



Technology Sector Retains Powerful Momentum

Macroeconomic concerns are not limiting these companies' potential.

May 2019

KEY INSIGHTS

- The secular forces powering the technology sector are robust and here to stay. The pace of innovation remains breathless, as we found out during our annual trip to Silicon Valley.
- As large-scale investors, we were able to meet many of the leading figures within the industry. The expansion of media platforms, the rise of artificial intelligence (AI), and the potential of the cloud remain powerful forces at many different levels.
- Investors should approach technology less as a standalone sector, but in a more diverse way. Technological change is impacting business models across every sector of the global market.



Scott Berg
*Portfolio Manager,
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The technology sector continues to garner huge interest. Not much more than a decade ago, the investment universe was composed primarily of personal computers and software companies. But the sector has changed dramatically in a relatively short space of time and, in so doing, has generated enormous value creation. It is much broader with more diverse markets, companies, and business models than ever before. As large-scale investors, we must grapple with this extremely dynamic industry and also scrutinize lofty valuations in some areas. That is why our annual trip to Silicon Valley—where we meet with top executives of the leading tech firms—is hugely valuable for deepening insights into our investments in the sector.

Technology Providing a Harbor Amid an Uncertain Macro Environment

For the team and I, it was striking how good the trip was compared with other field trips we had recently conducted. Compared with other meetings and conferences we attend globally, this tour featured a significantly higher proportion of encouraging engagements. Technology companies are clearly not (yet) seeing any slowdown. Many explicitly expressed a disconnect versus current macro fears.

It is easy to be cynical and paint this in an “as good as it gets” scenario, and with the broader economy slowing, some deceleration is inevitable for the sector. But, as investors, we can’t ignore the secular forces that are clearly circumventing the tricky macroeconomic environment that’s troubling some other sectors.

“As large-scale investors, we have greater access, allowing us to discover insights into even supposedly well-known companies.

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Growth Mindset and Secular Forces Driving the Sector

What encouraged us as growth investors was that these companies were actively investing for growth and in real “land grab” mode looking to increase market share. While this has the potential to negatively impact margins in the near term, we think it should yield results over the longer term. Importantly, the breathless pace of innovation remained on full display with most of the companies talking about the same topics—race to the cloud, artificial intelligence (AI), and machine learning (ML).

We have been conducting this trip for nearly 15 years now, and this is an example of where the size and scale of an asset manager like T. Rowe Price can gain us access to layers of management that other investors often do not have. It gives us an ability to discover insights into even supposedly well-known companies.

A chief objective of these trips is to identify the long-term secular forces at work. These need to be distinguished from the short-term cyclical swings that may lead to profits or losses in a given quarter, but tell us little about a company’s potential to generate long-term wealth for shareholders. Among the long-term factors that we believe will continue to drive the sector are the expansion of media platforms, the rise of artificial intelligence, and the increasing potential of the cloud.

Factor 1. Growth of Media Platforms

Alphabet (Google) and Facebook have become two of the largest companies in the world and two of the world’s largest media firms, principally by harnessing the power of the internet and mobile telecommunications. Both provide platforms that link content creators, advertisers, and customers. As a result, these and other “platform companies,” as they have come to be known, benefit from significant network effects—the more users on the platform, the more value it provides each of them.

When we met with Facebook—including three of the divisional executives and Sheryl Sandberg—much of the discussion was around regulation and putting controls in place. We were able to gain more appreciation for the process, both in terms of internal operations and how they are interacting with external constituents to get where they need to be. Clearly, they need to address these issues, but we feel they understood and were actively tackling these issues head on. Large companies like Facebook will ultimately be better placed to deal with these issues than smaller internet companies because of the resources they have at their disposal.

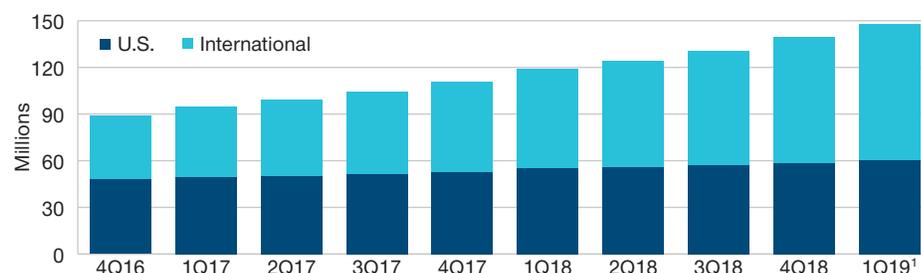
Outside of this, we discussed other areas of the business and we felt encouraged. There is a significant amount of work going on behind the scenes with more monetization of its activities. Listening to the Instagram executive on Insta video, IGTV, monetizing the ephemeral nature of Instagram Stories, and the associated personalization gave us a much better sense of what is possible down the track. A meeting with the Head of Advertising also suggested that Stories could be a game changer. While it will be slower than feed, it will create more user engagement. We were less convinced by Messenger’s strategy but think the WhatsApp monetization is an additional optionality for Facebook. Topline growth was not likely to slow, and if anything, there is a chance in a year or so that we may even be talking about acceleration.

Another key highlight was the technology-led rise in the scale and scope of the leading companies, allowing them to expand across industries and national borders. Netflix is a great example. It has become the largest video company in history—largely because its reach is unconstrained by infrastructure. This provides a key advantage over other firms that need to lay cables or set up broadcast towers. International expansion has allowed Netflix to spread the cost of high-quality programming among a global subscriber base.

(Fig. 1) Platform Companies Move Easily Across Borders

Netflix paid memberships

Fourth quarter 2016 through first quarter 2019



Source: Netflix.

¹ Estimate.

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Factor 2. Rise of Machine Learning and Artificial Intelligence

ML and AI are the key themes for the next decade and further. Platform companies are the best placed to benefit from this as they have the most data, biggest computing power, and best engineers. This, however, may be an area of ongoing conflict between the U.S. and China as they race for global leadership in this space.

Analyzing customer preferences is an example of innovation reshaping the economy. AI relies on powerful computing resources, which are now available to many firms through cloud computing services such as Alicloud, Amazon Web Services, and Microsoft’s Azure. But providing computers with the information needed to make decisions and perform tasks without human intervention—the branch of AI known as machine learning—also requires vast amounts of data. Computers calculate much faster than humans, but they require exponentially more data to make the same inferences. This is one reason the biggest tech companies and internet platforms with the most customers are taking the lead in developing machine learning-based AI.

Having been a theoretical topic for many years, we are now starting to see real fundamental impact on company

business models from AI use cases. Some of the uses of AI may be surprising. Workday is a cloud-based provider of human resources software. Unlike the static software its competitors install on a company’s servers, Workday’s product is constantly learning, and its experience with millions of employee records means that it can now predict, for example, which workers are in danger of growing dissatisfied with their jobs.

In our meeting with them, we had a real sense of the strength and durability of their cash flow. It was also apparent how powerful their analytics capabilities had become and the improved value add to the customer.

Factor 3. Importance of the Cloud

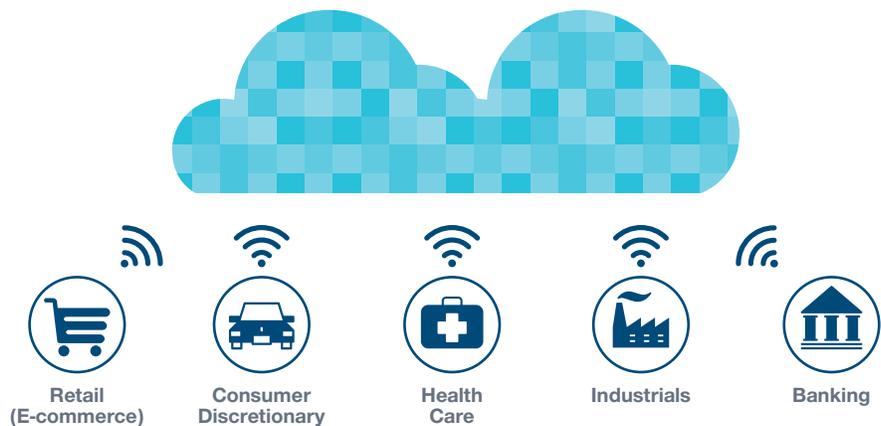
In nearly every meeting, companies talked about the importance of the cloud. In recent years, we have seen a transformation in the way businesses collect and deploy information. Key to recent changes have been constantly updated cloud-based software systems, which allow companies to integrate information in new ways. While the impact of this change is perhaps most visible to consumers in the rise of online retailing, it is also touching other industries. We may even be on the cusp of financial companies moving data into the cloud.

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Cloud-Based Software Transforming Businesses Across Industries

The importance of the cloud shows no sign of weakening



Salesforce.com is at the leading edge of this transformation. Salesforce's customer relationship management system, offered by subscription over the internet, allows companies to not only maintain records on current customers but also to identify new prospects—data that then flows into revenue forecasts, inventory management, and other parts of the enterprise.

Beyond the FAANGS

Of course, it's not all about these massive platform companies. There are many areas where we are finding great companies with a long runway for growth. Conveniently, segments defined by change and disruption also lend themselves to active management, with the benefits to winners over losers dramatically more pronounced than in segments of the market where change is less dramatic. The ongoing transition to greater computing mobility, increasing use of the Web, and growing technology consumption has massive potential. Banking is one such area, and we have focused particularly on electronic payments.

Consumers are changing their behavior when it comes to payments. As we look across countries and continents, we are witnessing more online and digital

transactions with fewer in-store cash transactions. We believe companies that can create new software to enable these transactions should benefit over the long term, even if they appear quite small today.

A great example is Adyen, a global payments company based out of Amsterdam. Their decision to build a full end-to-end acquiring stack as a single global payments platform allows them to develop new capabilities faster than their peers. They have better fraud protection, an improved view of the merchant's data, fewer unexplained turn downs, and overall higher authorization rates. All of this is done while operating at a lower cost and generating incremental EBITDA margins well north of 50%. As competitors have been largely created on legacy bank technology platforms and then have grown through M&A, there simply is not a competing acquirer with the equivalent capabilities of Adyen in the market.

Digital Highways Remain on Track

Autonomous driving is also moving ahead, although at a slower pace than some have suggested. We had a reassuring meeting with Tesla. We met with the new head of production, Jerome Guillen. He explained key issues

around product complexity, and how simplifying the line had paid dividends. Labor costs, production costs, and efficiency are all heading in the right direction. However, this is a stock that can trade in a very wide range depending on sentiment at the time. But we still feel reassured that strong fundamentals will carry the day, and this remains an area of great potential.

Internet and Cloud Continue to Drive Value Creation

Investors should think about technology less as a standalone sector, but in a more diverse way. Technological change is impacting business models across every sector of the global market.

The mid-2004 initial public offerings of Google and Salesforce ushered in an era of internet platforms and cloud computing. These have been transformational, especially for

technology investors. Today, most of the largest companies in technology (and, in fact, the world) are either internet or cloud companies and in Amazon's case and, arguably, Google's case, both. More impactfully, internet platforms with their technology and other competitive advantages have claimed large pieces of industries that were not previously associated with technology companies.

We have been fully invested in these areas and have increased our exposure to AI-related names over the last year as we believe the technology will be game-changing for several industries. We have also been positioned to benefit from the ongoing transition toward greater computing mobility, increasing use of the Web, and growing technology consumption in emerging markets.

The technology sector continues to evolve at a great pace and, in so doing, is driving enormous value creation for investors.

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