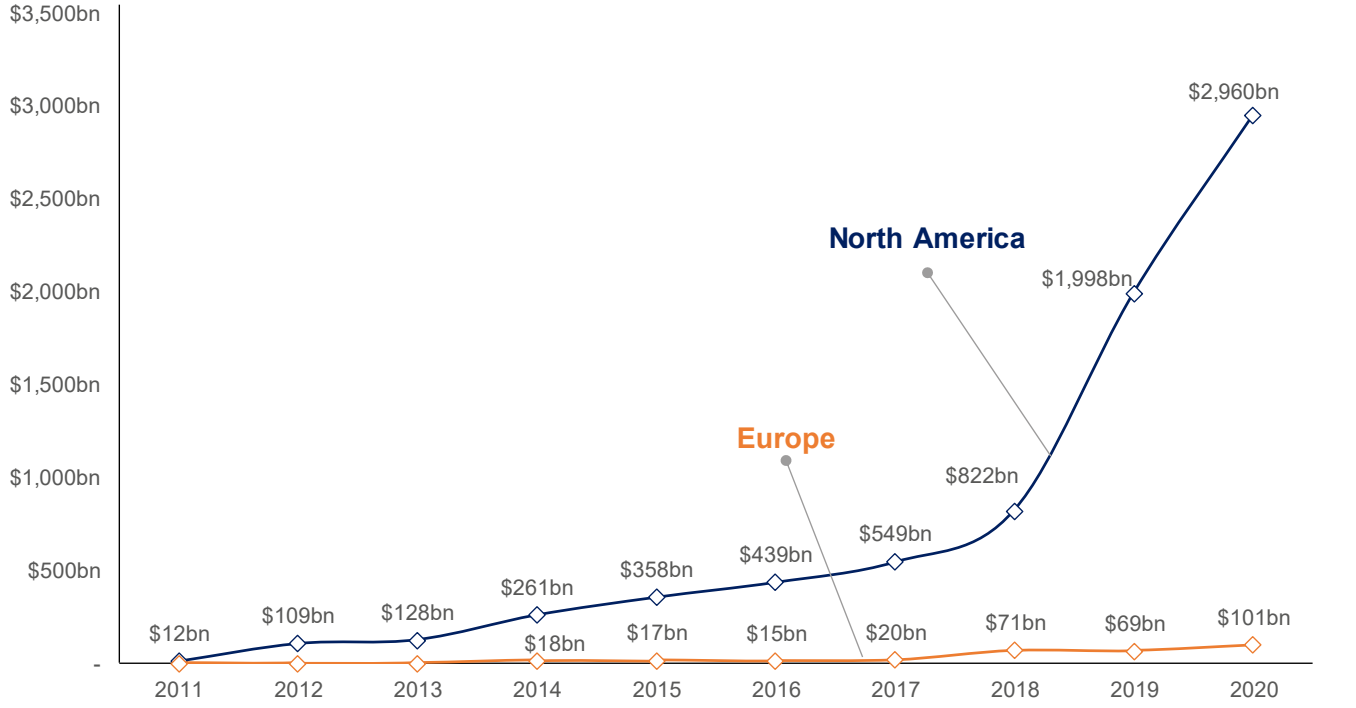
1 - Source: Refinitiv

Major European indices are used to reflect a non-tech element rather than, for example, the Dow Jones or S&P 500 in part because of the wide disparity of market capitalisation value between the North American tech and European tech sectors. As figure 2 shows, as of 31 July, 2020, the market capitalisation of former or exited "unicorns" (private tech companies valued at over $1 billion) in North America was $3 trillion, compared to only $100 billion in Europe[2].

Were this analysis a proxy for all tech companies represented in these geographies, it would suggest Europe's tech sector is only worth three per cent of the North American tech sector, despite European countries boasting a population almost twice that of North America's (747 million versus 366 million, respectively[3]) and almost the same GDP ($21.6 trillion versus $23.2 trillion, respectively[4]).

> "...over a 22-year period technology stocks have delivered an approximate return 15 times greater than non-technology stocks, in spite of the dot-com collapse from 2000 to 2003."

Historical Enterprise Value Of Exited Unicorns To Date ($bn) – North America vs Europe



Source(s): PitchBook

Figure 2

Note(s): Data as of 31 July 2020; Top North American exited unicorns based on exit size include Uber (2019), Facebook (2012), Slack (2019), Lyft (2019), Snapchat (2017), WhatsApp (2014), Twitter (2013); Top European exited unicorns based on the exit size include Spotify (2018), Rocket Internet (2014), Adyen (2018), Zalando (2014), Farfetch (2018)

2 - Data Source: PitchBook / 3 - Source: The World Bank / 4 - Source: The World Bank

The definition of a 'tech company' can vary, but for the purposes of this study we broadly define a tech company as a company that either makes new technology and uses it to differentiate itself (such as Intel), or relies on technology completely to deliver and scale its products or services rather than relying on bricks and mortar (such as Airbnb) or harnesses technology to create a fundamental competitive advantage (such as Amazon).

Using the Nasdaq 100 as a basic proxy for the tech sector (70-80 per cent of the Nasdaq 100 constituents are 'tech' companies) and the European indices as a proxy for the non-tech sector, then we can see from figure 3 below the actual TSR of these indices over four different time periods from January 1999 to 31 July, 2020.[5]

Each time period shows that the TSR of tech far exceeds the TSR on non-tech. Since January 1999, tech, represented by the Nasdaq 100, has returned 13,350 per cent on a TSR basis while non-tech, represented by the average of the returns of the FTSE 100, the CAC 40 and DAX 30 indices, returned only 864 per cent on a TSR basis.

In other words, over a 22-year period technology stocks have delivered an approximate return 15 times greater than non-technology stocks, in spite of the dot-com collapse from 2000 to 2003.

Even in the last five and half years, since January 2015, the Nasdaq 100 has delivered a TSR close to 3.5 times greater than that of the average of the non-tech indices.

Compounded TSR – Tech vs Non-Tech[(1),(2)]

	Tech TSR	Non-Tech TSR	Difference (%)
As of January 1999	13,350%	864%	12,486%
As of January 2005	2,701%	595%	2,106%
As of January 2010	1,228%	551%	677%
As of January 2015	350%	79%	271%

Source(s): Aquaa Partners, Refinitiv

Figure 3

Note(s): Base 100 as of January 1999. Yearly performance as of 31 December for each year from 1999-2019, and as of 31 July for 2020; (1) TSR - Total Shareholder Return (including capital growth, dividends and stock splits); (2) Tech is represented by the Nasdaq-100 index, and Non-Tech is represented by the average of the returns of the FTSE 100, DAX and CAC 40 indices

5 - Sources Aquaa Partners, Refinitiv

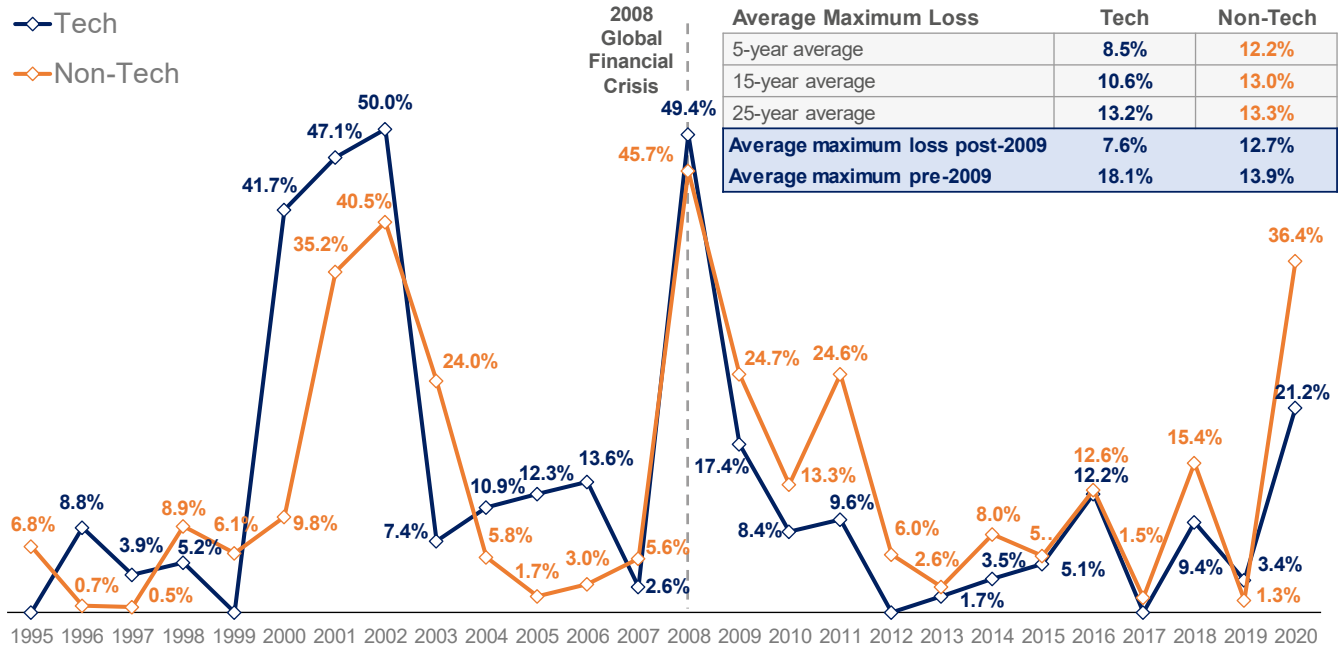
Relative Risk

Despite these significant returns, negative perceptions of technology stocks persist among investors. Fuelled in part by the dot-com bubble, tech stocks are often perceived as being high-risk. Figure 4 examines the validity of this perception by comparing the relative risk of tech stocks to non-tech stocks.

The measure of risk is calculated by taking the maximum point of loss in each year since 1995 from the first day in the year of trading[6]. Yearly averages are calculated, and the figures amalgamated. The exercise is applied to both tech and non-tech stocks. Again, the Nasdaq 100 index is used as the source of tech sector data, while the non-tech sector is measured by the average of non-tech data for the FTSE 100, CAC 40 and DAX 30 indices[7].

Maximum Loss In Year – Tech vs Non-Tech

Tech vs Non-Tech, Yearly Maximum Loss From First Day Of The Trading Year (1995- 2020)[1],[2]



Average Maximum Loss	Tech	Non-Tech
5-year average	8.5%	12.2%
15-year average	10.6%	13.0%
25-year average	13.2%	13.3%
Average maximum loss post-2009	**7.6%**	**12.7%**
Average maximum pre-2009	**18.1%**	**13.9%**

Sources: Aquaa Partners, Yahoo Finance as of 12 August 2020 *Figure 4*

Note(s): (1) Price index only, excluding the effects of currency, tax and dividends; (2) Tech considers the maximum loss for the Nasdaq-100 Index and Non-Tech considers the average maximum loss of the FTSE 100, DAX and CAC 40 indices for each period

> The data shows a paradigm shift. Since the late 1990s, which encompassed the dot-com boom and the emergence of the Internet, to today, the tech sector has gone from being volatile and risky to becoming a safer haven of value.

6 - Only price index data is used, and the data excludes the effects of currency, dividends and tax.
7 - Sources: Aquaa Partners and Yahoo Finance.

The data shows a paradigm shift. Since the late 1990s, which encompassed the dot-com boom and the emergence of the Internet, to today, the tech sector has gone from being volatile and risky to becoming a safer haven of value.

The average of the maximum point of loss for the tech sector from 1995 through 2008 was 18.1 per cent, while for the non-tech sector it was only 13.9 per cent. During these 14 years, tech had a higher maximum point of loss in nine years while non-tech achieved a higher maximum point of loss in only five years.

However, since 2008 a significant shift has emerged. In the 12 years from 2009 to 2020 (seven months to 31 July, 2020), the average of the maximum point of loss for the tech sector was only 7.6 per cent, compared to 12.7 per cent for the non-tech sector. During these 12 years, non-tech had a maximum point of loss that was higher than tech's maximum point of loss in every year except for 2019, in which tech's maximum loss of only 3.4 per cent exceeded non-tech's maximum loss of 1.3 per cent.

A year characterized by market uncertainty owing to the Covid-19 pandemic, 2020 marks an especially notable data point. The high volatility scare that caused the volatility index (VIX) to reach a level of 82 in March 2020 – after having ranged between 10 and 20 during the previous five years – should have caused the more 'high risk-high reward'-based stocks to plummet. Traditionally, these more volatile stocks have been tech stocks. However, in 2020, the opposite can be observed – the high risk, high reward tech stocks declined in value less than the slow growth, non-tech stocks declined in value. The year-to-date maximum point of loss to 31 July, 2020 was only 21.2 per cent for tech, compared to 36.4 per cent for non-tech.

"...in 2020, the opposite can be observed – the high risk, high reward tech stocks declined in value less than the slow growth, non-tech stocks declined in value. The year-to-date maximum point of loss to 31 July, 2020 was only 21.2 per cent for tech, compared to 36.4 per cent for non-tech"

> We are witnessing the emergence of AI, robots, drones, electric self-driving vehicles, 5G, VR, AR, holograms, renewable energy, plant-based meat, vertical farms, 3D printing, blockchain. All this advanced tech is emerging now and is growing exponentially fast

The tech sector's extraordinary TSR over the long-term combined with reducing volatility is neither the result of a price "bubble" nor is it the result of a one-off trend. It's the effect of Moore's Law materialising in all industries as the world becoming more technology dependent. This force is only to going to grow, despite the inevitable market cycles.

Critics may argue that this data mainly represents "Big Tech" or the very largest tech companies such as Apple, Amazon and Microsoft (despite the FTSE 100, DAX 30 and CAC 40 representing the largest companies headquartered in their respective countries) and that Big Tech is therefore unrepresentative of all tech. Such critics also often predict that Big Tech is at risk of a significant fall in value, due either to being overpriced or a likely future victim of regulation and tax. Our view is that when Big Tech falls, smaller tech develops to take its place. The tech industry is characterised by a faster rate of change than traditional industries. This fast rate of change lends itself to greater adaptability and growth. Friendster declines and is replaced by Myspace. Myspace declines and is replaced by Facebook.

Moreover, if the concern is that larger tech companies are at risk of being broken up by regulators, then what gets spun out, split off or severely taxed can, and likely will, still grow. eBay's acquisition of PayPal for $1.5 billion in 2002, and subsequent spin off in 2015 at a value of $49 billion is one example. PayPal has since grown on its own since 2015 to a market value today of $225 billion. Investors in companies such as Facebook should not fear Instagram or WhatsApp being spun off.

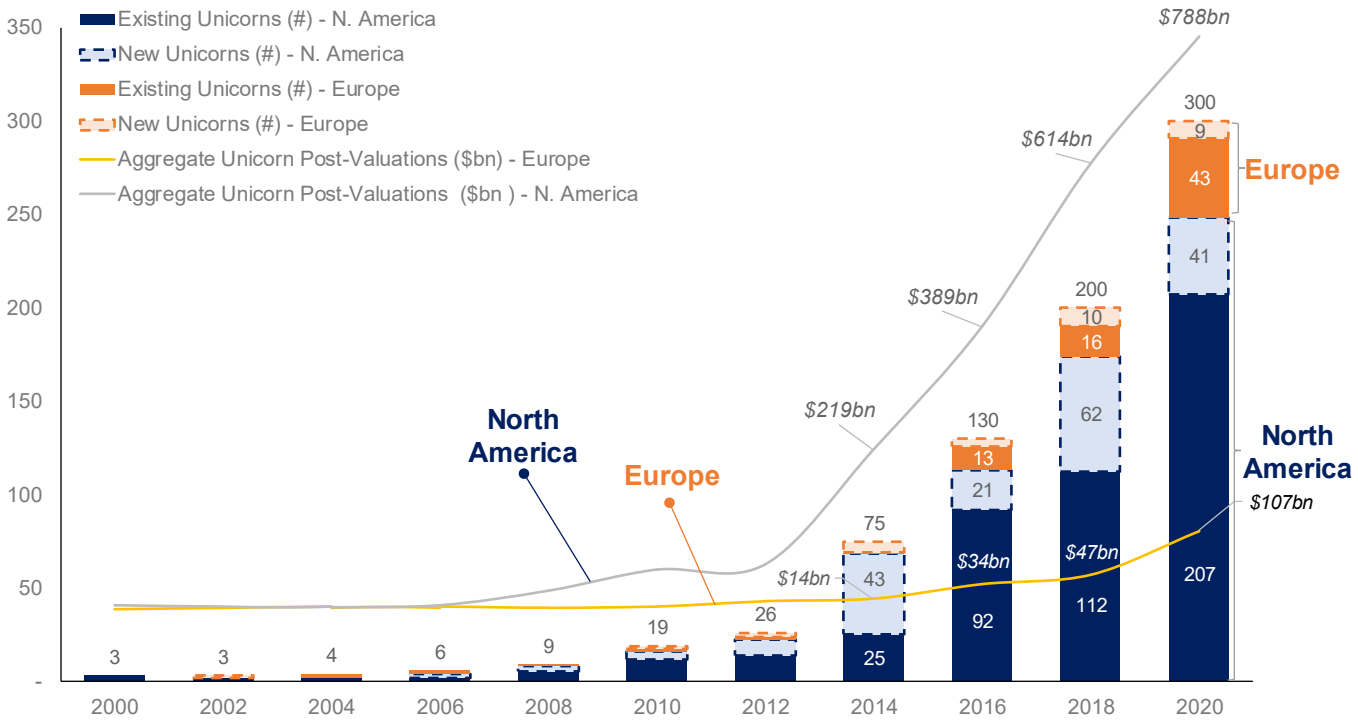
Other investors may argue that, though Big Tech presents a satisfactory risk, in fact the problem with the TSR data presented is that it appears to be focused too heavily on a limited number of big tech companies and not on all tech or smaller tech. Emergent tech companies are in abundance. We are witnessing the emergence of AI, robots, drones, electric self-driving vehicles, 5G, VR, AR, holograms, renewable energy, plant-based meat, vertical farms, 3D printing, blockchain. All this advanced tech is emerging now and is growing exponentially fast.

Unicorns

The first category beneath the larger tech companies are the unicorns, defined as private companies valued at over $1 billion. Former unicorns include companies such as Uber, Slack, Facebook, WhatsApp, Dropbox, Twitter, Spotify and Zalando. Current unicorns include companies such as Palantir, SpaceX, Stripe, Airbnb, Epic Games, DoorDash and Instacart.

Figure 5 shows that unicorn companies have been growing exponentially since 2000 when there were just three unicorns, all based in North America. Eight years later, there were only eight unicorns in North America. However, two years later the number doubled to 16. By 2015 there were 103 unicorns in the region and today there are 248 valued at a combined total of $800 billion[8]. In Europe, the first unicorn appeared in 2002 and 11 years later there were still only four unicorns. However, two years later, in 2015, there were 16 and today there are 52 worth a combined $110 billion.

Cumulative Unicorn Count & Aggregate Post-Valuation ($bn) – North America vs Europe[(1),(2),(3)]



Source(s): PitchBook

Figure 5

Note(s): Data as of 30 June 2020; (1) Aggregate unicorn post-valuation - Latest aggregate valuation for current and new unicorns excluding unicorn exits (IPOs and Private Equity acquisitions); (2) North America consists of data for US and Canada, Europe consists of data for the 47 main European countries and sovereign city-states, as defined by PitchBook; (3) Cumulative number of unicorns defined as existing unicorns + new unicorns - exited unicorns (IPOs and PE acquisitions)

Previous evidence has shown that these unicorns typically go on to grow in value exponentially.

Figure 2 illustrates how unicorns in North America and Europe that have exited (via IPO or trade sale) were valued at $12 billion in 2011. However, this exit market value grew exponentially rapidly by 31 times in only four years to $375 billion in 2015. This exponential growth then increased rapidly in the five years to July 2020 by another 6 times, to $3.1 trillion.

8 - Source: Pitchbook

Venture Capital Investment

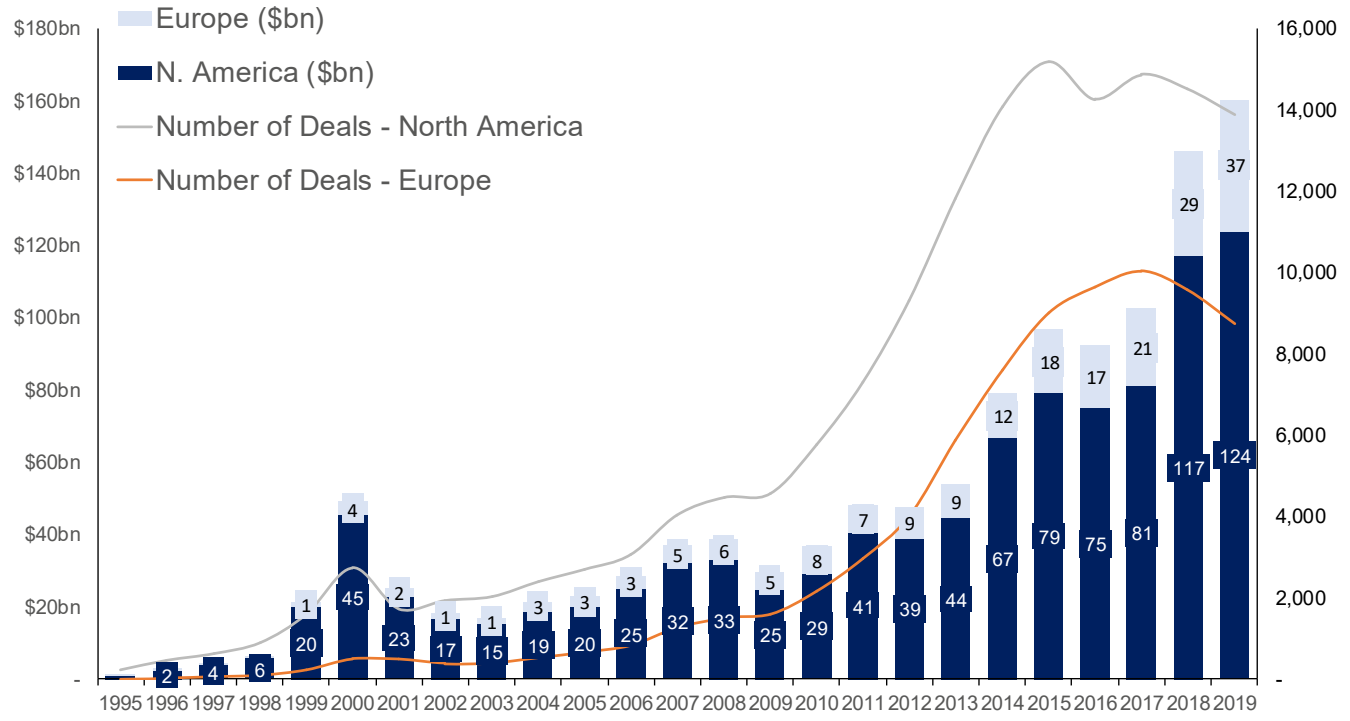
An additional category beneath 'unicorns' and that also demonstrates the growing exponential value of technology companies is reflected in dollars of venture capital invested (at least 80 per cent of venture capital is invested in technology companies).

In 2019, approximately $161 billion of venture capital was invested in 22,645 companies in North America and Europe, yielding an average of $7.1 million invested per company, as shown in figure 6.

By contrast, in the dot-com boom years of 1998, only $6 billion of venture capital was invested in only 979 companies, the majority of them in North America. Over these 21 years the amount of venture capital invested has increased by 27 times, and the number of tech companies receiving venture investment has increased by 23 times.

Even during the dot-com peak year of 2000, a total of only $49 billion of venture capital was invested into only 3,200 companies, which represented just 30 per cent of the amount of venture capital invested in 2019 and 14 per cent of the number of companies in 2019 that received venture investment[9].

Venture Capital Invested And Number Of VC Deals By Year – North America vs Europe[1]



Source(s): PitchBook

Figure 6

Note(s): (1) 2020 excluded due to the impact of the Covid-19 pandemic

9 - Source: Pitchbook

Growth Investing is the New Value Investing

Some investors may argue that the growth in value of tech over the past three decades is just an effect of the 'bond bubble', i.e. of ever-declining interest rates, as shown in figure 7. Since 1981, the daily 10 Year Treasury yield has declined by 96 per cent (1,513 basis points), from 15.05 per cent to 0.71 per cent as of 14 August, 2021[10].

10-Year US Treasury Rate – 1962 To August 2020

Sources: Macrotrends - Note(s): Data as of 14 August 2020

Figure 7

> "Growth investing, i.e. investing in technology companies, is unconstrained; it is not a bubble. On a long-term basis, growth investing delivers a superior balance of risk-reward, i.e. "value", compared to the traditional value stocks. Tech stocks are the new value stocks"

Some experts, such as Bain & Co have argued that declining interest rates have been a primary driver in the growth of private equity during this time. Many say the same about venture capital. However, low interest rates also reduce the attractiveness of fixed income, which is particularly relevant to today since the yield on the 10 Year Treasury is at all time-lows. It is not just the United States that is experiencing ultra-low rates. As of late July 2020, the yield on the ten-year sovereign bonds of eleven European countries was negative[11].

10 - Source: Macrotrends / 11 - Source: Quilvest.

As a result of these ultra-low interest rates on sovereign bonds, investor appetite for bonds and fixed income has diminished with many fixed income investors increasing their exposure to dividend yielding equities. Low interest rates have allowed low growth, generally non-tech, traditional, 'value'-based companies to generate cash flow, which has allowed them to maintain if not increase their dividend payouts.

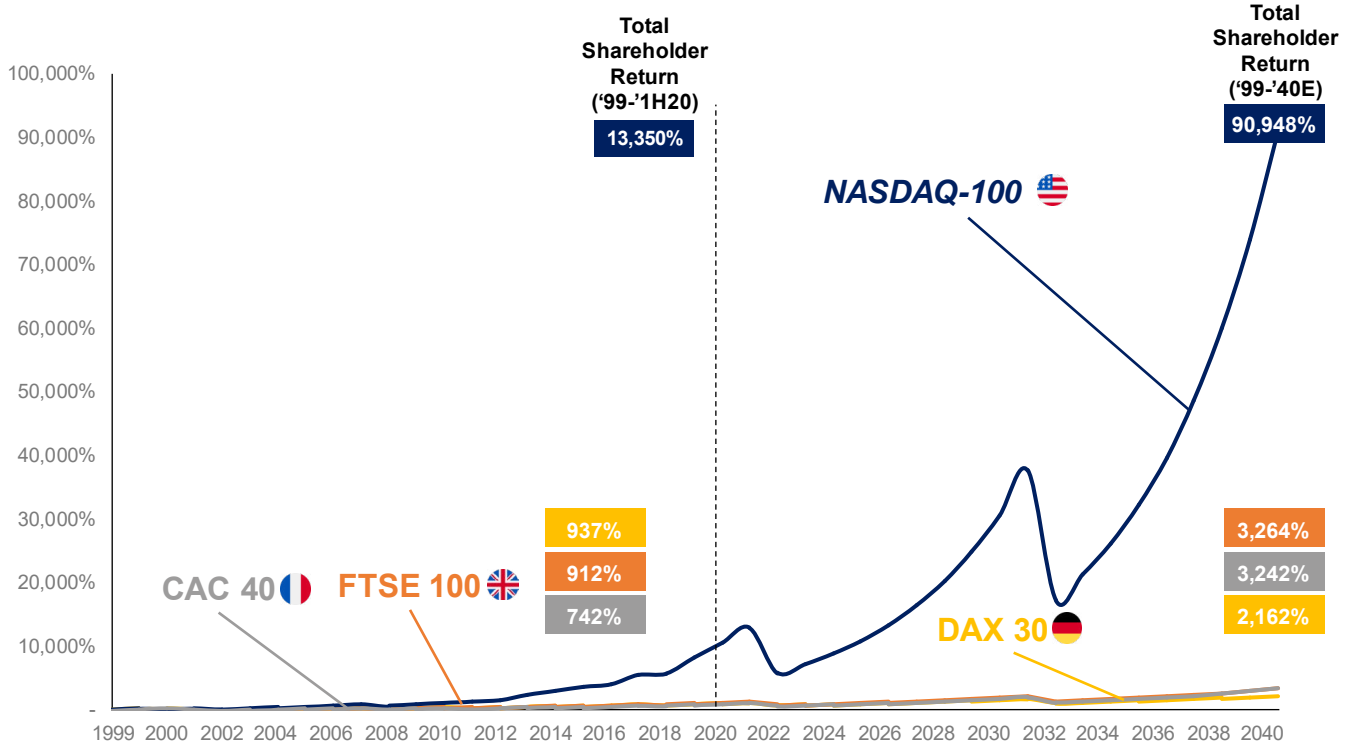
However, the data presented in this study demonstrates that investing based on dividend yield does not come close to matching the growth in value of technology stocks. This shift combined with both the recent reversal of the risk-reward dynamic shown in Figure 3 and the continuing deterioration of cash flow (on a real value basis) at traditional companies makes it more challenging for them to continue to pay dividends as they have in the past. This in turn means that value investing is constrained.

Growth investing, i.e. investing in technology companies, is unconstrained; it is not a bubble. On a long-term basis, growth investing in tech delivers a superior balance of risk-reward, i.e. "value", compared to the traditional value stocks. Tech stocks are the new value stocks.

Over the next 20 years we are likely to witness peaks and troughs due to the cyclical nature of financial markets. But, what is unlikely to change is the exponential nature of the growth of tech and the stagnation of non-tech from an investment perspective.

If we extrapolate the last 20 years of equity growth and project them into the next 20 years then tech offers the most attractive investment destination. Figure 8 shows an estimate of TSR for the Nasdaq 100 and the three European indices for the next 20 years.

Illustrative Example Of Exponential Growth: Forecasted TSR For The Main Indices[(1),(2)]



Source(s): Aquaa Partners, Refinitiv

Figure 8

Note: Actual yearly performance as of 31 December for each year from 1999-2019, and as of 31 July for 2020; (1) TSR - Total Shareholder Return (including capital growth, dividends and stock splits); (2) Returns for the indices from 2020 onwards were calculated using the average returns from 2014-2019, with predicted market downturns in 2022 and 2032

These TSR projections from 2020 to 2040 include the assumption of a major market crash in 2022 (assumes a 55 per cent decline in the Nasdaq 100, a 30 per cent decline in the DAX, a 37 per cent decline in the FTSE 100 and a 37 per cent decline in the CAC 40), and another market crash in 2032 (assumes a 54 per cent decline in the Nasdaq 100, a 35 per cent decline in the DAX, a 37 per decline in the FTSE 100 and a 42% decline in the CAC 40). Apart from these market crash points, the assumptions of the index projections reflect an approximate extrapolation of the TSR of the indices for the six years from 2014 to 2019 (23.1 per cent for the Nasdaq 100, 9.2 per cent for the DAX 30, 11.6 per cent for the FTSE 100 and 13.7 per cent for the CAC 40).

> “... we estimate the TSR of the Nasdaq 100 index to grow exponentially to a model level of 90,948 in 2040, representing an increase of over 90x in total TSR from 1999”

If we assume a Nasdaq 100 starting point of 10,424 (not the actual Nasdaq 100 index price but the measure used in our model) for the end of 2020 (which represents an assumed decline in TSR from July 30, 2020 to December 31, 2020 of approximately 21 per cent), then we estimate the TSR of the Nasdaq 100 index to grow exponentially to a model level of 90,948 in 2040, representing an increase of over 90x in total TSR from 1999, which was near a market top for tech. (Despite the near market top in 1999 as a starting point for the index, the TSR of the Nasdaq 100 from 1999 to 31 July, 2020 was still 13,350 per cent (starting from 2002 the TSR would be significantly greater)).

The increase of the Nasdaq 100 level to 90,948 in 2040 in our model represents an increase of nearly 9 times from the end of 2020, despite the assumed more severe impact of the market crashes on the Nasdaq 100 compared to the other indices.

It is important to note that the projected TSR gains from the non-tech indices, specifically the FTSE 100, the DAX 30 and the CAC 40, will be less than a tenth of the TSR gains generated from the Nasdaq 100 when taking the 40 years from 2000 to 2040 into consideration. For example, the TSR projected to be generated by the CAC 40 represents only 7.8 per cent of the TSR projected to be generated by the Nasdaq 100 (the CAC 40 grows from a base of compounded TSR of 94 in 2000 to 3,242 in 2040, the Nasdaq 100 grows from a base of 206 in 2000 to 90,948 in 2040).

Based on these results and projections, the non-tech indices will be less attractive to long-term investors. The majority of companies represented in the non-tech indices are at risk of stagnation rather than growth.

The long-term risk is that that those traditional companies that fail to embrace technology (and technology companies) risk becoming commoditised. As the value of these companies diminishes, they will become less relevant. Kodak, Blockbuster, Toys'R'Us, Sears, Hertz, GE, Thomas Cook are all examples of this trend.

Furthermore, as companies become less relevant, they lose customers, and struggle to attract talented individuals and capital investment. They often fall into a vicious cycle of value destruction.

With the exception of quarterly returns focused trading strategies, a long-term 'value' stocks investment strategy is unlikely to offer significant gains, particularly when compared to technology company-based growth stock strategy that will inevitably grow into value.

Conclusion and Recommendations

Our findings offer compelling evidence for the shortcomings of the traditional value investment-led approach over the long term, particularly investment in non-tech companies. The evidence demonstrates how these value investment strategies often undervalue the critical role technology companies now play in delivering investor returns.

It also reveals the shifting nature of tech stocks and their increasing capacity to confound traditional investment expectations by delivering significant returns compared to traditional stocks coupled with lower volatility.

Despite what we regard as a realistic estimate for the 20-year time horizon for the technology sector (i.e. the 2020 to 2040 exponential index curve), we also recognise that there are factors that may disrupt our forecast. Rising interest rates and inflation, for example, can cause havoc to financial markets. But these are unlikely to halt the growth of tech over the medium term. They are more likely to be disruptive to non-tech companies.

The greater threat is the decline in the value of the US dollar, which is probable in the medium to long term, at least in comparison to Asian currencies. We can also expect a decline in the value of the Euro. However, the US dollar is at risk of losing its reserve currency status sometime over the next decade, which would likely cause a market crash. Digital currencies are on the ascent, and China at the forefront, with Alipay and WeChat Pay among several that are disintermediating and democratising the way finance is carried out. 'China Tech' shows promise as an investment opportunity, particularly in digital consumer finance in which China leads the world.

As these macro risks are outside of investor control, it is wise to hedge. Few investors would want to be entirely exposed to equities over the long-term. The best long-term hedge is not to be long in non-tech equities as part of your diversification, but rather to be long in inflation-protected assets such as property, fine wine, stamps, gold and cryptocurrencies as well as cash and having an allocation to a correctly timed, very careful selection of bonds or interest-bearing securities.

Based on our findings, we recommend long-term fund-managers should:

1

Invest the same amount in tech every month because no one can time the market, at least not consistently. This way an investor can catch the market bottoms as well as suffer from buying as the market tops.

2

Invest in a basket of tech companies, the best ones you or your advisers can find, or the best tech indices, and then don't touch them. Buy and let them sit. Don't sell. The losses from the few bad ones that die off will represent a small fraction of the massive gains an investor can accumulate on a pre-tax compounded basis from the ones that go on to gain 10 times or 100 times.

3

When a market crash has clearly arrived because the markets are consistently showing lower lows and lower highs over a period of several months and a state of maximum pessimism is being reached, then you can plan a special one-off "bottom" purchase. Allocate your one-off purchase to the highest quality tech companies on the planet, and also consider buying out-of-the-money long-term options. As Warren Buffett said, "price is what you pay, value is what you get."

4

Apply geographical diversification to your tech stocks. The next 20 years in tech are going to be as much if not more about Asia and China than about North America, so be sure to have a mix of tech stocks from North America, Europe and Asia.

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