



# The Byte-Sized Economy

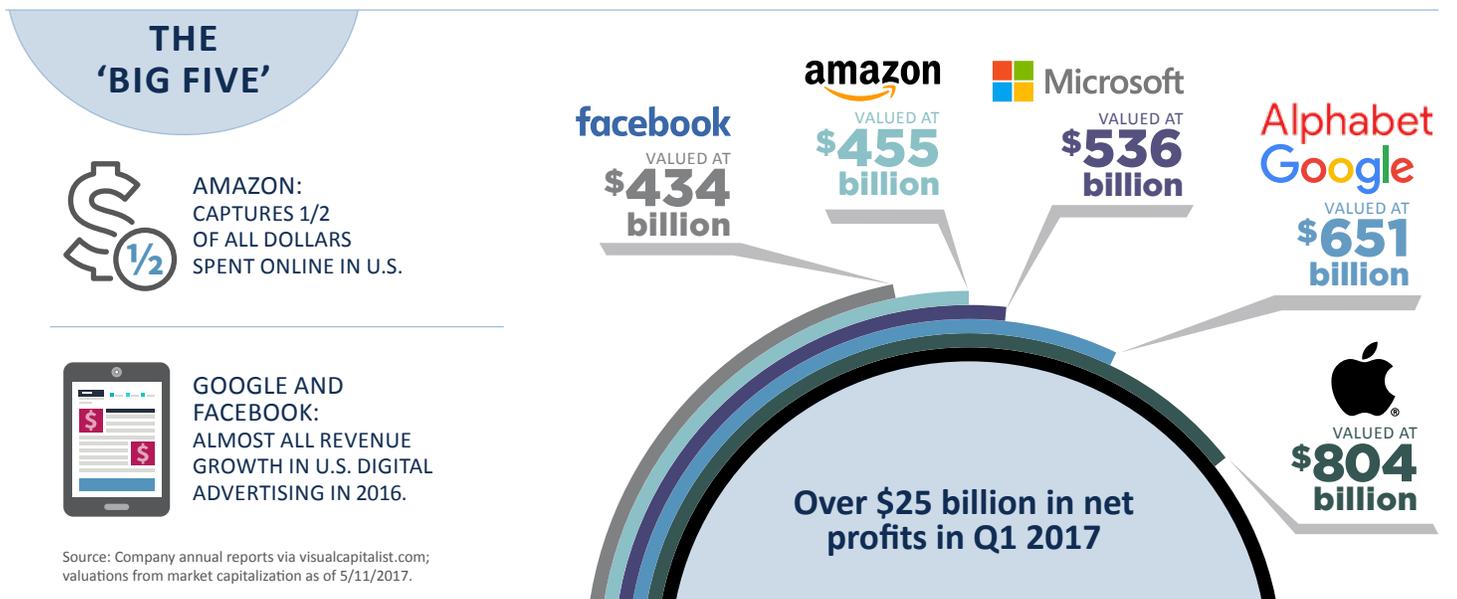
**Andrew Adams, CMT, Senior Research Associate, Equity Research,** discusses how the increasing connectedness of data and technology are shaping our economy.

The 2014 Christmas episode of Netflix’s *Twilight Zone*-style series, *Black Mirror*, eerily presented a near-future world where tiny, portable devices can be implanted into the heads of willing consumers to collect all kinds of data. That data is then used to create digital ‘cookies’ of the participants that can automatically control many aspects of daily life – from making toast each morning just the way you like it to managing your entire ‘smart home.’ To some, this *Jetsons*-esque level of technological involvement is frightening, while others see it as the natural evolution of our increasingly connected society. Like it or not, it does appear to be the direction our world and, by extension, our world economy is headed – and it’s probably going to happen much sooner than most believe.

## THE FUTURE, TODAY

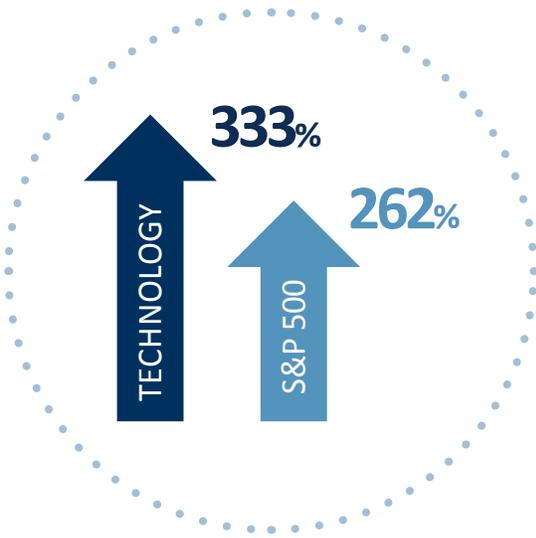
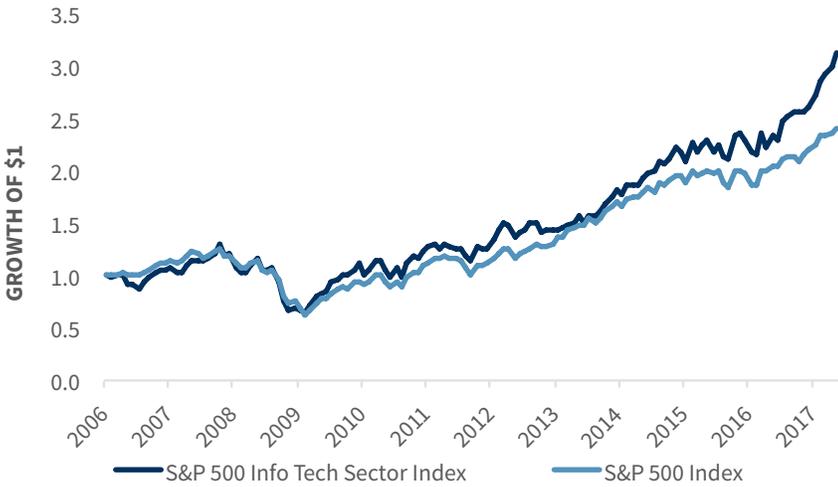
Of course, in some ways, the future is already here. The five most valuable publicly traded companies in the world from a market capitalization perspective – Apple, Alphabet (Google), Microsoft, Amazon and Facebook – are all firmly entrenched in the technology realm. In just a few short years, these tech titans have become essential, integrated parts of our lives, and that dependence is likely to become even more pronounced as their services continue to get more powerful and personalized. The tremendous growth of

big tech is not a case of unjustified expectations either, since investors recognize that real value is already being produced. A recent article in *The Economist* nicely summarised the importance of the ‘big five’ by noting, “Their profits are surging: they collectively racked up over \$25bn in net profit in the first quarter of 2017. Amazon captures half of all dollars spent online in America. And Google and Facebook accounted for almost all the revenue growth in digital advertising in America last year.”





### S&P 500 TOTAL RETURN GROWTH OF A DOLLAR



Source: Bloomberg

In short, these are not the ‘dot-coms’ of the late 1990s for which ‘eyeballs’ and ‘mouse-clicks’ were more important than sales and profits. Instead, most tech stocks today are viable companies offering products and services that many consumers feel they can no longer function without, a dependency we are really only aware of when the internet goes down or our phone dies in the middle of the day. At the same time, these technologies used by billions of people across the globe have been constantly collecting precious data on everything we do, and that data is now worth ... well ... a lot.

#### THE DATA-DRIVEN ECONOMY

Information has become a highly sought-after resource not too dissimilar to oil or other commodities. Data already powers almost everything these days (from inventory management systems, to our healthcare system, to the financial system that supports it all) and as more data is collected and analysed, the systems will become even better and more efficient.

In fact, the last decade hasn’t been the computer age; it’s been the *vanishing* computer age. As screens and artificially intelligent ‘smart

*“The Economist recently published an article ‘Data is Giving Rise to a New Economy’ in which they referred to data as the fuel of the future, and that probably isn’t just hyperbole.”*

systems’ have been implanted into almost everything we use and come into contact with, so the concept of a computer has become a little blurred. This gradual change nicely illustrates one unique principle of technological growth: we never really know what the world is going to look like until it happens. In the 1980s and 1990s, the conceived future was one of personal computers, just as we think in terms of smartphones and tablets today. Yet, if the past rhymes once again, our relationship with technology in just 10 to 20 years will likely be something very different than what we currently envision.

What is known is that investors have been greatly rewarded for their exposure to the technology sector over the last few years. Since March



# The Byte-Sized Economy (cont.)

“Exponential technologies have a long way to go before their full impacts are realised, bringing tremendous potential for growth and investment.”

2009 when stocks bottomed after the financial crisis, the S&P 500 itself is up 262% while the technology sector is up a whopping 333% (as of 5/26/17). When the modern S&P 500 was created in 1957, industrial stocks made up 425 of the 500 spots, with 60 utility stocks and 15 railroad stocks rounding out the list. Now, more than 22% of the index is defined as ‘information technology,’ and it would be a tough task to find an area of the market where the proliferation of data and analysis hasn’t made a substantial impact. As a result, the tech-heavy Nasdaq Composite Index has finally eclipsed its dot-com bubble high after more than 15 years of largely moving sideways, and that may be just the beginning.

## EVOLVING TECHNOLOGY

Naturally, this data-driven revolution is worrying to some, who readily recall the fallout from the dot-com bubble at the end of the 1990s that soured many investors on the concept of a ‘new economy.’ The market is always skeptical when someone says, “This time is different.” Yet, there have been monumental occasions in the past when it really has been different – the Industrial Revolution, the advent of the personal computer, and, now, the complete integration of electronic technology into our daily lives. We usually think of ‘technology’ as just gadgets and gizmos, but it’s simply the continuous progression of doing things better. Fire was technology. The wheel was technology. The steam engine and the assembly line were definitely technology. This is the next stage of that evolution, which is why it’s sort of a misnomer to label just one sector of the market ‘technology’ since it’s really describing the progression of humanity.

The most exciting part, though, is that we seem to be entering a new phase of this advancement, as so-called ‘exponential technologies’ are only now in the infancy of their life cycles (or at the bottom of their

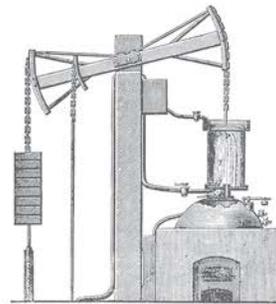
## TECHNOLOGY OVER TIME



**ABOUT 1 MILLION YEARS AGO**  
Changed the course of human evolution



**AROUND 3500 B.C.**  
Created initially to serve as potter’s wheels



**17TH CENTURY**  
Designed by James Watt



**1913**  
Mass production reduced the time to build a car



**TODAY**  
Exponential technologies continue the progression of humanity

Sources: history.com, smithsonianmag.com, popularmechanics.com



'S-curves' in tech parlance). We are somewhat familiar with innovations like robotics, virtual and augmented reality, 3-D printing, artificial intelligence and autonomous automobiles (however, at this point, they are mostly still in the 'Wright Brothers plane' stage of development). There is a long way to go before their full impacts are realized, which is fantastic news because this means there is tremendous potential for growth and investment. As a result, rapid progression in these and other related areas such as modern medicine, alternative energies and financial tech will, in our view, help drive this secular bull market to greater and greater heights over the next several years.

#### INTO THE GREAT BEYOND

Of course, there are always risks to progress. World governments are already struggling with how to regulate all this data collection and use, and cybersecurity will need to grow at the same rate as technology in order to keep pace with protecting that data. Privacy is also a concern in our modern society, and that promises to become even more of an issue as consumers push back on how their personal information is commoditised by corporations.

Because of these concerns, exponential technologies will be adopted at the speed the public and world governments will allow. Additionally, there is a threat of not having enough skilled workers to fill the employment needs of this new economy, as companies are already fighting a global war for talent. There needs to be a shift in the focus of education systems to teach the required skills of today and tomorrow, especially as automation continues to replace workers in an ever-growing number of fields. Otherwise, we run the risk of stagnating that expected growth.

However, it is very difficult to hold back progress completely, and we remain optimistic that much of the change to come will have a positive influence on our world. Technology has helped shrink the relative size of the planet, while fueling its economic development. It is unlikely that its impact is going to diminish as we progress forward. Consequently, we continue to believe it will help power this secular

bull market as new technological advances further disrupt the ways companies do business and how we interact with our world and each other. The world of science fiction will eventually become science fact, but the most amazing part is that we may not even realise it is happening. ■

#### KEY TAKEAWAYS:

- Like it or not, a data-driven society appears to be the direction our world, and world economy, is headed – and it's probably going to happen much sooner than most believe.
- Information has become a highly sought-after resource not too dissimilar to oil or other commodities.
- Investors have been greatly rewarded for their exposure to the technology sector over the last few years.
- We seem to be entering a new phase of this advancement, as so-called 'exponential technologies' are only now in the infancy of their life cycles, bringing tremendous potential for growth and investment.
- Rapid progression in areas such as modern medicine, alternative energies and financial tech will, in our view, help drive this secular bull market to greater and greater heights over the next several years.

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