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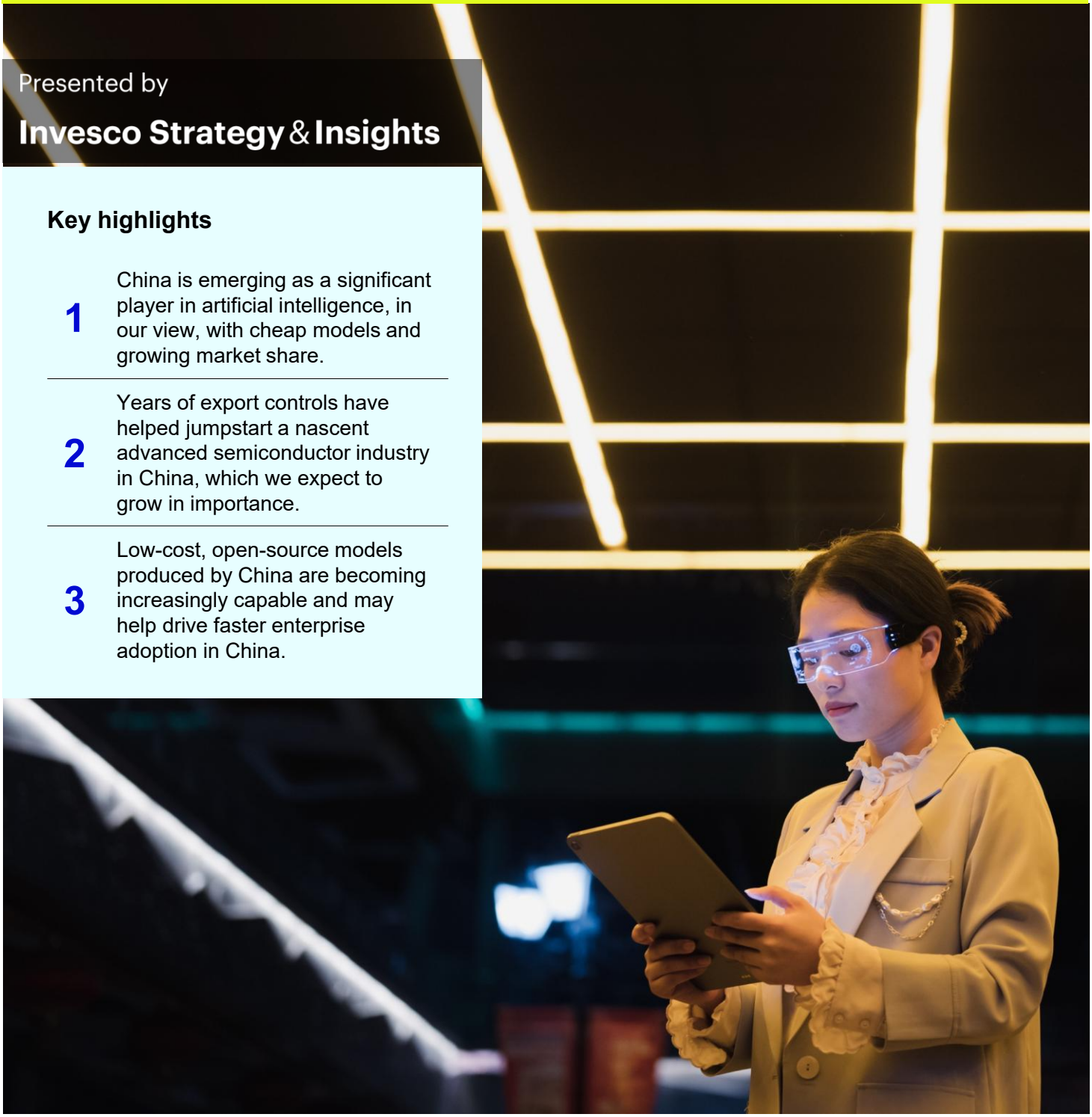
An alternative model: China's low-cost AI strategy



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Key highlights

1. China is emerging as a significant player in artificial intelligence, in our view, with cheap models and growing market share.
2. Years of export controls have helped jumpstart a nascent advanced semiconductor industry in China, which we expect to grow in importance.
3. Low-cost, open-source models produced by China are becoming increasingly capable and may help drive faster enterprise adoption in China.

An alternative model: China's low-cost AI strategy

Ashley Oerth, CFA®
Senior Investment Strategist,
Strategy & Insights

Thomas Wu
Investment Strategist,
Strategy & Insights

1. Based on model elo, per data from Arena. See Figure 4 for more.

A different path to being an AI leader

In January 2025, China commanded attention in the artificial intelligence (AI) race with the announcement of DeepSeek's R1 model, rekindling enthusiasm for Chinese technology stocks and China's AI ambitions. Yet, since then, Chinese markets have largely taken a backseat in the AI investment story as American players spent heavily on new models and data centers to power them. Meanwhile, the supply chain exposed to these investment flows has created winners in select Asian markets, particularly in Taiwan and Korea (see Figure 1).

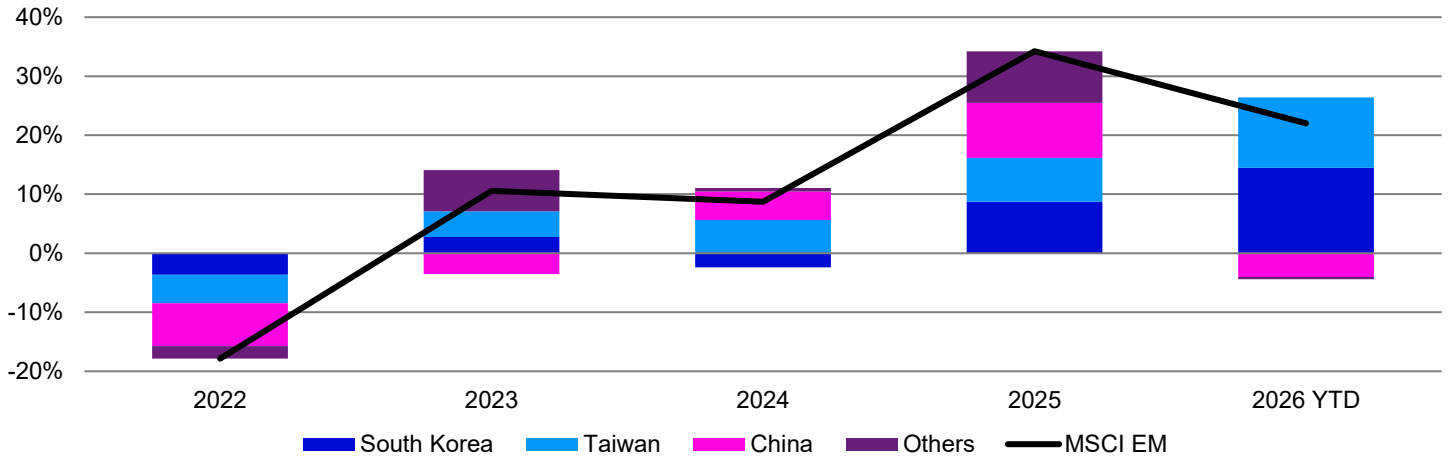
On the surface, it appears the market has gauged that China is not the obvious destination for AI-related investment capital. Its most advanced semiconductor foundries are two to three generations behind the frontier, while US-led export controls have restricted access to the most advanced chips. In addition, Chinese AI firms spend a fraction of what US hyperscalers deploy (see Figure 2). By most headline public benchmarks, many Chinese models also trail the leading US models—even if the gap has narrowed materially.[1] In short, the market has tended to view China as lagging where investors have so far placed the highest premium in the AI trade: the semiconductor supply chain, large-scale frontier data centers, and model leadership.

We argue here that China's position in the AI race should be rethought. Domestically, China is working towards a differentiated AI strategy focused on minimizing the cost of deployment across the economy through a combination of open-source and highly efficient models. We think this is driven in large part by US-led export restrictions designed to slow China's progress in AI. We anticipate that these low-cost models will help facilitate rapid diffusion and adoption of the technology. Meanwhile, China appears to be expanding its role in building and outfitting data centres. That includes progress in its own domestic semiconductor manufacturing capabilities that will likely benefit from its own data center build-out as well as global supply chain bottlenecks.

In this part one of a two-part series, we examine China's AI strategy and the investment narrative it supports. We note that markets may be underappreciating China's role in AI hardware supply chains beyond semiconductors, such as in power and networking equipment, and we will discuss that in more detail in part two of our series.

Figure 1: Emerging markets have been a key beneficiary of recent spending

Emerging market equity return contribution by region



Note: 2026 YTD indicates year-to-date returns as of 30 June 2026.
Sources: Bloomberg, MSCI, Invesco Strategy & Insights. Chart shows data to 30 June 2026. **Past performance does not guarantee future results.** An investment cannot be made directly into an index.

Limited access to semiconductors has shaped China's AI strategy

We see the hardware backdrop and US-led export controls as an important context for China's strategy. Years of US-led restrictions on China's access to technology have pushed Chinese policymakers to focus on growing a domestic, high-tech semiconductor sector. Progress has been gradual and required innovation that has narrowed but not closed the gap with rival manufacturing centres.

As early as 2018, the first Trump administration curbed exports of semiconductors and related manufacturing equipment to China, with a far more restrictive crackdown beginning in 2022 in response to the growing capabilities of AI systems. These actions have been designed to crimp progress in China's domestic semiconductor industry, particularly around high-end memory and logic chips. The result could in fact be the opposite as China is more highly incentivized to innovate and develop domestic capabilities.

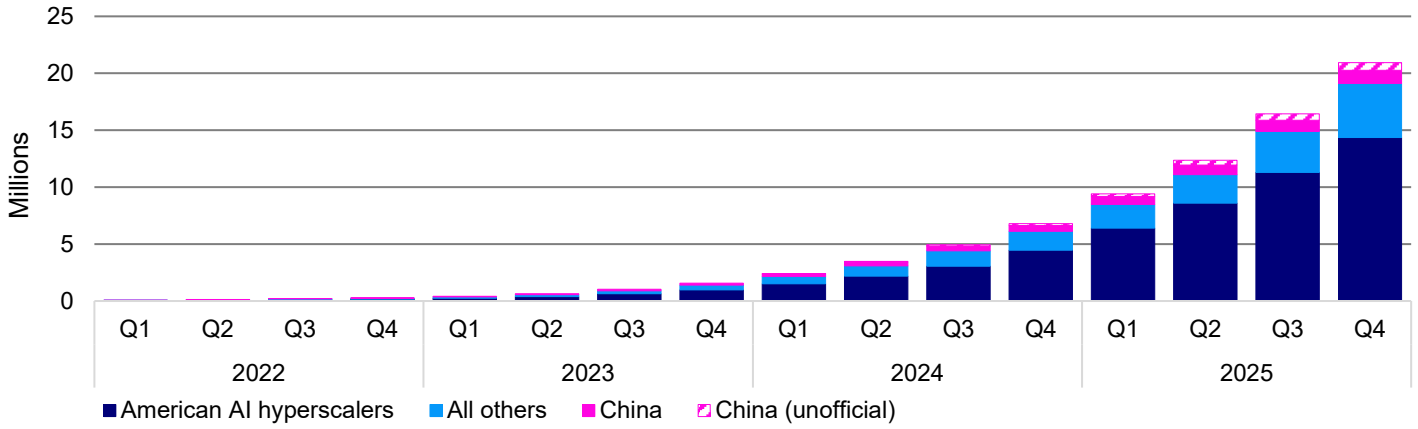
The Trump administration loosened restrictions in December 2025, but these actions were only a nominal restoration of access, in our view: Only select, older-generation chips were permitted for export—and subject to a 25% revenue surcharge payable to the US government. In effect, China is being offered previous-generation horsepower while its mainland domestic manufacturing capabilities remain cordoned off to advanced equipment used in Taiwan and Korea.

Notably, despite approved exports, we have observed very few exports of Nvidia's China compliant chips into the domestic market.[2] Localization has taken precedence with data centres reportedly required to source at least 50% of chips from indigenous suppliers.[3] A surge in black market prices of foreign leading-edge chips suggests they are still helping to fill gaps, with domestic players still progressing.[4]

2. Source: Bloomberg, "Small Amount of Nvidia AI Chips Shipped to China With US License", 14 July 2026.
3. Source: South China Morning Post, "China mandates more domestic AI chips for data centres to cut reliance on Nvidia", 17 August 2025.
4. Source: Financial Times, "Nvidia's banned AI chips double in price on China's black market", 23 June 2026.

Figure 3: American data centers have been leading in chip accumulation

Cumulative chip purchases since 2022 of AI chips, measured in H100 equivalent computing capacity



Note: The chart measures advanced logic chips built for artificial intelligence workloads, as produced by a selection of companies including AMD, Amazon, Cambricon, Google, Huawei, and Nvidia. Chips measured in H100-equivalent computing capacity. American AI hyperscalers include Alphabet, Amazon, Meta, Microsoft, and Oracle. All others includes xAI and others. China data is split into officially reported figures and those estimated beyond officially reported channels. These figures are not exhaustive. Sources: Epoch AI and Invesco Strategy & Insights, quarterly data from Q1 2022 to Q4 2025, latest data available as of 30 June 2026.

Doing more with less: Hardware

Developing home-grown leading-edge chips to reduce dependence on US technology therefore remains a policy priority. Yet access to manufacturing equipment is a challenge: The export ban on state-of-the-art extreme ultraviolet (EUV) lithography equipment from ASML restricts Chinese foundries to the 7-nanometer (nm) process node, leaving them two to three generations behind the industry leaders TSMC and Samsung.

SMIC, the only Chinese foundry currently capable of fabricating at 7nm, has made limited progress in closing the architecture gap by using a multi-patterning workaround using older-generation deep ultraviolet (DUV) equipment. Instead of shrinking the size of transistors alone, this process involves printing an additional pattern of transistors on a chip. The challenge in this technique, however, is that the error rate and manufacturing time both increases, making this a costly approach that's more challenging to commercialize.

Separately, China is attempting to close the technology gaps domestically, including early-stage efforts to develop indigenous extreme ultraviolet (EUV) machines, but we think commercial breakthroughs below 7nm are unlikely in the near term, even as some reports suggest progress may be closer than initially believed.[5]

5. Source: Reuters, "How China built its 'Manhattan Project' to rival the West in AI chips", 18 December 2025.

With access to EUV lithography equipment blocked, China has focused on a new front: competing on architecture instead of transistor size alone. Huawei's latest announcement of "logic folding" is a clear expression of this, in our view. Rather than spreading circuits across a flat surface, the design stacks them vertically, shortening the distance signals must travel and squeezing more density and performance out of older-generation equipment. Huawei claims a 55% lift in transistor density and 41% gain in power efficiency when measured against their own conventional single layer (2D) chip designs on the same node and expects its high-end chips will have transistor density equivalent to 1.4nm processes by 2031.[4]

Vertical stacking itself is not new (TSMC, Intel and Samsung have been refining it for years), but unlike conventional 3D stacking which bonds separate chips together, Huawei folds the circuitry within a single chip, accomplishing greater integration and therefore computing speeds. Huawei has packaged the approach under what it calls the “Tau (τ) Scaling Law”, a deliberate counter to Moore's Law that swaps transistor size for signal propagation time (or speed of information) as the metric of progress. Unproven at scale and with hurdles like heat dissipation ahead, the framing still matters, in our view. A 7nm or 5nm chip could in theory rival a leading-edge node through architecture rather than transistor size.

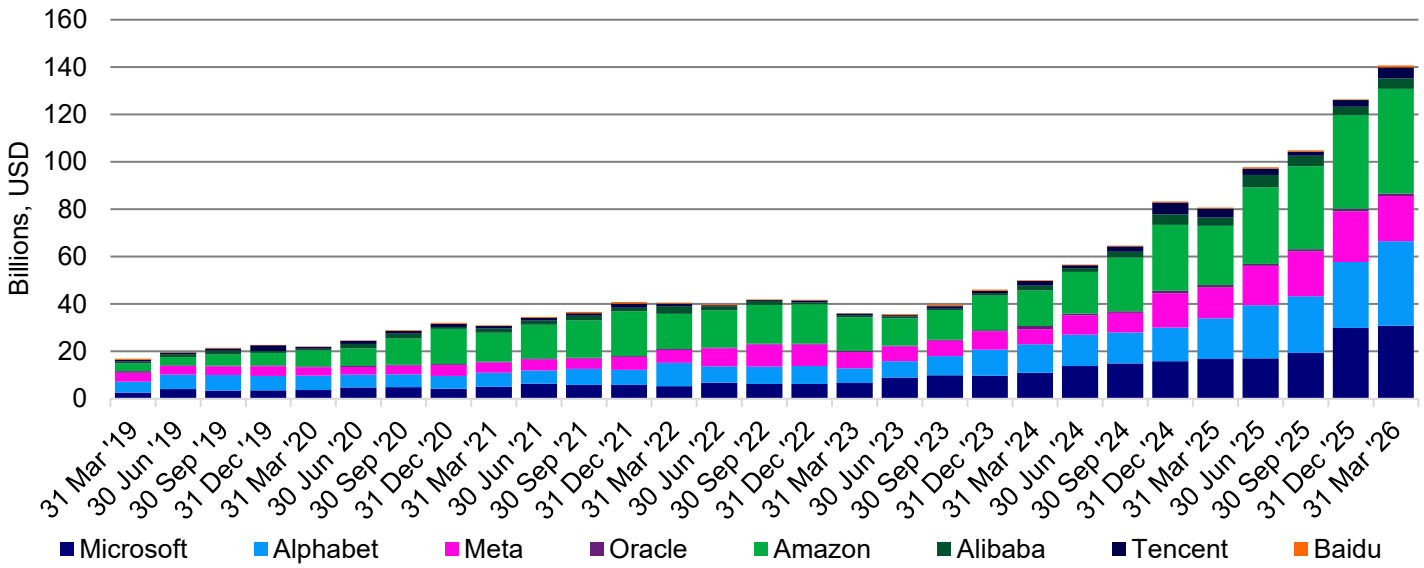
	Moore's Law	Tau Scaling Law
First presented	1965	2026
Primary metric	Transistor size	Signal travel latency
Design focus	2D plane layout	3D multilayer layout
Lithography tools	Reliant on advanced EUV machines from the West	Achievable on older DUV equipment
Bottleneck	Transistor size approaching physical limit	Thermal management

Together with multi-patterning techniques, we suspect the rise of logic folding techniques presents an upside risk for China’s homegrown high-tech semiconductor industry ambitions. Still, China has so far been unable to accomplish the same scale in manufacturing output as rivals at TSMC and Samsung even while working in older-generation architecture. This suggests to us that the Chinese AI strategy must also do more with less at the model layer – and may help to explain why China’s AI strategy has evolved differently.

6. Source: Reuters, “China's Huawei reveals chip design breakthrough amid US sanctions”, 25 May 2026.

Figure 2: US tech giants have been outspending China – and by a wide margin

Headline capital expenditures major US and Chinese hyperscalers, by quarter



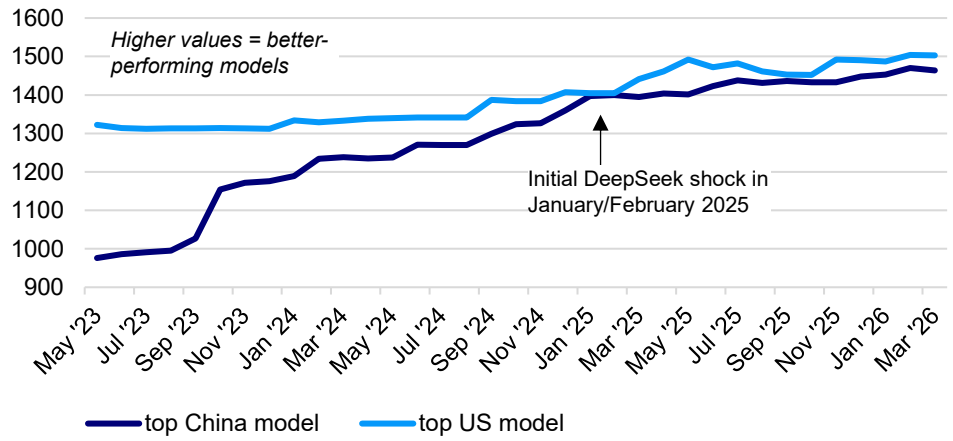
Source: Bloomberg. Quarterly data as of Q1 2026 as at 30 June 2026. Note: Figures for Microsoft (MSFT US), Alphabet (GOOGL US), Meta (META US), Oracle (ORCL US), Amazon (AMZN US), Alibaba (9988 HK), and Baidu (9888 HK) use Bloomberg's headline Capital expenditure field; Tencent (700 HK) uses reported capital expenditures due to data availability. All in USD.

Doing more with less: Software

Limited access to top-end compute has pushed Chinese AI labs toward smaller, more efficient models and deployment strategies optimized for lower-cost inference on older or domestically produced hardware. Reflecting this, capital expenditures are significantly less at Chinese hyperscalers relative to US counterparts, with a yawning gap in terms of data centre scale and capacity.[7] We see two core themes in the Chinese AI software strategy: efficiency and openness.

Figure 4: The model performance gap has largely closed

Top Chinese and US AI model scores: Based on Arena model elo



Note: Model elo score is based on a ranking system used by Arena, a website where users rank artificial intelligence model outputs and rank preference. A higher elo score indicates a better-performing model. The value is a relative score and by itself does not carry meaning. Sources: Stanford AI Index Report 2026, data as at 31 March 2026.

China's model efficiency strategy

China's efficiency approach is reflected in AI model design principles. Recent models have focused on a "mixture of experts" (MoE) approach, which separates an AI model into specialized parts that are activated based on which "expert" is best suited to the task at hand, helping to minimize computing requirements. Top Chinese labs publish a range of models of varying complexity, with some optimized for use on far less powerful consumer devices like phones and tablets. While US-based AI labs also produce efficient model variants, we see greater emphasis in China on relatively scarce computing resources and designs optimized for older-generation hardware.

Model performance measured against cost helps demonstrate China's strategy. Across several AI leaderboards, Chinese models point to attractive cost versus performance. For instance, Xiaomi's Mimo V2.5 model and DeepSeek's V4 Flash models show token costs at a fraction of major peers while performance benchmarks rank them alongside OpenAI's GPT 5.5.[8] According to data from Artificial Analysis and Epoch AI, Chinese model capabilities tend to lag that of US peers but are offered at a fraction of the cost. For models that perform best on a collection of benchmarks, US models are on average six times more expensive on a per-token basis versus Chinese peers (see Figures 5 and 6).

Since the launch of DeepSeek's R1 model last year, Chinese model performance gaps have narrowed considerably versus US AI labs. Research by Epoch AI highlights that open-weight models—in which Chinese AI labs are dominant players—lag frontier AI labs by as little as four months when measured by popular performance benchmarks.[9] A 2025 research report further indicates that frontier model performance can be achieved on consumer hardware less than one year after initial model release. Notably, the producers of those models are most often Chinese labs and made available open source.

Perhaps most tellingly, a website called Openrouter – which routes requests for AI resources to models from any of a variety of major AI labs – shows that Chinese models are the most popularly used worldwide, a feat achieved earlier this year.[10] We suspect this is primarily due to their favourable mix of a competitive cost structure with still-solid performance.

While China has lagged in overall data centre investment and has highly limited access to state-of-the-art hardware, we think the competitive dynamics have helped push China's emphasis on model efficiency.

7. See, for example, data from Epoch AI on large data center locations as well as reporting from the 2026 Stanford AI Index.
8. Note: Ranking model performance is a highly complex task given the large number of benchmarks. Here, we use a weighted benchmark constructed by Artificial Analysis, a ranking platform.
9. Source: Epoch AI, "Open models lag state-of-the-art closed models by 4 months", of 29 May 2026. We note that some observers believe that China is distilling American models to achieve its efficient model results. While possible, we think this misses the point: The provision of cheap, fast-follower models still enables broad-economy adoption with a lower price tag.
10. Source: OpenRouter, as of 14 July 2026.

China's "open models" strategy

Open-weight models have become one of the defining features of China's AI strategy. These models are released with public access to the model weights, meaning individuals and businesses can download and deploy the models on their own hardware. This open-source approach to AI development removes a significant cost barrier as there is no intellectual property or licensing fees that constrain adoption and deployment of the technology.

Reflecting China's emphasis on an open models approach, most of the world's open-source models available are produced by Chinese labs, such as DeepSeek, Alibaba, Moonshot, Minimax, and Z.ai. Major American AI labs occasionally publish open-source models—particularly Meta's Llama family of models—but the best-known, leading edge AI platforms are all proprietary, such as Anthropic's Claude, OpenAI's ChatGPT, and Google's Gemini.

We believe that China's emphasis on open-source models provides a competitive cost dynamic for wider economic adoption of the technology (see Figures 5 and 6). While it is difficult to estimate the licensing fees involved in serving models, we note that DeepSeek shows the lowest cost of all major AI providers on a per-token basis.[11] Our analysis of data from Artificial Analysis suggests Chinese models are nearly 70% cheaper than US models, and more than 80% cheaper for more powerful models.[12]

11. Major AI providers are defined as Google, Anthropic, OpenAI, and DeepSeek.
12. Source: Invesco Strategy & Insights and Artificial Analysis, based on a review of 124 models for which pricing and intelligence assessments were available. Data as of 30 June 2026.

Figure 5: Proprietary models still lead, but low-cost options are catching up

Pricing versus intelligence for open-source and proprietary models

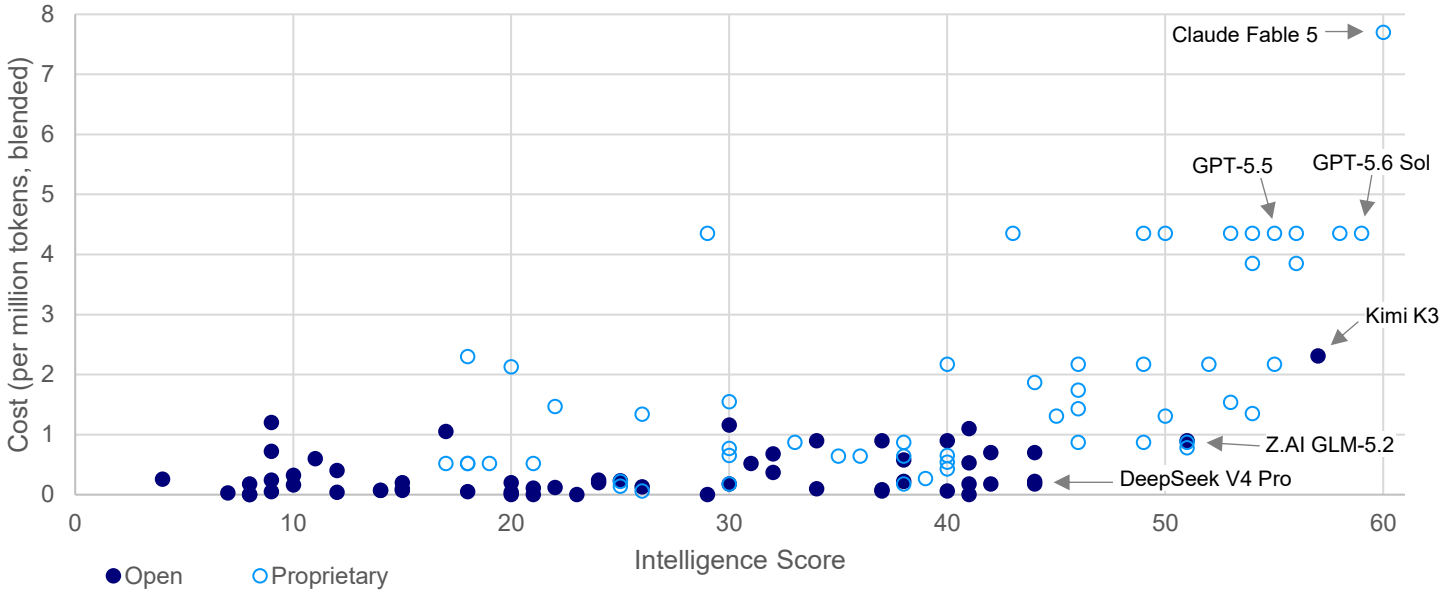
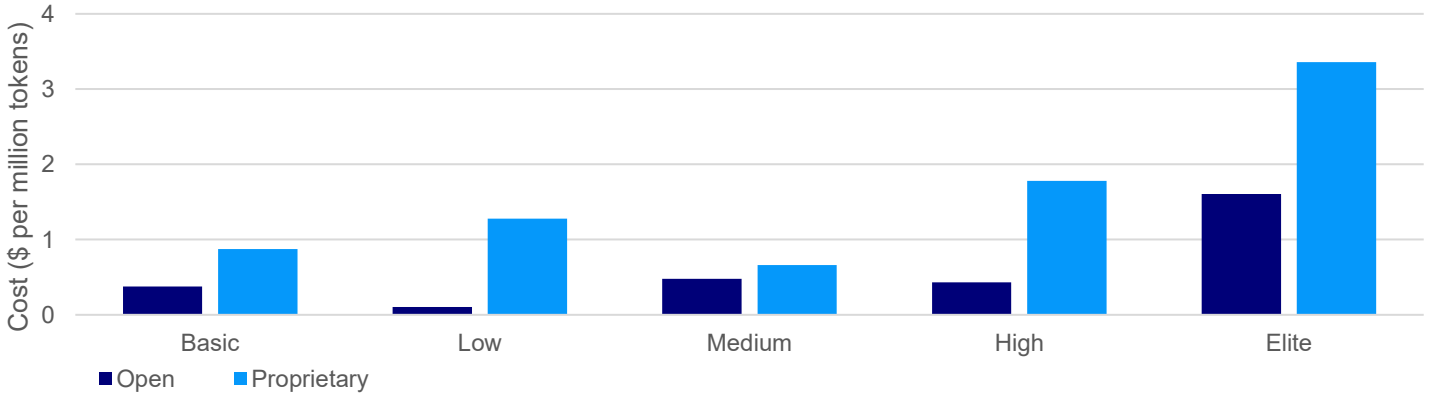


Figure 6: Open-source models come at lower costs across most capability levels

Average pricing for models, by intelligence grouping



Note: Intelligence Score is an assessed value based on an aggregation of benchmarking tests as compiled by Artificial Analysis. A higher score indicates a more capable model with greater performance across a wider range of benchmarks. Basic = Intelligence Score of 10 to 20; Low = 20 to 30; Medium = 30 to 40; High = 40 to 50; Elite = 50+. Many factors go into describing model performance. Here, we include all variants of a model with high to low reasoning. Models shown are reasoning models only. We use "open" to describe both models released with open weights and those released open source. Sources: Artificial Analysis, EpochAI, and Invesco Strategy & Insights. Data as at 19 July 2026.

Factors enabling China's low-cost model

Less value capture at the model layer

Most Chinese models are released open-source, meaning there are few to no licensing roadblocks and costs for adopters.

A drive for efficiency

China's model ecosystem prioritizes efficient designs that are intended for low-resource environments, helping to minimize computing spend.

Cheap and abundant power

Industrial power costs are a fraction of those in other major markets, which should help keep AI operating costs low.

State-backed AI policy

Top-down strategy helps to coordinate infrastructure buildout, managing bottlenecks that would otherwise slow AI progress.

China's national AI strategy

As we have highlighted, China's apparent AI strategy reflects external constraints. It follows that national policy is now anchored in self-reliance across the AI stack, framed as both strategic and economic security.

China's AI ambitions are reflected at the highest levels of economic planning. At the December 2025 Central Economic Work Conference, AI was framed as a tool to enhance "new quality productive forces" and lift productivity across the real economy. That direction was operationalized at the March 2026 National People's Congress, where AI was elevated into an execution agenda — with emphasis on broad industrial application across manufacturing equipment, electric vehicles, smartphones and services. More recently, a reported ~US$300bn data centre expansion announced in June 2026, paired with localization targets for domestically sourced chips, has reinforced this push.

China's AI push can also be viewed through the lens of its macroeconomic position. As the world's largest industrial economy facing a turning point in its working-age population, policymakers are turning to AI as both an industrial upgrade tool and a demographic offset. Indeed, AI adoption is increasingly viewed as a potential next leg of productivity growth.

Developed market studies have generally focused on the task-level impacts of artificial intelligence and its implications for services sector work, with estimates pointing to somewhere around a one percentage point annual increase to output per hour growth over the next decade. China's AI strategy takes a more expansive view, including heavy emphasis on robotics that may suggest a broader economic impact.

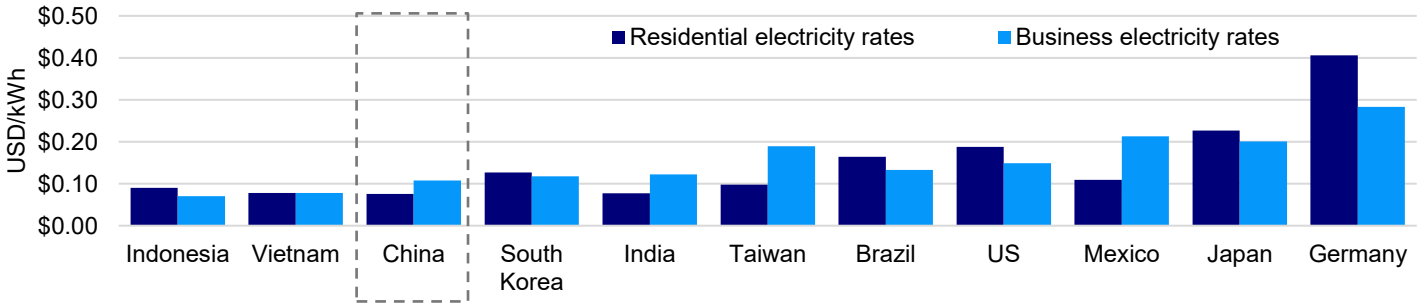
We also note that electricity is considerably cheaper in the Chinese market versus major developed markets, a factor supported by national policies (see Figure 7). Data centers in developed markets are increasingly facing higher electricity bills and a bottleneck in supplier deliveries of power generation equipment (not to mention growing local opposition in some regions, such as New York's recent moratorium on data center construction).

In China, access to renewable energy resources and what we see as a greater ability to build-out new power generation capacity should help position China's AI projects for providing lower costs versus American AI labs. This strategy is framed at the national level as well through the 2022 "Eastern Data, West Compute" initiative, which seeks to push data centers into areas with surplus power. Less populated regions may see costs

Together, we see China taking a proactive stance in embracing AI, including strategies for its integration as well as facilitating data center construction.

Figure 7: China's electricity prices are a fraction of developed market peers

Residential and business electricity rates, measured in USD per kilowatt hour (kWh)



Note: Based on local and national statistics collected by GlobalPetrolPrices.com. Data as at May 2026.

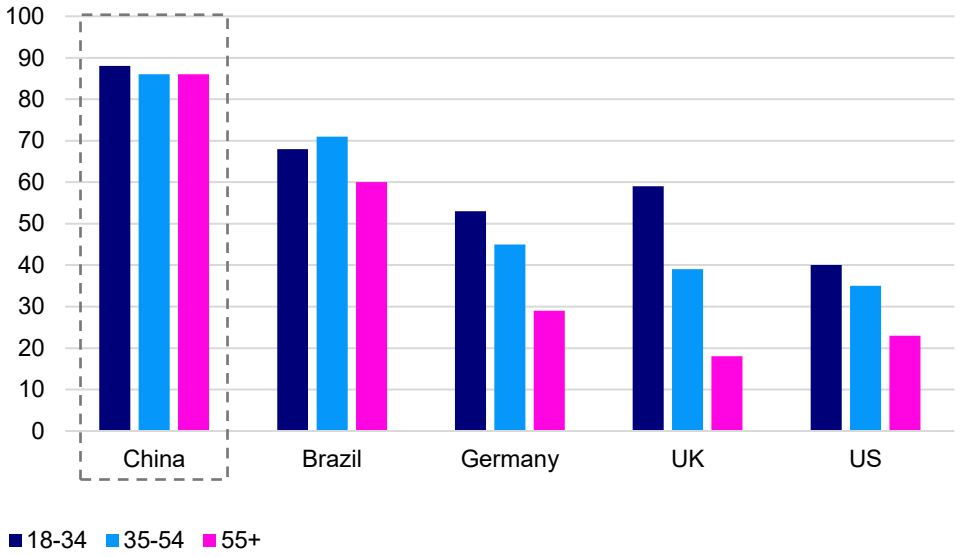
Primed for adoption

We anticipate that China's low-cost, open-source AI strategy should help fast-track adoption by requiring a lower hurdle rate for return-on-investment. China's industrial focus on AI use, in combination with a workforce with more positive views towards AI, suggests that it may climb the adoption curve faster than other major economies.

Indeed, China appears open to embracing AI. A survey from late 2025 indicated that Chinese users were more likely to trust AI models compared to Western peers: The 2025 Edelman Trust Barometer Flash Poll on AI found that 87% of Chinese respondents trust AI, versus just 32% in the US, 36% in the UK and 39% in Germany (see Figure 8). Perhaps unsurprisingly, the survey also highlighted that higher trust resulted in users who were more willing to use the technology. State-run research suggests a similar picture, with Chinese domestic uptake having reached 600 million users.[13]

Figure 8: China's workforce shows trust in AI models

Share of individuals who report trust in AI models, by country



Source: 2025 Edelman Trust Barometer Flash Poll: Trust and Artificial Intelligence at a Crossroads. Based on the question: "How much do you trust the below technology?" with answers produced on a 9-point scale; respondents who selected any of the top four levels of trust are counted in the chart total.

Data on enterprise adoption points to a positive outlook for China AI. Recent surveys point to AI adoption rates of around 56% across Chinese businesses.[14] This statistic would rank China among the highest globally, though we note that cross-country comparisons are challenging due to different survey methodology and may not reflect the depth of implementation. Nevertheless, the picture looks positive: AI has been deployed in over 70% of production and business scenarios at the country's highest-ranked "leading-tier" smart factories, supporting more than 6,000 industry-specific AI models across sectors ranging from manufacturing and logistics to healthcare.[15] Stanford's 2026 AI Index reinforces the same picture: China leads globally in industrial robot installations and has accelerated model output from 151 releases in 2022 to 849 in 2025.

Taken together, China's AI story increasingly looks more like a diffusion play rather than a frontier race, supported by low-cost models and an open-source ecosystem. If that thesis holds, value capture is unlikely to sit primarily with model builders, with perhaps the exception of those few with genuine moats or a leading-edge position. Instead, the beneficiaries may sit upstream, as in the "picks and shovels" play that has so far defined the global AI trade through the build-out and outfitting of data centers, or downstream, such as those enterprises and industries that can convert lower-cost AI into measurable productivity gains, particularly in manufacturing, logistics and services.

13. Source: The State Council of the People's Republic of China, "China's internet user base hits 1.125 billion as AI adoption surges", 5 February 2026.
14. Note: Surveys combine various estimates and methodologies. Sources: OECD (2025); US Census Bureau (January 2026); Yano Research Institute of Japan (2025); United Kingdom Department for Science, Innovation & Technology (2025); Statistics Canada (2025); and Deloitte-HKU ("AI Adoption Index 2026").
15. Source: China Daily, "Experts: AI driving transformation of manufacturing in China", 22 January 2026.

A data center build-out to come?

While China has not matched the scale of the recent hyperscaler-led AI infrastructure spending cycle in the US, we expect it will still need to invest to provide the infrastructure necessary to power growing AI adoption and commercial use cases. We expect China to use this as an opportunity to help drive the development of its domestic semiconductor industry.

China's recently announced data centre investment project reflects this well, in our view. The planned ~US$300bn data centre build-out will reportedly be run by state owned telecom operators and mandates that 80% of the underlying technology be domestically sourced. Even so, this may prove to be table stakes given the anticipated trajectory of adoption.

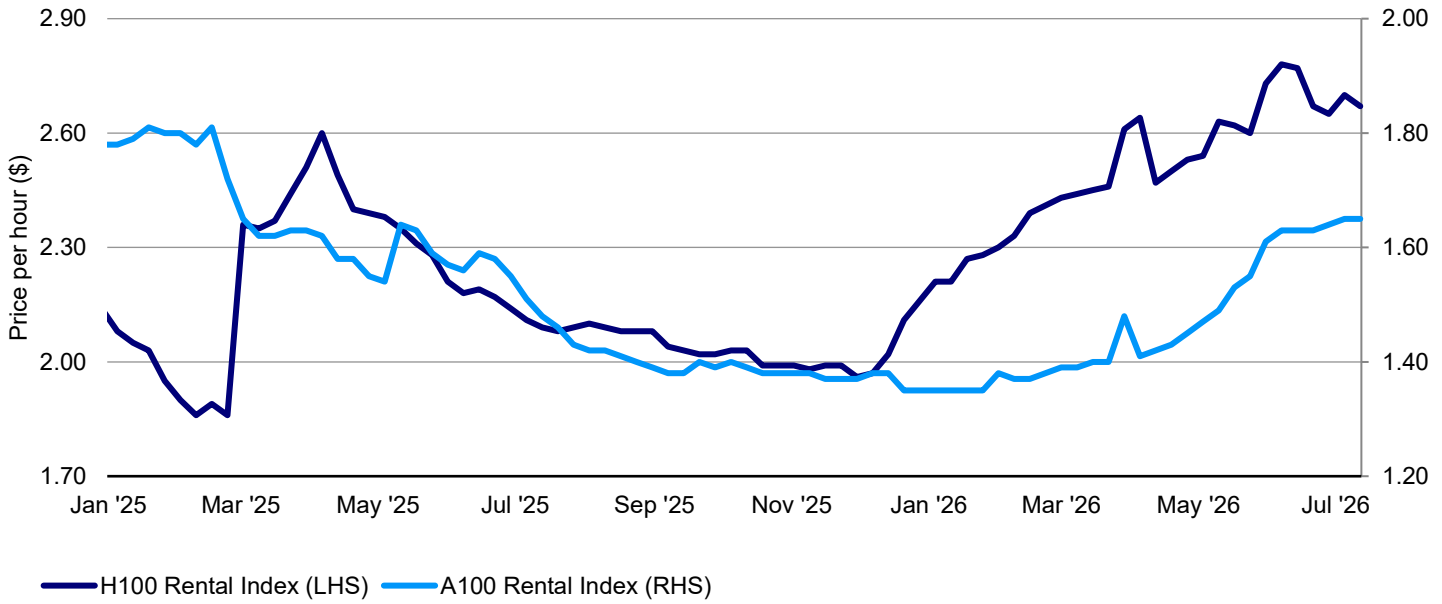
The focus on practical applications may shift the nature of compute demand to inference, where workloads are less dependent on the absolute frontier of logic semiconductors. This may make China's domestic compute stack and its localization targets more workable than they may initially appear. Moreover, pressures in AI-related semiconductor supply chains may also help drive demand for Chinese equipment. Rising prices for older node compute and commodity memory (segments where Chinese players hold strong market share) suggests that demand is broadening beyond the frontier of compute.

China's broader AI hardware ecosystem stands to benefit. China is the world's largest producer of printed circuit boards with a growing presence in the high-density interconnect segments that AI infrastructure relies on. It also has an established footprint in networking components, supplying optical transceivers to the global data centre build-out.

Perhaps most notably, China dominates the global battery energy storage system market, an increasingly critical component of AI data centres as inference power demand is more intermittent. A domestic AI infrastructure push should further entrench these Chinese suppliers into the hardware stack.

Figure 9: Price of compute more broadly has risen steadily this year, not just the cutting edge

Silicon Data compute rental indices ($ per hour)



Note: The index tracks the cost to rent computing capacity available on the marketplace from hyperscalers, neoclouds, regional data centers, and other graphics processing unit (GPU) platforms. The benchmark focuses on market rental prices for single A100 and H100 (more powerful) chips.
Sources: Bloomberg L.P. and Silicon Data, as of 16 July 2026.

China in the global AI race

China has so far underperformed—both in markets and in leading-edge technology—in the global AI race, but we suspect the opportunity set is building. We see four core takeaways from China's AI strategy:

1. **A nascent semiconductor story.** China's domestic tech sector may be reinvigorated as domestic data centre construction projects ramp up. Similarly, its advanced semiconductor industry continues to show potential and may see a growing role in global supply chains.
2. **A fast-diffusion AI strategy.** We note that China's AI strategy suggests that value capture is unlikely to sit at the model builder level. This may promote faster diffusion of the technology, drive lower operating costs, and realize productivity gains sooner than Western peers.
3. **A potential disruptor to Western models.** China's focus on AI technology that is open-source and low-cost may disrupt the narrative supporting major AI labs in the US that focus on monetization at the model layer.
4. **A data centre build-out to come.** Even with China's efficiency drive, we expect that data centres are still necessary to power broad adoption and ongoing use of more powerful AI tools. China has so far underinvested compared to American peers, but this may shift and present opportunities for exposure to the supply chains enabling China's domestic chip production goals.

In short, we expect China is well-positioned to benefit from both the adoption of AI and its growing resources needs. For Chinese equities, we see opportunities for exposure to this theme. For instance, the Chinese technology sector is trading at a meaningful valuation discount to global peers, and the sector shows increasing promise in its exposure to outfitting data centres constructed in various regions. We explore these questions in Part 2 of this series, where we focus on where value is likely to accrue across China's AI ecosystem.

Investment risks

The value of investments and any income will fluctuate (this may partly be the result of exchange rate fluctuations) and investors may not get back the full amount invested. Past performance is not a guide to future returns.

Artificial intelligence (AI) technology companies are sensitive to specific risks such as small markets, business cycle changes, economic growth, technological progress, obsolescence, and regulation. These companies may have limited products, markets, resources, or personnel, making their securities more volatile, especially for smaller start-ups. Rapid technological changes can adversely affect their results. AI companies often rely on patents, copyrights, trademarks, and trade secrets to protect their technology, but there's no guarantee these protections will be sufficient. Significant research and development (R&D) spending doesn't ensure product or service success.

Investments in Chinese AI companies are subject to risks associated with government intervention, evolving AI and data-security regulations, geopolitical tensions, export controls, potential delisting or audit-related issues, and increased regulatory scrutiny of AI-related business activities and securities markets. These factors may adversely affect operations, valuations, liquidity, and investment returns.

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