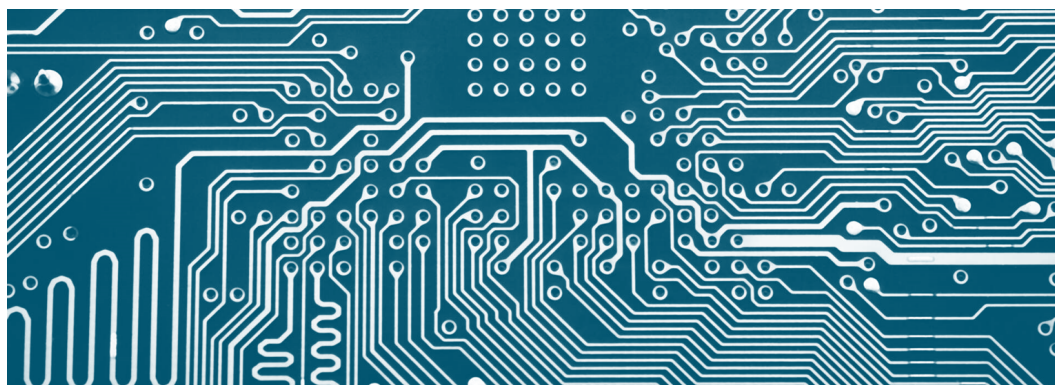


Technology

Tech demand is strong but subject to U.S. trade policy

January 14, 2025

This report does not constitute a rating action.



What's changed?

Tariff. U.S. tariff on tech imports, should they be implemented, could seriously affect IT consumption from consumer-focused PCs and smartphones to enterprise hardware demand. The tech industry is diversifying its supply chain but is still heavily dependent on China.

What are the key assumptions for 2025?

IT spending growth. We forecast IT spending to grow 9% in 2025, up from 8% in 2024, supported by continued AI infrastructure buildout and improvements in non-AI hardware segments and resilient software and IT services demand.

AI investments are strong in 2025. We expect sustained AI investments throughout 2025 given industry comments regarding robust AI demand and hyperscalers' announced capex plans, benefitting rated semiconductor and hardware issuers.

What are the key risks around the baseline?

Higher for longer. Inflation and policy rates have likely peaked, but interest rates may take longer to decline given caution among central banks in cutting rates too soon. This will stress companies in the 'B' ratings category with floating rate debt while keeping enterprise spending subdued.

AI investments will be volatile longer term. AI spending, while robust today, has the potential to turn the tech industry more volatile longer term should AI-related revenue growth fail to meet expectations and hyperscalers "pause" new infrastructure buildouts.

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Ratings Trends: Technology

Chart 1
Ratings distribution by subsector

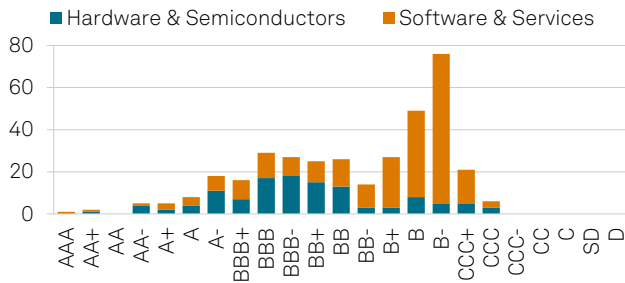


Chart 2
Ratings distribution by region

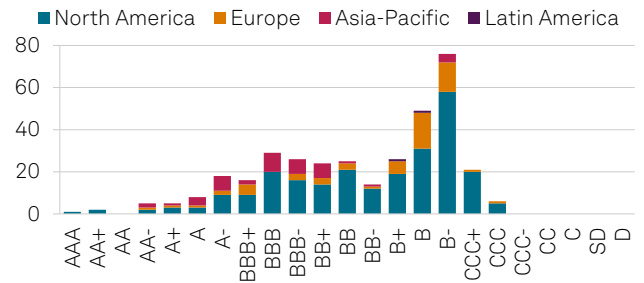


Chart 3
Ratings outlooks by subsector

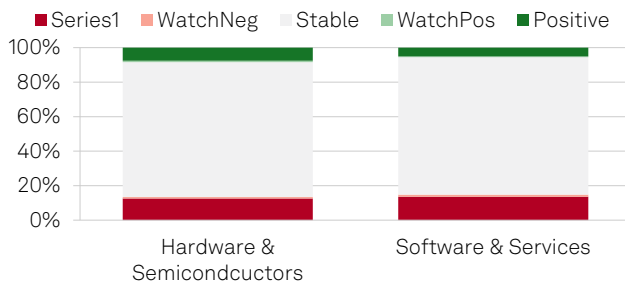


Chart 4
Ratings outlooks by region

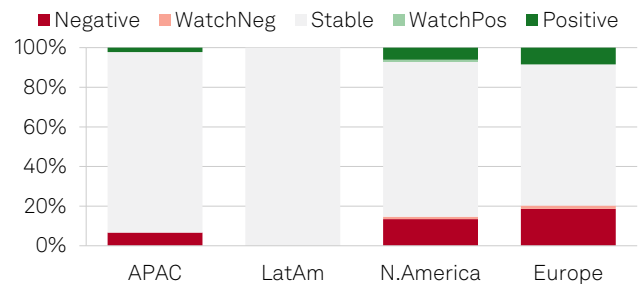


Chart 5
Ratings outlook net bias by subsector

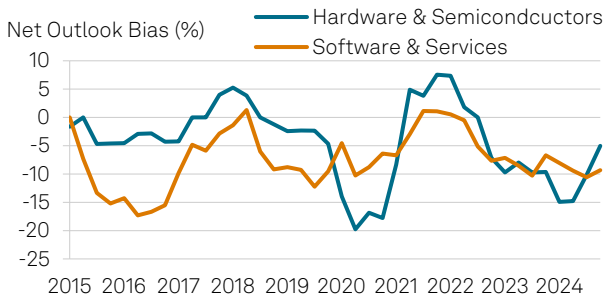


Chart 6
Ratings net outlook bias by region

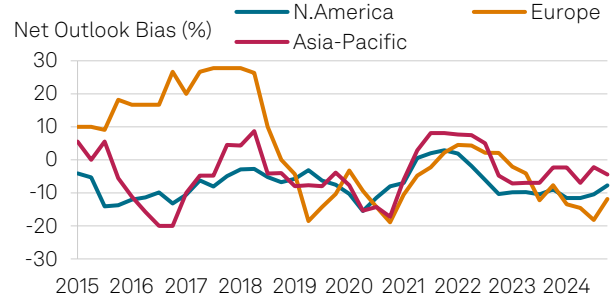


Chart 7
Ratings outlooks

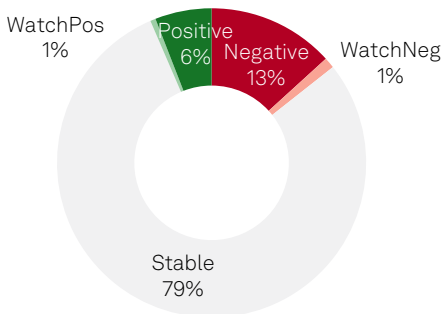
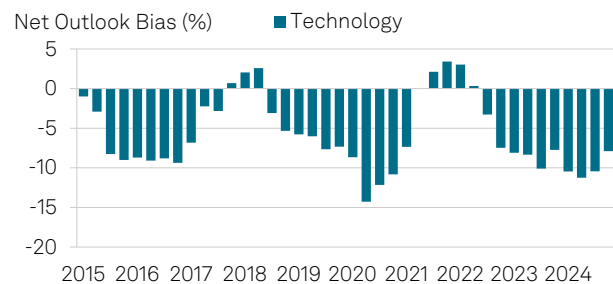


Chart 8
Ratings outlook net bias



Source: S&P Global Ratings. Ratings data measured at quarter-end.

Industry Outlook

Ratings trends and outlook

North America: While the uneven global macro backdrop is a risk to demand, the majority of U.S. technology issuer ratings have been stable. We expect this trend to continue in 2025, particularly in the investment-grade category, where approximately 85% of our issuer ratings have stable outlooks, while speculative-grade credits face heightened downside risks.

Non-stable outlooks (e.g., positive or negative) generally precede rating actions, but upgrades or downgrades from stable outlooks are possible. We see ratings upside in AI-exposed semiconductor companies seeing strong demand. Supportive financial policies, high business quality, and solid cash flow profiles across the investment-grade tech sector will provide a cushion for ratings; however, transformative acquisitions could be a catalyst for rating or outlook changes, as seen in the cases of Broadcom Inc. and Hewlett-Packard Enterprises (HPE).

Select investment-grade credits have non-stable outlooks and may experience rating changes over the next 12 to 24 months. Uber Technologies (BBB-/Positive/--) was the sole rising star in 2025, with the potential for further rating upside as profits and free cash flow scale. ON Semiconductor (BB+/Positive/--) is also a candidate in 2025 based on our assessment of its improved product portfolio and meaningful margin expansion that is likely to be sustained. Other credits with positive outlooks include Advanced Micro Devices (AMD), Analog Devices, Cadence Design, and Marvell. Corning and HPE remain on negative outlooks.

We took positive rating actions on AI hardware and infrastructure beneficiaries including AMD, NVIDIA, and Marvell during 2024. Broadcom received an upgrade to 'BBB' with a stable outlook on its acquisition of VMware and our view of its improved business profile. We took the unusual step of downgrading Intel Corp. three times in 2024 given its continued operating challenges and significant capital spending to support its foundry strategy.

Despite pockets of weakness in the automotive and industrial semiconductor sectors, we maintained our ratings on Texas Instruments (A+/Stable/--) and NXP Semiconductors (BBB+/Stable/--). We revised our outlook on Analog Devices to positive from stable in August 2024, reflecting our view of the company's strong business quality and low leverage, despite weakness in these end markets.

Higher-quality speculative-grade credits in 'BB' category may see positive rating momentum but spec-grade ratings will likely carry a more negative bias in 2025 considering the high number of credits in the 'B' category and below. Credit quality certainly deteriorated for those carrying significant variable interest rate debt, most prevalent among 'B' or 'B-' rated issuers, as the elevated interest rate environment persisted. Most speculative-grade ratings have stable outlooks, although approximately 18% are on negative outlook or CreditWatch negative as of year-end 2024. Negative rating actions, including downgrades and negative outlooks, slightly outpaced positive rating actions in 2024 by 1.2:1 ratio. Apart from three issuers--Xerox (B+), Lumentum (B), and Maxlinear (B)--all other downgrades were from the 'B-' category and below. Western Digital (BB) is on CreditWatch with negative implications.

The prospect of slower rate cuts could push out cash flow improvements we expect in 2025 for some companies. For instance, we revised our outlook on Solera (B-; Polaris Parent) to negative from stable due to liquidity pressures and our expectation for free operating cash flow (FOCF) pressures stemming from significant interest expenses. Additionally, we downgraded companies facing idiosyncratic business challenges and nearing debt maturities. We downgraded Veritas (SD; selective default) on its debt exchange transaction to address its 2025 maturity. Verifone's

credit deterioration, following a inventory correction in point-of-sale hardware and its upcoming maturity, led us to downgrade the company to 'CCC+' with a negative outlook.

Most of the Canadian tech sector maintains stable ratings; however, some companies may face downgrades in 2025. Currently, two issuers have negative outlooks: We downgraded Mitel Networks to 'CCC' and assigned a negative outlook due to anticipated liquidity pressures amid challenging conditions in the unified communications market. Similarly, we hold a negative outlook on Alludo (B-; also known as Cascade Parent Ltd.) because of reduced demand and weakening earnings and cash flow. Canadian tech companies are experiencing trends similar to their U.S. counterparts. For instance, CGI plans to invest C\$1 billion over the next three years in AI-based services and solutions as more customers seek AI solutions. Celestica is benefiting from increased growth and spending at hyperscalers, providing high-performance switches and custom computing solutions. In the expanding human capital management (HCM) market, Dayforce continues to thrive due to its scalable infrastructure and capability to perform human resource operations across multiple jurisdictions, while also targeting larger businesses and moving upmarket to serve large enterprises and global clients. Despite these positive developments, smaller software companies are experiencing low- to mid-single-digit revenue growth, with high leverage and rising interest rates continuing to exert pressure on their credit metrics.

While the uneven global macro backdrop is a risk to demand, the majority of U.S technology issuer ratings have been stable. We expect this trend to continue in 2025, particularly in the investment-grade category, where approximately 85% of our issuer ratings have stable outlooks, while speculative-grade credits face heightened downside risks.

Europe: We expect steady credit performance for European tech issuers in 2025, with 73% of our rated issuers holding a stable outlook. The remaining issuers have a negative bias, with 20% on negative outlooks or on CreditWatch (CW) with negative implications, while 7% carry positive outlooks or are on CreditWatch with positive implications. The majority of the negative outlooks are on 'B' or 'B-' rated financial sponsor-owned issuers, characterized by very high leverage or liquidity pressure.

In 2024, rating actions exhibited a negative bias, with six downgrades compared to four upgrades, and six negative outlook revisions versus two positive outlook revisions. Atos (SD; selective default) alone accounted for four downgrades during the year while we downgraded both ams-OSRAM AG (B/Stable/--) and Poseidon Bidco (B-/Negative/--) by two notches due to difficult market conditions that led to declines in EBITDA and increases in leverage. On the other hand, we upgraded Infineon (BBB+/Stable/A-2) at the beginning of the year, following several years of strong growth, creating the scale needed to absorb downturns in the cyclical semiconductor industry. The remaining three upgrades were of software companies that demonstrated solid operating performance and gradual deleveraging: Precise Midco (B/Stable/--), Almaviva (BB/Stable--), and Unit4 Group (B-/Positive/--). We also assigned four new ratings during the year: the Dutch advanced packing provider BE Semiconductor Industries (BB+/Stable/--), the Italian high complexity PCB manufacturer Castello (BC) Bidco Sp.A (B/Stable/--), the U.K.-based AI-powered cyber security provider Luke Midco II Ltd. (Darktrace) (B-/Stable/--), and the integrated payments processor Al silk Midco Ltd (Planet) (B-/Stable/--).

We expect that market conditions for technology hardware issuers in Europe will continue to present challenges, although we anticipate an overall improvement compared to a difficult 2024. We expect stabilization in most end markets, stemming from a normalization of customer inventories, which had depressed demand in 2024 following a post-COVID-19 buildup in 2022-2023. That said, we expect that the auto-exposed semiconductor companies we rate will continue to be affected by flat levels of auto production and stagnating electrification in the

automotive sector in Europe and North America, leading to a low-single-digit revenue decline in 2025. By contrast, we expect a return to growth for our telecom equipment makers in 2025 following two years of consecutive revenue decline, reflecting expanding 5G coverage in developing markets and capacity investments in more mature markets.

Increased geopolitical conflict and trade tensions could prompt governments to impose additional tariffs or trade barriers on global supply chains, and some governments could take actions that favor local suppliers. The impact on European issuers resulting from the potential policies of the new U.S. administration and possible reprimands from other governments remain uncertain. However, we note that many of our issuers have sizable exports to both the U.S. and China, which could be directly or indirectly affected in various ways. At the same time, we generally consider our technology hardware issuers to be relatively diversified both in terms of customer and supplier bases.

We believe that software and IT services providers have strong growth prospects that will support stable ratings. The efficiency and competitive advantages of their cloud migration and digitalization offerings will likely spur demand for their products, which we expect will remain resilient. At the same time, we note that many of the companies we rate are grappling with persistently high restructuring costs related to business transformations and acquisitions, leading to pressure on profitability and FOCF generation. Although we expect a gradual decline in interest rates during 2025, we foresee that companies rated in the 'B' category (approximately 66% of European technology ratings) will continue to face high interest costs, especially given the high ratio of floating rate debt, which will likely result in lower FOCF generation and weaker credit ratios.

Asia-Pacific: More than 90% of the APAC issuers in the hardware and software sectors maintain a stable outlook thanks to a recovery in end-market demand despite tepid macroeconomic conditions. Most tech companies we rate possess substantial financial buffers to support their high capital expenditures needs. We expect these companies, particularly in Japan, will continue making aggressive investments and pursuing large acquisitions, some of which will be in non-tech areas such as entertainment and health care. These efforts aim to diversify their business portfolios and seek growth opportunities primarily in overseas markets; however, such aggressive investments and acquisitions may narrow the rating headroom for some Japanese tech issuers.

The AI super cycle is expected to continue boosting sales in product categories such as high-bandwidth memory and AI servers, despite U.S.-China trade tensions. This trend will benefit Korean DRAM manufacturers and companies involved in the supply chain for AI-related products. AI features and new models of smartphones and PCs are driving replacements in the premium segment. On the other hand, the increase in sales prices for AI-enabled PCs may introduce higher demand uncertainty and inventory risks within the sector. Additionally, the rising costs of AI-enabling components will pressure hardware margins for smartphone companies, although this may be partially offset by cost savings in other areas.

The APAC IT services sector is likely to continue benefiting from strong growth in digital transformation (DX) and automation. We anticipate this trend will support the earnings and profitability of Japanese and Indian IT services issuers over the next one to two years. Robust cash flow, supported by multiyear projects, diversified downstream market exposure, and solid financial foundations—often close to a net cash position—will continue to underpin their creditworthiness, even as they increase growth investments in areas such as DX and AI.

Latin America: Our base-case outlook for Latin American issuers reflects a positive momentum for business expansion; however, volatile macroeconomic conditions and high investment needs in the region may hinder our growth forecast for 2025.

We expect that online marketplace and fintech platform MercadoLibre Inc. (Meli; BB+/Positive/--) will maintain its leading market position in the region and continue to achieve strong growth. This growth aligns with the increasing digitalization of commerce and financial services in the region, which still lags other developed markets. While we believe Meli may face renewed competition from new foreign entrants, particularly Chinese platforms, its extensive footprint, superior user experience, and robust shipping capabilities provide it with significant competitive advantages. These factors, combined with its comfortable capital position, should enable Meli to grow while maintaining relatively conservative leverage metrics.

In Brazil, economic uncertainties continue to affect the retail and services sectors. Elevated interest rates may pose challenges for certain companies within the credit market. Despite this environment, we maintain our stable outlook on the Brazilian technology companies Agasus S.A. (brA-/Stable/--) and Positivo Tecnologia S.A (brA/Stable/--). We believe these companies will continue to see enhanced performance metrics over the coming years, even in a highly competitive and volatile exchange rate environment. In addition, we anticipate that sustained effective management of working capital will facilitate cash generation for the companies, thereby contributing to a gradual reduction in their debt levels.

Main assumptions about 2025 and beyond

1. IT demand set to accelerate but is subject to U.S. trade policy.

We forecast IT spending growth will improve to around 9% in 2025 versus 8% estimated for 2024, supported by a turnaround across the hardware segments which will cascade to a continued strong semiconductor demand. Software sales will remain resilient while IT services will grow meaningfully, partly due to ongoing public cloud migration. Our outlook incorporates a partial implementation of proposed Trump policies, including tariffs on China, but how these policies evolve will affect IT spending across the globe.

2. Hyperscalers betting big on the future of AI.

The global AI investment landscape is rapidly expanding, with spending projected to reach \$630 billion by 2028 per IDC. Hyperscale data centers from Microsoft, Alphabet, and Meta are increasing capital expenditures, while semiconductor makers like NVIDIA and TSMC lead the beneficiaries. Software companies are still exploring monetization strategies, integrating AI into products and experimenting with revenue models as the industry evolves.

3. High uncertainty to China's technology spending in 2025.

The Chinese government's recent stimulus measures to boost consumption pulls forward some demand and will lead to slower growth in smartphone and PC shipment in 2025. The semiconductor sector in China faces overcapacity due to new capacity additions and softening end demand, although the government push to localize some tech supplies may alleviate the pressure. Large technology companies in the country will likely continue to spend on imported and domestic AI chip solutions for long-term competitiveness, after already significantly increasing their AI-related capital expenditure in 2024.

IT demand set to accelerate but is held hostage to U.S. trade policy. AI was all the rage in 2024. Despite global macroeconomic and geopolitical uncertainties and cautious enterprise IT budgets, hyperscalers continued their relentless march toward building out their generative AI infrastructure. While these companies have yet to meaningfully monetize their AI investments, their cloud revenues still grew in excess of 20% as enterprise customers continued their migration to the public cloud, keeping overall IT services growth near 7% in 2024 (see table 1). Software spending, despite its perceived backseat to the AI buildout, remained resilient, growing

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near 9% (see "[Solid IT Demand Bodes Well For Technology Credits In 2025](#)", published Jan. 8, 2025).

The PC and smartphone industries finally turned the corner in 2024 after two years of a significant downturn. Global server shipment grew an estimated 7% in 2024, but industry revenues jumped more than 40% to nearly \$200 billion, according to IDC as the more expensive AI-enabled server shipments nearly doubled. The semiconductor industry was the biggest AI beneficiary, growing nearly 19% in 2024 due in part to massive spending on AI-related infrastructure including GPUs and high bandwidth memory (HBM). In all, we estimate global IT spending grew near 8.3% on a constant currency basis in 2024, higher than the estimated real GDP growth of 3.3% (nominal growth near 6%).

Our 2025 global GDP forecast calls for a 3.0% growth (nominal growth near 5%). U.S. GDP growth will slow gradually to the 2% area in 2025, incorporating a partial implementation of proposed Trump policies and consistent with a soft landing, while the Eurozone will continue its gradual recovery, growing 1.2% versus 0.8% in 2024. China's growth will slow toward 4.1% as the U.S. tariffs weaken exports and investment. That said, our global macroeconomic outlook is hostage to the policy implementation of the new U.S. administration. Potential changes in fiscal, trade, and immigration policy from the U.S. are significant unknowns at this juncture. Specifically, it is unclear to what extent campaign promises will translate into policy, and when. Given the size of the U.S. economy, policy action on any of these fronts can move the IT spending outlook among all regions.

Table 1

Global IT growth forecasts

	2023	2024e	2025e
Macro			
Global GDP growth (real)	3.5%	3.3%	3.0%
U.S. GDP growth	2.9%	2.7%	2.0%
Eurozone GDP growth	0.5%	0.8%	1.2%
China GDP growth	5.2%	4.8%	4.1%
Global IT spending (nominal)	3.9%	8.3%	9.0%
Revenues			
IT services	6.0%	7.0%	8.0%
Software	10.0%	9.0%	10.0%
Semiconductors	(8.0%)	19.0%	12.0%
Network equipment	7.0%	(11.0%)	7.0%
Mobile telecom equipment	(11.0%)	(10.0%)	3.0%
External storage	(2.0%)	2.0%	4.0%
Shipments			
PC	(14.0%)	1.0%	3.0%
Smartphone	(3.0%)	5.7%	2.4%
Server	(19.0%)	7.0%	4.0%
Printer	(3.0%)	(5.0%)	(3.0%)

e—Estimate. Source: S&P Global Ratings.

Despite the uncertainty that lies ahead for global trade, we forecast global IT spending will grow a robust 9% in 2025, higher than in 2024 and much greater than our expectations for global GDP growth. We note our forecast has a high degree of variability. In our economic forecasts, we assume President-elect Trump will use his executive powers to impose targeted tariffs on China by raising the bilateral (weighted average) effective tariff rate on Chinese imports to 25%, from an estimated 14% currently, and that Beijing would likely reciprocate with equivalent barriers on American exports to the country. We further assume that such tariffs could be managed over time by most hardware providers by passing on much of the incremental costs to end users and through supply chain reallocation, albeit gradually. Conversely, we do not assume any potential upside in U.S. enterprise IT spending should corporate tax cuts be implemented in 2025.

Hyperscalers will continue to generate revenue growth well above 20% in 2025, partly supported by gradual monetization of AI investments, and contribute to an overall strong IT services growth near 8%. The software segment will continue to outpace the overall IT industry, with a modest acceleration to around 10%, although some investment-grade issuers may exceed that level. While AI-related gains are nascent overall, we believe the continued strong growth among software vendors validates their strategy of providing productivity gains and lowering customers' operational costs.

Enterprises are entering 2025 with an improving IT spending view as they continue their transition to the cloud and slowly ramp up their investments in generative AI projects. We believe hardware spending will improve materially in 2025. Server shipments should grow near 4% but revenue growth will be much higher given high AI server ASPs. We expect network equipment and mobile telecom equipment makers to return to growth while storage sales should grow around 4%. PC and smartphone shipments should grow in the 2%-3% range but industry revenues should be higher given modest infusion of AI-enabled devices.

We forecast the semiconductor industry, already the biggest beneficiary of the AI arms race, will outgrow the overall IT industry again, at near 12% growth, largely driven by continued adoption of AI compute (GPU, HBM, among others) as well as a rebound in non-AI-related demand. We estimate that industry revenues, excluding memory and NVIDIA, will grow in the mid-single-digit percentage area after experiencing a similar decline in 2024.

Hyperscalers betting big on the future of AI. The AI investment landscape is poised for significant growth, building upon the extraordinary momentum established in 2024. IDC projects that global AI spending will surge to a staggering \$630 billion by 2028, a nearly 30% compound annual growth rate from 2023. Financial services, software and information services, and retail are expected to account for 45% of anticipated AI spending over the next five years. Fast-growing use cases include claims processing, digital commerce, sales planning, smart factory floor, and product design.

We estimate capital spending by large data center players Microsoft, Alphabet, and Meta Platforms will increase about 50% in 2024, followed by more than 20% in 2025. This marks an incremental \$30 billion expansion in 2025 on top of nearly \$50 billion growth in 2024 amid a significant build-out of data center structures to be filled with equipment later. Management comments support a continued robust investment environment. Last quarter, Microsoft CFO Amy Hood noted that demand continues to be higher than the company's available capacity, despite rapid investment growth; Amazon reported similar constraints. Google's CEO Sundar Pichai has said that the risk of underinvesting is greater than the risk of over investing.

The clearest beneficiaries of AI investment spending at this point are the semiconductor makers. Far and away, first among them is GPU-provider NVIDIA Corp. followed by its manufacturing partner Taiwan Semiconductor Manufacturing Corp (TSMC). The memory chip makers are benefiting from high-bandwidth memory necessary for AI servers as are the custom chip

providers like Broadcom and Marvell that help the large public cloud providers build their own chips like Google has done with its Tensor Processing Units and Amazon with its Trainium chips. AI server makers such as Dell and HPE will get a boost as enterprises build out on-premises or private cloud AI capabilities because of data governance and security requirements.

The platform providers—Amazon, Microsoft, Google, and Oracle—that rent AI data center capacity to model builders and to a lesser extent enterprises running AI workloads, are gaining revenue growth but are also paying for it with unprecedented levels of capex measured in the tens of billions of dollars annually for each company. The frontier model providers like OpenAI are being rewarded with large valuations but are reportedly still losing billions annually as they keep plowing cash into training the next mode. This keeps getting more expensive as these companies add more and more compute to make advances, while also try to invent new training techniques as model improvements are slowing.

Software companies are the furthest behind in monetization. They are investing in building their own models to integrate into their products—creating revenue for the platforms—but the industry remains in the early stages of monetization. Companies are experimenting with revenue models. Some are charging subscription fees for specific AI capabilities, while others are pursuing a more general strategy, infusing AI into their existing products to make them more competitive. Early examples include Microsoft's Copilot assistant that is integrated into its Microsoft 365 suite, Salesforce's Agentforce, which provides agents that can handle tasks like customer support without human intervention, and Adobe's integration of AI tools to support content creation and data analysis. We expect more progress from software companies on AI monetization in 2025 as investors seek returns on investment spending.

High uncertainty to China's technology spending in 2025. China accounts for more than 20% of the worldwide hardware and semiconductor spending. A potential slowdown in its domestic market poses significant risk to the overall health of the global IT industry. Recent stimulus measures implemented by the Chinese government, particularly the subsidies for trade-in of used consumer electronics, significantly bolstered consumer spending of smartphones, PCs, home appliances, and other products in late 2024, pulling forward some demand from 2025. Without effective further stimulus or an economic recovery, we expect the spending surge to subside in 2025. We expect China's smartphone and PC shipment growth in 2025 to slow to low-single-digit and mid-single-digit growth, respectively.

China's semiconductor market for mature nodes will continue to grapple with overcapacity, although the government's initiative to localize chip and technology supply production may alleviate some of this pressure. The Chinese government's push for technology companies to invest in chip manufacturing and the country's significant surge in purchasing semiconductor equipment from ASML in the first half of 2024 amid concern over further trade restrictions has resulted in overcapacity. We anticipate softening consumer electronics demand in 2025 and the commissioning of new capacity, albeit at a slower pace than in 2024, to lead to reduced utilization rates and ASP for companies in this sector. The Chinese government is focused on enhancing the localization of technology supplies, particularly smartphone components and semiconductor components for electric vehicles (EVs). This strategy may help mitigate the effects of declining demand for mature node semiconductors due to the country's slowing economic growth.

Large technology companies in China will continue to invest heavily in AI infrastructure in 2025, as falling behind in AI risks hurting their future competitive positioning in their core businesses. Large Chinese internet companies such as Alibaba and Tencent doubled their capital expenditures in 2024, mostly for investments into AI-related infrastructure. Much of the spending in 2023 and 2024 were to stock up on advanced AI chips from the U.S. prior to the

effective date of U.S. export restrictions. However, we believe Chinese companies will continue to buy AI chips with China-specifications, as well as homegrown AI chips to continue the buildout of their AI capabilities.

Credit metrics and financial policy

With policy rates slowly falling, significant refinancing achieved in 2024, and a solid industry growth outlook in 2025, we expect a favorable credit environment over the near term. The technology sector has already seen solid earnings growth in 2024. Supportive financing conditions and lower interest rates allowed more than three-quarters of U.S. corporate speculative-grade bond and leveraged loan issuance in 2024 for refinancing or repricing. Inflation and policy rates have likely peaked, but interest rates may take longer to decline given caution among developed market central banks in cutting rates too soon for fear of reigniting inflation. We expect the U.S. federal funds rate will average about 3.9% in 2025 before declining to the neutral rate of about 3.1% in mid-2026.

We expect credit metrics to improve for most of our investment-grade companies given supportive top-line growth expectations and stable to improving margin profiles. We expect heightened share repurchases and acquisition activity in 2025 but do not think this will affect the credit profiles of most of our investment-grade issuers.

However, amid the U.S. political transition, the prospect that materially higher tariffs will reignite inflation and force the Federal Reserve to halt—or even reverse—its cycle of monetary-policy easing poses a significant risk. Investors could demand higher-risk premiums amid slowing economic growth, rising policy uncertainty, and increasing market volatility. Borrowers, especially those at the lower end of the ratings scale, would face more challenges servicing debt or refinancing under this scenario.

We expect financial policy will remain relatively consistent in 2025 for rated technology issuers. M&A deal flow was relatively quiet in 2024, except for Synopsys' acquisition of ANSYS for \$35 billion in January 2024, Cisco's acquisition of Splunk for \$28 billion in March 2024 (closed), and HPE's acquisition of Juniper Networks for \$14 billion. Synopsys and Hewlett Packard Enterprise deals remain on hold due to anti-trust issues. Other sizable deals included Cohesity's (B/Stable/-) acquisition of Veritas' data protection business to form a company valued at \$7 billion. The transaction included a \$2.3 billion debt financing. Other notable transactions included IBM's acquisition of HashiCorp. for \$6.4 billion and Thoma Bravo's acquisition of Darktrace for \$5.3 billion.

We expect deal-making to pick up in 2025. While rates are likely to stay higher for longer, an end to the Federal Reserve's hiking cycle should improve the outlook for buyers and sellers. The Trump administration's potential friendlier stance on M&A should also spur deal-making, at least for smaller transactions that do not require Chinese regulatory approval.

Through the 12 months ended September 2024, technology companies repurchased a total of \$246 billion of stock, up 24% from the prior year. We see a broader pickup in buyback activity into 2025 led by Apple, Alphabet, Meta, and NVIDIA, the four largest share repurchasers within S&P 500 Index through September 2024. With the recent Fed fund rate cuts, and the market's current expectations for more, companies may be more willing to increase their share buybacks. We expect lower-rated investment-grade companies, especially those in hardware and semiconductor industries, to exercise caution with shareholder returns in 2025 given tariff issues.

Key risks or opportunities around the baseline

1. Incremental trade restrictions may prove more disruptive than prior rounds.

While the technology industry has weathered trade conflict well to date, incremental restrictions from a second Trump administration could prove more painful. Tariffs and restricted entity lists have affected hardware and semiconductor companies the most, and a further escalation could lead to more disruptions, particularly in the production of smartphones and PCs, which are heavily concentrated in China. The industry is diversifying supply chains outside of China, but this process is slow and expensive.

2. AI is transforming the technology industry in ways that will create winners and losers.

The technology industry is on the cusp of a massive wave of spending on AI, with companies poised to spend over \$230 billion in 2024, primarily from the largest technology companies globally. While this presents opportunities for infrastructure providers, it also poses risks, including margin pressure across the software landscape and the potential for an "AI winter" if the current level of enthusiasm proves to be oversold. Over the near term, we continue to see benefits accruing to providers of compute infrastructure and the core backbone models, while traditional—even cloud native—software providers will need to remain nimble to see benefits from this wave of investment.

3. Rising rate uncertainties pose risks to lower-rated issuers.

Our economists expect diverging global macro conditions and potential growth effects of U.S. policies will lead to inflationary pressures and a possible Fed rate cut pause at some point. They now expect the Fed rate to end 2025 at 3.6% versus 3.1% previously. A more stable backdrop may spur M&A activity while higher-for-longer presents downside risk for lower quality issuers that didn't refinance in 2024.

Incremental trade restrictions may prove more disruptive than prior rounds. The global technology industry has navigated the challenges of trade tensions, expanding tariffs, and restricted entity lists over the past eight years, growing impressively despite these multiple headwinds. Nevertheless, we view a second Trump administration as creating substantial uncertainty around U.S. trade policy, with the potential to cause significant disruption to the tech industry. Our current base-case macroeconomic forecast assumes raising the effective weighted average tariff rate on Chinese imports to about 25% from 14%, with comparable retaliatory tariffs imposed by Beijing. While we believe that the broader industry should be able to weather this level of incremental trade barriers without major disruptions, the eventual course of U.S. policy may vary substantially, and we view potential trade hurdles as a key source of downside risk to our base-case forecast.

Trade restrictions—particularly those focused on China—have been a major factor in the technology industry over the past two presidential administrations, and the technology industry enters 2025 having already adapted to a less free-trade oriented world. Hardware and semiconductor vendors have made initial steps to diversify supply chains away from China, and substantial industrial policy in the western world—including the CHIPS Act in the U.S.—has spurred substantial investment in domestic semiconductor manufacturing.

Notwithstanding these adaptations, substantial risks remain should the incoming administration pursue an even more aggressive restrictive policy than we currently expect. One area of exposure is smartphone and PC production, which remains heavily concentrated in China. China accounts for 60% or more of global production for these products, particularly for PCs and Android smartphones. This makes such products susceptible to increases in U.S. import tariffs and is a meaningful risk for PC and some smartphone manufacturers. Though we expect smartphone and

PC manufacturers can pass off some of the cost of higher tariffs to U.S. consumers and enterprises, sharply higher prices for such products could stifle demand and slow replacement cycles.

Restrictions on the export of advanced chips and their manufacturing equipment could also further exacerbate technology supply chain risks. While current U.S. export restrictions have been narrowly focused on the highest-performance chips used in AI and other advanced applications, these chips are a much larger share of semiconductor industry revenues than they were four years ago. Thus far, these restrictions have mostly impacted a handful of vendors selling advanced chips and wafer fabrication equipment (WFE). We expect these restricted entities to grow in scope—the U.S. added over 140 new entities to its restricted list in the third round of export controls this past December. If these restrictions continue to exclude a growing and increasingly important sector of the semiconductor industry from China, we see the risk of increasingly aggressive retaliation that could affect the broader technology sector.

We expect the industry to continue to pursue supply chain diversification outside of China and East Asia more broadly to mitigate some of these risks but view this process as slow and expensive. The CHIPS Act, which boasted roughly \$280 billion of incremental funding for U.S. semiconductor research and manufacturing, has only begun to reverse a decades-long consolidation and will need to be followed by many similarly scaled actions if supply chains are to be meaningfully rebuilt. If growing U.S. budget deficits limit political appetite for further subsidies, the technology industry could find itself unable to rebalance capacity in the face of growing trade challenges.

APAC technology suppliers have responded to the threat of additional tariffs by investing in capacity outside of China. Initially downstream assemblers were the first to invest in overseas capacity, but midstream technology suppliers are now following suit. This is a notable trend considering that midstream suppliers tend to be asset heavy, rely on skilled labor, and require proximity to upstream suppliers and downstream customers making it difficult to shift such capacity elsewhere. Such investments are likely to continue over the next two years, somewhat reducing the financial buffer for these companies.

Nonetheless, smartphone and PC production remain heavily concentrated in China, making these products susceptible to increases in tariffs and a meaningful risk for Asian manufacturers.

AI is transforming the technology industry in ways that will create winners and losers.

Generative AI and the broader universe of machine learning technologies pose both substantial opportunities and risks to technology companies and represent the greatest unknown risk facing the technology sector over the next five years. We currently expect companies globally to spend over \$230 billion on AI investment in 2024, representing nearly 7% of total IT spending, a figure we expect to grow to over \$300 billion in 2025. This massive wave of spending, primarily undertaken by five of the largest technology companies globally—Amazon, Alphabet, Microsoft, Meta, and Oracle—has largely benefitted infrastructure providers to date. As most of the investments so far have been focused on building out the core compute hardware needed to train large models, initial beneficiaries have been providers of “picks and shovels” to these hyperscalers rather than model owners and operators themselves.

While general optimism for this technology remains high and we don’t see signs of a pullback in spending so far, we see several ways in which growing adoption of AI could create disruption and increase credit risks among technology companies. For example, as enterprises have increasingly made AI an area of focus in their IT budgets—overall spending levels have not risen in step with this and we have heard comments regarding longer software sales cycles and pressured budgets in any area outside of AI or IT security. While software companies have pushed to add AI-enabled features in their offerings—such as Salesforce’s Agentforce—these enhancements are in early

stages and we have not seen substantial adoption outside of applications in design (Adobe) or coding (Microsoft Co-Pilot). We see risk that this could lead to margin pressure across the software landscape if providers of models and inferencing infrastructure are able to capture most of the incremental value added, while any marginal pricing power is competed away.

Although a smaller risk, we also see potential risk to companies if the current level of enthusiasm for AI proves to be oversold. Despite hundreds of billions already spent and hyperscalers’ push to pour more money into this technology, no “killer app” has yet emerged to create profitable broad adoption. Past cycles of heavy tech capital investment without a clear use-case have proven painful. While most of the heavy spending to date has been undertaken by the largest and best-capitalized companies in the sector that would certainly be able to weather an AI winter, we think an unexpected pullback could prove painful for several sectors of the semiconductor industry, which have largely relied on HBM and AI-enabling advanced logic chips to fuel the current market recovery.

Rising rate uncertainties pose risks to lower-rated issuers. The incoming Trump administration’s policy changes and calls for higher tariffs increase downside risk of stubborn inflation data and higher interest rates for longer in 2025. Although a declining interest rate environment is widely expected, the increasing probability of less aggressive rate cuts will not bode well for companies with vulnerable businesses or high debt leverage (see table 2). Our economists expect diverging global macro conditions and potential growth effects of U.S. policies will lead to inflationary pressures and a possible Fed rate cut pause at some point. S&P Global economists now forecast a gradual move in the Fed policy rate to reach 3.1% by fourth-quarter 2026 from fourth quarter 2025 under their previous forecast (see “[Global Economic Outlook Q1 2025: Buckle Up](#),” published Nov. 27, 2024).

Table 2

Less aggressive rate cuts will likely weigh on lower-rated entities

U.S. technology sector - Average interest cover and FCF to debt by rating category

	B		B-		CCC+ and below	
	2019	2024	2019	2024	2019	2024
Interest cover (x, adjusted)	2.79	1.57	1.85	1.32	1.62	0.68
Interest cover (x, reported)	1.98	1.55	1.15	1.24	0.88	0.47
FCF to debt (%)	8.2	4.1	2.6	1.5	1.9	-3.0

FCF—Free cash flow. These metrics represent simple averages by rating category, are not adjusted for new issuers and withdrawn ratings, and exclude outliers and pre deal periods. Source: S&P Global Ratings.

With this uncertainty settling in, a flurry of lower rated borrowers experiencing good operating performance rushed to reprice loans in 2024 and may continue into 2025. For example, Cloud Software Group (B/Stable/--) came to market several times to issue and opportunistically reprice its debt, including in November 2024 when it repriced more than \$6 billion of term loans, reducing the spread 25 to 50 basis points on its floating rate coupon. We view the refinancings positively considering the company’s capital structure—comprising \$16 billion of funded debt.

The repricing is a story of have and have-nots, as we witnessed some borrowers feeling the pinch of higher rates and become more vulnerable now that the trajectory of rate cuts is becoming uncertain. Underperforming credits have struggled to address capital structures amid weak operating performance and free cash flow generation. For example, in April 2024 we revised our outlook on Solera (B-/Negative/--) to negative from stable based on its reducing liquidity buffer and significant interest expense burden. While we expect self-help to expand EBITDA, the change in rate trajectory expectations raises downside risk for Solera.

Related Research

- [Solid IT Growth Forecast Bodes Well For Technology Credits In 2025](#), Jan. 8, 2025
- [Global Economic Outlook Q1 2025: Buckle Up](#), Nov. 27, 2024

Industry Forecasts: Technology

Chart 9
Revenue growth (local currency)

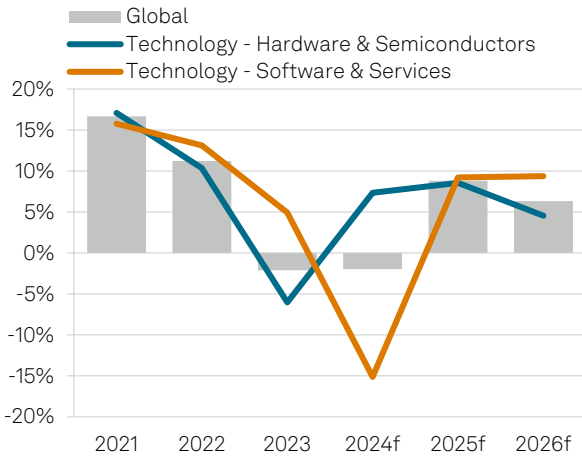


Chart 10
EBITDA margin (adjusted)

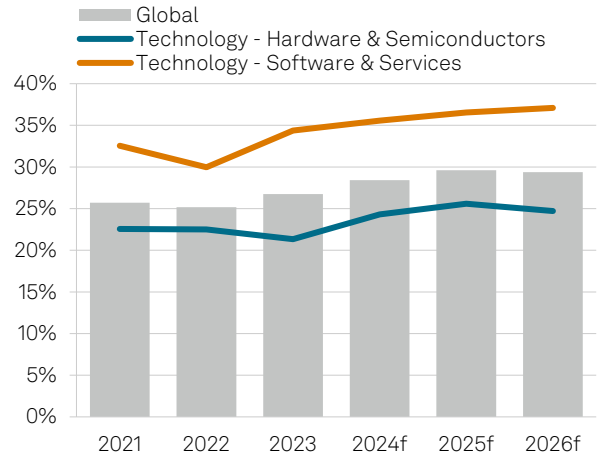


Chart 11
Debt / EBITDA (median, adjusted)

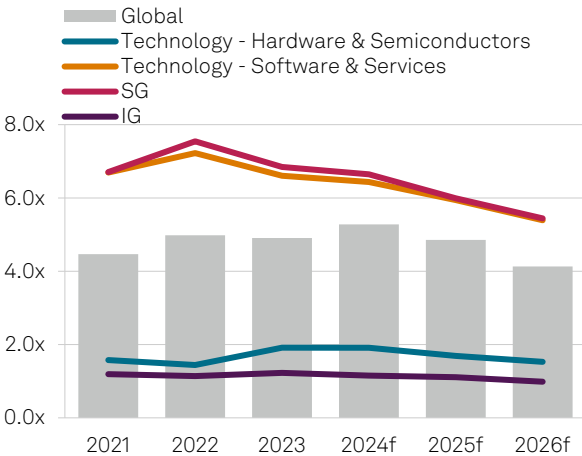
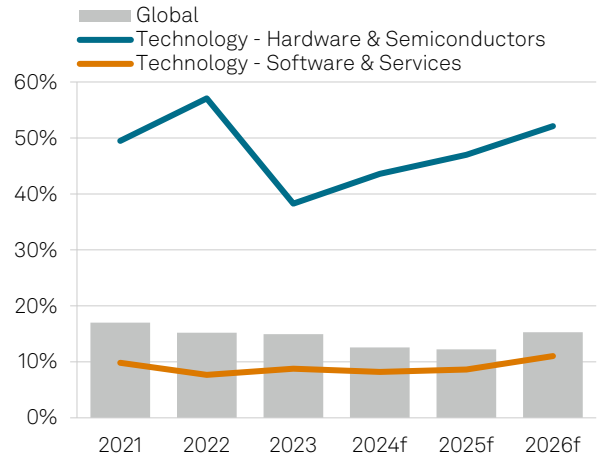


Chart 12
FFO / Debt (median, adjusted)



Source: S&P Global Ratings. f = Forecast.
Revenue growth shows local currency growth weighted by prior-year common-currency revenue share. All other figures are converted into U.S. dollars using historic exchange rates. Forecasts are converted at the last financial year-end spot rate. FFO—Funds from operations.

Cash, Debt, And Returns: Technology

Chart 13

Cash flow and primary uses

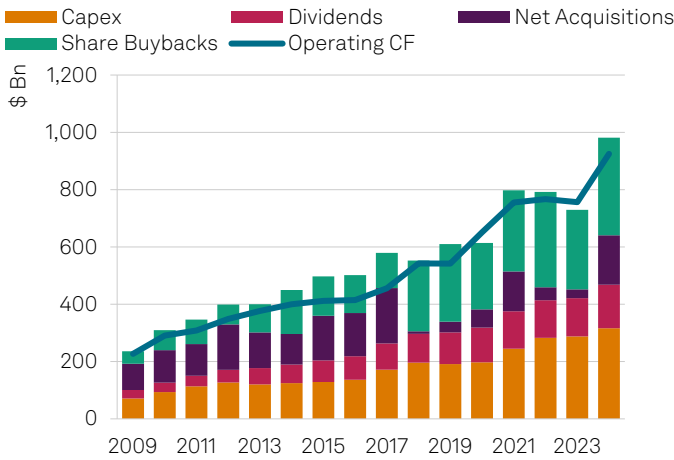


Chart 14

Return on capital employed

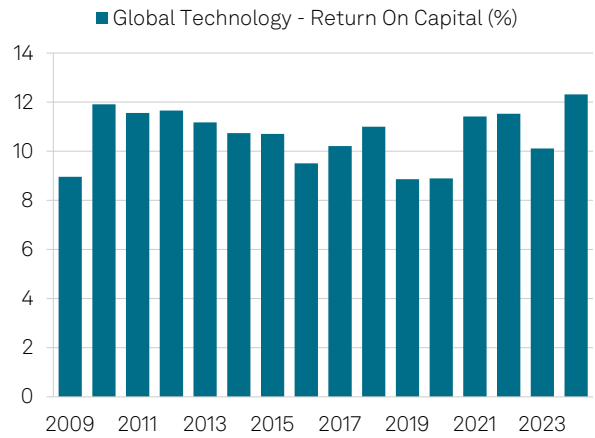


Chart 15

Fixed- versus variable-rate exposure

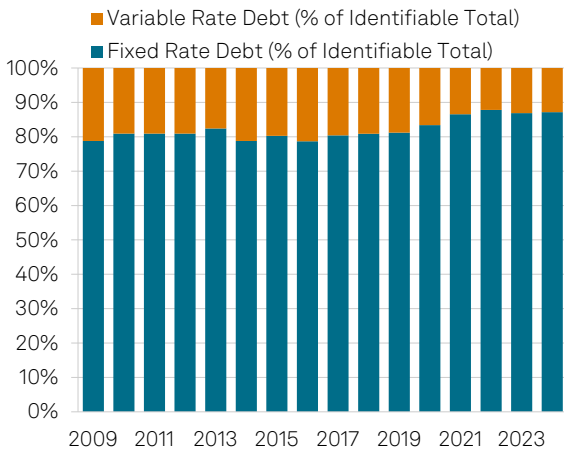


Chart 16

Long-term debt term structure

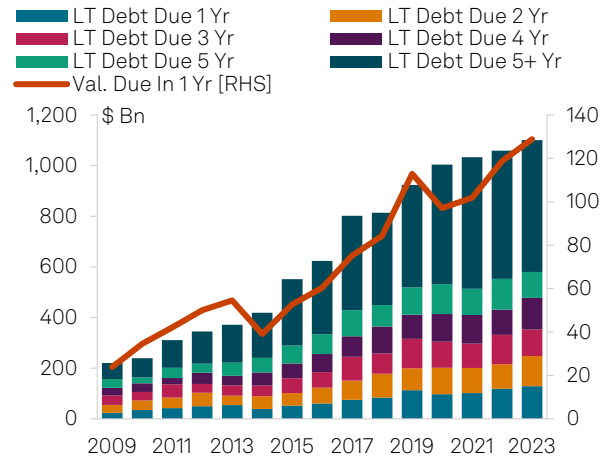


Chart 17

Cash and equivalents / Total assets

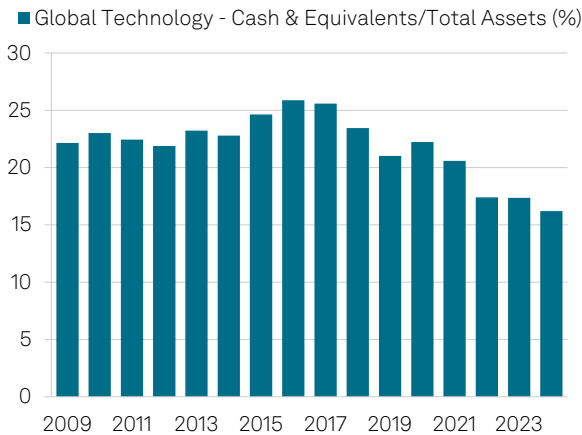
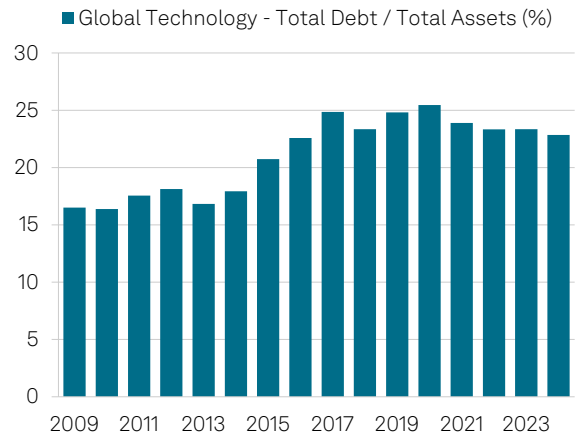


Chart 18

Total debt / Total assets



Source: S&P Capital IQ, S&P Global Ratings calculations. Most recent (2024) figures use the last 12 months' data.

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