Macro Strategies insight

Our approach to investing in Artificial intelligence

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In-brief:

- Artificial intelligence (AI) is currently one of the strongest trends ever seen in the market.
- Naysayers call this a bubble; the optimists see it as the most rapid platform shift and creation of new industry.
- We believe it is far from a fad and that the impact is pervasive across industries and sectors.
- However, we are concerned about the significant investment to date and how and when that will feed through to improved profits.
- Despite these concerns, we are excited for the AI trend, invest in it directly and consider its impact across our portfolio holdings.

Bubble or the next tech revolution?

AI is currently one of the strongest trends ever seen in the market. Its magnitude is best illustrated by Nvidia AI server-related revenues, which have increased from USD 10 billion in 2022 to circa USD 110 billion in 2024[1].

Naysayers call this a bubble, citing overinvestment in chip infrastructure and excessive value assigned to AI startups. Supporting this argument is the valuation for OpenAI, which reached USD 157 billion in the company's second year of existence[2].

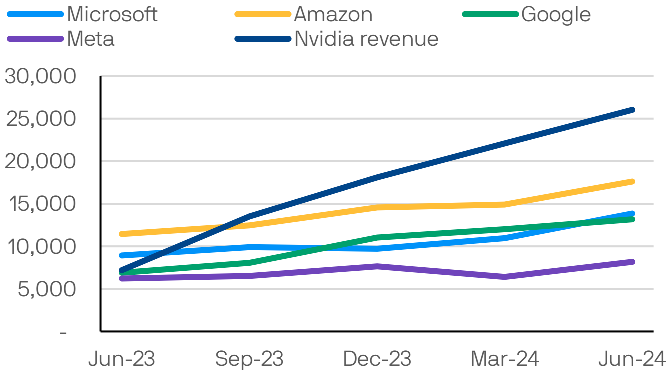
The optimists see it as the most rapid platform shift and creation of new industry. OpenAI's revenue has reached USD 3.7 billion in its first two years[2]. A feat that took Google and Meta four and six years consecutively[3].

Source: J.P. Morgan Asset Management as of 9 October 2024. [1]Nvidia company filings and our portfolio manager estimates, October 2024. [2]Reuters, October and September 2024. [3]Google and Meta company filings, 2024.

Not a fad, but investment needs to turn to profit

We do not think AI is a fad. Furthermore, we recognise it is not only GenAI (Generative AI) driving the demand for new infrastructure but also overall need for accelerated compute. Hyperscalers' capital expenditure has been significant and rising, while Nvidia's revenue has grown exponentially. However, it is unclear if the initial infrastructure investment is excessive, when it peaks, and when and how the new profit pools will be created to justify the significant investment made to date.

Quarterly hyperscalers' capex and Nvidia's revenue ($M)



Source: J.P. Morgan Asset Management, as of 9 October 2024.

Investing in AI amid the excitement and uncertainty

This is the first time that we have seen so much funding, effort and talent committed to the development of every level of the technological stack from chips to end-user applications. We closely monitor AI developments, especially in enterprise software and consumer apps, to better understand upside opportunities as well as disruption risk to existing businesses. We have exposure to this trend in our portfolios through long-term secular and near-term cyclical equity implementations. We are focused on three layers of AI: data centre buildout, data management and GenAI applications/software.

Datacentre build-out layer

The first layer is about the build-out of AI servers, initially in the form of GPU (General Processing Unit) clusters added to existing datacentres and ultimately in dedicated AI datacentres. This build-out has implications for chip and networking equipment demand, as well as requiring significant changes in datacentre design, especially in relation to electrification and cooling. The data centres will also be expected to have an impact on increased electricity demand from the datacentres.

We believe a key winner of the datacentre build-out is Taiwan Semiconductor Manufacturing Company (TSMC). TSMC has a monopolistic position in AI chips foundry and is the main capacity bottleneck for GPU production. The company is well placed to benefit if AI functionality drives upgrades and content for smartphones and PCs.

SK Hynix is also poised to capitalise on this trend and is already the main supplier of High Bandwidth Memory (HBM) to Nvidia. The HBM product cycle enables Nvidia to maintain annual product rollout, and to benefit from the potential impact of AI on smartphones and PCs. As such, HBM is a critical component, supporting long-term growth for SK Hynix.

Some of the hyperscalers are also having success with what's referred to as their "in-house silicon", especially Google with Tensor Processing Units (TPUs).

AI servers are electricity hungry as GPU racks require much more power density. The result is increased demand for cooling and electrical equipment within data centres and for electricity overall. This dynamic is benefitting companies such as Legrand, Schneider and Johnson Controls.

Data management layer

The data management layer relates to the accelerated shift to the cloud among enterprises and the reorganisation of their data stacks. This shift will have several impacts, including changing data storage formats (for example, from structured to unstructured data warehouses); and increasing demand for new services, such as data streaming. Hyperscalers are well positioned here, offering the full stack solutions.

However, many enterprises prefer, or even have a regulatory requirement, to use a multi-cloud approach, creating demand for some third-party data management providers with multi-cloud solutions. An example is Confluent, a leader in data streaming.

Large language models (LLM)

At the moment, the LLM layer is not particularly investable, hence our focus on only three layers. In addition, the apparent arms race is making it unclear if LLM becomes a commodity or an attractive profit pool. Players such as OpenAI and Anthropic are working hard to develop and invest in application layers on top of the LLMs they are developing. At the same time, Meta is trying to provide its LLMs as open source.

We are watching this space closely as capabilities of new models such as ChatGPTo1 , which combines inference with reasoning, and the upcoming ChatGPT5 will have an impact on the infrastructure needs and speed of AI adoption.

Gen AI applications / software layer

The final layer is ultimately where the biggest changes will take place and the largest profit pools will be created. The total addressable market for software is estimated to be USD 800 billion[4]. However, we believe Generative AI could target an even larger market, including services that are today provided by human workers.

Here, we look at two end markets: enterprise software and consumer applications. It appears for now that the incumbents are well positioned in both areas thanks to customer trust, large historical data, industry know-how and large balance sheets.

In enterprise software the race seems to be to develop the most capable AI agents to initially support office workers but ultimately to fully automate specific tasks or roles. Microsoft, ServiceNow and Salesforce are all key players. We are also watching developments in private markets to assess the risk of disruption from new entrance AI native companies. Some examples include Glean or Harvey.

On the consumer side, we believe that Apple is best placed to offer AI functionality, accelerating growth in its service business with a blue-sky scenario being the creation of an AI personal assistant.

Conclusion

AI is one of the strongest trends ever seen in the market and we believe it is here to stay. Though nothing about this trend is static, it is fast evolving, requiring continual assessment of the risks and opportunities it poses to companies across industries and sectors. First and foremost, we see AI as a vast investment opportunity that we are seeking to capitalise on with a long-term perspective.

[4] Market Share Analysis, Gartner. As of 7 August 2024.

The companies above are shown for illustrative purposes only. Their inclusion should not be interpreted as a recommendation to buy or sell.

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