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China AI Software Outlook 2025

Developers to Make Progress, But Not Profit for Three Years

China's strategic ambitions in AI software should continue paying off, despite the geopolitical tensions gripping the chip sector. Low barriers to entry have allowed the nation to narrow the gap with the US, positioning it as the leading challenger, though its AI developments are running about six months behind and its AI firms are unlikely to turn a profit for at least three years in a fragmented market. A consolidation would be a step in the right direction, though we see a low chance of this currently.

- **Monetization Challenge:** Chinese software companies will struggle to monetize in a sector dominated by free-access options. Low technical barriers to entry have allowed competitors to quickly develop new products, leading to a crowded market and low product differentiation. This oversupply has driven down pricing.
- **Sector Consolidation:** An industry shakeout remains at least two years away as there are few "weak hands" to be forced out. A consolidation likely won't generate much profit, given the sector's commodity-like characteristics.
- **Tech Platforms to Prevail:** Tencent and Alibaba are well placed as the future leaders of China's software sector, with Baidu set to continue losing share as it struggles to compete against the deeper resources of the large tech platforms. ByteDance and Huawei should also prosper. The AI operations of Alibaba and Baidu remain at risk of disappointing consensus expectations.

Featured in This Report: Bloomberg Intelligence's proprietary market-forecast model for China's AI software, IT services and Cloud Computing sectors are used throughout this report and available on the Bloomberg Terminal. Our methodology is detailed on page 35.

Nov. 20, 2024

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More detailed analysis and interactive graphics are available on the Bloomberg Terminal

Section 1. Executive Summary

478
Large language models in China in July 2024

3:2
China's numerical advantage in software engineers vs. US

<$1 Million
Revenue generated by China's AI chatbots in January-September 2024

AI Progress, Not Profit

China is well placed as the main contender to the US in AI, though its software firms face an arduous road to profitability. Putting the industry on a commercial footing will be hard to achieve as long as they're willing to sacrifice profit for market share, even as a number of companies, including Alibaba, Baidu and SenseTime have earmarked the sector as a near-term revenue and earnings driver. Consumer indifference toward AI and intense competition are further barriers.

Key Research Topics

- **Smaller Models Alleviate Chip Shortage:** China's software companies have narrowed the development gap with the US by turning to smaller, more-focused Large Language Models (LLMs), allowing them to mitigate the impact of US chip export controls to date. Smaller models are cheaper to develop and require less computing power, making them better suited to run on lower-spec, domestically produced chips.
- **Commercialization Challenges:** China's AI developments remain on track, but its software vendors will struggle to monetize in a market awash with free tools. A change in consumer willingness to pay for AI products is also required. China's top 10 AI Chatbots generated less than $1 million iOS revenue in the first nine months of 2024, according to Sensor Tower, compared with $160.5 million revenue generated by ChatGPT.
- **Limited Revenue Opportunity:** China's AI software, IT services and cloud computing markets are set for rapid growth in 2024-33 from a low base. Still, the estimated market size of $51 billion -- equivalent to 24% of Tencent and Alibaba's combined 2023 sales -- is modest.
- **Scale to Win Out:** China's internet platforms should allow them to ultimately lead the sector, though we expect their AI ventures to remain loss-making in aggregate for three years. AI startups will likely struggle to scale their user base, gain pricing power or achieve profitability given the competition in the sector, with weaker names vulnerable to a funding squeeze.

Performance and Valuation

Investor sentiment toward the Chinese AI sector will probably remain muted over the next 24 months, with sector multiples unlikely to re-rate until the market gains visibility on AI's earnings potential. The stimulus-led rally in Chinese tech stocks in September 2024 saw the HS Tech index narrow the performance gap with the Nasdaq, with both delivering a similar level of total dollar returns in the first 10 months of 2024. Still, the HS Tech gains reflect a market rerating, rather than an improvement in the fundamental earnings outlook. EPS estimates for 2025 were revised down 4% over the same period, with sector multiples on the HS Tech remaining toward the low end of the five-year historical range.

Section 2. Catalysts to Watch

AI Investment a Strategic Priority in China

China's ambitions in AI are a top priority for the government and state support should help the country to further narrow the development gap with the US. President-elect Donald Trump's policy stance toward competition from China will be key. We identify the following potential catalysts.

Critical Milestones:

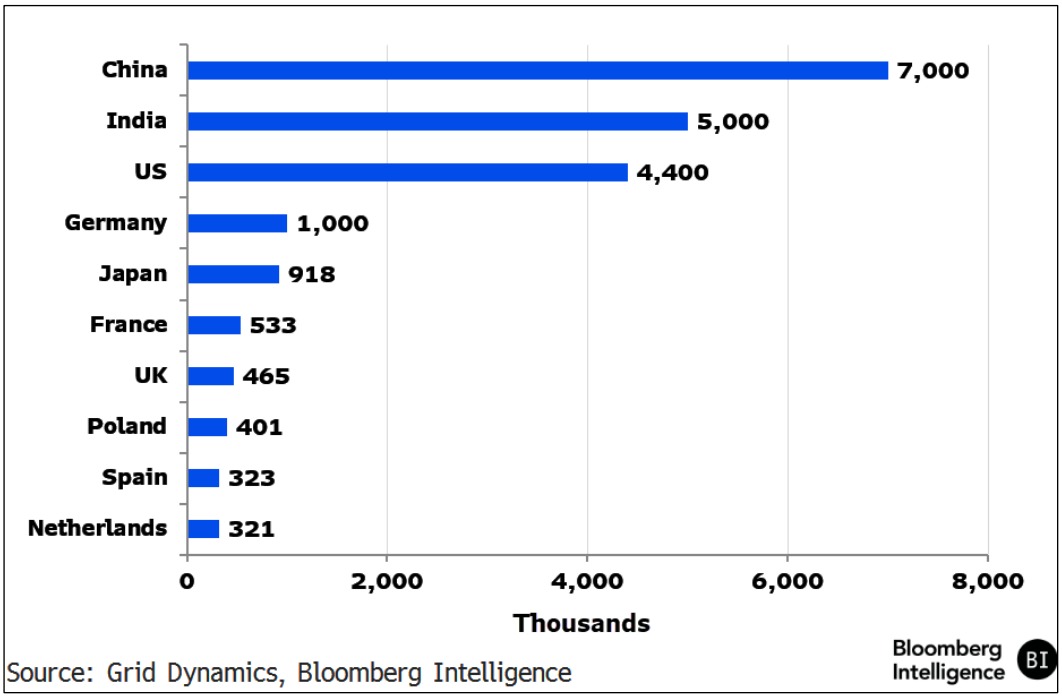
- **December 2024:** China's leaders will set policy goals for 2025 at the Central Economic Work Conference, with AI likely remaining a priority.
- **January 2025:** Geopolitical risks for China's AI sector could increase with the inauguration of a new US president.
- **February 2025:** AI companies will likely update on AI progress at 4Q24 earnings.
- **March 2025:** China's annual National People's Congress could lay out new development goals in its government work report.
- **March 2025:** The International Symposium on Computer Vision and AI in Shanghai provides a platform for providers to announce new AI products.
- **April 2025:** China's AI names will likely update on their AI developments at the China Information Technology Expo.
- **May 2025:** AI leaders globally will showcase their latest offerings during COMPUTEX in Taiwan
- **May 2025:** 8th International Conference on AI and Big Data in Chengdu.
- **May 2025:** Companies will likely update on their AI progress at 1Q25 earnings.
- **June 2025:** China's AI companies likely provide further updates at the SuperAI industry conference in Singapore.
- **June 2025:** The AI Summit London will likely focus more on regulation.
- **August 2025:** Management teams will likely update on AI progress at 2Q25 earnings.
- **October 2025:** The World Summit AI in Amsterdam is a forum for sector participants to provide updates on their developments.

Section 3. China vs. US

China Positioned as Primary Challenger to US

China's AI developments are running about six months behind the US, reflecting its deep technical capabilities in software development and the lower technical barriers in AI model construction. US export controls on Nvidia chips proved to be largely ineffectual as Chinese companies doubled down their development efforts, bolstered by a rising level of governmental support, in line with Beijing's ambition to become a global leader in AI.

Figure 1: Number of Software Developers (Thousands, 2023)



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China has more software developers

3.1 China's Talent Pool Aids Software Industry

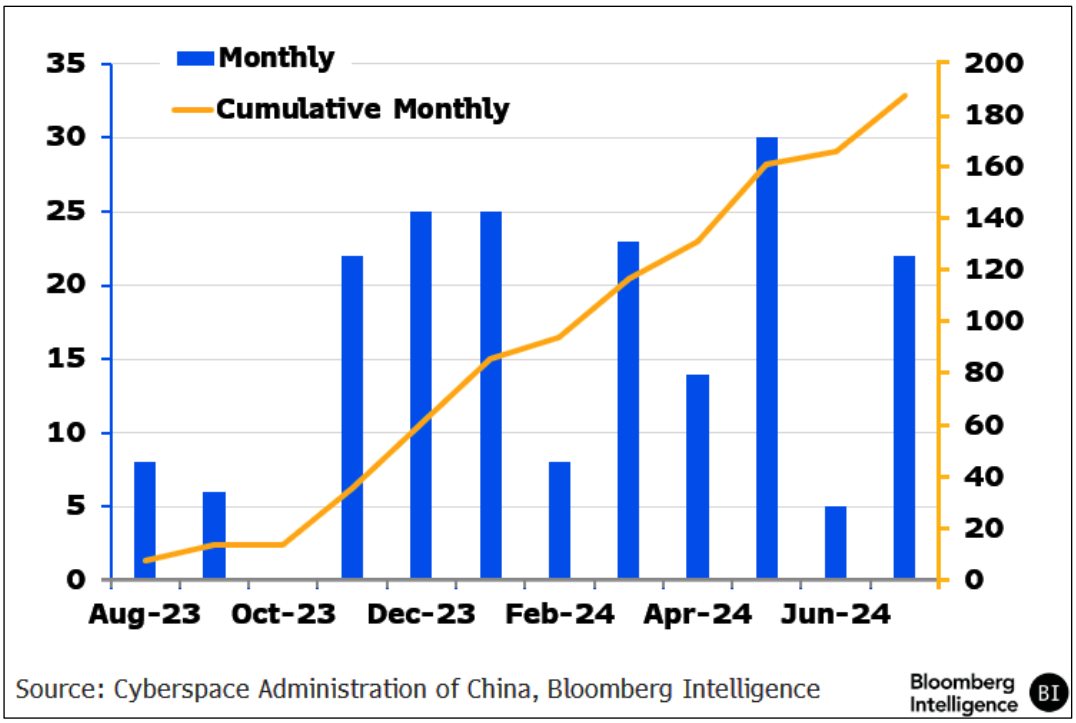
China's highly developed software sector draws on a rich pool of talent that has given rise to two of the world's leading internet companies, Tencent and Alibaba. Tencent is the largest global video game studio and chief architect of Weixin/WeChat, arguably the preeminent super-app. China also sparked the craze for short videos, pioneered by TikTok owner ByteDance.

The lower technical barriers to entry in software are also to China's advantage as it's far easier to train people to code than to fabricate leading-edge semiconductor devices at the atomic scale. With more than 7 million software developers, China also has an approximate 3:2 numerical advantage over the US (see Figure 1 above).

China's AI software firms have made swift progress in the past 18 months, with the regulator confirming a total of 478 AI LLMs in the country in July 2024. Of these, 188 were officially certified, compared with just 14 in October 2023. The performance of Chinese LLMs rapidly improved during this period as export controls on Nvidia chips compelled companies to become more innovative.

Chinese AI providers pioneered the shift to smaller, more focused models -- partly out of necessity, given the chip bottleneck. The shift to smaller models has delivered a significant reduction in operating costs and a proliferation in the number and variety of application-specific LLMs in China.

Figure 2: LLM Registrations



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Application-specific LLMs on the rise in China

Chinese software AI developments are running about six months behind the US, in our opinion. For example, it took China four months to launch a text-to-video AI engine following the demonstration of OpenAI's ground-breaking Sora model in February 2024. Kuaishou was one of the first Chinese companies to demo a Sora-like product, showcasing its Kling tool in June 2024. Several others have since announced similar models, including Alibaba and ByteDance.

While China has been able to largely keep pace with the US, none of the Chinese text-to-video models have yet to fully match Sora's performance. The best-placed Chinese text-to-video engine can generate 10 seconds of video from a text prompt, compared with 60 seconds from Sora.

The performance of US LLMs continues to outrank Chinese peers on most metrics, despite a narrowing of the development gap. LiveBench, an Independent US AI benchmarking service, ranked DeepSeek's Coder V2 model as the seventh-best LLM globally in June 2024, behind models from OpenAI and Anthropic. DeepSeek's model ranked second globally in math, after Anthropic, sixth in coding and fifth in reasoning. It performed less well in language and data analysis (see Figure 3).

Figure 3: LiveBench LLM Ranking

Ranking	Company	Model	LiveBench Score	Coding	Data Analysis	Language	Math	Reasoning
1	Anthropic	claude-3-5-sonnet	**61.2**	63.2	56.7	56.9	53.7	64.0
2	OpenAI	gpt-4o	**55.0**	46.4	52.4	53.9	49.9	55.0
3	OpenAI	gpt-4-turbo	**53.0**	47.1	51.3	45.3	49.0	54.0
4	OpenAI	gpt-4-1106-preview	**52.2**	44.4	51.3	48.4	47.6	52.0
5	Anthropic	claude-3-opus	**50.8**	40.1	54.3	51.7	46.5	41.0
6	OpenAI	gpt-4-0125-preview	**49.4**	44.1	54.1	43.6	42.7	48.0
7	**DeepSeek**	**deepseek-coder-v2**	**46.8**	**41.1**	**38.3**	**33.0**	**52.2**	**49.0**
8	Alphabet	gemini-1.5-pro-api	**44.4**	32.8	52.8	38.3	42.1	33.0
9	Alphabet	gemini-1.5-flash-api	**40.9**	39.1	44.0	30.7	38.5	30.0
10	**Alibaba**	**qwen2-72b-instruct**	**40.2**	**31.8**	**26.2**	**29.2**	**43.4**	**42.0**
11	Mistral AI	mistral-large	**38.9**	26.8	42.6	28.7	32.2	35.0
12	**DeepSeek**	**deepseek-chat-v2**	**38.4**	**33.5**	**38.0**	**32.3**	**33.2**	**29.0**
13	Anthropic	claude-3-sonnet	**38.1**	25.2	44.6	38.1	29.6	26.0
14	Meta	meta-llama-3-70b-instruct	**37.4**	20.9	42.4	34.1	32.3	31.0
15	Anthropic	claude-3-haiku	**35.3**	24.5	41.5	30.1	25.7	26.0

Source: LiveBench, Bloomberg Intelligence

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Chinese benchmarking service OpenCompass reported similar results in July 2024, ranking DeepSeek fifth globally behind models from Anthropic, OpenAI and Mistral. The superior ranking of four non-Chinese models by the Shanghai-based benchmarking portal suggests a potential lack of bias toward domestic LLMs.

3.2 Startup LLMs Deliver Superior Performance

The performance of models from China's larger tech platforms is less impressive, with Alibaba ranked seventh globally, according to OpenCompass, and 10th according to LiveBench. Models from China's other large tech companies fared less well, with ByteDance's Doubao model placing 14th in China, Baidu's ERNIE model in 18th position and Tencent languishing in 22nd.

The fact that DeepSeek, a 16-month startup, can develop a model whose performance outranks the efforts from one of China's preeminent tech names supports our view that technical barriers to entry in AI software remain low. The development field is wide open, though we expect the large tech platforms to close the development gap eventually.

Figure 4: OpenCompass LLM Ranking

Ranking	Company	Model	Average	Language	Knowledge	Reasoning	Math	Code	Instruct
1	Anthropic	Claude 3.5 Sonnet	**67.9**	50.9	85.0	57.0	71.1	69.6	66.2
2	OpenAI	GPT-4o	**67.7**	55.5	85.2	55.8	71.1	69.1	60.3
3	Mistral AI	Mistral-Large	**63.2**	50.9	83.4	50.1	66.4	65.1	51.1
4	Mistral AI	Mistral-Large-Instruct	**62.5**	50.3	83.3	50.0	72.8	55.6	50.3
5	DeepSeek	DeepSeek-V2-Chat	**61.7**	46.3	78.8	47.4	68.2	66.2	44.1
6	OpenAI	GPT-4o-mini	**60.4**	50.1	78.7	45.4	58.2	63.3	56.0
7	**Alibaba**	**Qwen-Max**	**57.8**	**56.5**	**79.0**	**47.9**	**55.1**	**52.4**	**47.4**
8	01.AI	Yi-Large	**56.3**	48.7	75.3	47.6	54.8	54.3	40.0
9	**Alibaba**	**Qwen2-72B-Instruct**	**55.4**	**45.8**	**84.0**	**44.7**	**57.7**	**49.5**	**34.0**
10	Zhipu AI	GLM-4	**55.2**	45.8	77.7	46.1	53.2	56.3	36.9
11	Meta	Llama3.1-70B-Instruct	**53.9**	38.4	81.4	31.6	58.0	53.7	46.2
12	Alphabet	Gemma-2-27B-it	**53.5**	45.2	58.5	45.4	50.1	54.6	45.2
13	**Alibaba**	**Qwen1.5-110B-Chat**	**51.9**	**53.4**	**79.3**	**45.8**	**39.6**	**49.5**	**36.8**
14	**ByteDance**	**Doubao-pro-32k**	**51.0**	**31.1**	**78.3**	**27.8**	**67.5**	**50.2**	**30.6**
15	Baichuan	Baichuan4	**50.4**	37.2	74.2	38.5	51.8	44.1	39.4
17	MiniMax	abab6.5-chat	**49.9**	44.9	69.8	47.0	47.2	50.5	32.0
18	**Baidu**	**Ernie-4.0-8K-Preview**	**48.8**	**36.7**	**76.4**	**41.3**	**44.7**	**50.6**	**28.5**
19	Moonshot	Moonshot-v1-8K	**48.6**	46.3	61.0	46.0	46.6	47.0	35.9
20	Zhipu AI	GLM-4-9B-Chat	**47.9**	44.3	68.9	40.0	38.7	45.1	36.0
21	01.AI	Yi-1.5-34B-Chat	**46.9**	50.5	65.0	42.7	38.1	44.8	38.8
22	**Tencent**	**Hunyuan-Standard-256k**	**46.9**	**30.6**	**69.7**	**36.8**	**53.9**	**46.1**	**29.2**

Source: OpenCompass, Bloomberg Intelligence

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Alibaba is top-ranking large Chinese firm

Restrictions on the ability of Chinese AI companies to access broad, high-quality training data remain limiting factors, given the huge volume of English-language information on the web. Just 1.7% of the world's most frequently used websites were in Chinese in January 2023, with 58.8% of content in English, according to Statista.

The depth of available training is also more limited, with Baidu Baike, China's leading online encyclopedia, listing 25.5 million entries in February 2022 vs. Wikipedia's 58.2 million. China's strict censorship laws also limit the ability of its LLMs to access training data on politically sensitive topics. Earlier chatbots such as Microsoft's Xiaobing were banned for failing to abide by censorship rules.

Section 4. AI Chip Challenge

Chinese AI Firms Narrow Gap Despite Nvidia Controls

Concerns that China's dwindling access to imported, leading-edge accelerator chips would forestall its AI development efforts have largely proven to be unfounded. Rising technical innovation, an increasing domestic chip supply and a healthy buffer stock of components should ensure China's AI developments remain on track through 2025 and beyond.

Figure 5: Chinese LLM Models

Company	Model	Areas of Expertise	Version	# of Parameters
Baidu	Ernie	Search, Autonomous Vehicles	Ernie 3.0	260 Billion
Tencent	Hunyuan	Social Media, Games	Hunyuan	1 trillion
Alibaba	Tongyi Qianwen	Retail, Logistics, Health	Qwen1.5-110B	110 Billion
JD.com	ChatRhino	Retail, Logistics, Health	ChatRhino	100 Billion
Huawei	Pangu	Telecom, Government	Pangu 5.0	1 trillion
SenseTime	SenseNova	Computer Vision	SenseNova 5.5	600 Billion
Moonshot AI	Moonshot	Artificial Intelligence	Kimi	100 Billion
01.AI	Yi	Artificial Intelligence	Yi-Large	100 Billion

Source: Bloomberg Intelligence

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BI **Concerns about leading-edge chip access unfounded**

Preemptive action by China's largest tech platforms to stock up on Nvidia accelerator chips before US export controls came into force should allow them to continue their developments without significant disruption. The rising, albeit limited, supply of Huawei's lower-spec domestic accelerator chips should further alleviate the supply bottleneck. Unconfirmed reports have also suggested some companies imported restricted hardware via third-party countries to circumvent the controls.

Baidu said in May 2024 it had enough chips to continue training its ERNIE LLM for another one to two years. Tencent announced in November 2023 it had one of the largest inventories of AI chips in China, with sufficient stock -- including Nvidia's H800 -- to support several generations of upgrades to its Hunyuan LLM.

Chinese companies have increasingly turned to smaller, narrowly focused LLMs to further mitigate the impact of US controls. Small models are cheaper to build and are less computationally intensive, making them better suited to run on lower-spec, domestically developed chips. They also cost less to operate, as they require less time in training and inference.

Smaller models also tend to have lower latency, producing superior, faster results within their defined specialization (see Figure 6). Startup DeepSeek pioneered the use of highly efficient Mixture of Experts (MOE) LLM architecture, resulting in a material reduction in computational demand during pre-training and inference. DeepSeek claimed its approach yielded a 43% reduction in training costs, boosting the model's maximum generation throughput 5.8x.

Figure 6: DeepSeek Performance vs. Peers

Model	Parameters		Benchmark Score			
	Activated	Total	English (BBH)	Code (HumanEval)	Math (GSM8K)	Chinese (CLUEWSC)
DeepSeek V2	21 Billion	236 Billion	78.9	48.8	79.2	82.2
Qwen 1.5	72 Billion	72 Billion	59.9	43.9	77.9	80.5
Mixtra	39 Billion	141 Billion	78.9	53.1	80.3	77.5
LLaMA 3	70 Billion	70 Billion	81	48.2	83	78.3

Source: DeepSeek-AI, Bloomberg Intelligence

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BI **DeepSeek delivers performance at lower cost**

The adoption of smaller, targeted LLMs is a growing global trend, driven by the rising need to reduce costs. OpenAI, for example, launched GTP-4o mini in July 2024, its most cost-efficient small model to date.

DeepSeek's pioneering MOE utilizes a sub-network of specialized expert models to jointly perform a task. By only activating the specific experts needed to complete each task, the MOE delivers faster results, delivering substantial cost and computational savings vs. earlier generation LLMs. DeepSeek's 236 billion parameter V2 model consists of 160 experts (plus two shared experts), activating just six experts (i.e. 21 billion parameters) during inference.

4.1 US Embargo Pushes Chinese Providers to Domestic Chips

Chip supplier Huawei has been a primary beneficiary of the US export controls, which have boosted demand for its AI accelerator chips, including the Ascend 910B. That was marketed in China as a replacement for Nvidia's H100, which previously dominated. Though Huawei's chips are supply-constrained -- reflecting the low production yields on its 7nm fabrication process -- the rising, incremental supply of domestically fabricated chips has helped alleviate the impact of the US controls.

The performance of Huawei's AI components trails Nvidia's by two to three generations, though SemiAnalysis says Huawei's forthcoming accelerator, the Ascend 910C, which begins shipping in October, could outperform Nvidia's planned China-specific H20 AI accelerator.

Rising geopolitical tensions, combined with growing fears about a further tightening of US controls, will likely drive China's AI firms toward domestic suppliers in the long run and away from Nvidia and other US suppliers. However, there should still be a healthy appetite for Nvidia's forthcoming H20 chip -- particularly from smaller companies -- given the current overall supply constraints.

Huawei has been testing its Ascend 910C with key players in China's tech sector, including ByteDance, Baidu, and China Mobile, according to the Wall Street Journal. Initial orders for the new chip could potentially reach 70,000 units, the report said. The total value of these orders is estimated at around $2 billion, suggesting a price of about $28,000 per chip.

Section 5. AI Monetization

Arduous Road to Monetization

China's AI software companies should continue making technological progress, but we expect revenue generation to remain low during the next three years given the predominance of free-to-access products in the market. Intense competition in the fragmented AI software sector presents a further challenge to monetization efforts, making it difficult to expand user bases.

A sector consolidation would likely help companies scale more easily, but we think it's unlikely, given the abundance of large tech platforms and well-funded startups active in the market. Monetization efforts in China's consumer sector will ultimately require a shift in users' appetite. This seems less probable, given current consumer indifference toward AI apps and a lack of standout tools in the market.

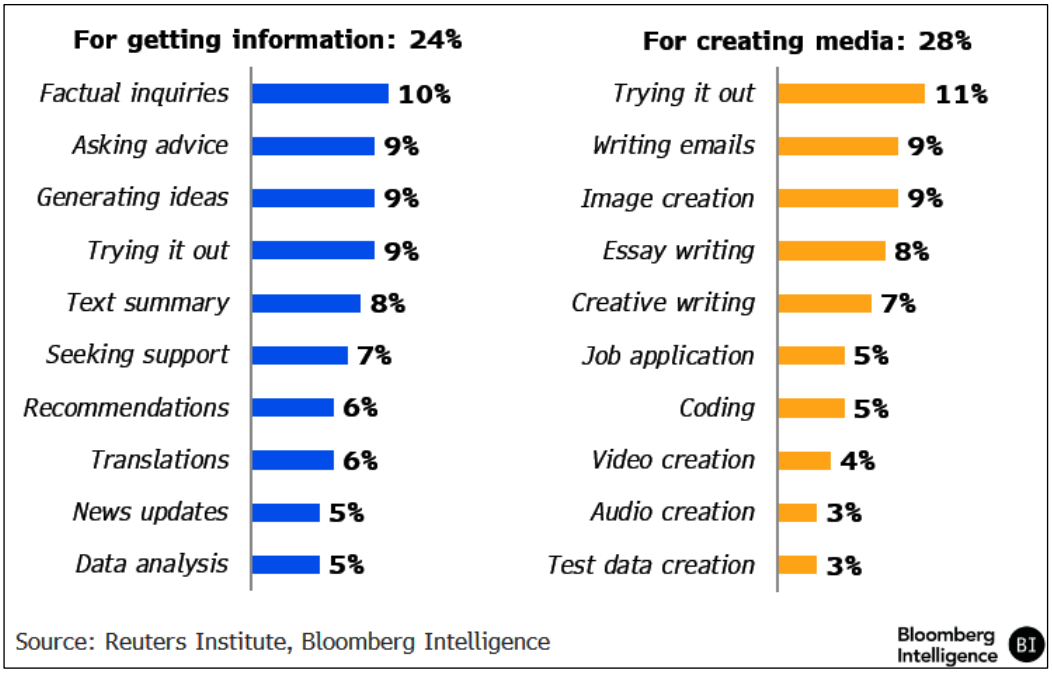
The reluctance of Chinese consumers to pay for AI apps stems from their perception that the current generation of tools offers limited added value. The high prevalence of free AI tools available also provides consumers with little motivation to spend on paid options.

A joint survey of 12,000 people in six countries -- including the US, Japan and the UK -- in May 2024 by Oxford University and Reuters Institute found that, while a majority of those surveyed were aware of ChatGPT, just 7% of US respondents used the tool on a daily basis, with the total daily users falling to 2% in the UK and 1% in Japan. The report's lead author, Dr. Richard Fletcher, observed a mismatch between the hype surrounding AI and public interest in it.

Consumer skepticism highlights a deeper issue concerning the true intelligence of today's AI applications, whose underlying artificial neural networks rely on "pattern recognition" to produce results. While pattern recognition is an effective method for swiftly and accurately identifying relationships within datasets, it has notable limitations and is not a form of true intelligence.

The current generation of AI models can’t think or reason independently; they can only solve problems within very limited parameters. They’re also unable to generate content or respond to inquiries on topics beyond their training datasets. Additionally, they are prone to hallucinations and errors, necessitating human oversight and the implementation of safeguards to prevent incorrect or inappropriate responses (see Figure 7).

Figure 7: How Consumers are Using Gen-AI



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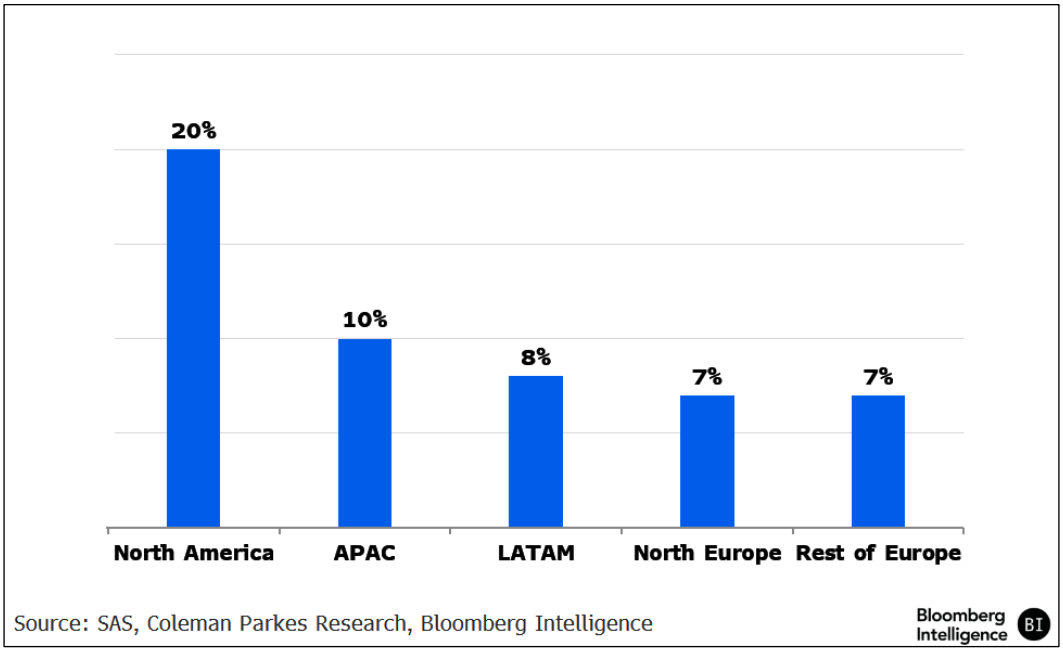
Consumers use Gen-AI mainly for inquiries, advice

Persuading Chinese consumers to pay for AI apps will necessitate a shift in mindsets, given the pervasiveness of free-to-access products in China's broader software market. The continued, albeit decreasing, availability of pirated software is a further factor influencing consumers' willingness to pay for software. The high prevalence of "freemium" software -- which provides free access to basic features and charges for premium access -- is a further barrier to the AI sector's monetization efforts.

Consumer price points in China also tend to be much lower than on comparable products and services in the West. For example, long-form video streaming platform IQIYI currently charges around 20 yuan ($3) per month for basic access to its service, a substantial discount to Netflix's entry-level monthly fee of $15 in the US.

A survey commissioned by SAS in July 2024 confirmed that, while 83% of Chinese organizations had experimented with LLMs, just 19% chose to fully adopt the technology. Most corporations said they had insufficient data to train the models or lacked the appropriate tools to successfully implement AI.

Figure 8: Gen AI Full Implementation by Country



Software developers have focused their monetization efforts in three areas: developing AI chatbots based on in-house LLMs, augmenting existing applications with AI functionality, and creating new AI-powered applications for overseas markets. However, the incremental revenue generation in all three segments has been weak.

Revenue in China's AI chatbot sector has been extremely low, with the top 10 AI chatbots generating less than $1 million in revenue during the first nine months of 2024, according to Sensor Tower. The low level of monetization reflects continuing consumer indifference and the predominance of free tools in the market as companies prioritize user growth over revenue generation.

The addition of AI functionality to mainstream software tools has also failed to drive a pick-up in growth in that sector. Chinese software developers have achieved some success in overseas markets, though the international revenue outlook is subject to rising geopolitical tensions.

Baidu's Ernie Bot -- the first AI chatbot to launch in China -- accounted for the majority of chatbot revenue in China, though this represents a poor return on its registered user base of more than 300 million. By contrast, OpenAI's ChatGPT engine generated global iOS revenue of $160.5 million during the same period.

Ernie Bot's monetization challenges highlight the obstacles Chinese names have encountered -- even for the industry's most prominent players – to build financially viable businesses around their AI technologies and products.

We estimate Ernie Bot's current annual revenue run rate is around $8 million, equivalent to around 0.04% of Baidu's 2023 group sales. The low level of annualized sales supports our view that the chatbot is unlikely to deliver significant financial benefits anytime soon.

5.1 Gen-AI Unlikely to Boost Mainstream Software Sector

The monetization outlook for AI products in China's mainstream software sector remains equally challenging, particularly at a time of rising economic uncertainty. While China's software firms were quick to incorporate AI features into their existing apps in 2023, that's so far failed to deliver a pick-up in growth.

The addition of gen-AI functionality failed to deliver faster expansion at four leading creative apps. Annualized revenue gains on Alibaba's Quark, Meitu's Meitu, Kingsoft's WPS, and Baidu's Wenku, eased to 55% during the first nine months of 2024, down from 63% during the whole of 2023.

China's software providers have mainly integrated Gen-AI into creative tools used for document, image, and video generation. A notable example is Alibaba's Quark App, which offers AI-enhanced search, AI desktop assistant, document and presentation generation capabilities. The use of Co-pilots remains limited in China, as users prefer to use more generalize AI chatbots.

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AI yet to drive growth upturn

Figure 9: China iOS Revenue ($ '000)

Company	App	2018	2019	2020	2021	2022	2023	2024*
Alibaba	Quark	-	118	716	3,685	16,021	38,073	68,584
Growth (%)				*509%*	*414%*	*335%*	*138%*	*80%*
Meitu	Meitu	16	4	689	6,154	10,660	22,225	42,068
Growth (%)			*-78%*	-	*793%*	*73%*	*108%*	*89%*
Kingsoft	WPS	4,411	10,042	19,146	25,475	27,298	30,121	32,672
Growth (%)			*128%*	*91%*	*33%*	*7%*	*10%*	*8%*
Baidu	Wenku	1,136	2,977	5,859	4,368	6,450	7,955	8,974
Growth (%)			*162%*	*97%*	*-25%*	*48%*	*23%*	*13%*
Total		5,563	13,140	26,409	39,681	60,430	98,375	152,298
Growth (%)			*136%*	*101%*	*50%*	*52%*	*63%*	*55%*

*NB: Annualized revenue based on Jan-Sept data.

Source: Sensor Tower, Bloomberg Intelligence

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Chinese software firms have also looked overseas, though these products have yet to generate a meaningful level of revenue. Notable examples include MiniMax's avatar chatbot Talkie, ByteDance's photo editor Hypic, and Zuoyebang's homework assistant Question AI.

Geopolitical tensions threaten to forestall the international sales of China's software companies -- particularly in the US -- as they increasingly look overseas given the domestic challenges (see Figure 10). Rising distrust between China and the US resulted in the proposed ban of TikTok and the earlier forced sale of LGBTQ dating app Grindr by Kunlun Tech in 2020. Kunlun's disposal was prompted by national security concerns raised by the US Committee on Foreign Investment.

Figure 10: Global iOS Revenue ($ '000)

Company	App	2021	2022	2023	2024*
ByteDance	Gauth	9	1,534	6,474	3,043
Growth (%)				*322%*	*-53%*
Zuoyebang	Question.AI			375	4,521
Growth (%)					*1107%*
MiniMax	Talkie			685	2,903
Growth (%)					*324%*
Kunlun Tech	Linky AI				1,552
Growth (%)					
ByteDance	Hypic			2	225
Growth (%)					
01.ai	PopAi			2	85
Growth (%)					
Total		9	1,534	7,538	12,328
Growth (%)				*391%*	*64%*

*NB: Annualized revenue based on Jan-Sept data.

Source: Sensor Tower, Bloomberg Intelligence

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ByteDance's Gauth challenged by Zuoyebang app

5.2 Industry Shakeout May Support Pricing

An industry shake-out would probably support pricing, though this appears unlikely at present, given the multitude of large tech platforms and well-funded startups active in the greater software sector. Many current AI product offerings in the Chinese market are undifferentiated, further intensifying the downward pressure on pricing, making it difficult for any one company to achieve dominant market share and pricing power.

The large number of free-to-access products in the sector reflects the decision of many Chinese AI companies to prioritize user growth over monetization. However, building scale remains extremely challenging in a fragmented market that has already become commoditized.

Section 6. Profit Outlook

Long and Winding Road to Profitability

Putting the industry on a sustainable earnings footing will require a cooling of competitive pressures and a more rational approach to pricing. This will be hard to achieve as long as many are willing to sacrifice profit for market share. The sector's commercialization will require a change in consumers' willingness to pay for AI tools. A consolidation of the fragmented sector would help, but we see a low chance of this currently. A shakeout also isn't guaranteed to drive a substantial level of profit in a sector with commodity-like characteristics.

6.1 Thin Margins, State Support to Defer Profits

China's AI software companies are not alone in their profitability challenges. Companies in the solar panel, steel and textile industries have become accustomed to operating on razor-thin margins, while grappling with aggressive pricing and market saturation, despite China's leadership in these segments. The AI sector shares many characteristics with these commodity industries, which have all benefited from a high level of government support. Other common factors include low barriers to entry and over-capacity stemming from the large number of competitors.

The tendency of Chinese companies to prioritize market share over sustainable profitability is a further barrier to the sector's commercialization as it encourages aggressive competitive behavior and investment strategies.

Rising central governmental support threatens to prolong the industry's path to profitability, though it should benefit its development. State subsidies risk worsening overcapacity by enticing new entrants, potentially creating a distorted market where uncompetitive companies can continue operating at a loss, relying on state support instead of developing sustainable business practices.

This risk is likely to be a secondary consideration for China's government currently, given its global AI ambitions. Market forces will determine the final structure of the industry, with the private sector ultimately responsible for addressing the sector's profitability challenges.

Lower technical barriers to entry in AI software have allowed Chinese companies to quickly develop new products, leading to a crowded marketplace and low product differentiation. The resulting oversupply drives down pricing, making it hard to achieve profitability.

Chinese consumers are highly price-sensitive, forcing companies to maintain low prices to attract buyers, which restricts their ability to raise prices when costs rise. This intense rivalry has resulted in price wars in both the LLM and AI cloud computing sectors. Such practices have further diminished the profitability outlook as companies feel pressured to engage in price competition.

Figure 11: AI Dragons Fundraising ($ Billion)

Company	Valuation	Latest Round	Date	Select Investors
Zhipu	2.8	-	Sep-24	Zhongguancun Science City
Moonshot AI	3.3	0.3	Aug-24	Tencent, Alibaba, Gaorong Capital
Baichuan	2.8	0.7	Jul-24	Tencent, Alibaba, Xiaomi
MiniMax	2.5	0.6	Mar-24	Alibaba, HongShan

Source: Bloomberg Intelligence

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An industry consolidation remains at least 24 months away, we believe, as there are few "weak hands" to be forced out. The sector is populated by an abundance of competitors -- from the resource-rich tech platforms to state-owned national telcos and well-funded startups. Most large software and internet companies regard AI as a critical component of their future growth strategies, making it improbable that they will step back from the competition.

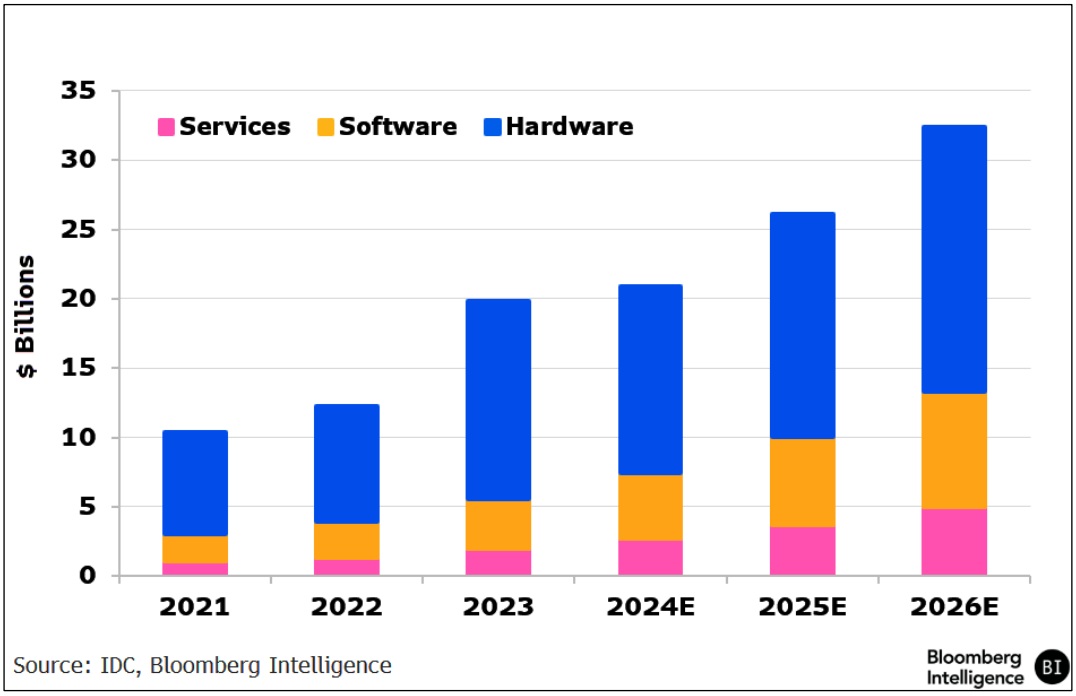
An immediate shake-out in the private sector also appears unlikely, though we expect funding opportunities to progressively tighten as it becomes clear that few, if any, of the cohort of "AI Dragons" are likely to achieve profitability.

Section 7. Competitive Landscape

Tencent, Alibaba Set to Prevail as Baidu Struggles

Tencent and Alibaba's AI ventures will likely remain loss-making in aggregate over the next three years, but their superior resources should enable them to deliver best-in-class solutions, attract talent and invest in promising startups. The companies' broad reach is a further source of competitive advantage, opening opportunities to cross-sell AI products across their platforms, as well as leverage AI internally to generate cost savings. Their deep pool of customer data provides them with a further edge, allowing both to train and refine their AI models more effectively, while their lead in China's cloud computing industry provides an additional route to market and a source of revenue generation.

Figure 12: China AI Market Size



BI

China's AI software market offers gradual progress

7.1 Huawei, ByteDance Trail, But Opportunities Arise

Huawei and ByteDance should also prosper, though they lack the full spectrum of capabilities -- AI cloud, LLMs and application software -- necessary to lead the sector. ByteDance's limited cloud presence, weaker positioning in LLMs and relative narrow application software portfolio place it at a strategic disadvantage. ByteDance is also coming from behind, as a relative late adopter of AI, though it has made swift progress since as exemplified by its in-demand Doubao AI chatbot.

Huawei's weaker software position makes it a laggard among China's big four tech firms, though its close ties with Beijing should continue to offer opportunities at state-owned enterprises and in

government sectors. Huawei should retain its position as China's national champion in AI hardware and semiconductors.

Baidu's once leading position looks set to erode further as its thinly stretched business struggles in an increasingly competitive market. It lacks the ability to carve out a defensible niche, given the sector's low barriers to entry. It also lacks the scale and resources to compete effectively with China's large tech platforms in the long run and we expect its AI ventures to remain loss-making over the next three years.

Baidu's Ernie AI bot has progressively lost market share this year to aggressive new rivals, including Moonshot AI's Kimi engine, which was ranked as China's most-popular AI chatbot by website visits in September 2024 (see Figure 13). Baidu's AI cloud business also faces rising competition from hyperscalers, including Huawei and the three national telcos.

Figure 13: Domestic AI Chatbot Ranking by Visits (Million)

	September 2024				August 2024			
Rank	AI Chatbot	Company	Visits	% of Top 10	AI Chatbot	Company	Visits	% of Top 10
1	Kimi	Moonshot AI	25.1	28.0%	Kimi	Moonshot AI	23.4	29.9%
2	Ernie Bot	Baidu	20.7	23.1%	Ernie Bot	Baidu	19.1	24.5%
3	Doubao	ByteDance	13.7	15.3%	Doubao	ByteDance	11.0	14.0%
4	Tongyi Qianwen	Alibaba	9.4	10.5%	Tongyi Qianwen	Alibaba	8.6	11.0%
5	Tiangong AI	Kunlun	5.2	5.8%	Tiangong AI	Kunlun	4.5	5.8%
6	Hailuo AI	MiniMax	5.0	5.6%	ChatGLM	Zhipu AI	3.5	4.4%
7	ChatGLM	Zhipu AI	3.8	4.3%	Baidu Chat	Baidu	2.4	3.1%
8	Baidu Chat	Baidu	2.6	2.9%	Xinghuo	iFlytek	2.2	2.9%
9	Xinghuo	iFlytek	2.1	2.3%	DeepSeek Chat	DeepSeek	1.8	2.3%
10	DeepSeek Chat	DeepSeek	2.0	2.2%	Coze	ByteDance	1.7	2.1%
	Total		89.5	100.0%	Total		78.2	100.0%
	Sequential Growth (%)		*14.5%*					

Source: aicpb.com, Bloomberg Intelligence

Bloomberg Intelligence BI

BI **Moonshot's Kimi overtakes Baidu's chatbot**

7.2 Regulation a Risk, Startups May Struggle

Tencent and Alibaba remain at risk from a further tightening of China's antitrust and data privacy regulations, which could constrain their ability to leverage data and AI capabilities. Data security concerns are likely to remain at the forefront as both platforms seek to exploit their vast troves of user data.

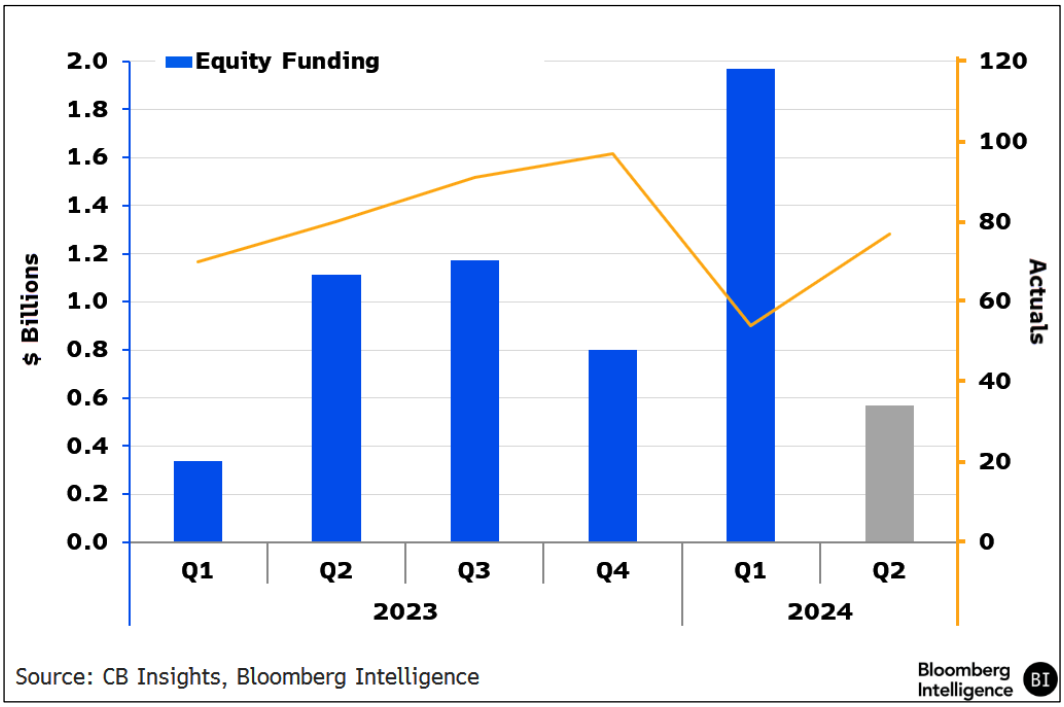
Failure to effectively manage those assets could invite increased regulatory oversight and a public backlash, despite the recent improvement in relationships with the government in Beijing. A further tightening of US export restrictions on AI accelerator chips and hardware remains a medium-term risk, though both companies appear to have circumvented it for now, having stockpiled.

AI startups will likely struggle to scale their user base, gain pricing power or carve out a defensive niche given the low technical barriers to entry and rampant competition. There's still a role for innovative startups to play, though we fail to see how they can effectively compete with the superior resources of the large platforms.

The startups remain vulnerable to a funding squeeze, given rising pressures in the economy, though a fundraising window should remain open for the best-placed ventures. The total value of

AI deals in China fell to a five-quarter low of $600 million in 2Q24, down 85% from the market peak in 1Q21. Higher-quality startups remain vulnerable to consolidation, with Alibaba and Tencent well placed to cherry-pick the best-placed targets.

Figure 14: China AI Equity Fundraising



BI

China's AI equity fundraising deals on the decline

7.3 Alibaba, Tencent Have Greater Potential

Alibaba's and Tencent's broad ecosystem-- spanning e-commerce, social media, video games, fintech and entertainment -- enables them to develop a wide range of AI applications, allowing insights and models developed in one area to be rapidly applied and scaled across the entire platform. Both also have greater potential to generate cost synergies through integrating AI into their multiple business functions.

Alibaba, for example, utilizes AI to drive personalized product recommendations on its e-commerce platforms, while Tencent leverages AI to target short-video advertising and to enhance features in its WeChat app. Tencent also announced GameGen-O in September 2024, an AI diffusion transformer model that can generate characters and environments to accelerate the development of open-world video games.

The superior financial strength of the tech giants should enable them to out-invest the competition in research and development, attract talent and invest in or acquire promising startups. Their significant financial resources also bring advantages when sourcing AI accelerator chips, which will likely remain in undersupply for the foreseeable future.

Alibaba and Tencent have developed sophisticated AI capabilities including machine learning, speech recognition, computer vision and natural language processing. Their technological

prowess and vast data resources should allow them to create advanced AI solutions that are better tailored to user needs.

They have accumulated a vast repository of customer data from the many hundreds of millions of active users across their platforms. These datasets give them a significant competitive edge, enabling them to train and refine their AI models more effectively. By analyzing user behavior and preferences, they're better able to create personalized experiences for customers.

This not only increases user engagement but also drives higher conversion rates in e-commerce and advertising. Their substantial customer bases also create a sizable captive market for AI-powered products and services, enabling both companies to scale more quickly than rivals.

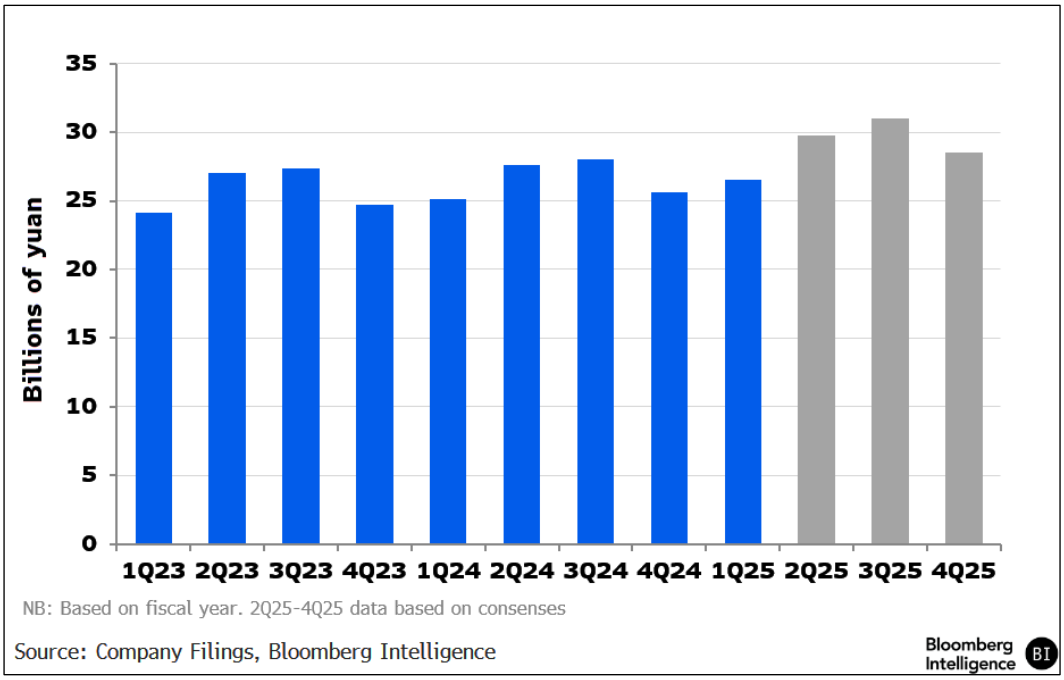
7.4 Cloud Monetization Opportunities

Tencent and Alibaba's industry-leading cloud computing offerings provide a further strategic advantage, opening an additional route to seed the market with their technology and drive demand for their specialist Infrastructure as a Service (IaaS) cloud services, helping bolster their market position in AI. Their large data-center infrastructure provides them with readily available access to high-end computing resources to develop their own tools and LLMs, despite the undersupply of AI accelerator chips in the market.

With China's AI IaaS revenue forecast to reach just $9.1 billion by 2028, according to IDC, the opportunity is unlikely to move the needle at either firm, with the profit potential in IaaS limited by substantial energy and depreciation costs.

Figure 15: Alibaba Cloud Intelligence Sales

BI **Alibaba's cloud intelligence sales seen inching up**

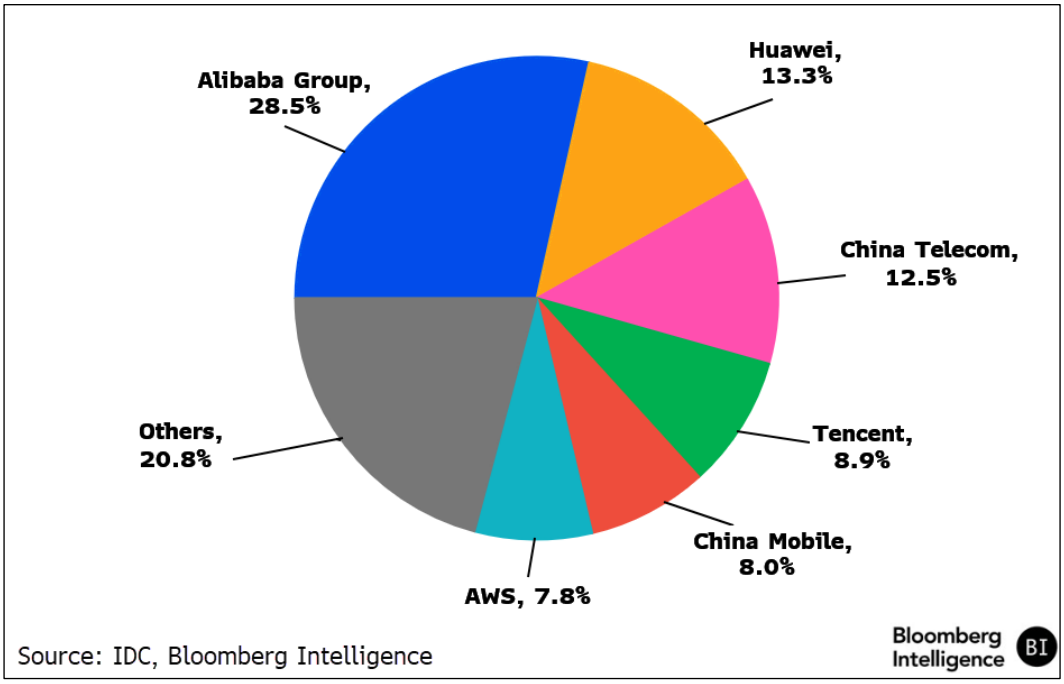


Section 8. Cloud Profit Outlook

Alibaba, Tencent Unlikely to Profit from AI Cloud

Alibaba, Tencent and Huawei may be leaders of China's AI cloud sector, but we expect the price war and surging energy costs to keep the industry locked in losses for at least three more years. A near-term industry shakeout appears unlikely, but we expect Baidu's over-stretched business to continue losing share.

Figure 16: China 2023 IaaS Sales



8.1 AI Developments, Open-Source Models Drive Demand

The forecast undersupply of AI accelerator chips and advanced computing facilities will help fuel growth in China's burgeoning AI IaaS market. Still, with sector revenue forecast to reach just $9.1 billion by 2028, according to IDC -- equivalent to 10% of Tencent's forecast 2024 sales -- the opportunity is unlikely to move the needle at China's leading cloud computing firms.

AI IaaS encompasses the provision of the specialist hardware and software resources needed to develop AI tools and models. AI IaaS services are predominantly offered by hyperscalers, such as Alibaba, and are charged on a pay-as-you-go or subscription basis, providing enterprise customers with access to leading-edge AI infrastructure and tools, without them having to invest.

AI IaaS services include rental access to the powerful dedicated AI accelerator chips and TPUs (Tensor Processing Units) for deep-learning-model training. Providers of AI-related IaaS services also normally include access to pre-trained AI models, APIs, and other tools that help developers

incorporate AI features into their applications. AI services will also include data storage so that clients can manage their AI dataset

The rising popularity of free-to-access, open-source foundation models should help accelerate the commercialization of AI in China as well as drive demand for AI IaaS services. Alibaba is best-placed to benefit among China's emerging Hyperscalers, with Tencent and Baidu less well positioned given their preference for closed-source models.

Open-source models tend to be most popular among less technically proficient customers that lack the resources to develop their own AI models. Open-source model users usually require the services of AI Cloud specialists given they are less likely to have the necessary hardware resources to develop, train and inference their AI models internally.

Though rising open-source demand should drive IaaS service growth, we expect it to widen losses in the unprofitable cloud sector, given the high associated energy and asset-depreciation costs of providing AI cloud services. Given the limited probability for a sector consolidation, we expect China's cloud sector to remain loss-making in aggregate during the next three years.

8.2 Consolidation Unlikely

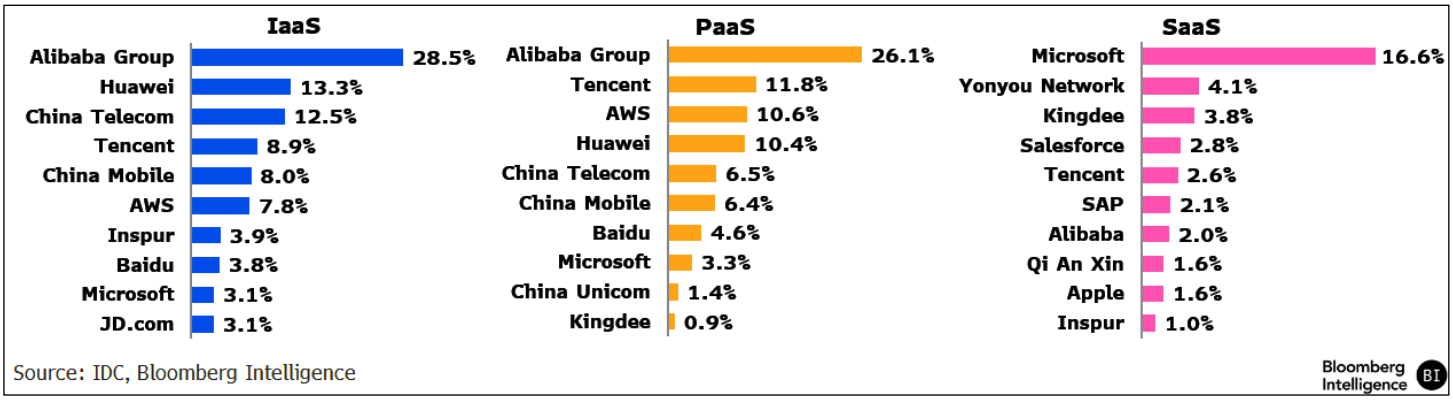
BI

Alibaba dominant provider in IaaS and PaaS

The current price war is unlikely to drive a consolidation as the cloud sector is dominated by seven large, well-capitalized corporations all set on securing a leading share, including Alibaba, Tencent, Baidu, Huawei and the three national telcos (as shown in Figure 17).

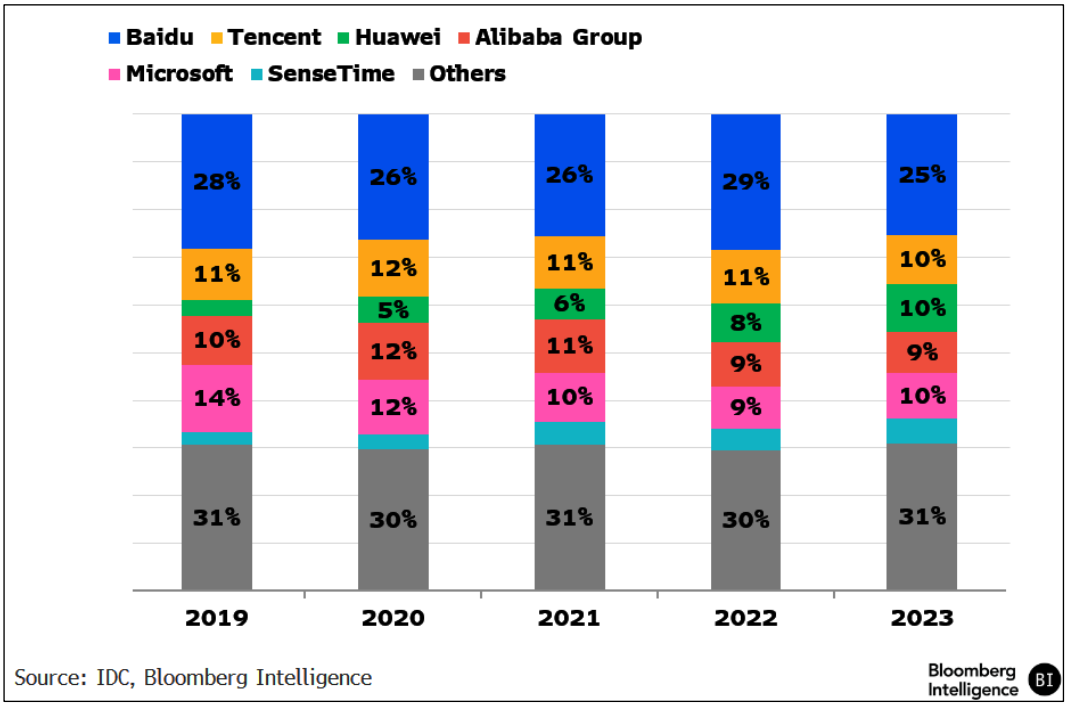
The potential exit of smaller players such as Kingsoft Cloud or SenseTime wouldn't likely alter the balance of power, given their relatively low market share. The sector's profit outlook, therefore, depends more on a return to rational pricing and an end to the price war, though there appears to be a slim chance of this happening currently.

Figure 17: Top 10 Chinese Public Cloud Providers



China's state-owned telcos will likely struggle to compete in the private-sector portion of the IaaS market, given their relatively limited expertise in LLMs and application software. These companies should continue to enjoy an advantage with governmental and SOE customers, given their ability to deploy their large data centers and high-end supercomputing resources at a national level.

Figure 18: China AI Cloud Software Market



BI

Baidu's market share seen extending erosion

We expect Baidu to continue losing share in cloud AI as the better-resourced, large tech platforms gain strength. Baidu's business has become too thinly spread, in our opinion, after the firm pursued market leadership in multiple end-markets including AI chatbots, LLMs, AI cloud and autonomous vehicles. As a medium-sized firm -- with adjusted Ebitda totaling just 15% of Tencent's in 2023 -- Baidu simply can't match the scale and resources of large tech platforms.

Baidu's share of China's AI cloud software market slipped to about 25% from a high of almost 30% in 2019 as Huawei, SenseTime, Tencent and Alibaba gained ground. Baidu has also lost share in the AI chatbot sector as rival startups, such as Moonshot AI, rapidly closed the gap.

8.3 Rising Electrical Energy Demand

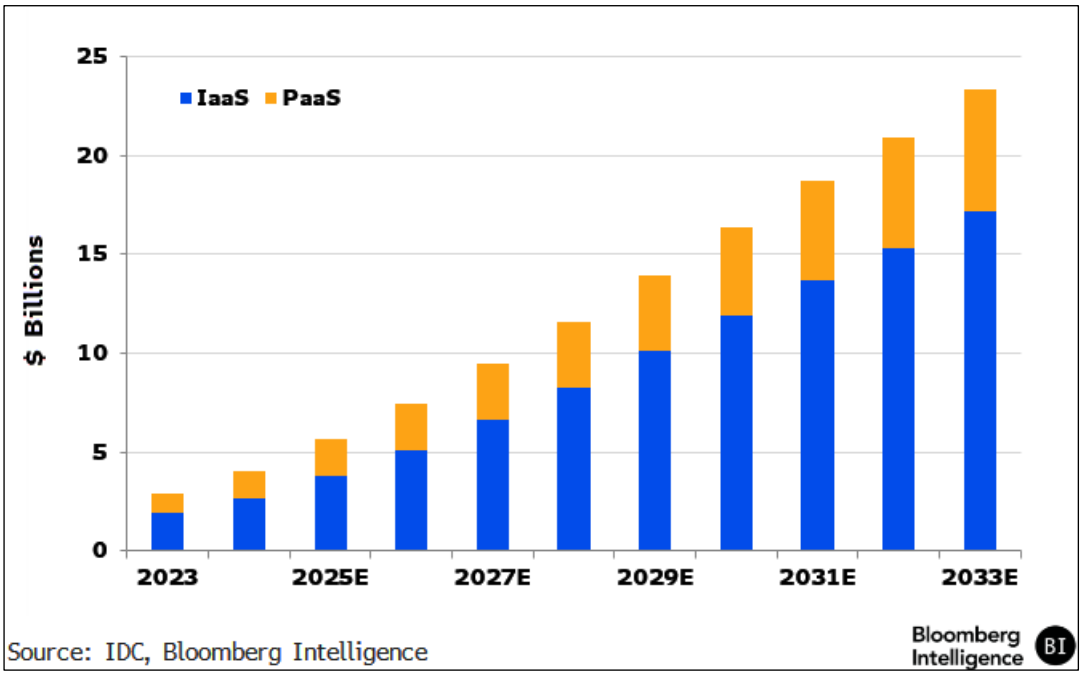
The high cost of activating large networks of power-hungry AI chips will likely drag on the IaaS sector's path to profit. Still, China should avoid the electricity supply bottleneck faced by many other countries, given the approximate fivefold increase in its electricity generation capacity over the past 20 years.

The new Eastern Data, Western Computing (EDWC) project should also help alleviate the burden on the power network, despite the rising demands from electric vehicles. EDWC, the national, interconnected data-center network, includes eight regional computing hubs and 10 data-center clusters in the east of the country that are connected to renewable energy sources in the west. The network includes a 1-million-square-meter data center, the world's largest.

China's AI IaaS market totaled $1.9 billion in 2023, with rising demand for AI cloud services expected to drive sector revenue at a compound annual rate of 36% between 2023-28 to reach $9.1 billion (as shown in Figure 19). The current low-level of AI IaaS sales reflects the sector's early stage of development and the price war.

Baidu retained its spot as China's largest AI cloud software vendor in 2023, though its share fell to 25.3% in 2H23 from 29.7% a year earlier, with Huawei and SenseTime gaining share. Tencent, Microsoft and Huawei each captured an approximate 10% share, with Microsoft likely to continue losing share given the backdrop of rising geopolitical tensions. Microsoft's share of China's AI cloud software market has declined 400 basis points over the last four years from a peak of around 15%.

Figure 19: China AI Cloud Revenue



BI

AI cloud revenue to continue rising

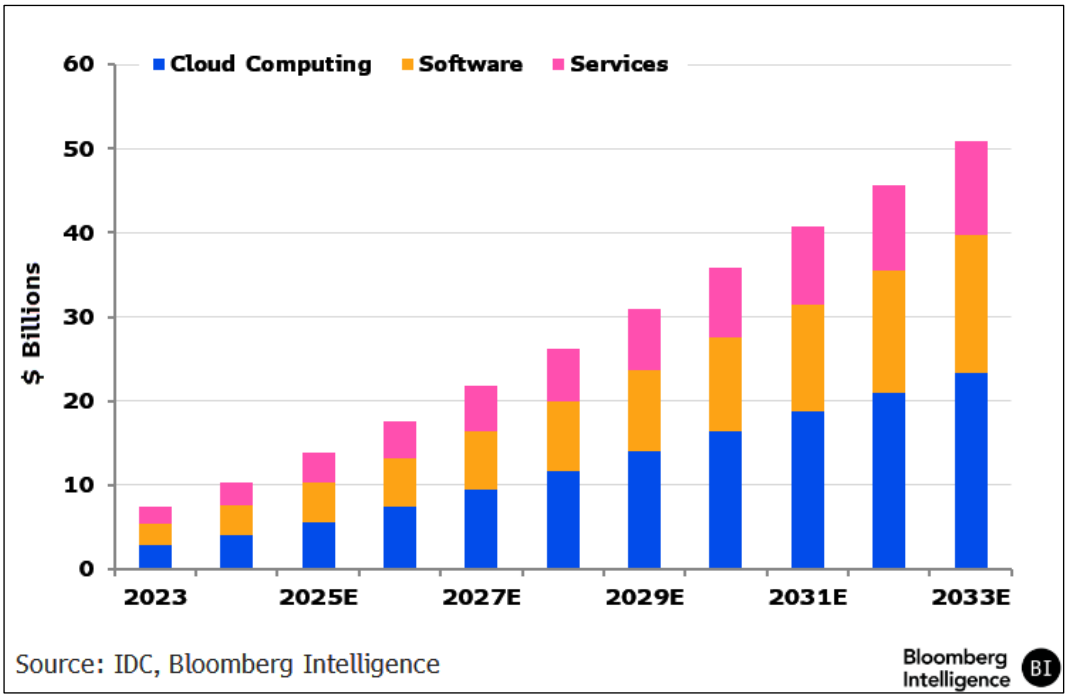
Section 9. China AI Market Size

Outlook Stifled by Fierce Competition, Free Tools

China's AI software, IT services and cloud computing markets are poised for rapid growth from 2024-33, off a low base. However, the estimated market size of just $51 billion -- equivalent to 24% of Tencent and Alibaba's combined 2023 sales -- is relatively modest. AI cloud computing service growth should outpace the rest of the industry, driven by the accelerator chip bottleneck, with AI cloud sales set to reach $23.3 billion by 2033, accounting for 46% of the total market.

The cloud computing price war will keep the segment unprofitable for at least the next three years. Industrial and enterprise applications should drive China's mainstream AI software sales. Consumer monetization will likely remain challenging.

Figure 20: China AI Software, Cloud and Services Revenue



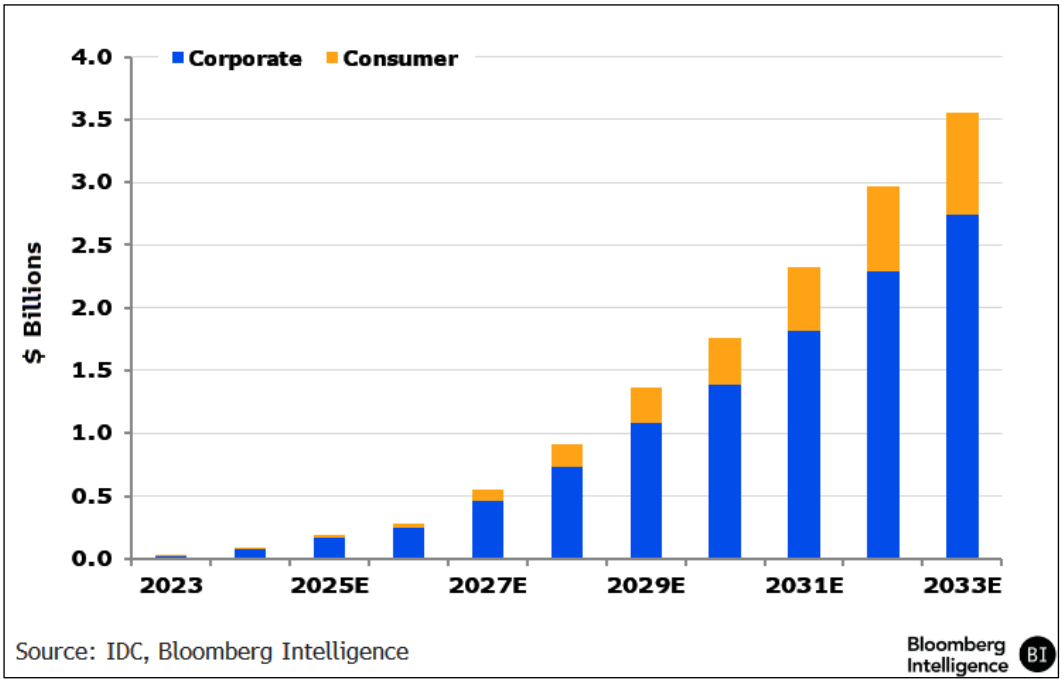
The forecast undersupply of AI accelerator chips should drive demand for specialist AI cloud computing services over the next 10 years. We expect revenue in the IaaS segment to increase at a CAGR of 24.5% between 2024-33 to reach $17.2 billion. Alibaba and Tencent remain well positioned to lead this segment due to their comprehensive product offerings and superior scale.

Alibaba arguably has an edge over Tencent given its greater emphasis on open-source LLMs, which is helping to drive demand for its cloud services. The outlook within the Platform as a Service (PaaS) segment is robust, though we expect Baidu to progressively lose share given the superior scale and resources of the internet platforms.

Rising demand in the corporate and industrial sectors should drive software sales during the next 10 years, with the market set for a CAGR of 20.4% from 2024 through 2033 to reach $16.3 billion. The digitization of China's industrial base should boost revenue in the AI-enhanced industrial computer vision system sector to $4 billion by 2033, with sales of machine learning tools rising to $2.9 billion.

Commercializing consumer AI tools looks set to remain challenging due to the predominance of free tools and intense competitive pressure in the retail segment. Monetizing AI chatbots will also likely remain difficult, with sector revenue set to total just $3.6 billion by 2033, we estimate (see Figure 21). A consolidation of the crowded sector could help drive sales higher, though this currently appears unlikely.

Figure 21: China AI Chatbot Revenue



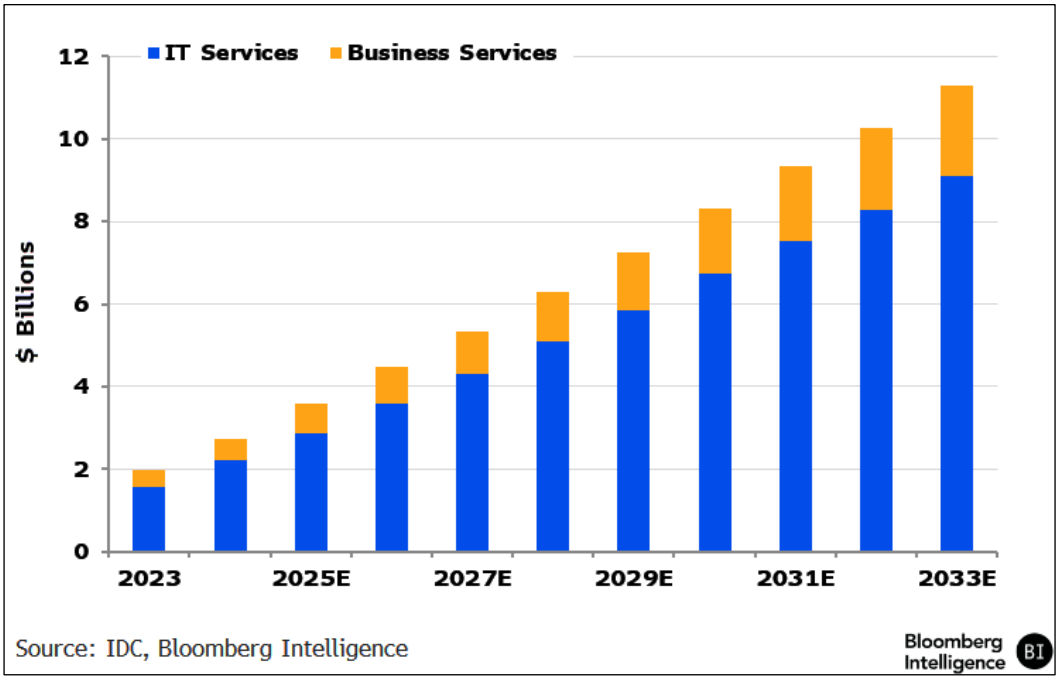
BI **Corporate demand to drive chatbot revenue over next decade.**

Demand for IT services will largely be driven by rising AI development efforts by non-specialists in the SOE and SME sectors. However, the outlook in these has a greater degree of economic sensitivity than the other segments, given the pressures on China's local government finances.

Alibaba, Tencent and Baidu are less likely to benefit from growth in this segment given their greater focus on internal developments, rather than servicing external clients. Rising AI development efforts should see IT and business services revenue grow at a CAGR of 19.1% from 2024 through 2033 to $11.3 billion, with growth likely front-loaded over the next five years.

IT services growth to outpace business services

Figure 22: China AI Services Revenue



Section 10. Fundraising Outlook

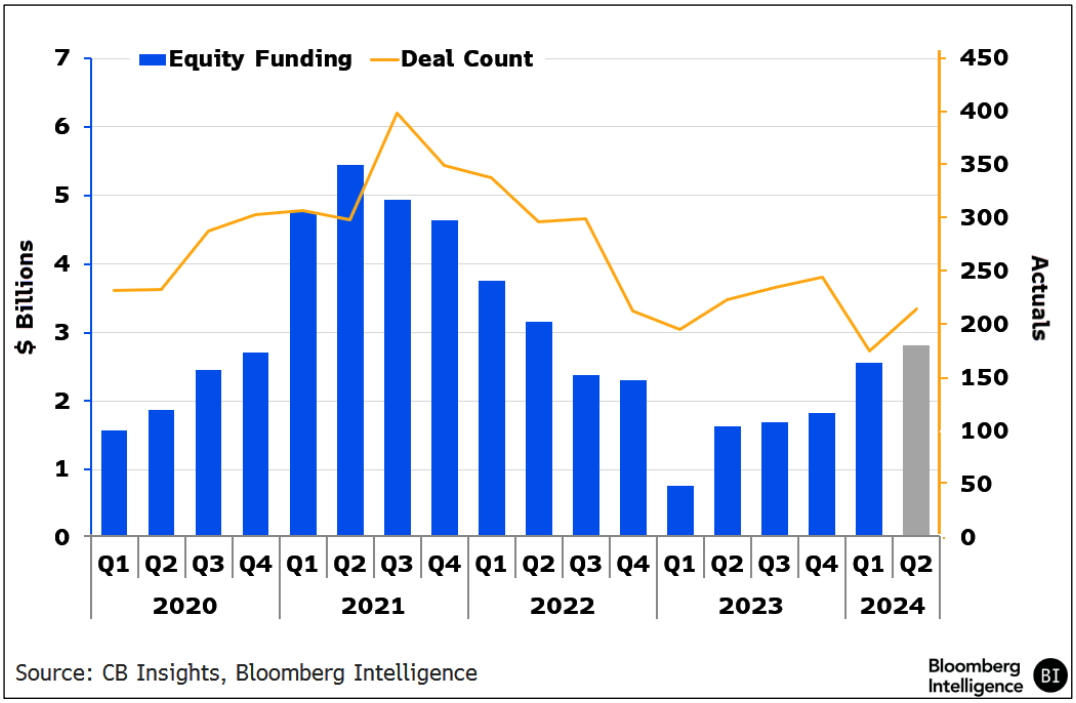
China AI Fundraising Window to Narrow

China should remain the center of Asian AI fundraising in the next 24 months, given the sector's national strategic importance. However, rising pressures in the private-equity sector will likely make it increasingly difficult for all but the best companies to raise money, bringing the industry a step closer to consolidation.

The total value of AI deals in China fell to a five-quarter low of $600 million in 2Q24, down 85% from the market peak in 1Q21. Though deal flow rebounded from the 1Q trough to 77, the total fundraising remained largely unchanged sequentially. That reflects rising pressure on China's slowing economy, as higher interest rates continued to suppress activity in the global private equity market.

The rising appetite for AI investment from China's cashed-up tech giants should keep the fundraising window open for the best-placed startups, though we expect total deal flow to remain pressured. Well-known startups, including Zhipu, Baichuan, and MiniMax, have attracted sizable investment in the past two years, with Alibaba and Tencent notable investors in Moonshot AI.

Figure 23: Asia AI Equity Funding



BI **AI equity funding in Asia recovers from decline in first quarter of 2023**

AI startups are coming under rising financial pressure due to the rampant competition and continuing price war in the country's LLM segment. We expect these pressures to continue rising into 2025. A wider industry shakeup remains at least 24 months away, we think, and could present a chance for consolidation. This should ultimately drive an uptick in deal flows, albeit at reduced

valuations. Transactions will likely remain subdued until then, given the external pressures on China's venture-capital sector.

Figure 24: China AI Top Equity Deals (2Q24)

Company	Amount ($)	Round	Valuation ($)	Select Investors
TERMINUS Technology	277M	Series D	-	AL Capital, Yuyao Yangming Equity Investment, China Everbright, SenseTime, Beijing Science Building Group
KargoBot	83M	Series A	-	Erdos Group, CIMC Vehicles, Horizon Investment, Shenzhen Investment Holdings
Rokae	69M	Private Equity	-	National Manufacturing Transformation and Upgrade Fund, Xinye Capital
Haomo.AI	41M	Series B	-	Nine Intelligence Capital
Ronovo Surgical	41M	Series B	-	INCE Capital, Wuxi Guolian Development, Kington Capital, LongRiver Investments

Source: CB Insights, Bloomberg Intelligence

10.1 Funding Environment Subdued in Asia, Buoyant in US

Asia's AI companies raised $2.8 billion in 2Q24, the sixth quarter in a row with higher fundraising, helped by the $1.5 billion financing round at UAE firm G42 (as shown in Figure 25). The deal count rose sequentially to 215, though was down 4% annually, reflecting the ongoing negative effect of higher rates. Total AI fundraising declined by almost 50% from the 2021 peak. Asian transactions remained dominated by early-stage companies, which accounted for 64% of total deal flow during 1H.

Chinese companies raised the second-most new money during the quarter, accounting for five of the top 10 deals in Asia, raising a combined $511 million. Surprisingly, no Indian companies featured in the top 10, with just two in 1Q.

China's dominance of Asian private equity fundraising is unsurprising, given its highly developed capabilities in the sector. That's coupled with strong support from central government, which views AI as a strategic economic growth driver. However, average deal size in Asia remains smaller than in the US and Europe, with the notable exception of G42 in Dubai. That received a $1.5 billion capital injection from Microsoft -- the second-largest AI deal globally in 2Q24.

Figure 25: Asia AI Top Equity Deals (2Q24)

Country	Company	Amount ($)	Round	Valuation ($)
UAE	G42	1.5B	Corporate Minority	-
China	TERMINUS Technology	277M	Series D	-
Singapore	Atlan	105M	Series C	750M
Japan	Sakana AI	100M	Series A	1.0B
China	KargoBot	83M	Series A	-
China	Rokae	69M	Private Equity	-
Japan	Tier IV	54M	Series B	-
South Korea	Upstage	45M	Series B	-
China	Haomo.AI	41M	Series B	-
China	Ronovo Surgical	41M	Series B	-

Source: CB Insights, Bloomberg Intelligence

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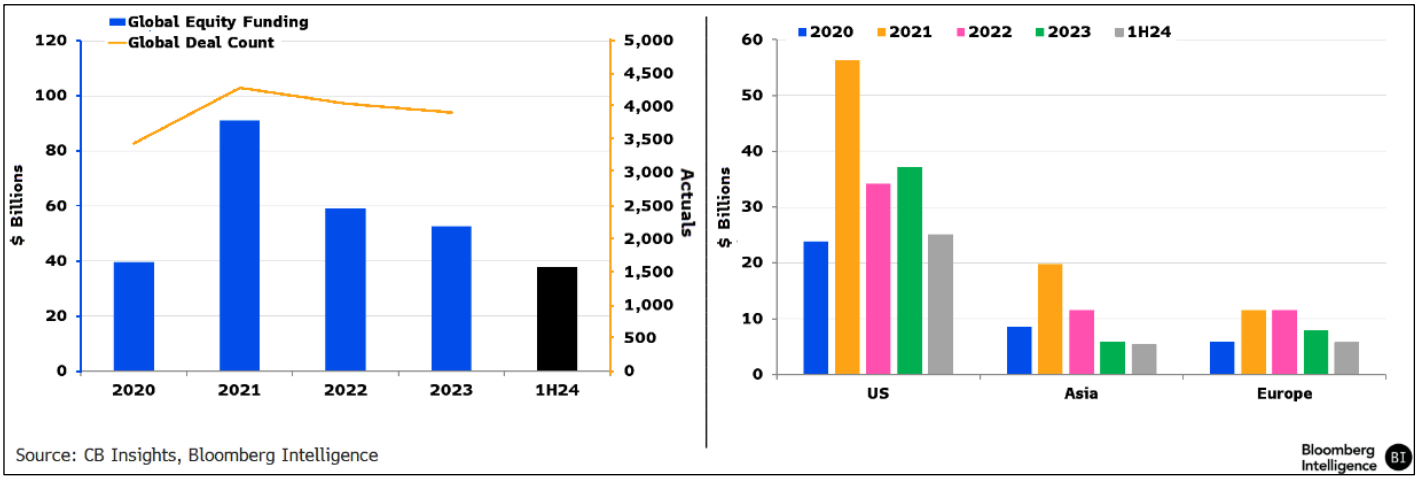
UAE lures most AI equity funding in Asia

Global AI fundraising turned a corner in 2Q24, rising 89% annually to $23.2 billion, with total deal flow up 16% sequentially to 948, following four quarters of decline. Total fundraising -- excluding xAI -- was still down 25% from the 2Q21 peak, reflecting a backdrop of higher interest rates.

US firms continued to attract the majority of new AI funding during 2Q24, raising $15.2 billion, compared with just $2.8 billion in Asia and $4 billion in Europe. US companies accounted for five of the top 10 global AI PE deals in 2Q, with China names absent from the list. Average deal size reached $28.9 million in 1H, up 55.4% vs. the whole of 2023, with xAI ($6 billion, Series B, US), Anthropic ($2.8 billion, Series D, US) and G42 ($1.5 billion, corporate minority, UAE) the most noteworthy deals year-to-date.

Figure 26: Global AI Equity Funding



Section 11. Performance & Valuation

China Tech Rally Driven by Stimulus, Not Fundamentals

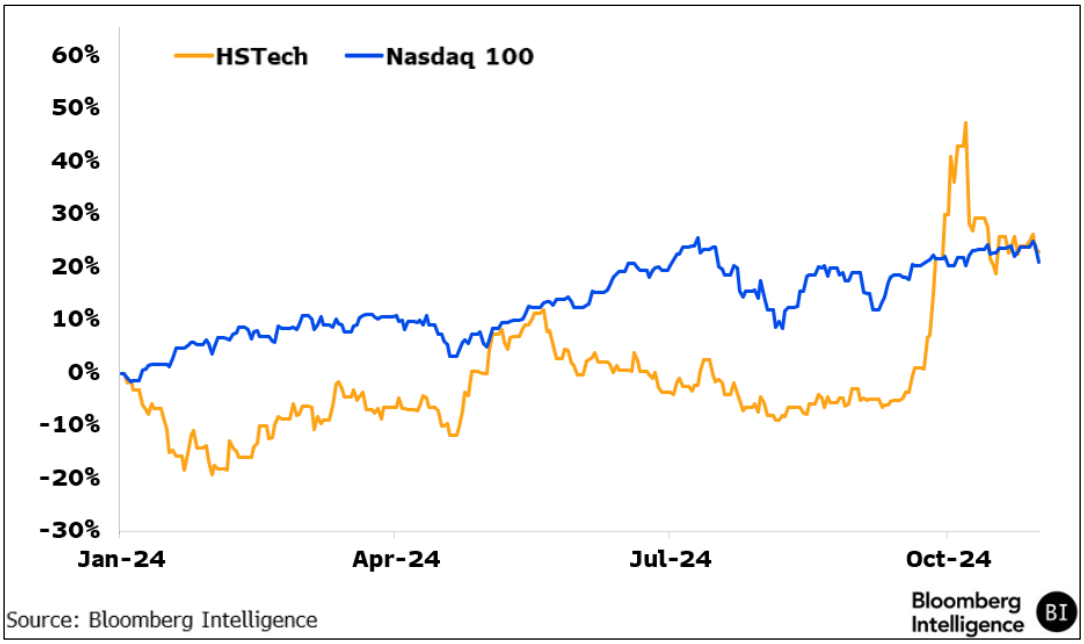
Investor sentiment toward China's AI sector will likely remain muted over the next 24 months, reflecting near-term headwinds and a challenging earnings outlook. The scarcity of pure-play AI stocks in the Hong Kong market further restricts opportunities for investors. Alibaba and Tencent are well-placed as potential long-term winners. However, we don't view AI as a near-term driver of their share prices, given the limited earnings potential. A consolidation of the fragmented market could catalyze interest in Chinese AI stocks, though we believe an industry shakeout remains at least 24 months away. Multiples are unlikely to rerate until the market gains visibility on the earnings potential of the sector, but we expect China's AI firms as a whole to be loss-making over the next three years.

11.1 Index Gains Reflect Rerating, Not Improved Outlook

Recent gains in the HS Tech index were fueled by market inflows following the Chinese government's September 2024 economic stimulus. We expect the measures to have a minimal impact on the earnings outlooks for the leading companies. This year's HS Tech gains reflect a market rerating, rather than an improvement in the sector's earnings outlook. Full-year 2024 EPS consensus estimates at China's top tech companies remained largely unchanged in the first 10 months of 2024. EPS estimates for 2025 have been revised down 4% over the same period.

The stimulus-led rally in Chinese tech stocks in September 2024 saw the HS Tech index narrow the performance gap with the Nasdaq (as seen in Figure 27). Both indexes delivered a similar level of total dollar returns during the first 10 months of 2024, though the HS Tech index exhibited considerable volatility during the period.

Figure 27: HSTech vs. Nasdaq 100 Total Return (in USD Term)



Sector multiples trade at discount to Nasdaq peers

Sector multiples remain low in both historical and relative terms, despite the recent rerating, trading at a significant discount to their Nasdaq peers. Rising economic headwinds will likely drive a slowdown in earnings momentum in the internet sector in 2025, except at Alibaba and Baidu. The forecast 2025 earnings rebound in the chip sector reflects rising demand for domestic chips.

Figure 28: Chinese Technology Companies Valuation

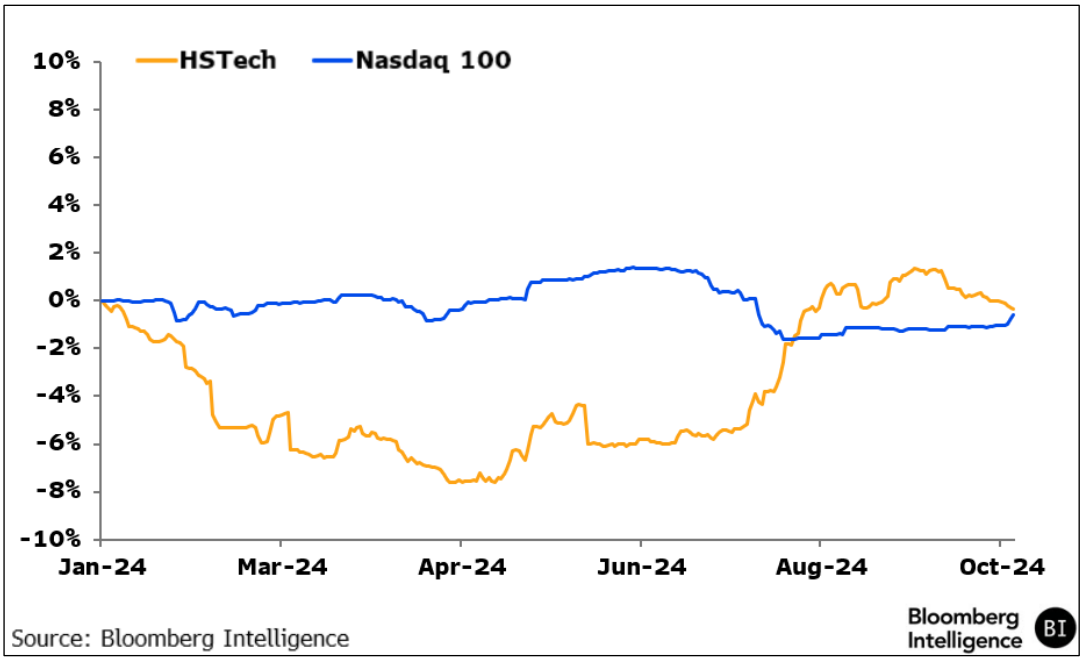
	Market Cap	EV/EBITDA		FCF Yield		P/E		Sales Growth		EBIT Growth		EBIT Margin		NI Growth	
	$ Bn	2024E	2025E	2024E	2025E	2024E	2025E	2024E	2025E	2024E	2025E	2024E	2025E	2024E	2025E
Internet															
Tencent	483	13.5	12.2	5.5%	6.5%	16.5	15.0	8.3%	7.3%	9.6%	14.2%	31.9%	33.9%	35.6%	11.2%
Alibaba	235	6.3	5.7	7.5%	9.9%	11.2	10.1	7.1%	8.3%	(15.5%)	12.7%	13.7%	14.3%	(3.7%)	11.1%
JD.com	66	6.8	5.9	8.3%	9.2%	11.1	10.3	4.7%	5.9%	3.1%	20.7%	3.2%	3.7%	19.5%	6.9%
Baidu	32	1.9	1.7	11.1%	9.9%	8.3	8.5	(0.1%)	5.6%	(11.3%)	8.8%	18.7%	19.3%	(7.8%)	4.2%
Kuaishou	25	6.2	4.9	10.0%	13.2%	10.4	8.2	12.1%	10.8%	132.3%	39.1%	11.7%	14.7%	70.9%	28.2%
Telecoms															
China Mobile	202	3.5	3.4	11.4%	8.8%	10.1	9.6	3.3%	3.7%	12.2%	6.0%	14.5%	14.8%	5.3%	5.1%
China Telecom	77	3.6	3.5	4.7%	7.8%	11.2	10.4	3.4%	4.0%	13.2%	8.0%	7.9%	8.2%	8.2%	7.7%
China Unicom	27	1.5	1.5	19.3%	22.6%	9.3	8.5	3.5%	3.2%	17.5%	16.5%	4.6%	5.1%	9.7%	10.5%
Hardware															
Xiaomi	86	22.0	17.9	2.8%	4.3%	28.6	25.0	26.8%	16.5%	(5.9%)	30.9%	5.5%	6.2%	12.8%	11.9%
SMIC	45	16.6	13.7	(9.5%)	(1.8%)	43.1	30.8	24.9%	15.2%	(21.0%)	79.1%	3.6%	5.6%	(31.6%)	33.8%
Lenovo	16	5.5	4.8	8.6%	12.2%	13.0	9.6	11.4%	10.4%	15.8%	20.0%	3.7%	4.0%	28.8%	35.6%
Hua Hong	6	9.6	5.4	(20.3%)	(20.0%)	45.8	22.4	(11.9%)	25.7%	(170.7%)	(201.6%)	(5.4%)	4.4%	(62.2%)	106.1%
AI Pure Play															
iFlytek	15	53.3	45.5	(0.0%)	(0.8%)	183.2	111.3	18.4%	18.8%	4.8%	67.5%	1.9%	2.7%	(8.0%)	66.6%
SenseTime	7	-	-	(5.6%)	(3.6%)	-	-	30.4%	29.6%	(42.7%)	(37.3%)	(85.8%)	(41.5%)	(35.7%)	(40.8%)

NB: Fiscal year for Alibaba, Lenovo, Data as of October 31, 2024

Source: Bloomberg Intelligence

Bloomberg Intelligence

Figure 29: HSTech vs Nasdaq 100, 2024 EPS Estimates Change

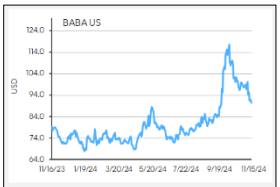


Section 12. Company Impacts

China's Tech Firms Unlikely to Profit From AI Soon

The superior scale and resources of China's large tech platforms should see them ultimately prevail in AI software, though profitability looks some way off. Baidu's first-mover advantage looks set to erode further, with weaker, sub-scale providers like Sensetime set to continue struggling.

12.1 Alibaba's Open-Source Strategy to Drive Share Gains



Market Cap (USD Bn)		213.55
Share Price (USD)		88.59
Earnings Per Share* (CNY)		P/E
2024A	62.23	10.37
2025E	64.09	10.07
2026E	71.36	9.05

* Bloomberg Consensus

21.6%

Alibaba's share of China's cloud computing sector in 2023

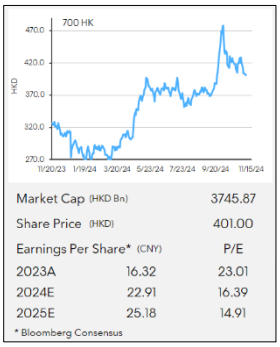
10th

Alibaba's Qwen2 Large Language Model was ranked, of 15, by LiveBench

Company Outlook: Alibaba will likely cede e-commerce and cloud margin gains in mainland China as well as overseas in the fiscal year ending March as it targets stronger revenue growth in these businesses. To achieve its medium-term goal of a double-digit return on invested capital, which was below 10% on March 31, 2023, Alibaba may expedite the sale of noncore assets such as stakes in Sun Art and the Freshippo grocery chain. This can help fund capex and annual dividend payments, even as the company buys back shares.

AI Impact: Alibaba is well placed, alongside Tencent, as a potential future leader of China's AI sector. Its superior resources should enable it to deliver best-in-class solutions, attract key talent and invest in promising startups. The tech giant's broad reach is a further source of competitive advantage, opening opportunities to cross-sell AI products across its platform, as well as leverage AI internally to generate cost savings. Alibaba's deep pool of customer data will help it train and refine its AI models more effectively, while its lead in China's cloud computing industry provides an additional route to market and a source of revenue generation.

12.2 Tencent Earnings to Decelerate Sharply in 2025



Market Cap (HKD Bn)		3745.87
Share Price (HKD)		401.00
Earnings Per Share* (CNY)		P/E
2023A	16.32	23.01
2024E	22.91	16.39
2025E	25.18	14.91

* Bloomberg Consensus

Company Outlook: Tencent's risk profile is rising and we think its earnings growth will sharply decelerate in 2025, but it should still deliver annual free cash flow in the 10-15% range through 2025-27, underpinned by a stabilizing regulatory environment and cost discipline. Its revenue streams remain well diversified, with the firm positioned as a leader in many of its end markets. Unlike its e-commerce peers, Tencent's divisions benefit from relatively high technical barriers to entry, making them less exposed to risk from low-cost disruptors.

AI Impact: Tencent's scale and technological prowess place it as a likely long-term victor in China's AI sector, though we don't expect its AI ventures to turn a profit during the next three years. Though hard to quantify, Tencent should benefit from using AI to generate cost savings and efficiencies in its group businesses. Its financial resources position it to potentially consolidate its position once the weaker hands in the AI market exhaust their reserves.

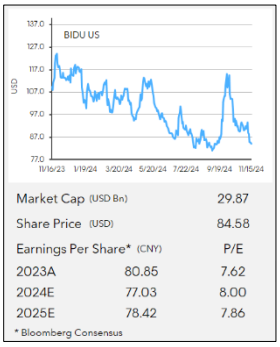
8.9%

Tencent's share of China's IaaS Cloud market in 2023

10%

Tencent's share of China's AI Cloud software market in 2023

12.3 Baidu Set to Continue Making Losses Over 3 Years



Market Cap (USD Bn)		29.87
Share Price (USD)		84.58
Earnings Per Share* (CNY)		P/E
2023A	80.85	7.62
2024E	77.03	8.00
2025E	78.42	7.86

* Bloomberg Consensus

Company Outlook: Baidu's outlook remains highly challenged, with its AI ventures set to continue losing money for three years as Tencent and Alibaba continue to narrow the gap. We expect Baidu's search-engine business -- the group's primary cash generator -- to remain under sustained pressure from rising competition in the short-video sector, with heightened uncertainty in China's corporate sector an additional risk. The AI price war will likely cause Baidu to lose further market share this year, hampering its ability to monetize its technical expertise and turn around its unprofitable AI ventures. We expect adjusted net income to decline 5-10% this year.

AI Impact: Baidu's lead in China's AI sector will likely continue to weaken as the country's large technology platforms make further inroads in the market. As a medium-size technology business, Baidu lacks the scale and resources to compete with Tencent, Alibaba and Huawei, who we view as the long-term winners in China's AI sector. Baidu's efforts to monetize its Ernie Bot AI Chatbot look unlikely to succeed given the rampant price competition in the sector. We also expect Baidu to struggle to compete against its better-resourced rivals in the AI Cloud sector.

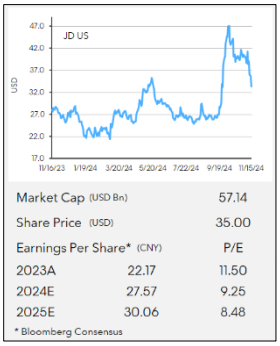
3.8%

Baidu's share of China's Iaas Cloud market in 2023

25%

Baidu's share of China's AI Cloud software market in 2023

12.4 JD.com Retail, Logistics Push May Lift Profit



Market Cap (USD Bn)		57.14
Share Price (USD)		35.00
Earnings Per Share* (CNY)		P/E
2023A	22.17	11.50
2024E	27.57	9.25
2025E	30.06	8.48

* Bloomberg Consensus

10th-Largest
Chinese cloud vendor in 2023 (Source: IDC)

No. 2
Global on-line store by revenue (Source: CCB function on Bloomberg)

Company Outlook: JD.com's efforts to broaden its retail product range and strengthen logistics could spur profit growth through 2024, even if buying sentiment in mainland China stays below pre-pandemic levels. The company, among the top three e-commerce players on the mainland with Alibaba and PDD, could win more online-retail share by collaborating with more consumer-goods partners to boost spending on its platform. A wider array of consumer goods and stronger fulfillment capabilities may help JD.com lift gross merchandise value.

AI Impact: JD.com is less well positioned in AI than its peers, with its ChatRhino AI bot (aka Yanxi) gaining limited traction in the mainstream chatbot sector to date. JD does, however, stand to benefit from utilizing AI within its e-commerce business. JD has successfully deployed ChatRhino to provide consumers and merchants with 24/7 services, including shopping guidance and across shopping nodes– pre-sale, sale, and after-sales. As a top 10 Chinese cloud computing vendor, JD could also generate revenue in the cloud sector, though its limited exposure to the IaaS segment likely caps any revenue upside there.

12.5 SenseTime Fundraising Requirement Set to Rise

Market Cap (HKD Bn)		53.77
Share Price (HKD)		1.58
Earnings Per Share* (CNY)		P/E
2023A	-0.17	-
2024E	-0.11	-
2025E	-0.07	-

* Bloomberg Consensus

No. 36
Chinese cloud vendor in 2023 (Source: IDC)

AI Pure-Play
Gives SenseTime rarity value

Company Outlook: SenseTime has rarity value as a listed Chinese AI pure-play company, though has remained unprofitable since joining the Hong Kong exchange at the end of 2021. SenseTime possesses a robust intellectual-property portfolio, but patents alone won't drive sustainable long-term profitability. Its weak 1H24 results cast further doubt on the co-CEO's claim that it can break even in the next one to two years, with its weak balance sheet an additional risk. We foresee the need for further potential fundraising in the next 12-18 months.

AI Impact: SenseTime lacks the scale to succeed in China's ultra-competitive AI sector and we expect its business to remain unprofitable for the foreseeable future. The business is too narrowly focused to compete effectively with the tech platforms, whose available resources dwarf those of SenseTime. It has achieved some notable technical industry firsts, but we doubt it'll be able to carve out a defensive market position in a sector with commodity-like qualities.

Section 13. Methodology

Our proprietary China AI Software model forecasts AI-related revenue across three key categories: Software, Cloud Computing and IT Services. The model projects market revenue within these segments from 2024 through 2033, employing a bottom-up approach that aggregates estimates from individual sub-sectors within each category. The model provides a comparative assessment of growth prospects, highlighting the distinctions between AI-related revenue and non-AI revenue within each category. This dual focus allows for a clearer understanding of the evolving dynamics in the AI market and its potential impact on overall sector performance.

Our model incorporates key economic indicators such as GDP growth rates, population growth, government spending on technology, and investment in AI R&D. Additionally, we evaluate the impact of policies and regulations that are likely to affect China's AI industry, including government initiatives aimed at promoting AI development.

Figure 30: BI Proprietary China AI Revenue Model

	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E	10YR CAGR
China AI Software	2,559	3,532	4,663	5,778	7,030	8,304	9,752	11,226	12,798	14,556	16,330	20.4%
Growth - %	*38.9%*	*38.1%*	*32.0%*	*23.9%*	*21.7%*	*18.1%*	*17.4%*	*15.1%*	*14.0%*	*13.7%*	*12.2%*	
as % of total China AI market	34.5%	34.1%	33.6%	32.7%	32.2%	31.7%	31.5%	31.3%	31.4%	31.8%	32.0%	
China AI Cloud Computing	2,900	4,084	5,637	7,423	9,449	11,605	13,961	16,345	18,688	20,915	23,346	23.2%
Growth - %	*11.7%*	*40.8%*	*38.0%*	*31.7%*	*27.3%*	*22.8%*	*20.3%*	*17.1%*	*14.3%*	*11.9%*	*11.6%*	
as % of total China AI market	39.1%	39.4%	40.6%	42.0%	43.3%	44.3%	45.1%	45.5%	45.8%	45.7%	45.8%	
China AI Services	1,965	2,744	3,577	4,464	5,339	6,300	7,245	8,332	9,332	10,265	11,292	19.1%
Growth - %	*46.0%*	*39.6%*	*30.4%*	*24.8%*	*19.6%*	*18.0%*	*15.0%*	*15.0%*	*12.0%*	*10.0%*	*10.0%*	
as % of total China AI market	26.5%	26.5%	25.8%	25.3%	24.5%	24.0%	23.4%	23.2%	22.9%	22.4%	22.2%	
Total China AI Market	7,424	10,360	13,878	17,665	21,818	26,209	30,959	35,904	40,819	45,737	50,968	21.2%
Growth - %	*28.3%*	*39.6%*	*34.0%*	*27.3%*	*23.5%*	*20.1%*	*18.1%*	*16.0%*	*13.7%*	*12.0%*	*11.4%*	

The AI Software section of our model forecasts revenue across key sub-categories, including AI Chatbots, AI-enhanced vision software, and AI voice assistants. We also evaluate the growth potential within the corporate software market, focusing on categories such as Customer Relationship Management (CRM) and Enterprise Resource Management (ERM) software. While we anticipate rapid growth from a low base in both segments, we don't expect them to generate significant revenue, primarily due to China's continued dependence on foreign software solutions in these areas.

Our revenue projections for AI chatbots factor in a rising penetration rate within China's online community. This sub-model incorporates assumptions regarding the paying rate and monthly Average Revenue Per User (ARPU), which we expect to remain modest due to the prevalence of free tools and ongoing consumer indifference. Additionally, our analysis breaks down revenue by vendor across both consumer and corporate sectors.

Figure 31: BI Model - AI Software Revenue

	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E	10YR CAGR
China AI Software	2,559	3,532	4,663	5,778	7,030	8,304	9,752	11,226	12,798	14,556	16,330	20.4%
Growth - %	*38.9%*	*38.1%*	*32.0%*	*23.9%*	*21.7%*	*18.1%*	*17.4%*	*15.1%*	*14.0%*	*13.7%*	*12.2%*	
Total China Software	42,015	48,107	56,285	65,291	74,758	84,477	95,036	106,441	118,682	131,736	145,569	13.2%
Growth - %	*13.2%*	*14.5%*	*17.0%*	*16.0%*	*14.5%*	*13.0%*	*12.5%*	*12.0%*	*11.5%*	*11.0%*	*10.5%*	
AI as % of total China software	6.1%	7.3%	8.3%	8.8%	9.4%	9.8%	10.3%	10.5%	10.8%	11.0%	11.2%	

The AI Services section of our model analyzes the growth prospects for AI-related spending in the IT services and Business Services sectors. We incorporate GDP growth assumptions into the Business Services segment, given its strong correlation with overall economic performance. Conversely, the growth outlook for IT services is expected to be more robust and closely tied to advancements in the AI sector. We anticipate that growth in the AI services sector will be front-loaded over the next five years, with a likely easing of growth as the industry reaches critical mass.

Figure 32: BI Model - AI Services Revenue

	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E	10YR CAGR
China AI Services	1,965	2,744	3,577	4,464	5,339	6,300	7,245	8,332	9,332	10,265	11,292	19.1%
Growth - %	*46.0%*	*39.6%*	*30.4%*	*24.8%*	*19.6%*	*18.0%*	*15.0%*	*15.0%*	*12.0%*	*10.0%*	*10.0%*	
Total China IT Services Revenue	51,558	53,863	56,125	58,330	60,458	62,598	64,588	66,575	68,382	70,023	71,656	3.3%
Growth - %	*3.5%*	*4.5%*	*4.2%*	*3.9%*	*3.6%*	*3.5%*	*3.2%*	*3.1%*	*2.7%*	*2.4%*	*2.3%*	
AI as % of total China IT Services	3.8%	5.1%	6.4%	7.7%	8.8%	10.1%	11.2%	12.5%	13.6%	14.7%	15.8%	

The AI Cloud Computing section of our model forecasts revenue within the IaaS and PaaS sectors of China's cloud computing market. Our Software-as-a-Service (SaaS) projections are included in the AI Software segment. We estimate revenues for both AI and non-AI components within these sub-sectors, detailing market share by vendor in each category.

We expect the ongoing shortage of AI accelerator chips to boost revenue in the key IaaS segment, as companies increasingly rely on cloud service providers to develop their AI models. Meanwhile, growth in the PaaS segment is likely to be more closely aligned with developments in China's software market.

Figure 33: BI Model - AI Cloud Computing Revenue

	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E	10YR CAGR
China AI Cloud Computing	2,900	4,084	5,637	7,423	9,449	11,605	13,961	16,345	18,688	20,915	23,346	23.2%
Growth - %	*11.7%*	*40.8%*	*38.0%*	*31.7%*	*27.3%*	*22.8%*	*20.3%*	*17.1%*	*14.3%*	*11.9%*	*11.6%*	
Total China Cloud Computing	29,156	34,429	40,620	47,220	54,211	61,463	68,910	76,393	84,052	91,903	100,256	13.1%
Growth - %	*18.1%*	*18.1%*	*18.0%*	*16.2%*	*14.8%*	*13.4%*	*12.5%*	*12.0%*	*11.5%*	*11.0%*	*10.5%*	
AI as % of total China Cloud Computing	9.9%	11.9%	13.9%	15.7%	17.4%	18.9%	20.3%	21.4%	22.2%	22.8%	23.3%	

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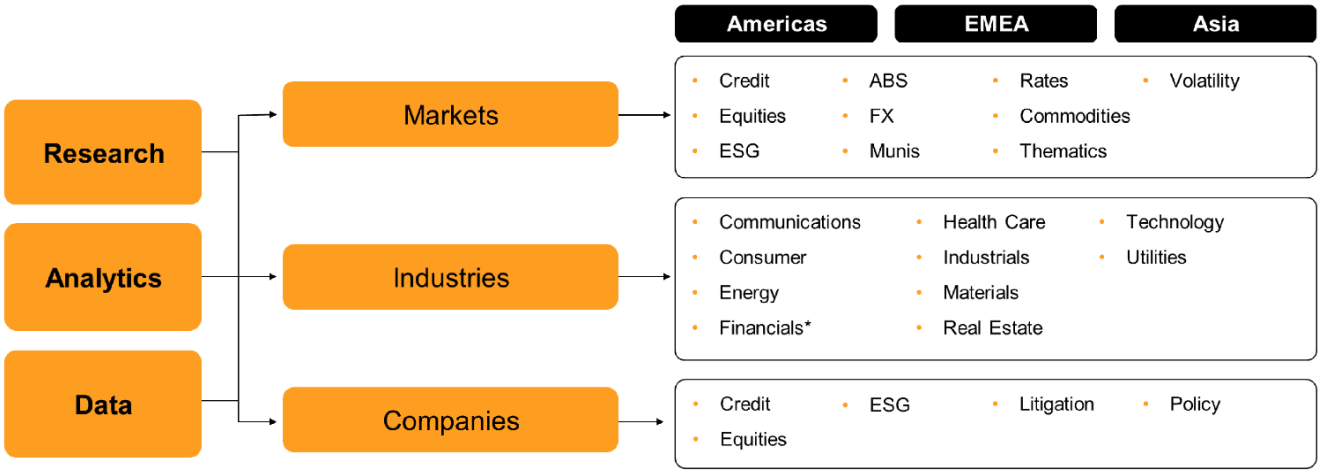

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