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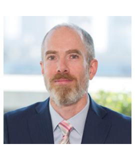
PUBLIC EQUITIES

The Turning Tide in Technology

INSIGHTS

With all the headlines surrounding OpenAI's recent management turmoil and nVidia's exceptional earnings, is the market paying enough attention to the signs of recovery in the core bedrock of technology? Is this a harbinger of even better times for the tech sector?

Matthew Ward
Managing Director,
Global Equities—Technology



Colin Moar
Director, Global Equities—
Technology

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Signs of Renewed Vigor in Tech

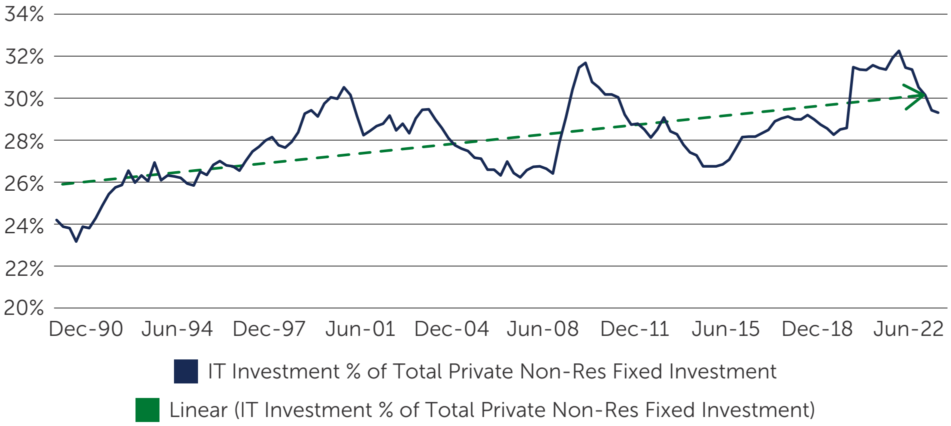
For good reason, artificial intelligence (AI) has captured the public's attention—with equity markets continuing to be dominated by stories such as the recent debacle surrounding OpenAI's sacking, then re-hiring, of their CEO, as well as nVidia, the dominant supplier of AI semiconductors, reporting another massive beat to consensus expectations. While it should come as no surprise then that the technology sector has recently achieved yet another relative high compared to the broader global equity markets, the question that is emerging is whether the technology sector—beyond the current AI headlines—is in a healthy state today?

Emerging generative AI tools including ChatGPT and Google Bard offer compelling pathways to accelerate the realization of powerful, secular growth trends that include the popularity of online media and retail, the shift of computing infrastructure into the cloud, and the digitization of the analog world. While these developments grab headlines, several major mature technology markets are showing renewed signs of life following a Covid hangover in 2022 and early 2023. Has the technology market, effectively, already had its recession?

Is the Tech Recession Over?

The mechanics behind the 2022–23 slowdown and expected recovery in growth can in large part be explained by the strength in spending through the pandemic and the subsequent slowdown during the economy's re-opening, which saw companies deal with issues ranging from excess inventories to lingering disruptions in global supply chains. These factors resulted in very rocky spending on information technology in 2022 and 2023 and likely contributed to IT spending's declining share of U.S. private fixed investment **(Figure 1)**.

Figure 1: U.S. Private Fixed Investment in Equipment and Software



Source: St Louis Fed. As of November 2023.

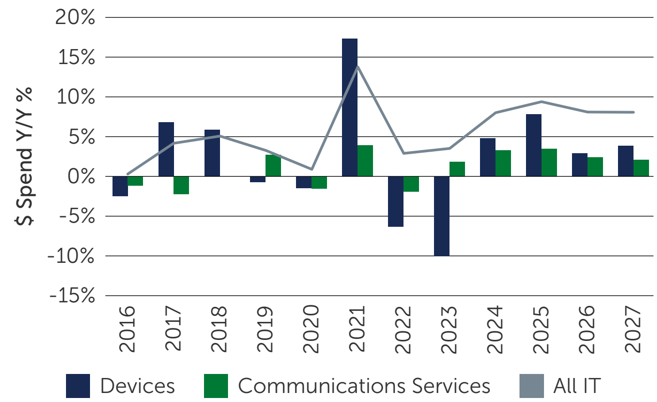
We would argue that the technology market has already had its recession and should experience a re-acceleration of growth in 2024 and beyond. According to Gartner, "In 2023, global IT spending growth slows down to 4.4% in constant currency, as CIOs show signs of change fatigue. The growth will rebound to 6.8% in 2024, exceeding $5 trillion."[1] Figure 2 illustrates the extreme impact of Covid on the growth rates of the computer, smartphone, and communications markets—as well as the nascent recovery. These industries are expected to account for 45% of the total IT spending in 2023 and as such will contribute a meaningful share of the overall IT re-acceleration we expect for 2024 and beyond.

A similar parallel can be seen in the technology job market, where tech companies reacted quickly to the changing economic outlook, making significant job cuts in late 2022 and early 2023 **(Figure 3)**. Since then, there have been fewer cutbacks despite emerging concerns over the sustainability of strength in the broader job market. This suggests that any upturn in tech demand is unlikely to be offset by more tech hiring, which is music to investors' ears!

When looking at the business impact of generative AI, cynics point to the high cost of servers and the lack of explicit AI revenues and cash flow being generated by the builders of the infrastructure, which include the giant U.S. cloud companies Microsoft, Amazon, Google, and Meta. This imbalance invites painful comparisons to the early days of the internet when a capital spending boom led to the dotcom bust—a case where early demand failed to live up to expectations.

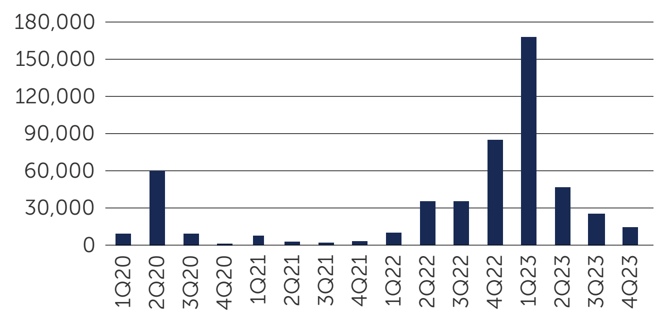
In our view, such framing distorts the true nature of AI and its eventual impact. Rather than being a standalone service, AI, which has the potential to become embedded in all kinds of online services and software applications, helps explain the impressive growth rates being forecast in Figure 4.

Figure 2: Covid's Impact on Annual IT Spending



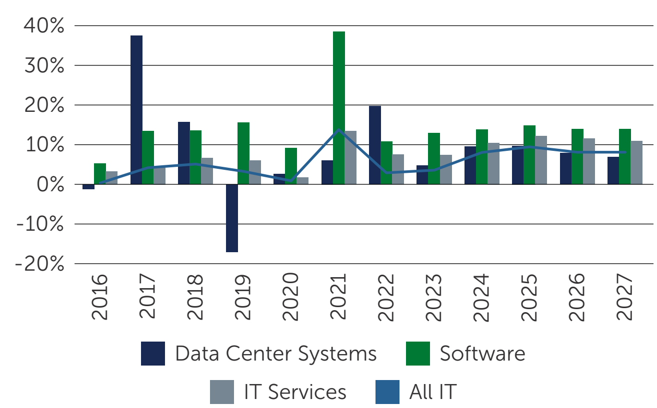
Source: Gartner Databook updates (Q3 2017, Q3 2019, Q3 2021, Q3 2023). As of September 29, 2023. Graphic created by Barings is based on Gartner research.

Figure 3: Tech Layoffs Since Covid



Source: Layoffs.Fyi. As of November 30, 2023.

Figure 4: Expected AI Growth Rates



Source: Gartner Databook updates (Q3 2017, Q3 2019, Q3 2021, Q3 2023). As of September 29, 2023. Graphic created by Barings is based on Gartner research.

1. Source: Gartner, Gartner Market Databook 3Q23 Update. As of September 28, 2023. GARTNER is a registered trademark and service mark of Gartner, Inc. and/or its affiliates in the U.S. and internationally and is used herein with permission. All rights reserved.

"The functionality demonstrated by generative AI services like ChatGPT, underpinned by the ever-present need to improve business performance, is driving accelerating demand for AI tools embedded within widely used business software applications."

Even before ChatGPT burst onto the scene, other varieties of AI were already driving massive investments in IT infrastructure and software. For example, the digital advertising market had suffered a recession of sorts following Apple's decision to force users to opt-in for targeted advertising. Meta was the hardest hit—its advertising revenue growth collapsed from 36% in 2021 to -1% in 2022.[2]

Meta responded to Apple's move by accelerating its multi-billion-dollar investment in AI, intending to increase the effectiveness of its customers' digital advertising spend on their Facebook and Instagram platforms, upon which millions of small- and medium-sized businesses rely. The result of Meta's AI spending can be seen in projections for the company's advertising revenues, which are expected to return to double-digit growth levels this year and next.[3]

Similarly, the functionality demonstrated by generative AI services like ChatGPT, underpinned by the ever-present need to improve business performance, is driving accelerating demand for AI tools embedded within widely used business software applications. Microsoft, ServiceNow, Salesforce.com, and numerous other enterprise software companies have already announced subscription pricing for license tiers that includes access to proprietary generative AI tools, supplied from the cloud infrastructure upon which they are built. In ServiceNow's case, the list price for a Pro Plus license, which contains AI, is around 60% above the basic Pro tier price.[4] Discounting for larger enterprise customers will reduce the price uplift somewhat, but interest in these tools is running very high and optimism is growing that ServiceNow will likely enjoy a significant step up in revenue per customer.

All Roads Lead to the Cloud

Demand for cloud computing infrastructure is inherently tied to these trends in software and AI. However, the IT budget pressure that followed the Covid disruption and cost inflation midway through 2022 led to enterprise customers focusing on optimizing the costs of running their workloads in the cloud. Datadog, a leading cloud-based supplier of tools to observe the performance of their customers' software applications and IT infrastructure in the cloud, has very good visibility on this trend and suffered as a result of the slowdown in cloud spending. In its second and third quarter of 2023 earnings calls, Datadog noted ongoing moderation of these "optimization" headwinds and raised their revenue guidance above consensus forecasts for the upcoming quarter. They also pointed to very early signs that demand for AI services operating in the cloud was starting to move the needle on their annualized recurring revenue base.

2. Source: Meta. As of November 2023.
3. Source: Bloomberg. As of November 10, 2023.
4. Source: ServiceNow. As of November 8, 2023.

Amazon's AWS Cloud division similarly cited the stabilizing demand environment for cloud services with new workloads, including AI, driving confidence in a strengthening recovery. Microsoft's Azure Cloud business saw three points of growth acceleration from the prior quarter to 29% year-over-year, thanks largely to Microsoft's OpenAI investment and demand for ChatGPT.[5]

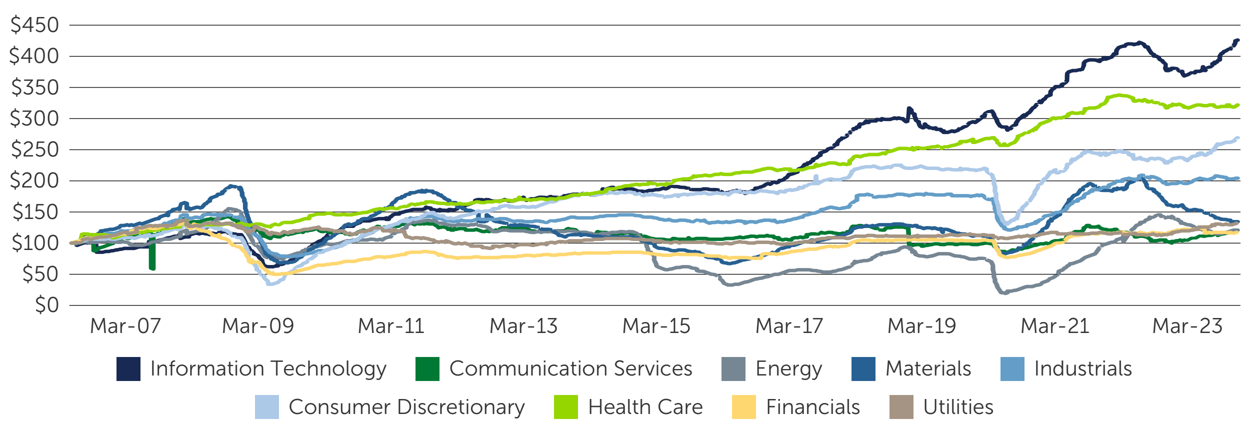
The confidence that cloud services companies are gaining from the stabilizing demand backdrop is contributing to the rising capital expenditures to build out AI infrastructure. nVidia's standout financial results in 2023 are a direct result of this incremental spending. Capacity constraints in nVidia's own supply chain, notably from its main manufacturing partner, Taiwan Semiconductor Manufacturing Company (TSMC), is limiting supply to below the level of demand they are seeing in their order book.
The resulting high prices they are charging for their AI chips and servers are incentivizing their competition and even their customers to develop alternative AI-processing chips to be able to meet that demand. All of this suggests a period of broadening out of the positive semiconductor supply chain impact from re-accelerating demand for AI and public cloud infrastructure.

A Positive Outlook

The post-Covid recovery process forced much of the tech sector to retrench earlier than the rest of the economy simply due to how early in the pandemic the sector saw a surge in demand. The recovery we see today would have happened anyway simply due to the self-help measures the sector had been forced to put in place through 2022 and into 2023. AI is the new driver that adds an extra boost to demand, which is shaping a more optimistic outlook.

As ever, we would caution that a rising tide does not lift all boats. Success in AI in the near term requires a strong base business that can leverage healthy cash flows to extract the gains that AI promises. Hence, we continue to focus on the cloud companies, the leading enterprise software companies that operate from these clouds, and the semiconductor companies making the chips that enable AI to work—which, historically, have consistently driven superior EPS growth compared to the rest of the MSCI ACWI index over the long term **(Figure 5)**.

Figure 5: Rolling 12-Month Forward EPS Estimates For MSCI ACWI Sectors



Source: Bloomberg. As of November 30, 2023.

5. Source: Microsoft. As of October 10, 2023.

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