



 **CIO ROUNDTABLE** | JANUARY 2018

# MODERN TITANS OF THE INFORMATION AGE

- How Modern Titans Ascended to Prominence
- What This Means for Investors
- New Technology Faces Old Question: Are We in a Bubble?
- What Could Disrupt the Disruptors?

# MODERN TITANS OF THE INFORMATION AGE

As chief investment officers, we often find ourselves answering questions that are on the minds of our clients. What opportunities and risks are we seeing? What impact will significant events or trends have on markets?

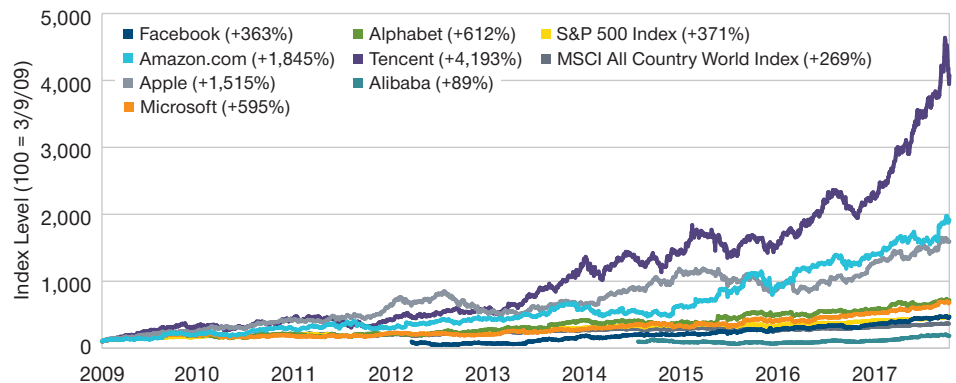
Clients are increasingly asking about our views on today's modern technology titans—Facebook, Apple, Google parent company Alphabet, Microsoft, Amazon, Alibaba Group Holding, and Tencent Holdings.

Our clients point to these firms' rapid pace of innovation, disruption, and concentrated wealth and power with both excitement and uncertainty. And with good reason. According to data from FactSet, as of November 30, 2017, these behemoths represented seven of the world's 10 largest companies by market capitalization. Investors, mindful of the dot-com era's lessons, are questioning their valuations and future growth potential.

These questions come at a pivotal moment. The power of new technology titans has created seismic shifts within industries and sectors, facilitating innovation while accelerating disruption. Platform companies have established new tools for people to more easily consume, socialize, and even build companies. But these very same tools have raised concerns about how platforms are being

**FIGURE 1: Today's Modern Titans Have Seen Their Shares Soar**

March 9, 2009, through December 7, 2017; in U.S. dollars.



Source: FactSet.

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Performance for Facebook and Alibaba Group Holding is indexed to 100 as of their respective IPO dates. Since coming public, the cumulative performance of each company has outperformed both the S&P 500 Index and the MSCI All Country World Index as of December 31, 2017.

manipulated by outsiders. Lawmakers and regulators, too, have taken note of the increasing concentration among a small number of mega-cap companies.

We recently got together in our Baltimore, MD, headquarters and shared perspectives on these and other topics, including perhaps the most pressing questions on investors' minds—do these modern titans represent a new dynamic, and what are the prospects of another dot-com meltdown?

The following CIOs participated in the discussion: group CIO Robert Sharps; equity CIOs Henry Ellenbogen, John Linehan, and Justin Thomson; and fixed income CIO Mark Vaselkiv. We don't hold a "house view" as a CIO group. In fact, the strength of our group is in how we challenge each other and debate ideas. We hope that our insights on a timely topic are helpful.

# How Modern Titans Ascended to Prominence

A superficial look at these companies—Facebook, Apple, Alphabet, Microsoft, Amazon, Alibaba, and Tencent—leads to labeling them just “tech” companies. A look beyond the numbers shows that they’re very nuanced yet also dominant in specific sectors ranging from retail to media to software.

Yet these firms do have significant common characteristics. Understanding their competitive advantage and how they ascended to positions of prominence can offer valuable insights for investors. As Rob commented, “Taken together, these characteristics allow platform companies to pursue multiple large end markets, whether they’re segmented by geography, sector, or industry.”

## WHAT SETS THESE COMPANIES APART?

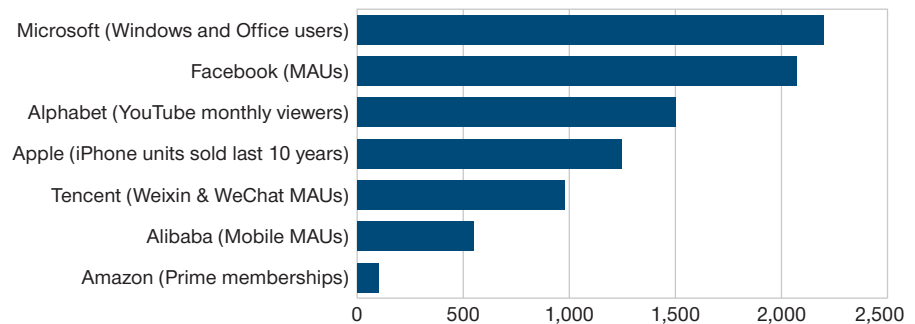
Indeed, we think these firms share four common characteristics.

- They boast an exceptionally large installed user base, across the business and consumer landscape. This helps drive network effects and serves as a valuable source of data—an indispensable asset as the world becomes increasingly digital.
- They benefit from computing capability at scale, which allows them to strategically leverage their data in day-to-day operations. As artificial intelligence platforms continue to develop, this advantage will widen the gap between platform companies and those with less data and inferior computing power.
- They can recruit the very best engineering talent and technological expertise. The modern titans operate on the cutting edge of technology and innovation. Their ambitious projects and massive proprietary data sets are unmatched.

“Since 2010, approximately 20% of the incremental revenue growth of the S&P 500 has come from this handful of companies, which is really a stunning number.” —HENRY ELLENBOGEN

**FIGURE 2: Platform Users/Subscribers Yield Powerful Network Effects**

Unless indicated otherwise, data as of November 1, 2017, monthly active users (MAUs), memberships, etc. (millions)



Sources: Microsoft 2016 annual report; most recent earnings reports for Facebook, Alphabet, Tencent Holdings, and Alibaba Group Holding; Apple’s earnings reports from last 10 years ended September 30, 2017; and Amazon Prime memberships estimated by T. Rowe Price from Amazon.com’s 2017 third-quarter earnings report. The information presented herein is shown for illustrative, informational purposes only. This is not intended to be investment advice or a recommendation to take any particular investment action. The specific securities/companies/products and services identified and described above do not necessarily represent securities/companies/products and services that were purchased, sold or recommended by T. Rowe Price and no assumptions should be made that the specific securities/companies/products and services identified and discussed were or will be profitable.

- They have financial resources allowing them to aggressively invest in infrastructure and talent, both organically and through acquisition.

“Since 2010, approximately 20% of the incremental revenue growth of the S&P 500 has come from this handful of companies, which is really a stunning number,” explained Henry.

## WHAT LED TO SUCH AN ACCELERATED PACE OF DOMINANCE?

First, and perhaps ironically, the technology, media, and telecommunications (TMT) bubble in the 2000s laid the foundation for the rise of these platform companies. These seven titans benefit from yesterday’s vast investments in the fiber-optic backbone of the Internet. Their

businesses now run on rails that were built and paid for almost two decades ago.

Second, the rise of mobility means these companies can interact with their customers instantly. “In 2010, the mobile phone went global and became the remote control for people’s lives,” Henry remarked. “These companies can now reach people throughout their daily lives, which unlocked billions of global users.”

Third, people have become more willing to adopt technology, which is a prominent characteristic of millennials, but other generations, too, have adopted the same millennial mind-set. “Today’s consumer who has this mind-set puts its trust in technology and reviews over traditional marketing,” Henry pointed out.

# What This Means for Investors

Investors need not wander far to find the impact of today's modern titans. Notably, during second-quarter earnings calls and other corporate events, Amazon was mentioned over 600 times among public companies monitored by Bloomberg. The Trump administration, by comparison, was mentioned just one-fourth as often.

The disruption these firms are creating in turn brings about new opportunities and risks. One of our roles as CIOs is to help our portfolio managers identify both.

## WHAT OPPORTUNITIES ARE WE FINDING?

Disruption arrives at the doorstep of every industry in a unique way, but we've found interesting investments by following several threads.

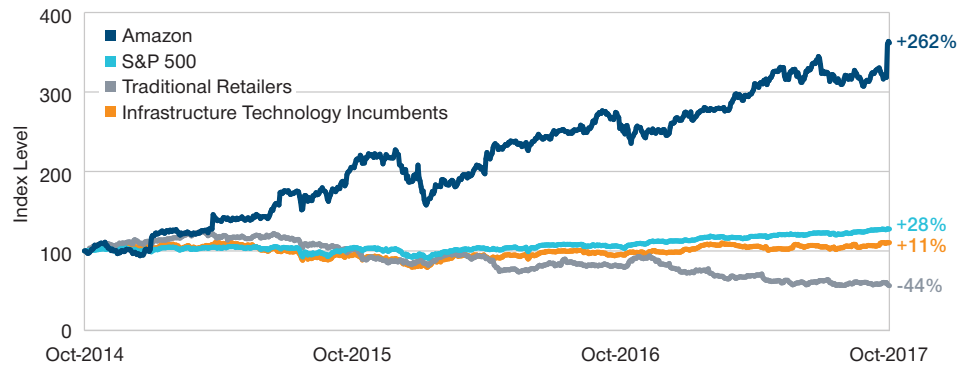
**Pivoting offline to online:** One notable trend, Rob pointed out, is that physical infrastructure previously represented a competitive moat for companies. However, supporting a legacy infrastructure's high fixed costs can drain an incumbent's resources and limit flexibility to the advantage of the more agile titans.

Therefore, investors must assess a firm's ability to effectively move transactions from offline to online. Microsoft offers a good example of what this looks like. The technology giant recognized that it needed to pivot toward cloud computing after Amazon pioneered the innovation. This move required the adoption of an entirely new business model. Microsoft is now the second-largest player in the U.S. public cloud computing market in terms of revenue and market share. Recent history is filled with examples of firms moving offline businesses into an online world, from Netflix in entertainment to Uber in transportation to Priceline in hospitality.

One silver lining, Mark said, is a potential wave of merger and acquisition activity

**FIGURE 3: Amazon.com's Performance Meaningfully Outpaced Competitors**

As of October 31, 2017



**Past performance cannot guarantee future results.**

Source: FactSet; data analysis by T. Rowe Price.

Traditional retailers is an equal-weighted basket of: JCPenney (JCP), Nordstrom (JWN), Gamestop, Corp. (GME), Macy's Inc. (M), Target Corp. (TGT), Kohl's Corp. (KSS), Dick's Sporting Goods, Inc. (DKS), Foot Locker (FL), Sears Holding Corp. (SHLD), and Barnes & Noble (BKS).

Tech incumbents is an equal-weighted basket of: IBM, NetApp, Inc. (NTAP), Cisco Systems (CSCO), VMware Inc. (VMW), Oracle Corp. (ORCL), Teradata Corp. (TDC), F5 Networks, Inc. (FFIV), and Lenovo Group Ltd. (Lenovo).

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in challenged industries. Consolidation has the potential to improve an industry's fundamentals and provide some rationalization. Several years ago, Mark recalled, PetSmart lost significant market share to Chewy.com, an online pet supplies retailer founded in 2011. "There's no need to go to a PetSmart when a 50 pound bag of dog food can be delivered to your front door," Mark said. "The resolution of PetSmart's strategic problems was to acquire Chewy." Though it's yet to be seen if this acquisition will create a successful blend of online and offline retail, consolidation has the potential to improve an industry's fundamentals.

**Looking for derivative plays:** Disruption can weaken demand in one part of an industry while strengthening it in others. For many years, paper manufacturers

struggled amid the meteoric rise of the Internet and the decline in print publications. However, the platform and Internet companies driving publishing's decline were simultaneously expanding e-commerce, much to the benefit of packaging and container companies. "If you think about value investments overall, it's very easy to say that most of these companies are on the wrong side of disruption," John said, "but I think that if you take that mind-set, you do so at your own peril."

Looking ahead, electric self-driving vehicles will likely pressure several established business models, including service stations, automobile manufacturers, and automotive insurance. With less focus on the act of driving, cars may soon feature enhancements and

additional components that heighten their functionality. John thinks companies exposed to automotive seating could be a fairly significant beneficiary.

**Business model innovations:** In our view, companies that are learning from today's modern titans can be strong investments. Disruption forces companies to allocate capital more effectively and to manage operations with more discipline. "By leveraging information technology, companies can lower their cost structure when dealing with suppliers or employees," explained Henry. "They can also gain market share or effectively deal with customers through proprietary mobile technology. This understanding led to some of our best investments, even in very mundane industries that might not be associated with technology."

Henry points to Vail Resorts, which operates some of the most visited ski resorts in North America. Vail Resorts introduced a subscription program, and now over 700,000 customers will prepay for their skiing this year, allowing Vail Resorts to lock in close to US\$600 million in revenue before Thanksgiving. "Half of these subscribers are not local skiers but actually destination skiers," added Henry. "Vail Resorts created a tremendous customer relationship management and data analysis skill set that allows it to communicate with a small subset of the U.S. population—the 3 million people who represent its potential market." These innovations, Henry believes, drove Vail's jump from approximately 12% to 22% market share and contributed to its stock's strong performance.

**Disrupted but not dead:** A firm's terminal value is an important consideration for equity investors because shareholders invest in perpetuity. "In the bond world," Mark explained, "the investment horizons are much shorter. So there are still opportunities to invest in some of these dying industries if an investor believes that the issuer will remain solvent for several years." Challenged or even dying

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**"In the bond world, the investment horizons are much shorter. So there are still opportunities to invest in some of these dying industries..."** —MARK VASELKIV

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industries, including traditional retail, consumer electronics, entertainment, and on-premise IT, may still generate solid returns. "About two years ago, new disruptive technologies in energy, like horizontal drilling, led to a sharp crash in commodity prices," recalled Mark. "It had a tremendous negative impact across both equity markets and credit markets, but we were able to purchase a number of well-capitalized companies and their bonds that were trading at deep discounts. One was an investment-grade energy and production company that had a two-year bond outstanding. It yielded a solid return at maturity."

However, Mark cautioned, today's extremely low default rates can create a false sense of security. We foresee storm clouds accumulating in the next five to 10 years for some of these now-healthy industries.

The same concept of looking at areas that are disrupted but not dead applies to perhaps the most disrupted part of the global economy—retail. It isn't surprising that four of the top five most popular shorts in the U.S. today are in the consumer discretionary sector. However, investors may be too quick to interpret such data as evidence that they should avoid retail altogether. "A lot of people talk about how Wal-Mart will be left for dead by Amazon," said John. "In my mind, as we think forward, there will likely be a brick-and-mortar component to retailing, whether it's done by Amazon, Wal-Mart, or others. Wal-Mart has a unique proposition given its very substantial store base." Firms need to recognize shifting industry trends, he adds, and pivot to address them.

**Technology knows no borders:** Several countries find themselves in the early

stages of disruption with no clear leader dominating a particular industry. Justin thinks about India as one such region that is up for grabs. "India is at a very interesting juncture because it's late in the transition to e-commerce," he explained. "The physical infrastructure in terms of organized retail has never been there, and the logistical infrastructure's always been very difficult. Both have been a big obstacle for e-commerce's growth." Amazon, Justin believes, should emerge triumphant from the three-way e-commerce battle between itself, Flipkart, and Alibaba, but Flipkart can still be relevant even after the dust settles.

**Understanding emerging risks:**

Categories once viewed as immune to e-commerce, like off-price retail or auto parts retail, are being called into question. Additionally, we've observed platforms' role in eroding the reach that many traditional brands historically wielded. Investors should consider how a particular industry or firm might be vulnerable to platform companies, even if future disruption seems far off.

The market correctly perceives that these platform companies could move into essentially any market. As a result, firms in industries susceptible to disruption find that transitory issues in fundamentals create more short-term volatility. "Even if an issue isn't really a result of e-commerce gaining share—perhaps a company faced tough weather or difficult comparisons—the natural negative reaction gets amplified and people call into question the longer-term growth potential," Rob said. While solid investment opportunities certainly exist in areas that are facing disruption, investors must be aware of the accompanying volatility.

# New Technology Faces Old Question: Are We in a Bubble?

As markets hit record highs and today's modern titans generate headline after headline, many investors are comparing recent market performance with the excessive speculation that occurred nearly two decades ago just before the dot-com bubble burst.

Our short answer to the question of whether we're in another bubble is "no." We do not believe that these platform companies exhibit the pronounced excess in valuations of the dot-com era.

## WHAT DO YOU THINK ABOUT THESE FIRMS' VALUATIONS?

We believe that the modern titans' current growth rates and forecasts support their valuations. In fact, these firms in aggregate trade at a reasonable premium to the S&P 500 Index considering their revenue growth, return on incremental capital, and free cash flow generation.

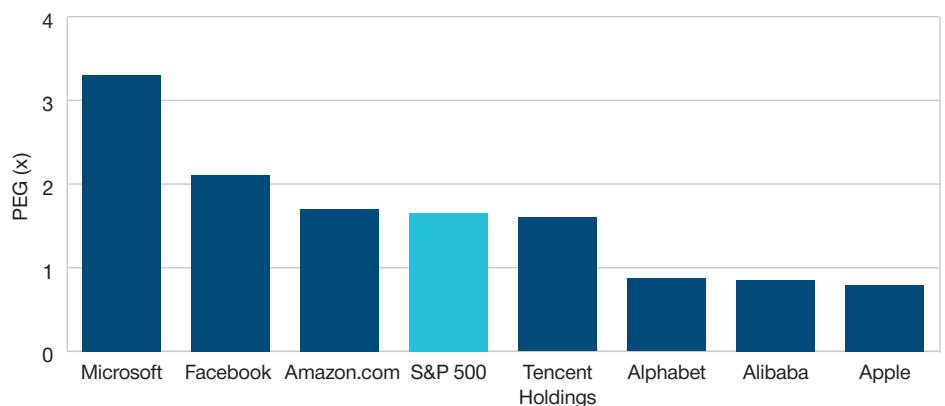
In some instances, it is appropriate to analyze these firms as if they were early-stage growth companies, and when viewed through this lens, today's modern titans continue to offer opportunity. Admittedly, this approach may seem unconventional because we're talking about such massive companies.

"If you look at classic early-stage growth companies that perform well," Henry explained, "they're dominant in markets characterized by a lot of change, and they're capturing more and more market share. They tend to out-execute their competitors, whether measured by market share or pace of innovation. Finally, they show the ability to extend their growth runways."

**"A significant portion of returns in Asia was driven by Alibaba and Tencent. But I think it's still difficult to argue that these two are in a bubble when you look at how embedded, ubiquitous, and dominant they are in the region."** —JUSTIN THOMSON

**FIGURE 4: When Viewed Against S&P 500, Titans' PEG Ratios Support Valuations**

As of November 30, 2017



Source: FactSet; analysis by T. Rowe Price.

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Henry argues that Amazon trades like an early-stage growth company. Underlying margins and long-term economics play an important role in its valuation, much like with small-cap growth companies. "What really changed Amazon's valuation is when the retailer became a dominant corporate technology company with Amazon Web Services' success," he added. "Now you have a successful retail business to consider but also a whole new growth curve in corporate technology. Both are

showing continued market share, and both need to be analyzed individually the whole way through."

Although they grow revenues quickly, some of these firms reinvest the majority of earnings back into their businesses. Therefore, they appear expensive based on their price/earnings levels and other traditional valuation metrics. Investors have a difficult time determining whether spending is offensive or defensive and

how it relates to long-term profitability. Time will tell if this spending is driving real value or simply profitless prosperity. Our global research platform is instrumental in making such assessments. We rely heavily on our analysts' deep industry expertise and analysis of unit-level economics to understand underlying trends.

**CAN THESE STOCKS CONTINUE TO PERFORM WELL?**

We believe that, despite strong recent performance, these stocks can still produce attractive returns if investors remain selective about their entry points and extend their time horizons. We caution, however, that future returns will not likely be consistent with what we've seen in the past and will probably represent compounding growth rather than continued acceleration.

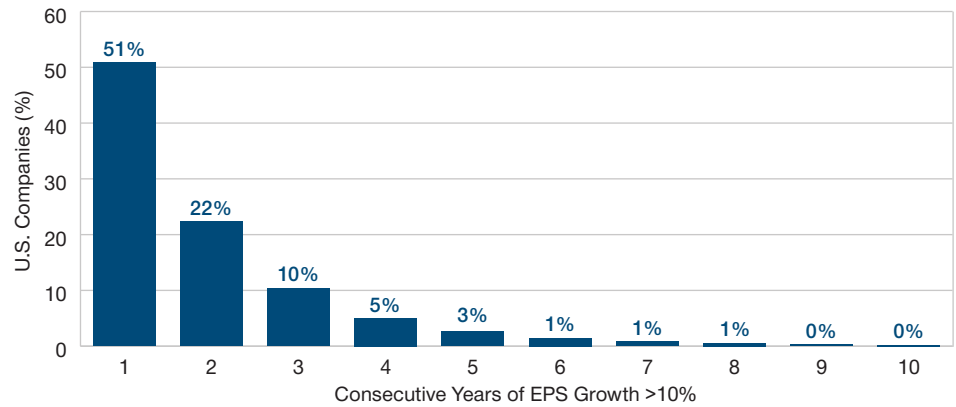
“Counterintuitively, over a longer period of time, value could outperform growth,” John explained. “I think investors get overly optimistic about what the future holds for companies. The number of companies that can report double-digit earnings per share [EPS] growth for three consecutive years is about 10% of the market. These companies have been able to do it; yet they're the exception and not the norm.”

Additionally, these firms are building meaningful, long-term competitive advantages—yet another important distinction between them and the dot-com era's darlings. Leading technology platform companies are incredibly dominant with client data, their ability to scale, and market concentration. These resources and capabilities weren't created overnight, and such dominance isn't limited to U.S. firms.

“The degree of concentrated performance in emerging markets is even greater than that of the S&P 500,” commented Justin. “A significant portion of returns in Asia was driven by Alibaba and Tencent. But I think it's still difficult to argue that these two are in a bubble when you look at how embedded, ubiquitous, and dominant they are in the region.”

“Counterintuitively, over a longer period of time, value could outperform growth. I think investors get overly optimistic about what the future holds for companies.” —JOHN LINEHAN

**FIGURE 5: Consecutive Years of Double-Digit EPS Growth Is Rarely Sustained**  
1985–2016, Russell 3000 Index, as of December 31, 2016



Only 10.4% of U.S. companies reported double-digit EPS growth for three consecutive years. Today's titans are the exception, not the norm.

Sources: FactSet and T. Rowe Price.

It's important to understand why a company is gaining share and whether it is likely to continue to be favorable, but many investors fail to recognize trends or capabilities that might unfold slowly. To this end, we discount short-term assessments and put a premium on our analysis of a company's ability to scale and execute. For example, Tencent's mobile leadership in China took time to cement, but it was well worth the wait. Now, Justin commented, Tencent's scalability uniquely positions it to meet regional consumer preferences that developed differently than those in the West.

“Tencent created WeChat, its mobile community, in a way that connects with all of their users. It makes it more like an operating system,” added Justin. “Mobile may very well be one way that Chinese firms can challenge U.S. companies. We're also seeing this with mobile payments. China has leapfrogged

the world in mobile payments, largely because it was a cash economy and credit cards lacked penetration.”

Analyzing disruptive investment opportunities, whether platform companies or early-stage growth firms, requires patience and persistence, and we acknowledge that we don't always get it right. Common traps include making bets before an industry structure and business model gel or betting on the wrong company or innovation entirely. For instance, Amazon with books and eBay with collectables once represented e-commerce's two dominant players, and each touted its own set of strengths that could have translated to meaningful long-term growth for one and not the other. It's clear today which company gained more market share, but it's important to remember that 15 years ago one could have reasonably argued that eBay would emerge the leader.

# What Could Disrupt the Disruptors?

While the modern tech titans are dominant, nimble, and well positioned, they too could be disrupted just as they've disrupted entire industries. Indeed, with time, a new technology, innovation, or service could uproot or render obsolete even the most fortified business models. Other forces, like increased regulatory scrutiny or burgeoning questions regarding a company's governance could also impede progress.

Our role as investors is to understand what those disruptive forces could be. Here's what we see as potential challenges to consider.

## LEADERSHIP

Mark Zuckerberg at Facebook. Sergey Brin and Larry Page at Google. Jeff Bezos at Amazon. Jack Ma at Alibaba. Ma Huateng at Tencent. At these firms, their founders are still active leaders and almost synonymous with their brands. But what happens when it comes time for succession?

"These companies' visionary, iconic founders established a brand of success," Henry pointed out. "Companies that have done a poor job transitioning leadership from the entrepreneur founder to the next generation have spent years in the wilderness. When the founder and entrepreneur leave the business, that's really the period of maximum potential pain for the company."

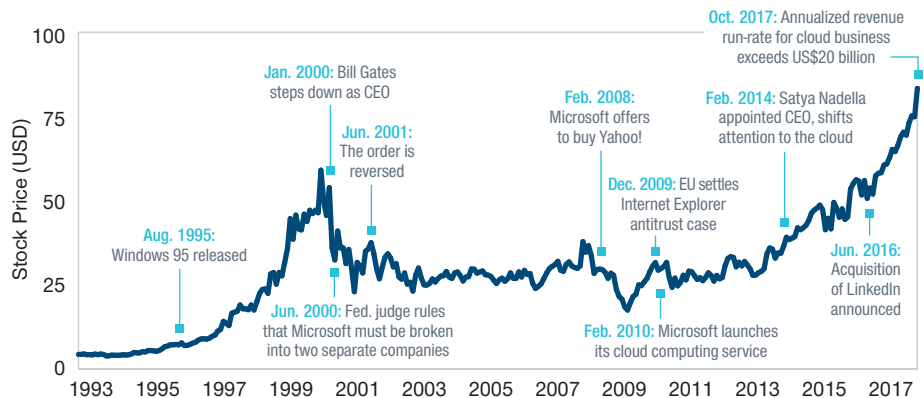
A poor leadership transition would present two key issues, Henry explained. For one thing, the raw material of these firms at its heart is human capital, which requires attracting talented and innovative engineers. That talent is very often drawn in by these firms' founders.

Second, bold strategic decisions are more likely to be made quickly and with wider

**"Populism's clearly on the rise, and populism tends to play to the fears and anxiety of people that are in the crosshairs of disruption. It's a real open question whether or not the government or media makes things more difficult for these companies moving forward." —ROB SHARPS**

**FIGURE 6: Microsoft: A Case Study in Potential Disruption**

25 Years (October 31, 1992, through October 31, 2017)



Over the past 30 years, Microsoft experienced leadership changes, regulatory scrutiny, and other competitive headwinds—each representing a challenge that the firm had to face.

Source: FactSet.

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support when they are made by successful founders. Without a bold founder at the helm, Facebook's acquisition of Instagram or Amazon's purchase of Whole Foods may not have moved as quickly or gained as much support.

"It's more likely that the financial markets and employment markets and the next generation of people joining the company will give the benefit of the doubt to these companies if the founders are still integral to the company," Henry said.

## REGULATION

Increased regulations could force platform companies to adopt less effective practices. Specifically, privacy concerns and antitrust laws may yield significant headwinds. In Europe, we've witnessed increasing concerns about data privacy, and U.S. firms Google and Facebook were recently pulled into investigations regarding Russia's alleged involvement in the 2016 U.S. presidential election. Furthermore, these business models have monopolistic features, and we recognize that



governments' previous interventions with monopolies often occurred at unexpected times—much to investors' chagrin.

We closely monitor news and other developments that could attract the attention of regulators or the general public and are mindful that businesses benefiting from legacy structures could have financial impact. For example, U.S. taxpayers arguably subsidize Amazon's shipping through the U.S. Postal Service. This benefit to the company and consumers could become problematic, if, as President Trump recently advocated, the postal service were to seek higher shipping fees.

**CONSUMER PERCEPTIONS**

So far, these global titans are largely viewed as a force for good. Their rise has coincided with many lower consumer prices, more convenience for consumers, more access to information and entertainment, and broad innovations. But that could shift, and perceptions could change as these firms grow more dominant, economic conditions change, and political sentiment shifts.

“Populism’s clearly on the rise, and populism tends to play to the fears and anxiety of people that are in the crosshairs of disruption,” Rob said. “It’s a real open question whether or not the government or media makes things more difficult for these companies moving forward.”

“Companies that have done a poor job transitioning leadership from the entrepreneur founder to the next generation have spent years in the wilderness. When the founder and entrepreneur leaves the business, that’s really the period of maximum potential pain for the company.” —HENRY ELLENBOGEN

**FIGURE 7: Titans Own Some of the Healthiest Brands Globally**

As of June 30, 2017

1	Google (owned by Alphabet) ★	6	Apple iPhone ★
2	YouTube (owned by Alphabet) ★	7	Amazon ★
3	Facebook ★	8	Toyota
4	Samsung	9	Adidas
5	WhatsApp (owned by Facebook) ★	10	Colgate

★ Denotes titan

These titans’ innovation and disruption have largely been viewed as a force for good; however, investors should be mindful that this perception could change with time, potentially resulting in consumer backlash or increased regulatory scrutiny.

Source: BrandIndex. (These brands were rated using YouGov BrandIndex’s Index score, which represents the average of Impression, Quality, Value, Satisfaction, Recommended, and Reputation scores. Global rankings were decided by the number of country-specific top 10 lists in which a given brand appeared. The Index Rankings for each country feature the brands with the highest average Index scores between July 1, 2016, and June 30, 2017. All Index scores were rounded to a single decimal place. Scores are representative of the general population; BrandIndex conducts over 2.5 million consumer interviews a year.)

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# CONCLUSION

Successfully navigating innovation and disruption is challenging. In fact, members of our CIO group sometimes disagree on the extent to which an industry could face disruption or the companies most likely to benefit most from creative destruction. We value this dialogue because we understand how rigorous, fundamental research coupled

with a collaborative environment can uncover value and lead to better outcomes on behalf of our clients. One of many examples is that our small-cap and large-cap analysts share information regularly to help large-cap managers recognize potential disruptors early. Equity and fixed income analysts meet regularly, travel

together to company meetings, and compare findings. Our investment staff challenges one another’s viewpoints so that they walk away with stronger, more compelling ideas, many of them represented in our discussion on the information age’s modern titans. We look forward to sharing more of our perspectives in future CIO discussions.

## MEET THE CIOs



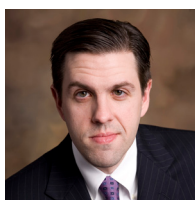
**Rob Sharps, CFA**

Rob Sharps is a vice president of T. Rowe Price Group, Inc., and T. Rowe Price Associates, Inc. He is co-head of Global Equity and group chief investment officer. Rob serves on the firm's Management Committee, International Steering Committee, Equity Steering Committee, Fixed Income Steering Committee, Asset Allocation Committee, and Product Strategy Committee. Prior to joining the firm in 1997, Rob was a senior consultant at KPMG Peat Marwick. He earned a B.S., summa cum laude, in accounting from Towson University and an M.B.A. in finance from The Wharton School, University of Pennsylvania. Rob also has earned the Chartered Financial Analyst designation.



**Henry Ellenbogen, J.D.**

Henry Ellenbogen is a vice president of T. Rowe Price Group, Inc., T. Rowe Price Associates, Inc., and T. Rowe Price International Funds, Inc. He is the chief investment officer for U.S. Equity Growth and is the portfolio manager and Investment Advisory Committee chairman of the New Horizons Strategy. He is also a vice president and Investment Advisory Committee member of the Media & Telecommunications, Mid-Cap Growth, Mid-Cap Value, and Global Technology Strategies. In addition, he is a member of the Equity Steering Committee. Henry started with T. Rowe Price in 2001. Prior to joining the firm, he was a general partner of Crimson Investments, L.P. Henry earned an A.B., magna cum laude, in history and science, from Harvard College. He holds a J.D. from Harvard Law School and an M.B.A. from Harvard Business School, where he was a Baker Scholar. He also was an adjunct professor at New York University Graduate School of Politics.



**David Giroux, CFA**

David Giroux is a vice president of T. Rowe Price Group, Inc., and T. Rowe Price Associates, Inc. He is the chief investment officer for U.S. Equity Multi-Discipline and is a portfolio manager in the U.S. Equity Division and cochair of the Asset Allocation Committee. David is president and chairman of the Investment Advisory Committee of the Capital Appreciation Strategy and is its lead portfolio manager. He is a vice president and Investment Advisory Committee member of the Spectrum and Retirement Strategies. He joined the firm in 1998 and, until 2006, had analytical responsibility for the firm's investments in the industrials and automotive sectors. As an analyst, David covered the automotive sector. He earned a B.A., magna cum laude, in finance and political economy from Hillsdale College. David also has earned the Chartered Financial Analyst designation.



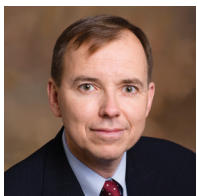
**John Linehan, CFA**

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