**Macro Picture**

CAN FED CUTS REFLATE THE AI BUBBLE?

Dario Perkins

> AI has the potential to boost productivity and GDP, although it is questionable whether it will match the boost from the Dotcom era, let alone "upend society" and deliver a "new machine age" or a "Third Industrial Revolution". But if the Fed can repeat Alan Greenspan's soft landing, who's to say it won't also recreate the "irrational exuberance" of the Greenspan era?

Chart 1: Is all the hype about AI justified?
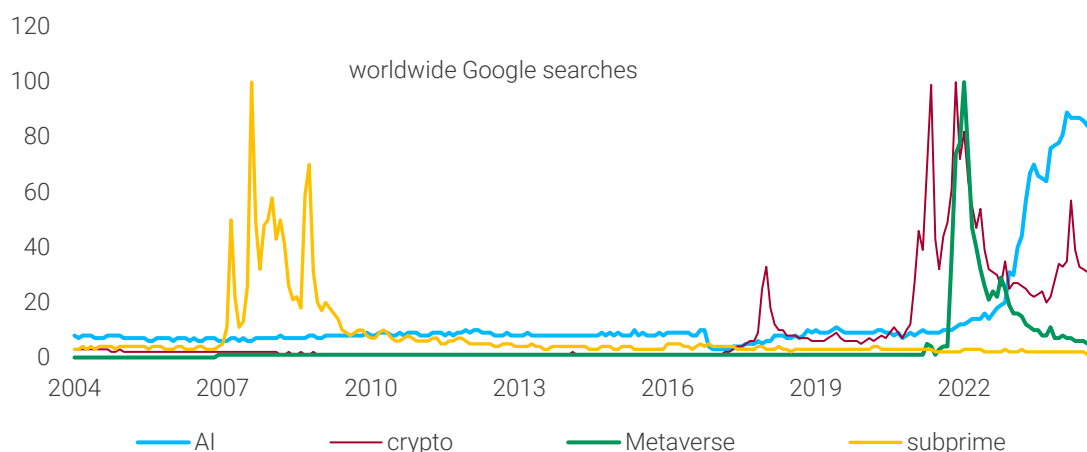
Source: Google Trends, TS Lombard

PICKS AND SHOVELS

The AI theme has been a dominant driver of US stock-market performance ever since ChatGPT's public release in late 2022. While the "picks and shovels" narrative (which has benefitted the likes of NVIDIA) probably has further to run, the big question now is whether we will start to see the broader benefits from AI technologies – particularly as a source of productivity and GDP growth.

BEYOND THE FOMO

We now have clear evidence that AI can boost worker efficiency in doing specific tasks, such as journalism, coding and customer services. But there is huge uncertainty about its potential to boost aggregate productivity, let alone transform the global economy. We should treat the most bullish forecasts – from management consultants, etc. – with a healthy dose of scepticism.

IRRATIONAL EXUBERANCE 2.0

Rationally, the prospect of Fed rate cuts and a soft landing should disproportionately benefit those stocks that are most exposed to economic weakness and tight policy (real estate, small cap, value stocks). We might see a rotation out of US tech. But if the mid-1990s is the policy template, there must be a decent chance that any AI-inspired "bubble" has further to inflate.

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CAN FED CUTS REFLATE THE AI BUBBLE?

During the summer, we noticed increasing scepticism among investors about the US tech sector and the potential for AI technologies to transform the economy. Nothing sets a market narrative like the latest price action, and the likes of NVDIA had clearly lost momentum, which, given their outsized weight in US equity indices, had become a problem for the broader stock market. Of course, it was important to keep those market moves in perspective. With the NASDAQ up more than 60% since the launch of ChatGPT in late 2022, a two-month period of "consolidation" (aka treading water) is not exactly unusual, let alone alarming. And it was somewhat reassuring that the companies that had benefitted most from the AI theme were also those companies that had seen a very direct revenue boost from Big Tech investments in this technology, which is why valuations had stayed far below those seen in the Dotcom era. The likes of NIVIDIA were the "picks and shovels" of the AI revolution rather than a speculative punt on who would "discover gold". While it is becoming increasingly hard for NVIDIA and co. to keep beating market expectations, the real question is now about the underlying technologies and whether AI can deliver the sort of efficiency gains that warrant such large-scale investments in the first place.

Macro economists have only recently started to take AI seriously, with a flurry of research activity over the past 18 months. Much of the focus has been on the ability of these technologies – especially Large Language Models (LLMs) – to generate efficiency gains in specific human tasks, such as computer programming, writing and customer services. So far, the evidence is encouraging, with AI delivering significant time savings – in the range of 15-60% – and major improvements in quality. Yet to translate these efficiency gains into a broader productivity boost, we need to take account of the proportion of tasks that are exposed to AI as well as the scope of these technologies to boost economy-wide innovation and scientific discovery. And these effects are hugely uncertain, which is why we are seeing big disagreements about what AI means for real GDP growth over the next decade. On one side of the debate, there are the management consultants such as Accenture and PwC, which say these technologies will totally transform the economy. On the other side, we have the gritty realism of the academic economists, who believe the impact of AI will be negligible. Right now, the spread between these two schools of thought is 20% pts of global GDP by 2035, which is laughably wide – even for economists.

We side with the sceptics. While we are confident that AI will eventually boost productivity (particularly in the US), the impact could well fall short of the efficiency gains associated with Dotcom (i.e., an extra 2% pts of growth per annum), let alone match the more outlandish claims of industry insiders. LLMs continue to struggle with major weaknesses; and – contrary to what enthusiasts say – there is no guarantee that future iterations of the tech will overcome these problems or that the industry will continue along the "exponential curve" that is supposed to lead to Artificial General Intelligence (AGI). (This is not necessarily a bad thing, especially for labour markets, because it means the technology will be skill-*augmenting* rather than labour-*replacing.*) But our scepticism about the fundamentals of AI does not mean we are particularly bearish US tech stocks or that we are forecasting a major correction in NVIDIA and co. We suspect the two-year mania in AI-related equities has further to run, especially now that the Fed has signalled its "commitment not to fall behind the curve". While, in theory, a successful Fed intervention should disproportionately benefit other areas of the market (driving a rotation), the lesson from the 1990s is that soft landings can be fertile ground for "irrational exuberance". Of course, there is one important difference between today and the New Economy of the Greenspan era – a less favourable geopolitical environment (with events in the Middle East providing a timely reminder).

1. PICKS AND SHOVELS

Two years ago, when the Federal Reserve started to raise interest rates, it looked like tighter monetary policy would fundamentally change the structure of stock markets. "Long duration" tech stocks would lose, while those sectors that were exposed to a stronger, high-pressure economy ("value" stocks, industrials etc) would outperform. And for a while this "rotation" was playing out. But that all changed with the launch of ChatGPT at the end of 2022. AI not only captured the imagination of the public; it revived the bullish narrative in US tech. Suddenly, investors were buying these stocks on the basis that they were "recession-proof" and had limited exposure to rising interest rates (because Big Tech had lots of free cash and only modest levels of debt – unlike the average small-cap stock). During the summer, however, we noticed that investor sentiment had flipped again. Scepticism about AI (and US Big Tech in general) had returned; and amid rising confidence in the soft landing, the "rotation" theme was suddenly back in vogue. Now we stand at a potentially important juncture. Was the AI theme just another tech bubble that is about to burst? Should we expect those stocks to underperform as the Fed cuts interest rates? Or could a 90s-style soft landing also deliver a 90s-style tech "melt-up"?

Chart 2: An investment 'theme'

S&P 500, AI mentions on earnings calls

Source: Factset via @Maverick_Equity

## Chart 3: Talking AI seems to help
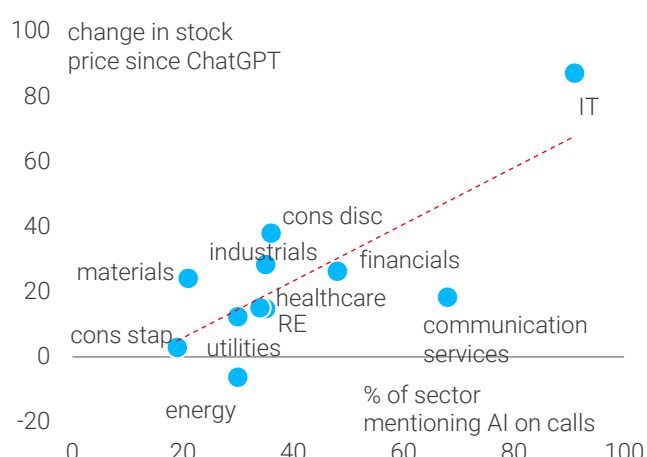
Source: Factset via @Maverick_Equity, TS Lombard
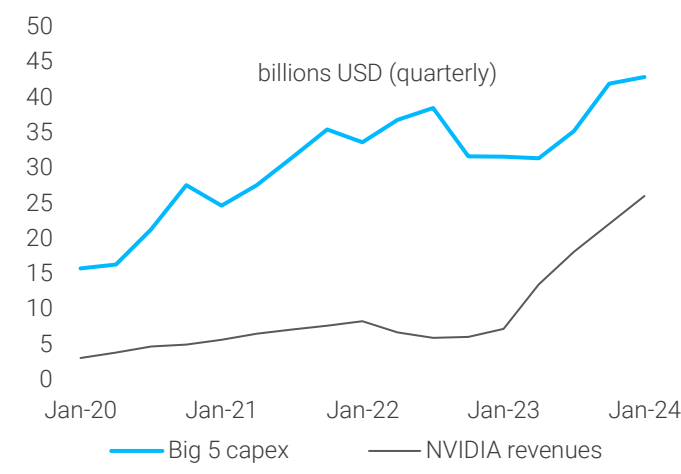
NVIDIA and beyond

There has been a lot of hype around AI since the launch of ChatGPT, as we can see from the number of times this technology has been mentioned on analyst earnings calls. AI chatter spread across all sectors of the US market, even those not immediately associated with digital automation. But for the most part, it is the companies supplying the "picks and shovels" for the AI revolution that have performed best. ("Picks and shovels" is a popular phrase in finance – a reference to the mid-19th century Californian goldrush. You didn't know who would find gold, but you wanted to be the person supplying the equipment needed to search for it.) And the biggest beneficiary, of course, has been NVIDIA. For decades, NVIDIA has specialized in making the chips and graphics processing units (GPUs) used in computer games. But a couple of years ago, its hardware suddenly found much wider use: crypto mining, self-driving cars and, most important, training of AI models. With Big Tech engaged in an AI arms race since the launch of ChatGPT, NVIDIAs earnings have surged – rising from US$12 billion in 2019 to US$120 billion today.

Chart 4: A lot of exposure to one stock

NVIDIA, per cent of US market cap
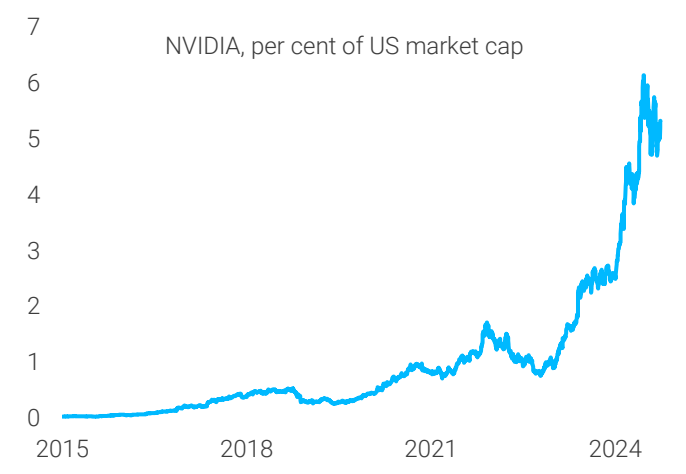
Source: Bloomberg, TS Lombard

Chart 5: The NVIDIA story is a simple one

billions USD (quarterly)

Big 5 capex — NVIDIA revenues
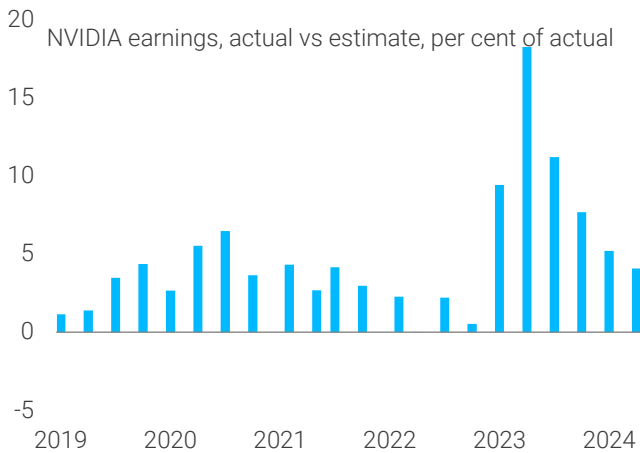
Source: Bloomberg, TS Lombard

Kalecki and NVIDIA

There is no mystery behind NVIDIA's spectacular success. In economics, there is a famous (often misused) accounting identity – the Kalecky/Levy equation – which shows that corporate profits must always grow in line with business investment (at least when you focus on the private sector and ignore the trade position). The intuition is simple. When one company invests more, it boosts the earnings of other companies (its suppliers) without generating an offsetting cost (because investment is not treated as an operating cost). From a profitability point of view, this makes an increase in capex quite different from an increase in household spending. When consumption increases, revenues rise, too; but because consumers tend to spend out of their wages (which are a cost for the corporate sector), the impact on profits is more ambiguous. When we think about the NVIDIA story from the Kalecky-Levy perspective, the company's earnings are just an aggregation of its customers' massive capital expenditures. And NVIDIA's customer base is heavily concentrated. Microsoft accounts for 20% of Nvidia's sales, while Meta Platforms, Alphabet, and Amazon account for 10%, 7%, and 6%, respectively, bringing the total to 42%. In short, NVIDIA has been a direct beneficiary of Big Tech AI "FOMO" (Fear Of Missing Out – the desire not to fall behind in this new technological arms race).

Is NVIDIA a bubble?

If there is a tech bubble concentrated in NVIDIA, it looks quite different from the Dotcom bubble of the 1990s. NVIDIA's price is backed by its incredible earnings growth, unlike many of the companies that saw their valuations explode during the Dotcom era. (With a trailing PE of under 60, there is no comparison between NVIDIA and the likes of Cisco or Qualcomm in the late 90s, which traded at PEs of 530 and 175, respectively). That does not mean, however, that the company is not vulnerable to a major correction. Although NVIDIA's Big Tech customers are planning continued strong AI capex in the coming years, there is no guarantee that Jensen Huang's outfit will continue to capture the lion's share of that market. Perhaps new competitors with superior GPUs will emerge or the likes of Microsoft and Meta will find a way to create their own hardware. We shouldn't forget that the whole semi-conductor industry is infamously cyclical, and it is possible that big tech FOMO has already brought forward a lot of future demand. But even if the demand for NVIDIA's product remains strong, it is going to be increasingly hard for the
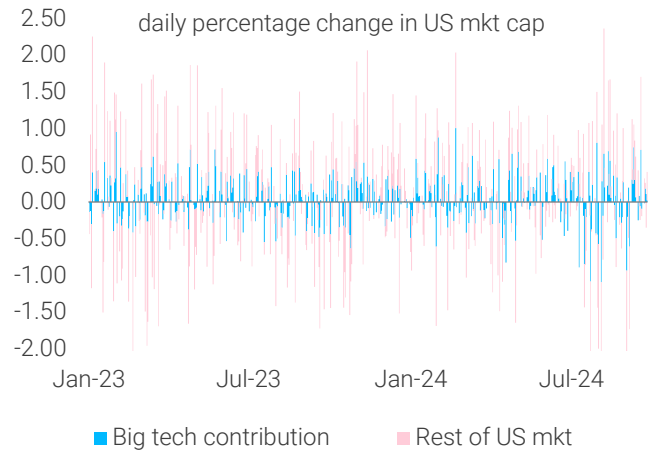
company to keep beating analysts' expectations by such a wide margin (Chart 6). Remember, it is not just earnings that drive stock prices; it is earnings relative to (increasingly) bullish sentiment.

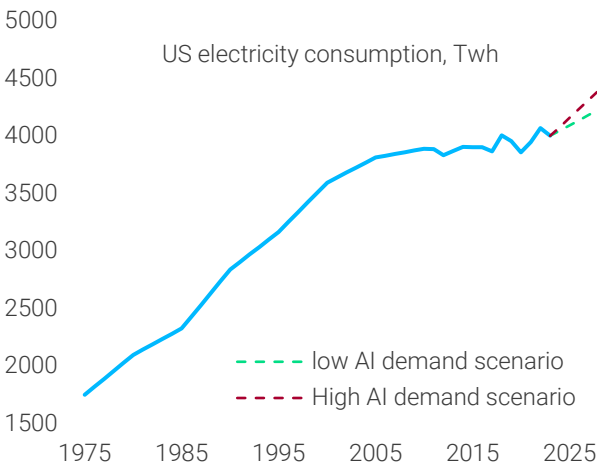### Chart 6: Can NVIDIA keep beating expectations?

NVIDIA earnings, actual vs estimate, per cent of actual

Source: Bloomberg, TS Lombard

Chart 7: A problem of market concentration

daily percentage change in US mkt cap

■ Big tech contribution ■ Rest of US mkt

Source: Datastream, TS Lombard

Chart 8: Next for the 'picks and shovels' theme?

US electricity consumption, Twh

--- low AI demand scenario
--- High AI demand scenario

Source: EPRI, TS Lombard

Chart 9: A bubble like in 1999?

Big Tech, per cent of US stock market cap
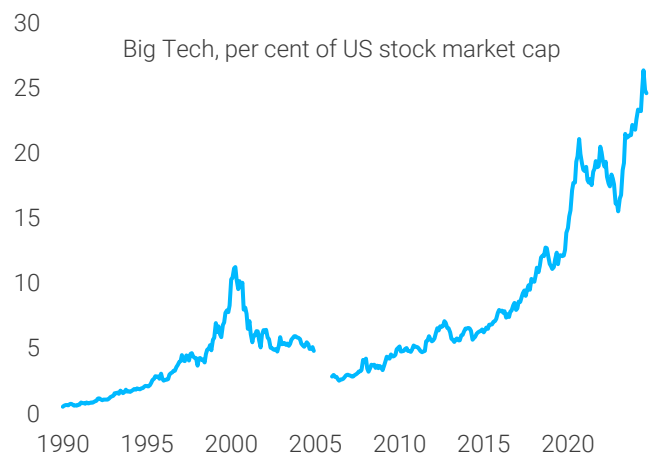
Source: Datastream, TS Lombard

Market exposure to AI

Thanks to NVIDIA's spectacular growth – and the AI theme more generally – the US stock market has become increasingly sensitive to a small number of Big Tech names. There are times when this concentration has become an obvious vulnerability – as we saw during the summer, when the Yen carry trade began to unwind, triggering a big correction in US tech stocks and a nasty risk-off episode in global markets. Realistically, we do not know if this was just the first taste of a much larger correctio, or whether NVIDIA and co. will quickly bounce back to their previous highs (and perhaps beyond). It is possible that even the "picks and shovel" theme has further to run and will spread to other sectors of the market such as energy; if big investment in AI continues, this trend will put enormous pressure on the US power grid. (Analysis from the Electric Power

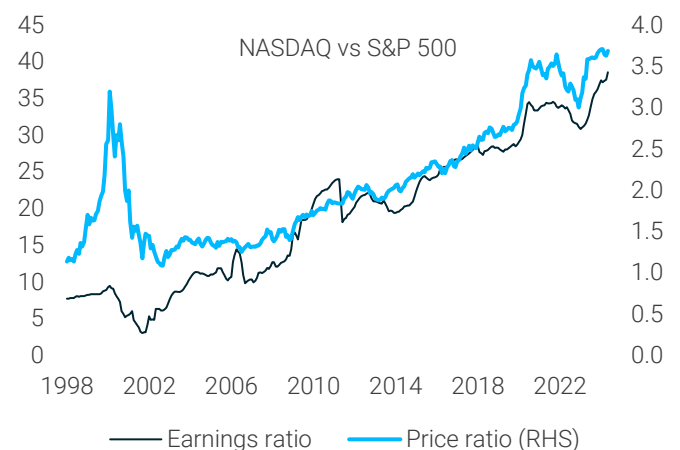Research Institute shows US electricity demand could surge over the next decade, the first material increase since the 1990s.) But we can look at the underlying macroeconomics of AI and provide an assessment of whether this technology can really prove as transformational as its enthusiasts claim. If the tech underlying the AI thesis – particularly LLMs like ChatGPT – cannot live up to investor expectations, then it will be increasing hard for the Big Tech companies to make money from it. There has to be an underlying "use case". And if the gold isn't there to be found, eventually people will stop buying the picks and shovels.

Chart 10: No Dotcom-style tech pricing

trailing PE

Big tech av	
Meta	
Nvidia	
Microsoft	
Amazon	
Alphabet	
Netflix	
Apple	
Dotcom av	
Intel	
Microsoft	
Oracle	
Cisco	
Qualcomm	

0   100   200   300   400   500   600
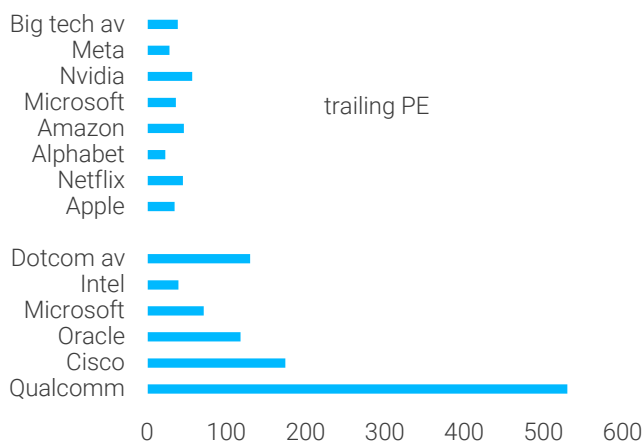
Source: Datastream, TS Lombard

Chart 11: Price based on earnings this time round

NASDAQ vs S&P 500

Earnings ratio — Price ratio (RHS)

Source: Bloomberg, TS Lombard

2. BEYOND THE FOMO

Eighteen months ago, we published a somewhat sceptical take on the transformative power of LLMs. We argued that industry insiders, such as CEO of OpenAI Sam Altman were wildly exaggerating the ability of LLMs to "deliver vast new wealth" and the warning that AI was about to "upend society" and deliver mass unemployment. Altman and his peers were not only talking their own book; their claims bordered on mysticism when it came to ability of these machines to replace human thinking. Since then, of course, we have learned a lot more about this technology, both in terms of its current capabilities and, looking ahead, whether we are on the "exponential path" that was promised. There has been a bull market in AI macro research, with a flurry of papers attempting to calibrate its impact on future economic growth and inflation. With these developments in mind, it is useful to provide an update. And to cut to the conclusion: we haven't seen anything to shake our scepticism. While we are confident AI boosts productivity, it will struggle to match the gains of the Dotcom era, let alone justify the rhetoric of tech insiders.

A macro framework

Let's start with a quick reminder of how generative AI works, particularly the latest vintage based on LLMs. In very crude terms, this is a system that has read a lot of stuff on the Internet and is predicting the next word in the sequence. When you ask ChatGPT a question, it converts each word into a number and then tries to predict the next number in the sequence, largely based on "learning" the associations between these numbers during billions of dataruns (its "training") on a massive dataset (a snapshot of the entire Internet, albeit with quality controls). In one sense,

these models are simply trying to autocomplete our sentences, based on things humans have written down previously; but they are doing this in an extremely sophisticated way, by trying to imitate the neural networks of the human brain. While ChatGPT produces words, there are other LLMs that can create digital photos, drawings and animations. With any new technology, the big hope is always that it will transform productivity – the key to unlocking growth and prosperity.

Chart 12: Technological adoption is speeding up
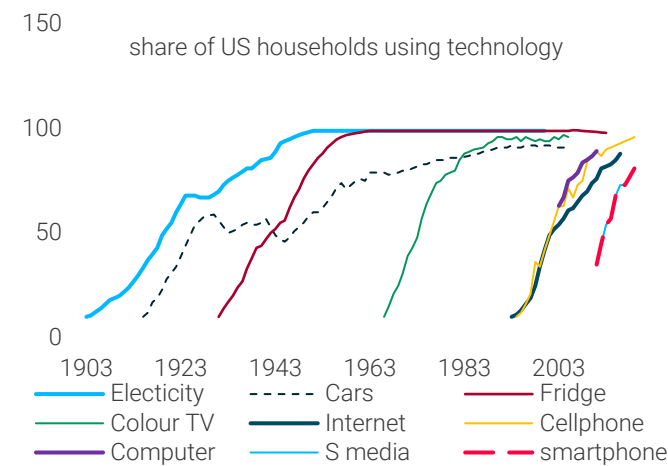
Source: OurWorldInData, TS Lombard

Chart 13: Impressive AI advancements
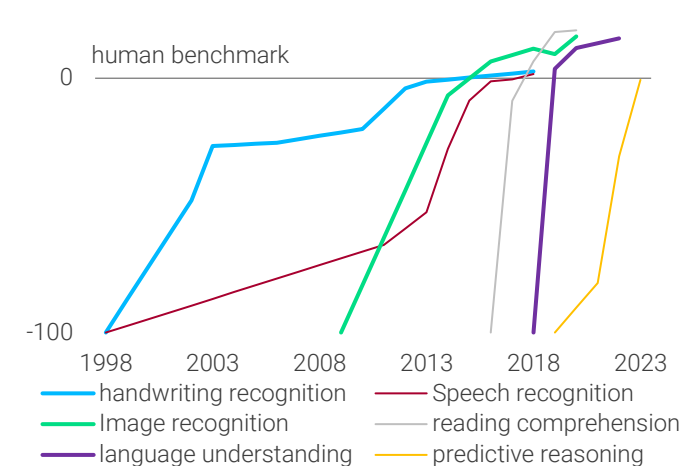
Source: OurWorldInData, TS Lombard

As Daron Acemoglu (2024) points out, there are several channels through which AI might (theoretically) unlock important efficiency gains:

(i)   **Simple automation** – this would involve AI models taking over specific tasks and delivering better quality output faster and at a much lower cost. In the case of generative AI, specific examples include various mid-level clerical functions, text summary, data classification, advanced pattern recognition and computer vision.

(ii)   **Task complementarity** – AI can increase the productivity of tasks that are not fully automated and may even increase the demand for labour. For example, workers performing certain tasks could have better information or superior access to other complementary inputs. Alternatively, AI may automate some subtasks, while at the same time enabling workers to specialize and raise their productivity in other areas.

(iii) **Deepening of automation** – AI may increase the productivity of capital in tasks that have already been automated. For example, an already-automated IT security task may be performed more successfully by generative AI.

(iv)   **Completely new tasks** – AI could create totally new investment opportunities and products, which would increase the productivity of the entire production process. LLMs might expedite the R&D process, accelerate innovation and even speed up the pace of scientific discovery, expanding the efficient frontier of the economy.

Chart 14: Gains from using LLMs – writing task
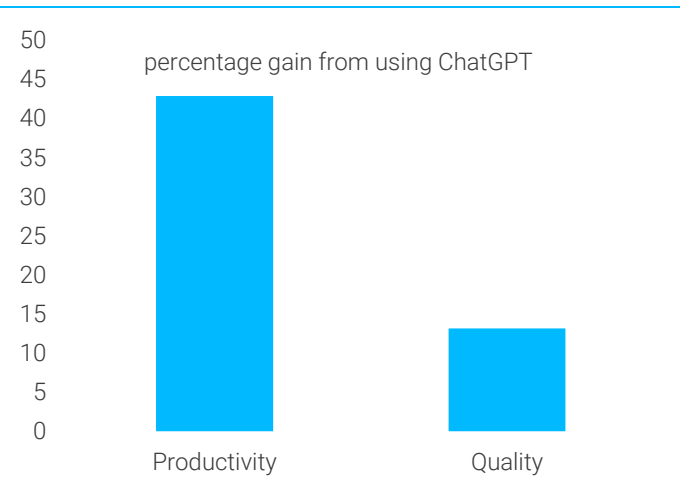
Source: MIT study, Noy and Zhang (2023), TS Lombard

Chart 15: LLMs produce a levelling up effect
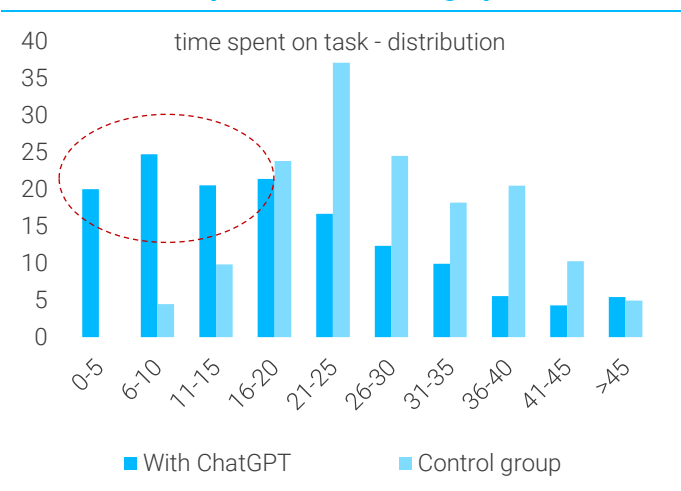
Source: MIT study, Noy and Zhang (2023), TS Lombard

AI and task efficiency

That's the theory, but what does the evidence say? Nearly two years after the launch of ChatGPT, we have compelling evidence that AI can increase the efficiency of doing *specific tasks* (which is related to the productivity potential of channels (i) and (ii) in the list above). When it comes to areas like computer coding, writing assignments and even customer services, LLMs have been found to deliver a material efficiency boost in the range of 15-60% (Table 1). People using the AI found they were able to complete these tasks in less time and to a higher standard. Interestingly, most studies also recorded a *levelling up* effect – that is, it was the LLM users with the lowest levels of competence that saw the biggest efficiency gains. We particularly like the MIT study that asked 444 college-educated professionals to perform two simple (occupation-relevant) writing tests, allowing half of the group to use ChatGPT on the second task (with the other half as a control group). Their results showed a large improvement in productivity, with the average time spent on the second task dropping by 40%. And the MIT researchers also measured the quality of the output, using (blinded) evaluations from experienced professionals in the same occupation. The quality of the writing improved by 15%, with LLM users also reporting higher levels of job satisfaction and an increased sense of self-worth. Just a few months ago, the BIS recorded very similar results, this time for computer programmers completing coding tasks.

Table 1: Studies of AI task performance

Study	Task	Productivity	Quality assessment	Distribution
MIT: Noy & Zhang (2023)	Professional writing	+40%	+13%, assessed by peers	Levelling up
BIS: Gambacorta, Qiu, Shan & Rees (2024)	Software programming	+56%	N/A	Levelling up
Peng, Kalliamvakou, Cihon, Demirer (2023)	Software developing	+55%	Users willing to pay for service	Levelling up
Brynjolfsson, Rock, and Syverson (2021)	Call centres	+14%	Customer satisfaction	Levelling up

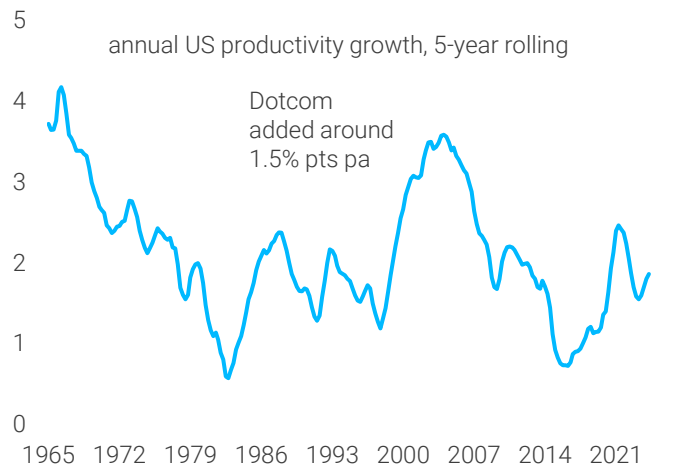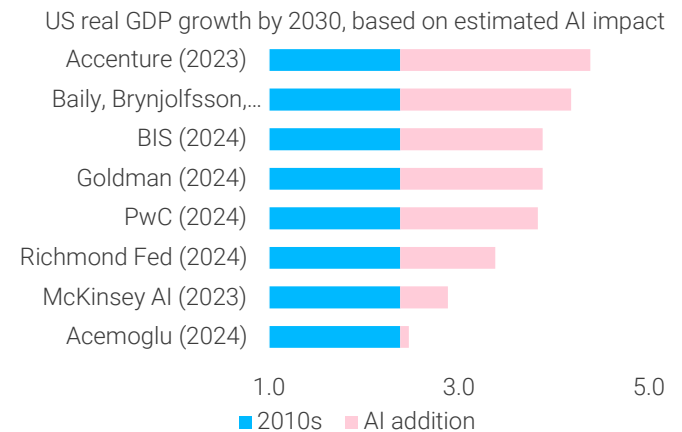Source: TS Lombard

Chart 16: The Dotcom productivity boost

annual US productivity growth, 5-year rolling

Dotcom added around 1.5% pts pa

Source: BLS, TS Lombard

Chart 17: Big range on AI expectations

US real GDP growth by 2030, based on estimated AI impact

- Accenture (2023)
- Baily, Brynjolfsson,...
- BIS (2024)
- Goldman (2024)
- PwC (2024)
- Richmond Fed (2024)
- McKinsey AI (2023)
- Acemoglu (2024)

■ 2010s ■ AI addition

Source: TS Lombard

What about the more controversial claims that AI will accelerate the pace of scientific discovery? Here the evidence is sketchy, at best. AI optimists point to certain areas of biological research, where there have been some encouraging breakthroughs. DeepMind's AlphaFold, for example, was able to predict the 3D structure of every known protein, a task that was predicted to take decades of human endeavour. But that was in 2021, and we haven't exactly seen a burst of scientific breakthroughs since then. In fact, just last month, a paper by Zachary Siegel and others found that AI struggled to *replicate* existing scientific research, even when using the same code and data sources, which means it is still a long way from "expanding the frontier of human knowledge". Based on what we know so far, the idea that AI will transform productivity by speeding up the pace of scientific discovery is largely conjecture rather than fact.

Chart 18: AI investment boom only just started?

comp equip & software, per cent of nom GDP

Source: BEA, TS Lombard
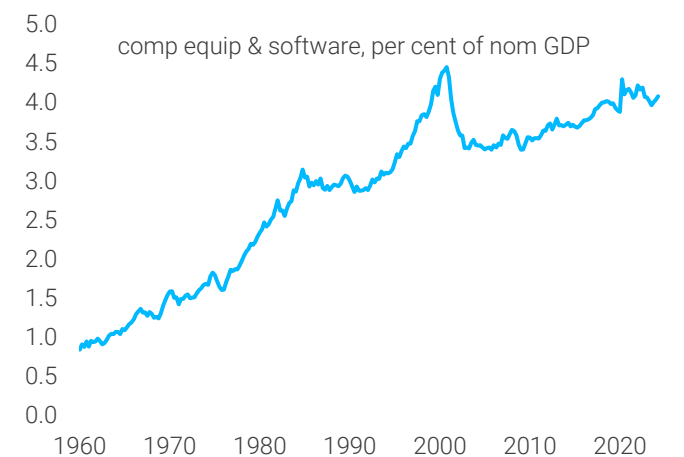
Chart 19: AI boom mostly a US story

AI investment, billions USD (2021 prices)

—— CHN   —— US   —— EU   —— WOR

Source: OurWorldInData, TS Lombard
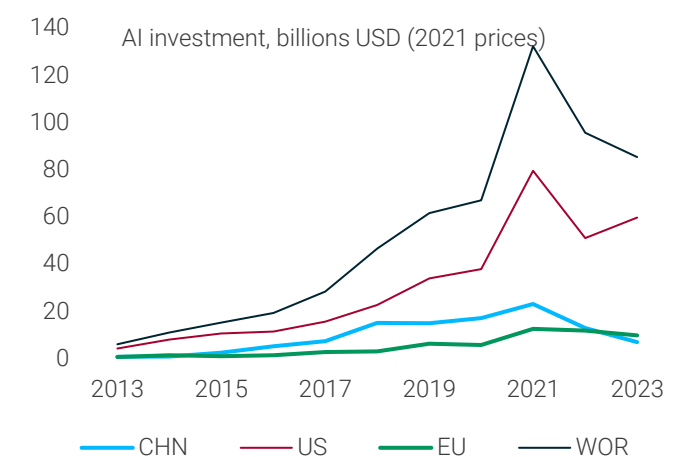
Aggregating the efficiency boost

While we can be confident that AI will boost the efficiency of doing *specific tasks*, even these gains are less than they seem when we translate them into a whole-economy impact. Glancing at Table 1, which shows efficiency gains of 15-60%, the casual observer might conclude that this is pretty impressive. But to estimate the effects on the whole economy, we have to take account of

(i) the proportion of tasks that are exposed to AI automation and (ii) the share of those automatable tasks where it is actually profitable to carry out the automation. So far, Darren Acemoglu from MIT has provided the most comprehensive analysis of this question . His estimates suggest 20% of the tasks in the US economy will be exposed to automation over the next decade (based on separate analysis from Svanberg et al. (2023) – Chart 20), but that automation is profitable only for 23% of those exposed tasks. If we assume an average efficiency gain of 27%, that means a whole-economy productivity boost of just 1% over the next decade (27 multiplied by 0.23 multiplied by 0.2). That's an extra 0.1% pts on US productivity growth per annum, a negligible improvement even by post-GFC standards.

Range of outcomes

If AI lifts productivity, it should also boost investment. So, the total impact on US GDP should be a little larger than Acemoglu's headline estimates. But even allowing for stronger capex, these calculations fall a long way short of all the recent hype from the tech industry. It is possible, of course, that Acemoglu is being too pessimistic. If we change any of his assumptions – such as the share of tasks that are exposed to AI or the speed over which the automation will happen – we end up with much punchier estimates. And over the past two years, there have been plenty of other economists – particularly those who work in the management consultancy industry – who have done exactly that, producing estimates that are often 10 times higher than Acemoglu's (published to much fanfare in glossy publications and with fancy graphics). Chart 17 shows this has delivered an enormous range of potential outcomes, which only underscores the uncertainties associated with AI automation. But even if we take an average of the estimates in Table 2, which overweights the management consultants, we are still looking at an impact that would fall short of the productivity gains we saw in the late 1990s with the Dotcom boom. And in view of the actual evidence available so far, we should lean towards the conservative findings.

Chart 20: AI task exposure varies enormously
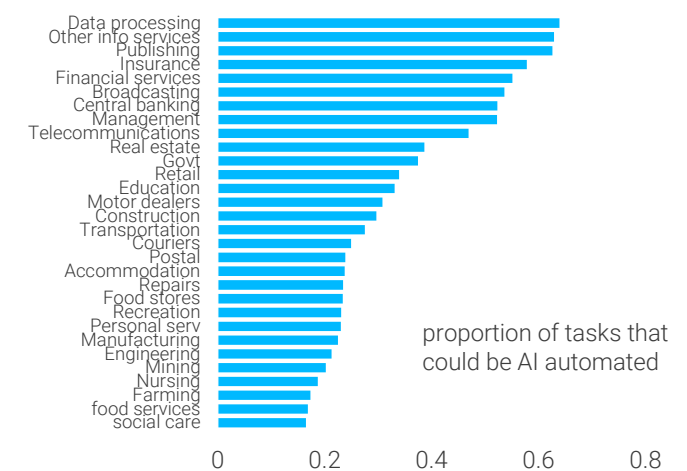
Source: Svanberg (2023), TS Lombard

### Chart 21: No bubble in tech employment – yet
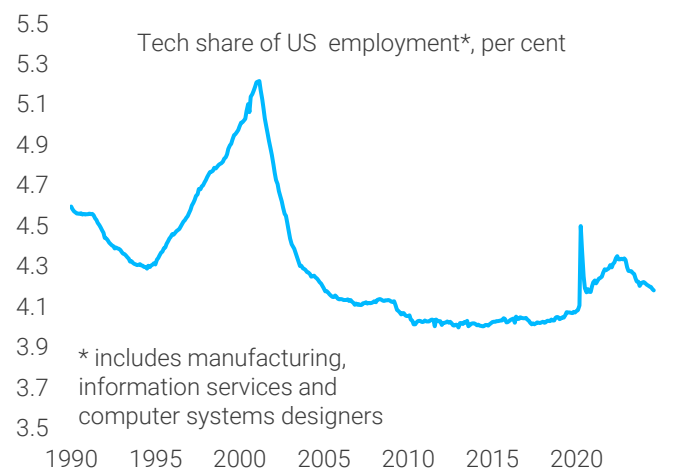
Source: BLS, TS Lombard

AI limitations are bullish!

To really buy into the AI hype, you have to believe that these technologies will continue to improve at a rapid pace (Sam Altman's "Moore's law for everything"),and that LLMs have put us on an exponential path to AGI – fully self-aware machines that can perform any intellectual task that a human can perform. But as we explained in our previous publication, this is a very strong assumption. Anyone who has used these models knows they have major limitations, particularly

in terms of their reliability and trustworthiness. The models hallucinate and there is no evidence that such issues will disappear just by "scaling" them (i.e., training them on more and more data). Almost two years after the launch of ChatGPT, these problems are still very much evident. In fact, Gary Marcus – whose work we highlighted in our previous Macro Picture – believes we have already reached the point of diminishing returns. Marcus jokes "we are still in the same place as two years ago, only with much better graphics". Ironically, from a broader societal point of view, these inherent flaws in LLMs could turn out to be a "good" thing. If AI continues to have reliability problems, it is always going to need a degree of human oversight. And in that scenario, we are talking about a technology that is likely to be "skill augmenting" rather than labour displacing. Put another way, AI will help humans become more efficient in their jobs, but it is not going to cause mass unemployment or societal breakdown. (Which means it will be like every previous technological breakthrough – surprise, surprise!)

Chart 22: Technology boosts wages
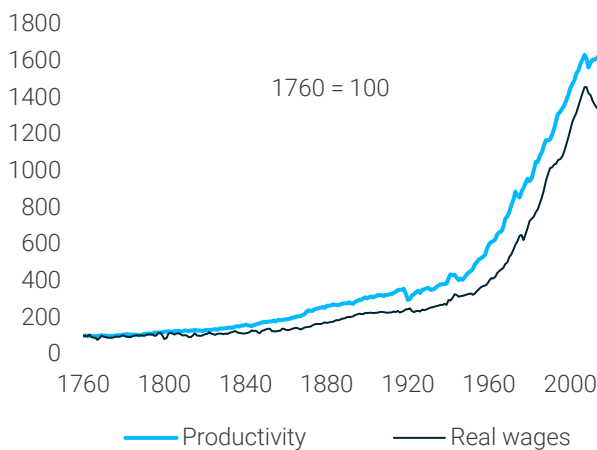
Source: Bank of England, TS Lombard

Chart 23: The myth of technological unemployment

Source: Bank of England, TS Lombard

AI can restore the middle classes?

Our (more optimistic) interpretation of AI aligns with the views of David Autor (who has a great track record when it comes to evaluating the impact of technology on labour markets). Autor argues that when the skill-augmenting properties of LLMs are combined with the "levelling-up" effects researchers have routinely found when studying AI, we are talking about a new technology that has the potential to improve the fortunes of the middle classes. This would make AI quite different from previous waves of computerization, which caused polarization in labour markets – by forcing people to either "skill up" and move to jobs that were complimentary to computerization (such as finance) or move to low-skilled services-sector jobs where computerization did not pose a threat (such as healthcare). And recent survey evidence supports this more optimistic interpretation of AI, with businesses saying they have been using the technology to retrain and skill up their staff, which is boosting their wages and earnings potential.

Whereas past waves of computerization involved technologies that followed simple rules and procedures (displacing workers, such as bookkeepers and typists, who did the same), AI can improve decision-making by, in effect, making educated guesses derived from very large datasets. This could be important, particularly in certain areas of the services sector that are notorious for their weak productivity and have been a key source of inflation in the modern economy. If, for example, AI can improve the performance of "non-elite" lawyers, engineers and

healthcare workers (to name just a few occupations), it could help relieve what David Autor calls a "shortage of expensive decision makers", which could unlock new efficiency gains in areas not previously associated with automation (since past automation was mainly a source of deflation for the goods sector).

Chart 24: ATMs didn't hurt banking employment
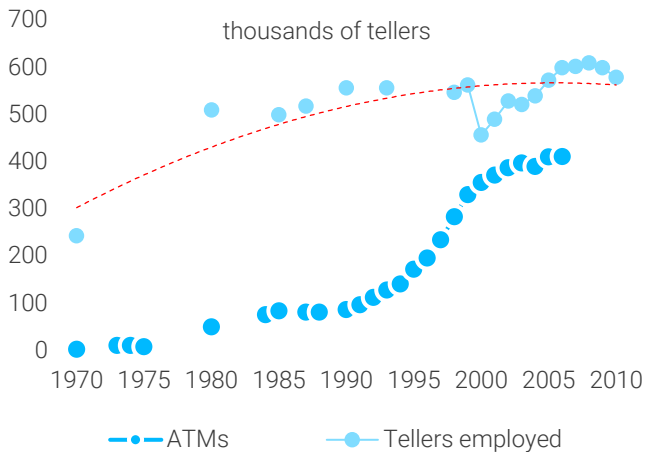
Source: Bessen (2015)

**Chart 25: Past automation caused polarization**
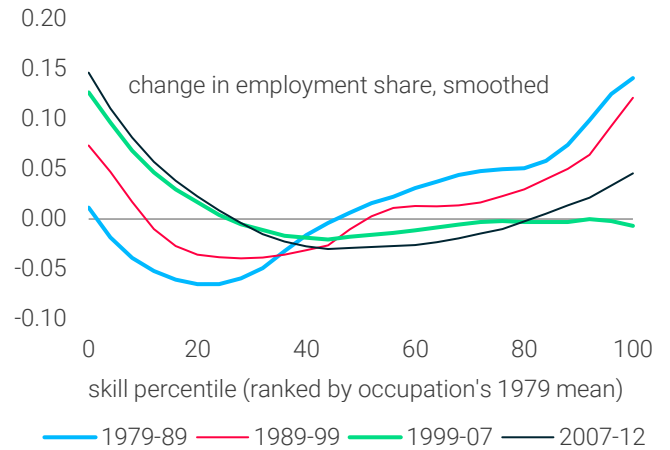
Source: David Autor

3. IRRATIONAL EXUBERANCE 2.0

While we are sceptical about the transformative role of AI, it is important to point out that we are not pessimistic about the outlook for global productivity more generally. We have long argued that the macro environment is evolving in such a way that it will naturally work the economy's resources harder (which is good for efficiency) and encourage higher levels of investment. AI is likely to be a *symptom* of this new macro environment, rather than an exogenous *cause*. And the Fed's apparent determination to deliver a soft landing – its "commitment not to fall behind the curve" – only strengthens our confidence in the emergence of this new higher-pressure economy. If the Fed can land the economy without a recession, this new business cycle would start from a position of full employment – something the authorities managed to achieve only after a decade of expansions from the depths of the GFC. The more immediate question is about what this means for short-term equity performance. Will Fed rate cuts deliver the long-anticipated rotation into sectors that always looked most vulnerable to higher interest rates and recession? Or will a 1995-style soft landing deliver a 1990s-style "melt-up"?

The case for rotation

If you watch CNBC or Bloomberg, you will have noticed that one phrase keeps popping up: "everything is priced for perfection". This is the idea that financial markets have already fully discounted the soft landing and that even if the Fed is successful in delivering it, there isn't a lot of upside to risk assets from here. (In fact, the risks must be skewed towards something going wrong.) But what is true at the aggregate level isn't necessarily true at the sectoral level. And we have always argued that there are still some areas of the market that are undervalued because of their exposure to higher interest rates and the threat of a policy-induced recession. If our analysis is correct, we might expect Fed easing (and the confirmation of a soft landing) to drive a "rotation" into these sectors, with areas like small-cap, real estate, industrials and "value" stocks

outperforming US big tech stocks. And it is fair to say the Macro Picture has always expressed a longer-term preference for these sectors, as history suggests they typically perform well in the sort of "high-pressure" environment we are expecting in the 2020s. Indeed, you might remember our Tangible Twenties thesis, which argued that moderately higher inflation and a secular bear market in bonds would favour value stocks and "tangibles", a major break from the 2010s.

Chart 26: The stages of AI development
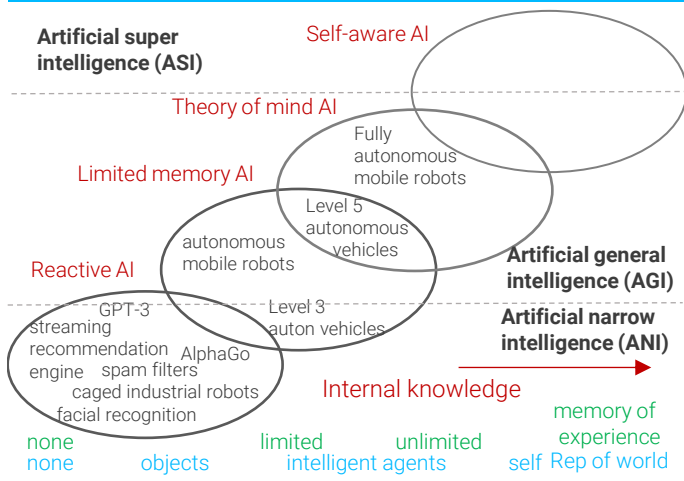
Source: Global Data report ("Artificial Intelligence", February 2023)

Chart 27: LLMs now totally dominate AI
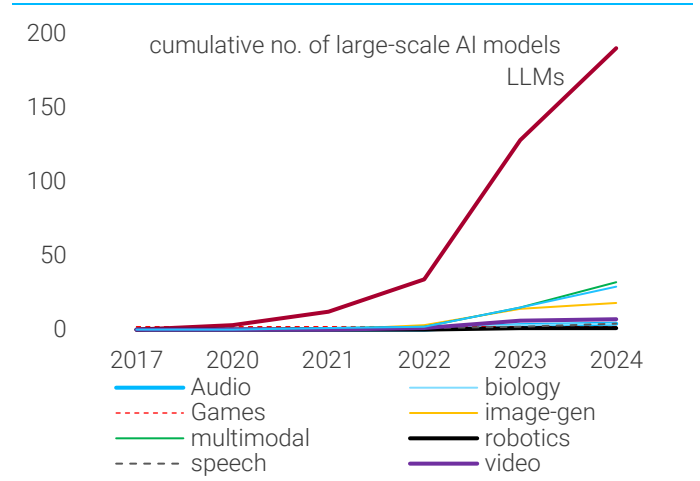
Source: OurWorldInData, TS Lombard

Party like it's 1995?

But while we continue to like the rotation theme, we cannot help wondering whether we are overthinking the outlook for US equities. After all, we have already seen the US tech narrative reinvent itself several times since COVID-19. In 2022, US tech was supposed to be a "long duration" asset that – along with bonds – would be particularly exposed to higher interest rates. Then, after the launch of ChatGPT, the sector suddenly became a "safe haven" play, with investors allured by the limited interest-rate exposure of the Big Tech companies and the sector's potential immunity to a global recession (a dubious narrative that always reminded us of what pundits said about the Nifty Fifty in the 1960s). Who's to say investors won't find another excuse to buy the likes of NVIDIA, particularly as the Fed's rate cuts are already transforming investor attitudes to risk? With Jay Powell and his colleagues clearly channelling Alan Greenspan's 1995 cutting cycle – the soft landing that would spark the eventual euphoria of the Dotcom era – there has to be a decent chance that history repeats (it already rhymes!). And given current valuations in the tech sector, any "bubble" could have further to inflate before it bursts. As the Big Short's Steve Eisman says, "bull markets are about stories, bear markets are about balance sheets".

What could go wrong?

Near term, we see two big threats to the possibility of a "melt-up" in US tech stocks. First, there is a risk that the US labour market deteriorates more than the consensus expects, which would revive the idea that the Fed has fallen behind the curve. Don't forget the importance of the Perkins rule: if US employment were to post an outright decline, there could be a nasty wobble in risk assets. But with US officials now very much focused on the dangers of "reflexivity" in the job market, they would surely make every effort to get "back on the curve" as quickly as possible. Conversely, we would not expect the authorities to withhold further rate cuts just because the labour market is resilient, or the equity market is melting up. The Fed does not target the stock

market and has always had a relaxed attitude to asset-price bubbles, especially where they are not backed by leverage (the current surge in AI investment has not produced a credit boom).

The second threat to any "melt-up" in risk assets comes from geopolitics, and the danger of another supply-induced spike in inflation. With the situation in the Middle East deteriorating once again, there is a very real danger of physical disruption to global energy supplies. While our geopolitical analysts maintain a relatively sanguine view about how the situation will evolve – at least in terms of its implications for the oil price – it is clear that another energy-price shock would make it much harder for the Fed (and other central banks) to deliver on their planned monetary tightening, let alone what is currently priced into financial markets. And this is a reminder of something we wrote earlier in the year – that a more fractious geopolitical environment, with more frequent supply shocks, has the potential to cap overall asset valuations. The trouble is – we have no idea about the timing and magnitude of those future shocks!

Chart 28: Reinventing the tech rate narrative
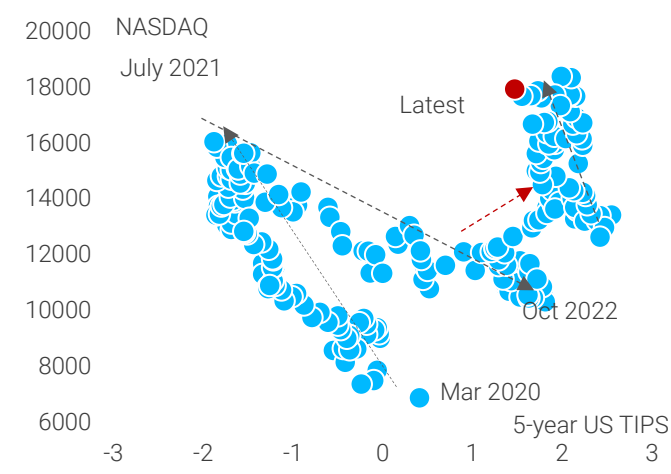
Source: Datastream, TS Lombard

Chart 29: Tech has rallied despite Fed QT
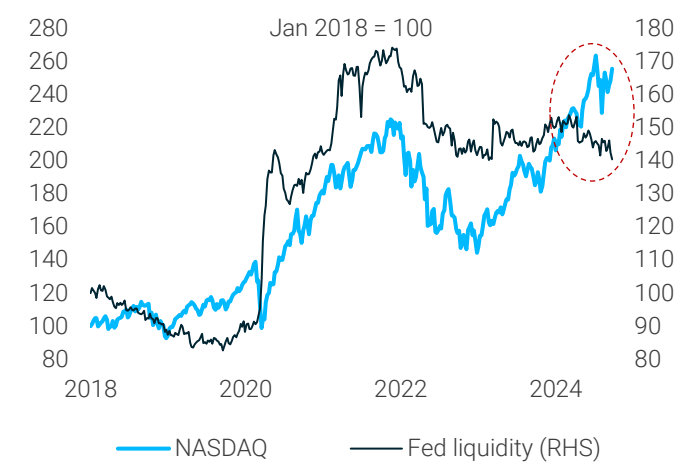
Source: FRED, TS Lombard

Bottom line

AI bullishness has been a central theme in US stock market performance since the launch of ChatGPT in late 2022. NVIDIA, which supplies the "picks and shovels" for the AI revolution, has been one of the biggest beneficiaries, thanks to Big Tech's digital FOMO. Two years on, we are now getting a better sense of the underlying technology and the capacity of AI to match all the hype coming from industry insiders. The evidence is not particularly compelling. While it is clear AI can boost the efficiency of specific tasks, there is no strong case to say it will match the productivity boost we saw during the Dotcom era, let alone transform the economy and "upend" society. That is not to say we are on the brink of a major bear market in US tech stocks. Although the fundamentals point to a rotation to other sectors of the equity markets (particularly those that are still priced for recession risk), we should not underestimate the capacity for a 1990s-style soft landing to deliver another shot of 90s-style "new economy" optimism. With tech valuations far below the levels of the Dotcom era, another Fed-inspired melt-up is entirely plausible. And officials are not going to stand in the way – not without some seriously bad news on inflation (which can only really come from another supply shock, such as a spike in global energy prices).

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