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Research China

AI's Sputnik moment ? A short Q&A on DeepSeek

What happened?

On 20 January the Chinese start-up DeepSeek released its AI model DeepSeek-R1. The model quickly became the most downloaded app in the US beating OpenAI's ChatGPT. The model stands out for the following reasons:

- **Caught up in performance:** DeepSeek-R1 is a reasoning model that *performs at par or better* with the most recent versions from major US competitors such as OpenAI, Meta, and Google. Reasoning models are needed for tasks where simple pattern recognition is not enough, not least useful for researchers and developers (see comparison of model performance with OpenAI models on page 2).

- **Much lower cost:** The model has been trained at a cost supposedly of USD6.5 million which compares to much more higher costs among peers. For example OpenAI's annual budget is USD 5bn per year.

- **Using less computing power:** The model is developed with far less computing power and supposedly without using the most advanced chips from Nvidia, which are sanctioned by the US. A DeepSeek research paper says it is developed using Nvidia H800 chips which were developed by Nvidia specifically for the Chinese market to comply with US sanctions. Some claim, though, that DeepSeeks parent, hedge fund High-Flyer, has been able to buy the more advanced H100 AI chips despite sanctions.

- **Offered at low cost:** The app is offered at no cost in the app store while the model's API is offered at very low cost of $0.14 for one million input tokens, compared to OpenAI's rate $7.5 rate for the o1 model.

- **Open-source model:** As Meta's Llama model, the DeepSeek model is an open-source model making it transparent and available for developers to work on top of it.

What are AI experts saying?

- US venture capitalist Marc Andreesen has called the model launch "*AI's Sputnik moment*" adding that it "*is one of the most amazing and impressive breakthroughs I've ever seen*".

- In an interview at World Economic Forum, MicroSoft CEO Satya Sadella said "*We should take the developments out of China very, very seriously*". In a *post* on X he added that "*as AI gets more efficient and accessible, we will see its use skyrocket, turning it into a commodity we just can't get enough of*."

- OpenAI CEO Sam Altman *said on X* that "*r1 is an impressive model, particularly around what they're able to deliver for the price*".

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Important disclosures and certifications are contained from page 4 of this report.

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DeepSeek-R1 performance comparison with OpenAI models
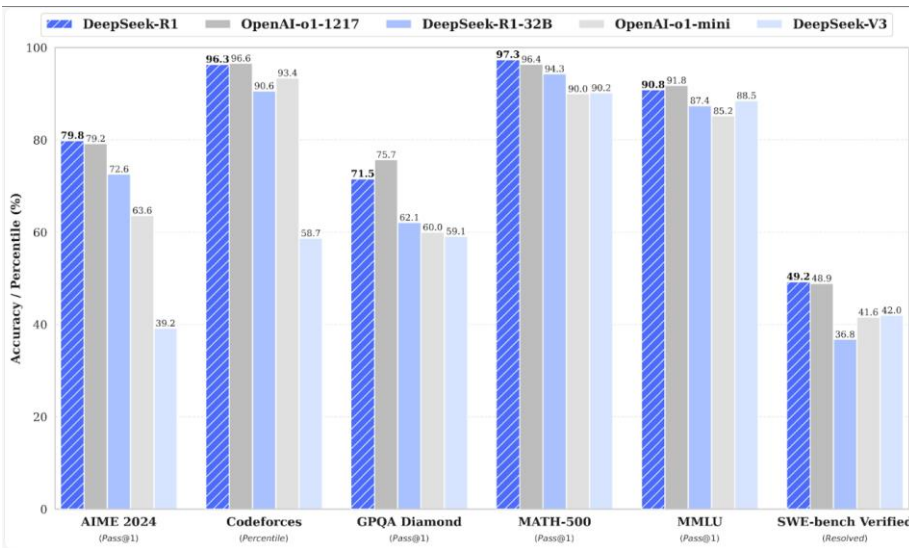
Source: DeepSeek paper

What are the implications for AI, geopolitics and global growth?

- **Open source approach to accelerate development:** The fact that the model is open source means that everyone can build on top of it. Both other major players as well as smaller developers tinkering with small advances. This will work to accelerate the development of these models further.

- **Use cases will continue to increase:** More advanced models and lower costs leads to more use cases for researchers, developers and companies; hence more tasks can be solved and automated. As use cases keep going up, demand for AI is set to increase. This is what Sadella refers to in his post on X referring to *Jevons paradox*.

- **Huge spending not needed:** The release of DeepSeek-R1 and the optimisation of the architecture reduces the need for massive investment spending in the development of the AI models. How will this affect a chips provider like Nvidia? On the surface it would reduce demand for advanced chips. But at the same time the use of AI is likely to accelerate even more as mentioned above. This could in fact in end up with more demand for chips, not less. Not least in a massive market like China. So the net result could end up being positive for Nvidia. This was also (maybe unsurprisingly) the message *from Nvidia* yesterday, that DeepSeek advances the usefulness of AI and with that the need for more chips, a similar message to Sadella's comments above.

- **Lower user cost good for clients, bad for OpenAI?** The very low price of DeepSeek's offering will increase competition and put pressure on other AI providers to lower their prices. This is good for users but provides thinner profit margins. Competition for volume becomes key. This is what is already seen in China in this space – as well as in many other sectors in China, not least EVs.

- **New US tech sanctions? It doesn't seem so:** The Chinese breakthrough raises the question if the US will double down and put even more restrictions on China and restrict access to less advanced chips as well? However, the lesson also seems to be that this can backfire as China works even harder to find ways to be optimize processes and be less reliant on US tech. And if China can already now match US

on AI with less advanced technology, is it just a matter of time before they themselves can produce advanced chips?

US President Donald Trump does not seem to turn to sanctions. Yesterday, *Trump said* the rise of DeepSeek was a 'wake-up call' for Silicon Valley and that it could be positive for the US. "*If you could do it cheaper, if you could do it for less and get the same end result. I think that's a good thing for us*". He said he wasn't concerned and that the US would remain a dominant player in the field.

- **A positive supply shock for the world:** As AI continues to advance, it will increasingly work to improve productivity in businesses and thus be a 'positive supply shock' for the global economy ultimately lifting potential growth. That should be a net positive for equity markets as well.

Who is DeepSeek?

- DeepSeek is a private start-up founded in May 2023 by 40-year old Liang Wenfeng in Hangzhou (for an interview with Liang, see *here*). It is funded by the AI quant hedge fund *High-Flyer*, which Liang founded in 2016 at the age of 31 and which has around USD8 bn in assets.

- DeepSeek's team consists of a team of '*young geniuses'* hired early in their career. The mission statement of the company is "unraveling the mystery of AGI with curiosity". Liang has become bit of a *national hero* after he put China on the global AI frontlines.

Is China's focus on innovation now paying off?

- The answer is yes and it has become increasingly evident for some years. China has for more than a decade had a strong focus on innovation and technology and put lots of money and energy behind it through industrial policies and creation of lots of tech clusters. We have increasingly witnessed the pay off over the past 2-3 years with the emergence of highly competitive EVs, EV batteries and solar panels and we now see it in the AI space, an area that has so far been dominated by Western players.

- With China's continued efforts on tech and innovation we should expect more key innovations coming out of China and that China catches up further in existing technologies. The US-China tech race is set to turbo-charge tech efforts in both countries and with that also new productivity-enhancing technologies benefitting not only US and China but all regions, including Europe where business have the same opportunities to implement AI and increase productivity. Of course, it can also intensify the US-China rivalry as technology is also instrumental in military capabilities.

What does it say about China's growth outlook?

- China's breakthrough in AI is exactly what the country is striving for. China is in the middle of a difficult and painful transition aiming to shift growth drivers away from housing and 'old infrastructure' (roads, railways, bridges) to high-tech manufacturing and private consumption. Among China's nine top priorities outlined in the Central Economic Work Conference in December, the first priority was "*vigorously boosting consumption, enhancing investment efficiency, and expanding domestic demand on all fronts*" while the second priority was "*driving the development of high-quality productive forces through technological innovation*". The AI breakthrough is an achievement in the second priority. In

recent years, China has put a lot of focus on "*new quality productive forces*", a catch phrase for disruptive innovation that can increase total factor productivity (TFP).

- As China slowly recovers from its' housing crisis (which could still take years), China will increasingly see its' GDP growth driven by high-tech innovations and investments, green investments, healthcare sciences, services and private consumption.