February 2025

From this weekend's WSJ:

Stocks Notch Losses for Month

Investors are struggling to gauge if U. S. will go ahead with tariffs on allies

A late-Friday rally wasn't enough to dig U.S. stocks out of their February hole.

All three major indexes notched losses for the month, with the Nasdaq Composite's 4% decline leading the retreat. The Russell 2000 index of smaller companies veered even lower. (As of Friday's close MAGS, an equal weight ETF of the Magnificent 7, was down 12% from its 12/17 high.)

Investors have whiteknuckled their way through earnings season and a mounting pile of data suggesting the U.S. economy is slowing. Even on days like Friday when the stock market has moved higher, policy uncertainty from the White House has left traders on edge. ...

Investors are struggling to gauge if Trump will go ahead next week with tariffs on allies including Canada and Mexico given the onslaught in Trump's trade pronouncements in recent weeks.

After the president said he would place an extra 10% levy on Chinese imports next month, Beijing said Friday it would retaliate with its own measures that could threaten to pull the world's two biggest economies into a deepening trade war.

Elsewhere:

- Inflation moderated in January. The Fed's favored inflation gauge showed prices rising 2.6% in the 12 months through January, excluding volatile food and energy costs.
- European stocks logged monthly gains. Investors could key in on the continent next week given the U.S.-Ukraine impasse over Russia's war.
- Investors bought government bonds around the world, pulling down yields on U.S. notes. The 10-year Treasury settled Friday at 4.228% after its steepest one-month decline in more than a year.
- Oil prices faded in February. Benchmark U.S. crude futures closed Friday at $69.76 a barrel, down 3.8% from a month ago.

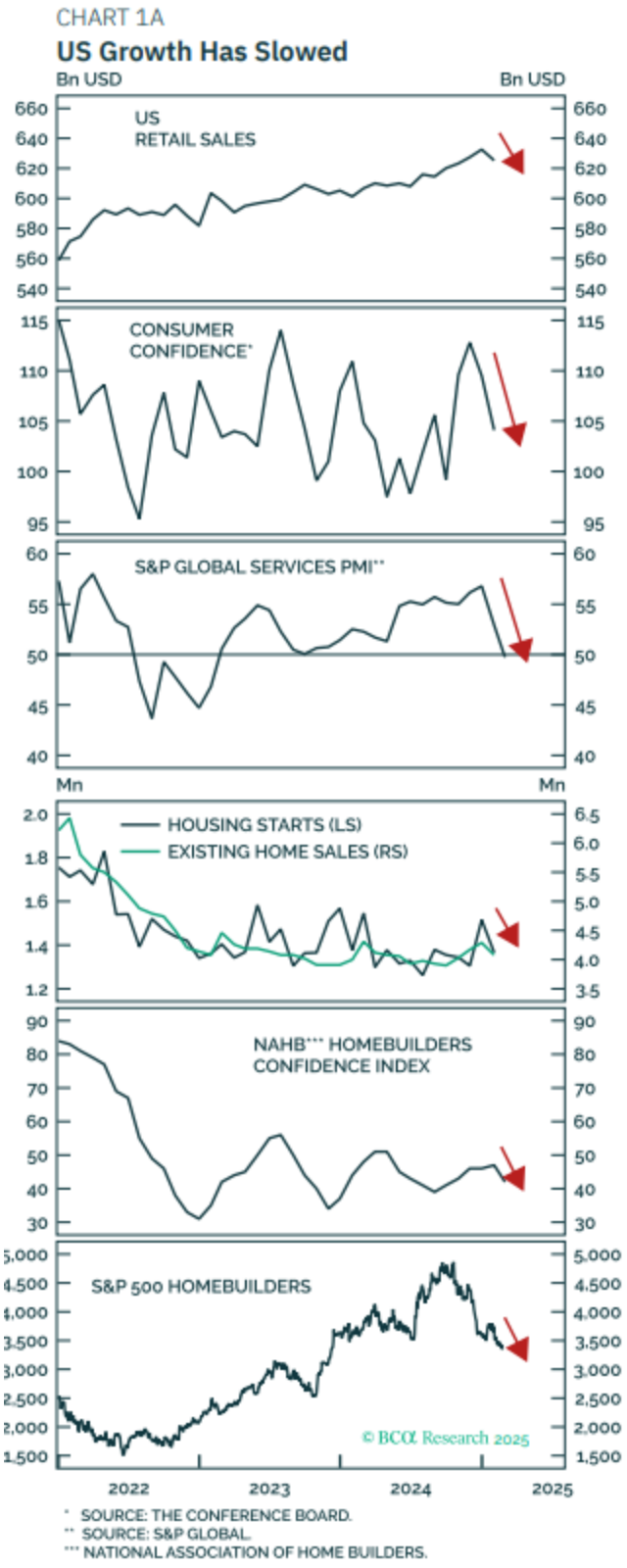
—*David Uberti and Joe Wallace*

From Global Investment Strategy on February 24th:

The Price Of Uncertainty

1. US growth has slowed in recent weeks. This can be seen in the weaker data on retail sales, consumer confidence, services PMIs, and a swath of housing releases (notably starts, existing home sales, homebuilder confidence, and stock prices). It can also be seen in the decline in GDP tracking estimates. The Atlanta Fed's

GDPNow model projects growth of 2.3% in Q1, down from a peak of 3.9% on February 3. The Citi US Economic Surprise Index has also dipped into negative territory (**Chart 1A**).



2. There are two proximate causes of the slowdown. First, financial conditions have stopped easing and some components, such as bond yields and the US dollar, have tightened since mid-September 2024. We estimate that the evolution of financial conditions added 0.5 percentage points to GDP growth in the last three quarters of 2024, but is set to subtract 0.2 points from growth in the first three quarters of 2025.

3. Second, policy uncertainty has increased, especially around two areas: trade and fiscal policy. The recent deterioration in consumer sentiment in the University of

Michigan survey occurred alongside the perception that government policy has gone astray (**Chart 3**). It is worth noting that the VIX has not increased nearly as much as one would have expected based on the rise in policy uncertainty. This implies upside risk for implied volatility (and correspondingly, downside risk for equities).

4. On the trade front, the US effective tariff rate has risen by 1.7 percentage points since President Trump's inauguration. This is equivalent to the entire increase observed during Trump's first term. In addition, Trump has pledged to impose 25% tariffs on autos, semiconductors, and pharmaceuticals as early as April 2. He has also threatened to levy "reciprocal" tariffs, with his definition of foreign trade barriers including value-added taxes (a definition no mainstream economist would agree with). And of course, he continues to dangle the Sword of Damocles over Canada and Mexico.

5. The Trump administration's trade policies have damaged US growth prospects in several ways. One, they have pushed up expected inflation, with near term CPI swap rates rising to the highest level since early 2023. Higher inflation will depress real wage growth, while constraining the Fed's ability to cut rates. Tariffs will also increase business uncertainty. Indeed, the IMF has shown that uncertainty over tariffs can damage growth as much as the tariffs themselves.

6. With respect to fiscal policy, the immediate source of uncertainty revolves around DOGE. A recent Wall Street Journal analysis was able to substantiate only $2.6 billion of the $55 billion in savings claimed by DOGE. This is consistent with the fact that the trend in federal noninterest spending remains slightly above 2024 levels.

Nevertheless, the indiscriminate nature of DOGE's firings has generated considerable anxiety across the entire civil service. Betters on Polymarket think there is a 68% chance that DOGE cuts more than 100,000 federal jobs within the next six months. There are currently three million federal government workers in the US and roughly twice as many workers whose livelihoods depend on federal government contracts and grants. Initial unemployment claims are already rising in the Washington D.C. area, and that is likely to spread to the surrounding states.

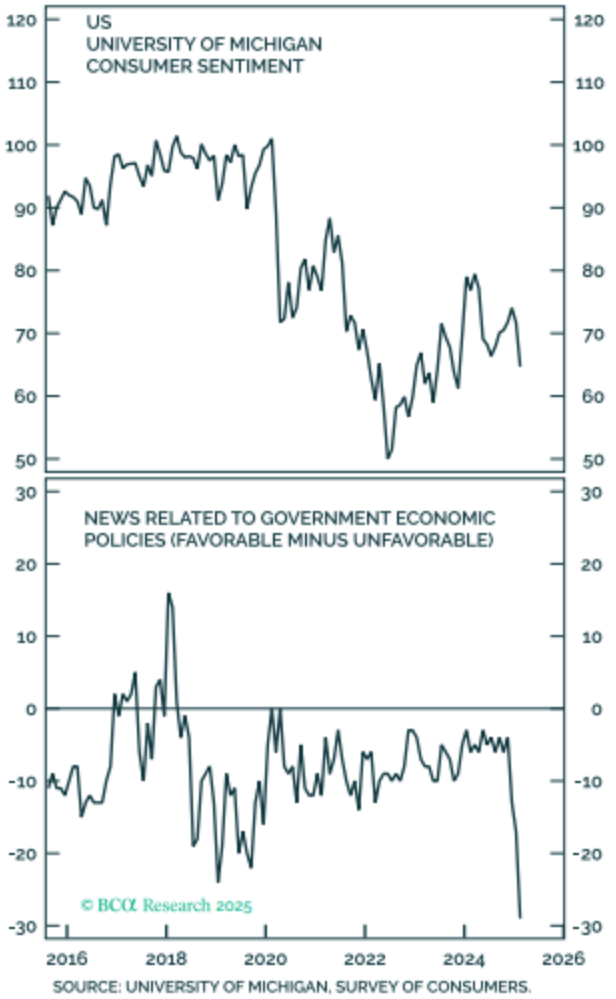
7. Despite all the publicity DOGE has garnered, it is doubtful that it will be able to find enough savings to reduce the budget deficit anywhere close to Treasury Secretary Bessent's goal of 3% of GDP. This is partly because the Trump administration is seeking to further cut taxes. It is also because most spending is in mandatory programs, which Trump has promised not to touch. In fact, nondefense discretionary spending was only 14% of overall government spending in 2024, down from 24% in 1980 (**Chart 12**).

8. Some commentators have argued that the US fiscal outlook is not as bad as it appears because real rates are close to the growth rate of the economy. This is a highly misleading argument. For one thing, the US would still need to run a primary budget deficit of zero to stabilize the debt-to-GDP ratio if real rates equaled GDP growth. In 2024, the primary budget deficit stood at 3.5% of GDP. Moreover, even if real interest rates were to fall 50 basis points below GDP growth, federal government debt would still asymptote to 0.035/0.005 or 700% of GDP if the primary budget deficit remains unchanged. Good luck keeping interest rates below the growth rate of the economy if the debt ratio ever gets that high. Although not our base case, we subjectively assign 30% odds of a major fiscal crisis over the next 12 months.

9. In contrast to the US, recent euro area economic data have come in stronger than expected, pushing the economic surprise index into positive territory. The manufacturing PMIs have risen and capex intentions have bounced off their lows. The ZEW and Sentix sentiment surveys have also rebounded. Some of the improvement can be attributed to the decline in inflation, which has allowed real wage growth to turn positive again. Hopes of a ceasefire in the Russia-Ukraine war have also bolstered confidence. Nevertheless, it is probable that the European economy is currently benefiting from the front-

CHART 3

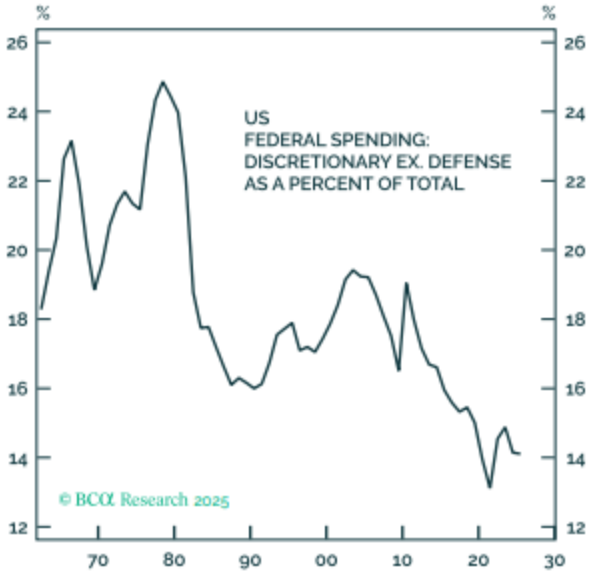
Consumers Believe That Government Policy Has Gone Astray



SOURCE: UNIVERSITY OF MICHIGAN, SURVEY OF CONSUMERS.

CHART 12

The Fraction Of The Budget Allocated To Nondefense Discretionary Spending Has Shrunk Dramatically



SOURCE: US CONGRESSIONAL BUDGET OFFICE.

running of imports in advance of US tariffs. This tailwind will turn into a headwind over the course of the year.

10. The German election is likely to produce a CDU/CSU-SPD coalition, with CDU/ CSU leader Friedrich Merz set to become the next chancellor. The AfD will be excluded from any government coalition and will not have enough weight in parliament alone to block reform of the debt brake. According to Matt Gertken, BCA's Chief Geopolitical Strategist, while altering the debt brake is not guaranteed and will take longer than expected, the election result improves the prospect for additional fiscal easing on the margin. In any case, German competitiveness has deteriorated meaningfully over the past decade, and it is far from clear that the new government will be able to reverse that trend.

11. As is the case for Europe, China's economy has benefited from the frontrunning of imports. This can be seen in the recent stark divergence between import and export growth. Although credit growth did pick up in January, this was largely driven by increased government bond issuance. Mortgage lending and shortterm household loan growth remained weak, suggesting that the underlying trend in housing and consumption has not changed significantly. The combined credit/fiscal impulse remains deep in negative territory. ...

From the NYT:

We Are Blundering Our Way Into a Financial Crisis

Feb. 18, 2025

By Wendy Edelberg and **Ben Harris**

You've heard warnings for years about how a fiscal crisis was brewing in the United States because the debt is unsustainable — and financial markets would eventually protest. However, the logic was often vague and the risk hypothetical.

Guess what? The Trump administration has made obvious the real source of risk. It isn't federal borrowing grinding ever higher. The true risk is our political leaders doing something wildly irresponsible that unnerves financial markets.

President Trump has brought budgetary chaos with extraordinary speed. In just his first week in office, his administration threatened to withhold payments of trillions of dollars of congressionally enacted spending. Days later, he appeared to reverse course. Then he allowed staff members of the newly formed Department of Government Efficiency, or DOGE, to gain access to critical Treasury payment systems, prompting the resignation of a senior official with decades of public service. New threats to withhold federal payments now come daily. At least one agency, the U.S. Agency for International Development, may no longer be operative.

Those who have spent years scanning the horizon for risks of a fiscal crisis should fix their sights on the president's malpractice. When Mr. Trump asserts he can pick and choose which payments to make, regardless of laws enacted by Congress, it is not impossible to imagine the president declaring he can pick and choose which holders of United States Treasury securities should be paid.

During his first term, senior officials from Mr. Trump's administration reportedly considered the idea of canceling some of the payments on U.S. Treasuries held by China as retribution for its purported role in the pandemic. Now, with DOGE itching to meddle in Treasury payment systems, the president may soon have the

means to withhold payments at his personal whim. “We’re even looking at Treasuries,” he told reporters ominously when discussing his plans to commandeer the payment system. “It could be that a lot of those things don’t count.”

Why is this a potential crisis in the making? The $28 trillion market for Treasuries — by far the most important financial market in the world — depends first and foremost on trust. By that we mean confidence that the United States Treasury will pay its interest and principal on time and that American politicians won’t drive the economy off a cliff. Because of that trust, Treasuries are viewed as risk-free assets. They serve as the benchmark for interest rates on all kinds of loans such as mortgages, business loans and borrowing by other governments. That trust is why American retirees and overseas pension funds put their money in Treasuries when they can’t risk losing it. It’s the bedrock of America’s economy.

Imagine if Mr. Trump threatens to withhold debt payments to China, prompting the Chinese to sell their nearly $1 trillion portfolio of U.S. debt. The sell-off would be likely to make financial markets jittery. But would it end there? Would other foreign investors, who together hold nearly a third of outstanding Treasuries, worry they might be next?

Political blunders have always been the more concerning potential trigger for an American fiscal crisis. We are not discounting the economic costs of carrying a nearly $2 trillion deficit, one that is likely to increase over time. Rising federal borrowing competes with private-sector investments for people’s savings. To entice investors to lend increasing amounts to the federal government, Treasury rates have to rise. That pushes up interest rates across the economy, which means businesses have to pay higher rates when they borrow. As a result, there is less private investment and ultimately less wealth for future generations. Those effects are unfavorable, but slow and predictable.

The political threat is more acute and builds on years of dysfunction in how the government manages the country’s finances. In 2023, Fitch Ratings downgraded the long-term U.S. debt, noting that “there has been a steady deterioration in standards of governance over the last 20 years,” especially because “repeated debt-limit political standoffs and last-minute resolutions have eroded confidence in fiscal management.”

What happens if investors conclude there is default risk in the largest and most liquid financial market in the world? Ernie Tedeschi at the Yale Budget Lab, a nonpartisan policy research center, shows that interest rates would rise if investors priced in the risk of a default, which would slow U.S. economic growth, even if the financial sector remained healthy.

However, the financial sector probably would not remain healthy. An abrupt and sustained increase in Treasury rates of, say, three or four percentage points would likely cause a crisis. Remember, the interest rate on a bond moves in the opposite direction of its price. Investors worried about default risk in Treasury bonds would value those bonds less. To maintain demand among potential buyers, the price of bonds would fall and thus the interest rate would have to rise. Every financial institution, investor and household holding Treasuries would simultaneously take huge losses.

Recall the bank failures in 2023, when rising interest rates cost financial institutions billions of dollars. In the financial crisis scenario we describe here, widespread failures of financial institutions would reverberate through the economy. In the 2008 financial crisis, Treasury rates fell as investors worldwide sought refuge in the safety of those assets. That helped finance America’s deficit spending. Instead, in this scenario, interest rates would rise significantly.

Mr. Trump is bringing chaos to one economic sector after another. More disruption is sure to come. While we can't predict what's going to happen, we know for sure that the risk of a fiscal crisis is higher than it was just four weeks ago.

Wendy Edelberg is the director of the Hamilton Project at the Brookings Institution and was chief economist of the Congressional Budget Office. Ben Harris is the vice president and director of economic studies at Brookings and was assistant secretary for economic policy in the Biden administration's Treasury Department.

Follow-ups

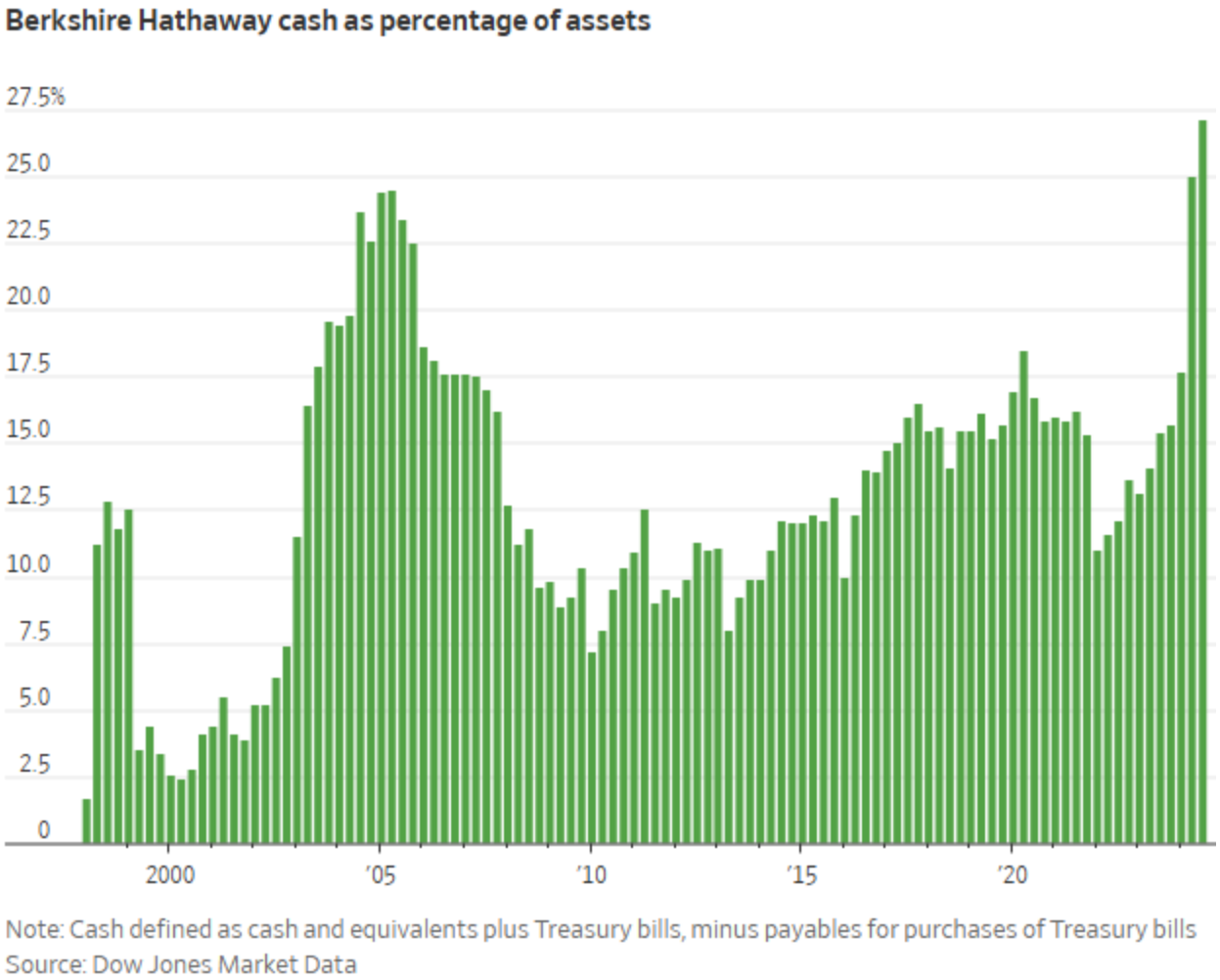
From the front page of last weekend's WSJ:

Why Is Warren Buffett Hoarding So Much Cash?

Investors are poised to study the Berkshire Hathaway chairman's annual letter for insights about the stock market

By Karen Langley
Feb. 21, 2025

Warren Buffett is known for picking stocks. These days, he is increasingly picking cash.



The mountain of cash and Treasury bills at the famed investor's company, Berkshire Hathaway BRK.B -0.39%decrease; red down pointing triangle, rose above $300 billion in the third quarter—easily a record and its highest as a percentage of company assets in data going back to 1998, according to Dow Jones Market Data.

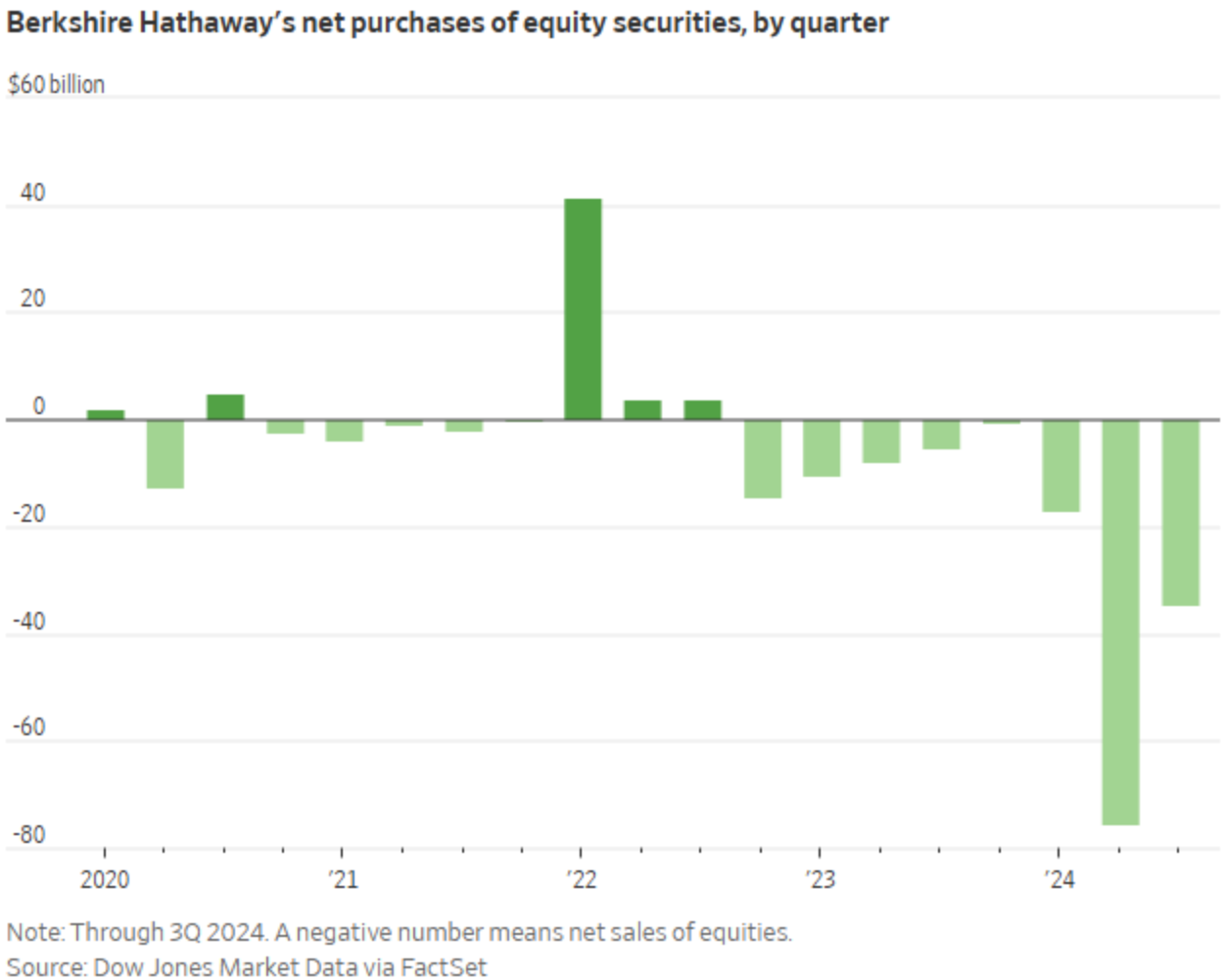
Holding lots of cash is standard practice for Berkshire, but the scale of the recent buildup has raised eyebrows among some observers of the Omaha, Neb., conglomerate.

They are preparing to parse Buffett's annual letter to shareholders on Saturday for clues about how the Berkshire chairman and chief executive is thinking about the stock market and any opportunities he might see for investing the cash. Berkshire's annual report, which includes the letter, will show how much cash the company held at the end of 2024. ...

Berkshire generates cash from its stable of operating businesses, which range from insurance to rail, from utilities to candy, as well as from its investments. Recently, the company's investing moves have involved selling a lot of stock. Berkshire was a net seller of equity securities in the past eight reported quarters, and a regulatory disclosure of its U.S. stock positions in December suggests the selling extended to a ninth period.

Buffett's storied reputation means his company's trades are watched like those of few investors. When Berkshire sells, it can spark worries that the outlook for stocks is poor. ...

Close observers of Berkshire think about the rise in cash this way: Within the company's hunting ground of large, high-quality businesses in industries Buffett understands, prices have risen too high for the stock picker to feel



confident an investment would lead to worthwhile returns for Berkshire and its shareholders.

Buffett and his deputies are searching for bargains while stocks trade at records. The S&P 500 notched its latest all-time high Wednesday and has advanced 4% in 2025 after two years of annual gains above 20%. The broad U.S. stock index recently traded at 22.4 times its projected earnings over the next 12 months, above a 10-year average of 18.6, according to FactSet.

At Berkshire's most recent annual meeting, in May, Buffett weighed in on the company's tower of cash: "We'd love to spend it, but we won't spend it unless we think we're doing something that has very little risk and can make us a lot of money."

"We only swing at pitches we like," he added later in the session. "It isn't like I've got a hunger strike or something like that going on. It's just that things aren't attractive."

If Buffett did find a company that looked appetizing, he might well have the cash to buy it in full. Based on its third-quarter report, Berkshire could easily pay the market price of all but the biggest U.S. companies ....

Buffett watchers tend to say the drumbeat of stock sales doesn't amount to a call on the overall market. Rather, they say, it has resulted from case-by-case determinations that individual companies' prospects don't merit the price at which other traders are willing to take the shares off Berkshire's hands.

One reason behind the cash buildup is Berkshire's extensive sales of Apple stock, which has traded in recent years at much richer valuations than when Buffett's company was establishing its position from 2016 through 2018.

Berkshire slashed its stake in the iPhone maker for four consecutive quarters starting in late 2023, reducing its ownership of Apple from nearly 6% to 2%, according to FactSet. Berkshire held off on further Apple sales in the fourth quarter, and the consumer-electronics company remained its largest stockholding at the end of 2024 with a market value of $75 billion.

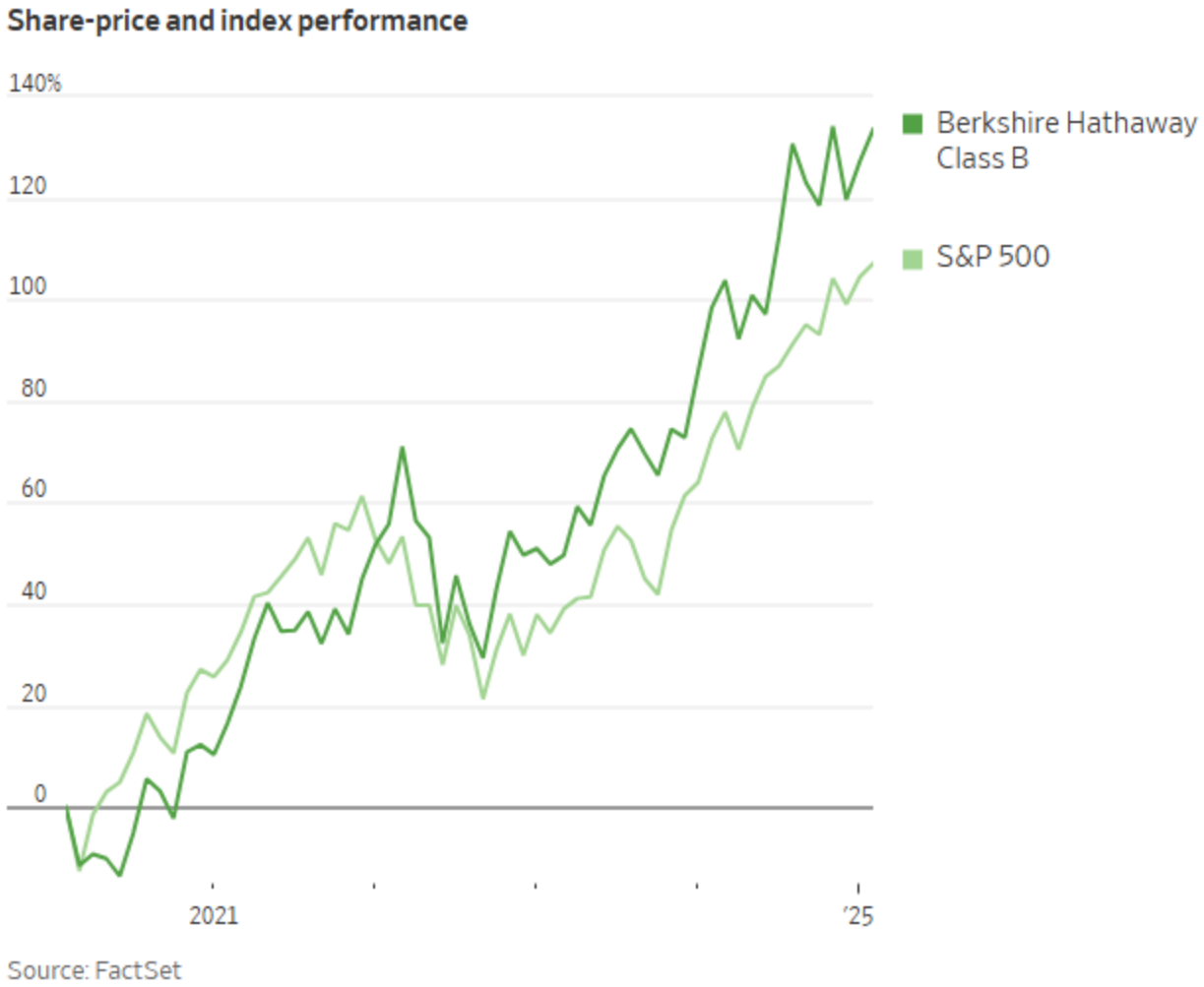
The move to lighten a position that had grown to an outsize share of Berkshire's stock portfolio is seen by some observers as part of the 94-year-old chief executive's efforts to smooth the transition when his designated successor, Greg Abel, eventually takes the reins. ...

Also contributing to the climb in cash: Stock buybacks have ground to a halt, with Berkshire repurchasing no stock in the third quarter for the first time in several years. The company says it can buy back stock whenever Buffett "believes that the repurchase price is below Berkshire's intrinsic value, conservatively determined," as long as its holdings of cash and Treasury bills wouldn't fall below $30 billion.

Berkshire's stock has rallied to start the year, with both Class A and Class B shares closing at records this week. The company's market value passed $1 trillion for the first time last year.

And the cash pile itself is making money. Berkshire reported $8 billion in interest and other investment income in its insurance operations in the first nine months of 2024, along with $3.8 billion in income from dividends.

Berkshire's streak of net stock sales has coincided with a climb in the overall market. Since the end of the third quarter of 2022, the S&P 500 has risen around 70%.



But longtime shareholders don't seem too anxious about missed opportunities. They say they trust Buffett to decide how to use Berkshire's hoard. Nor are they clamoring for the company to release cash through a dividend. ...

From Verdad on Feb. 10th:

AI and the Mag 7

What will be the ROI on AI spend?

By: Daniel Rasmussen

Taking a pessimistic view on Silicon Valley innovation is one of the worst things an investor could have done over the last decade.

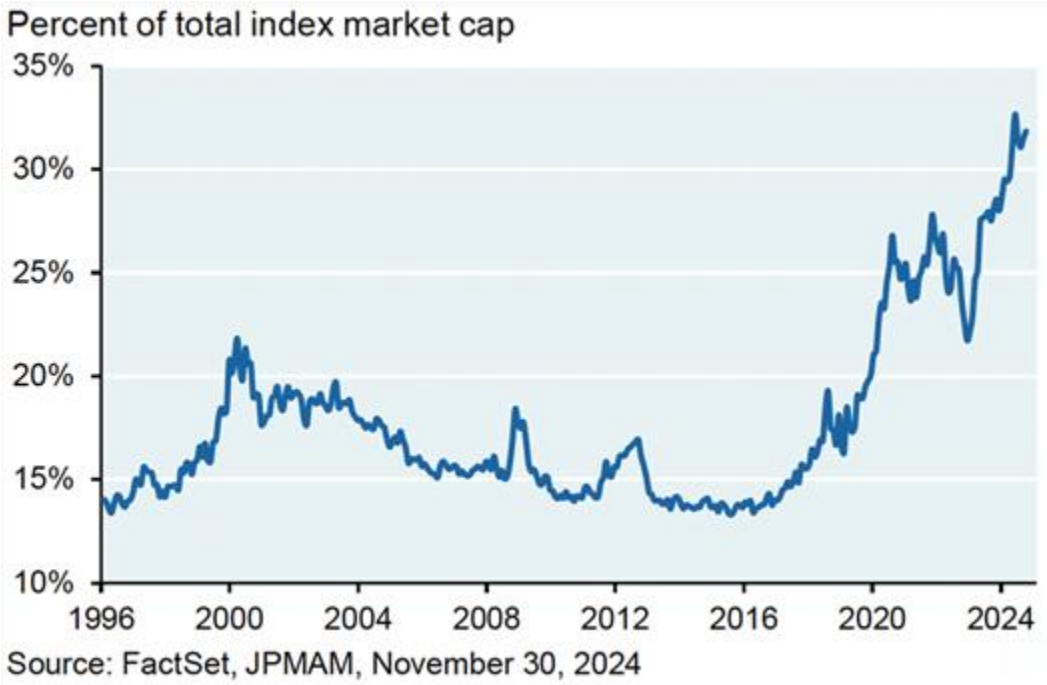
Legendary short sellers bet against Tesla, arguing they lacked manufacturing expertise and scale to compete against GM, Ford, and Stellantis; against Uber and DoorDash, arguing the unit economics of their gig economy model weren't sustainable; against Netflix, predicting it would drown in content costs; and against Facebook, warning that regulatory threats and a misguided metaverse pivot would doom the company. Even Bitcoin,

dismissed as a bubble, a scam, and a tool for criminals, has defied endless obituaries to become a mainstream asset class.

Skepticism about AI—and the profits to be earned from its mastery—could very well suffer a similar fate…eventually. But in the short term, the fate of the US equity market depends on the fate of the Magnificent 7—Apple, Nvidia, Microsoft, Amazon, Alphabet (Google), Meta, Tesla—and, increasingly, the fate of the Mag 7 depends on the success of artificial intelligence.

We are at a level of market concentration not seen since just before the dot-com bubble burst in 2000, and the largest US companies by market cap are betting huge percentages of their net income on AI-related capex.

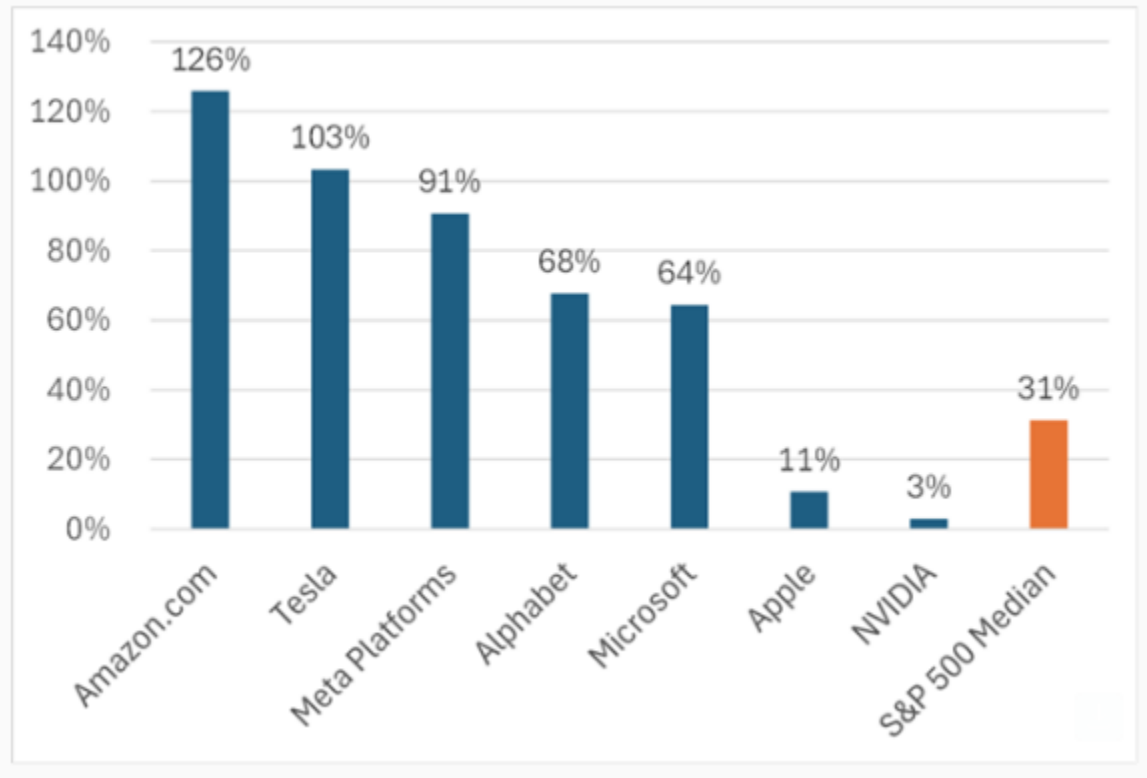
Figure 1: Market Cap of the 7 Largest Companies in the S&P 500



Most recent tech revolutions have resembled a lab experiment funded by cutting-edge VC managers. Venture bets might be expected to fail 90%+ of the time. And when they do work, they often take 10+ years before investors see big returns. That’s the business model of seed-stage economics. The current AI revolution has plenty of VC backers, but much of it is driven by the biggest publicly traded companies, who need these bets to pay off soon. If they don't, it won't just be the Mag 7 that suffers hits to earnings and valuations. It'll be the market as a whole.

Last summer, Goldman Sachs was estimating a $1T spend on AI capex in the coming years, and the numbers have only gone up since then, with most of it concentrated in the Mag 7 that dominate the public markets, per the chart below.

Figure 2: 2025E Capex / 2025E Net Income



Source: Capital IQ

It's necessary as an investor to at least consider how these bets might go awry, to consider what the short seller arguments might be if there were any short sellers of Silicon Valley left, if only as a thought exercise to commemorate a moment in time when thinking was still something primarily done by homo sapiens instead of by our robot overlords.

The skeptic's case starts with the possibility that the Mag 7 is suffering from a classic case of "competition neglect," where "subjects in competitive settings overestimate their own skill and speed in responding to common observable shocks and underestimate the skill and responsiveness of their competitors," as Robin Greenwood and Samuel Hanson put it in their paper, "Waves in Ship Prices and Investment." When shipping prices increase, shipping companies all decide to invest in ships—after all, their models are all saying these investments will be profitable at current rates. That investment not only drives up the price of building new ships, it causes a glut of supply once they are built, resulting in poor returns on these pro-cyclical investments, as low as -36%, according to Greenwood and Hanson. Meanwhile, those who invest at the bottom of that cycle—when current shipping prices are low and there's no one else building at the shipyards—earn returns as high as 24%.

Rather than ships, today's AI capex "is a euphemism for building physical data centers with land, power, steel and industrial capacity," as Sequoia Capital's David Cahn puts it.

AI competitors are spending this money because they believe that AI follows a scaling law, essentially that models become exponentially smarter with more data, bigger models, and enough compute (and energy) to power it all. Scaling laws, and the resultant belief that to the biggest spender go the spoils, have turned AI into a manufacturing and infrastructure problem.

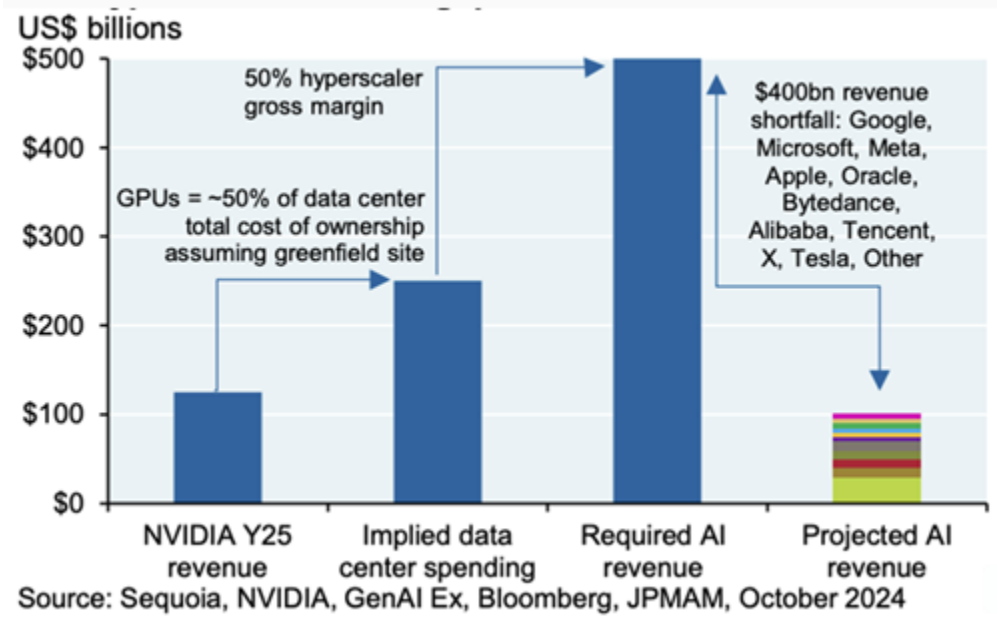
OpenAI, SoftBank, and the federal government's $500 billion Project Stargate is the culmination of this race to convert tech companies into industrial manufacturers. But even winning this race could be a Pyrrhic victory. Capex at these levels is an asset-heavy business model. Asset-heavy business models historically have lower returns on capital, especially when sunk costs meet increased competition.

In this scenario, perhaps Stargate is the AI equivalent of overinvesting in new ships at the same moment that everyone else is overinvesting in ships, leading to a supply glut, price drops, and poor investment returns. Or it's possible that all this AI spend ends up with the same result as the so-called "bandwidth glut" of the late 1990s. Massive investment in bandwidth made pricey long-distance phone calls a thing of the past, but it also helped drive overbuilders like MCI WorldCom into bankruptcy (a feckless merger spree and accounting fraud didn't help). Or perhaps, to take another analogy, AI chips and data centers will depreciate as fast as shale wells.

What's the profit model?

It's impossible right now to know which AI models will be more Yahoo than Google. But what is clear is that AI companies are burning cash without a lot of revenue to show for it. Google, Microsoft, Amazon, Meta, and other big spenders on AI capex are $400-500 billion short in revenues to cover traditional gross margins on data center spending.

Figure 3: The Hyperscaler Revenue Gap: $400B



Burn isn't a problem if you don't burn out before the returns come. But we still don't have many economical use cases for AI. Even in low-compute mode, a single prompt on ChatGPT's o3 model costs $20 to perform. High-compute mode can cost much more.

If we think of the internet as a large digital library and Google search as a better Dewey Decimal System, then AI is a librarian who has read every book and can answer any question you ask—but burns an incredible number of calories devising their response. Google was a better file organizer. LLMs are an energy-intensive digital brain.

Simple math calculations are a great way to understand why LLM systems are so expensive to run. To answer the question of what 2+2 equals, Microsoft Excel runs a simple "deterministic" calculation. It's the same answer—4—every time. Since it's running a line of code that produces the same answer every time, it needs only a tiny bit of processing power from your laptop and its battery. That is traditional software code, what Google's original search engine was based on. But if you ask ChatGPT, Claude, or any other LLM-powered chatbot what 2+2 equals, it runs an immensely complex "probabilistic" calculation. This is a bit like the Dr. Strange character in the Marvel Universe, where the model is calculating all the possible outcomes to make a series of predictions.

While Anthropic CEO Dario Amodei is confident AI can beat humans at most things in 2-3 years, that doesn't mean we will all be using AI that way. There's a difference between what can be automated and what is cost-effective to automate. Daron Acemoglu, Institute Professor at MIT, estimates that only a quarter of AI-exposed tasks will be cost-effective to automate within the next 10 years. An MIT research paper looked at jobs in non-farm businesses and found 36% of tasks in jobs they studied could be automated by AI vision models, but only 8% were economically worth automating.

Scaling laws are an assumption that brute force will get us more and more powerful AI. For AI investors, it's a playbook to outspend the competition, win the market, and trust that, eventually, more infrastructure and better chips will bring costs down and make more tasks economical to automate. But shooting for scale and achieving high ROI are not usually achieved at the same time.

Shortly after Stargate was announced, it was soon overshadowed by bigger news about China's DeepSeek model. While the exact specs are a subject of debate, DeepSeek shattered the cost-to-performance expectations that investors and the Mag 7 have been working from. At a fraction of the cost (the exact fraction is the subject of much ongoing debate), it performs on par with the leading US models on a range of tests and has called into question the big AI capex and high capital burn of AI model companies.

One could argue that DeepSeek is the proof of the investing thesis—an efficiency leap that will make AI automation far more cost effective and useful. But the subsequent hits to Nvidia and other Mag 7 stock prices show the market took a different interpretation: if the big Mag 7 companies have already invested huge sums under the assumption of huge compute cost, how are they supposed to recoup the expenses? How will the Mag 7 make up a $400 billion gap if a new Chinese model can deliver the same performance at one-tenth the cost? Better chips and data centers would still matter in that world, they just wouldn't be the only thing that matters, knocking out much of the advantage that the Mag 7 companies have built up at such great cost.

Just like the Mag 7 today, 50 years ago, companies like IBM and Xerox seemed to have all the advantages for any coming computer revolution. But it was a bunch of kids like Woz and Jobs and Gates soldering their own motherboards together in Silicon Valley garages who saw what was coming: a personal computer revolution that the mega-cap incumbents simply couldn't imagine. Those kids saw the future because they were the customers—early adopters who wanted to write college papers and do math and play games at home.

Microsoft CTO Kevin Scott puts it this way: "AI is a model, not a product." We have acted as though the models are products themselves because ChatGPT was an accidentally viral product. Virality, however, is not the same as commercial viability. ChatGPT found rapid widespread consumer adoption, but that hasn't (yet) turned into revenues that can even remotely cover the high costs associated with these models.

We've only just entered the true product-building era for AI. How many people today think of the internet as a product? The internet is not a single thing but a collection of services and products on common digital

infrastructure (e.g., TCP/IP protocol, which was built by DARPA with US taxpayer money and isn't a business anyone is making money on). Similarly, AI models could, like other commodities, utilities, and infrastructure projects, become a part of everything we use rather than a distinct product. Usage patterns are starting to reflect this: we are using these models less directly and more through other services built on top of them.

A whole new class of VCs and AI founders are betting that monolithic LLMs will be like an expensively educated jack of all trades but master of none. Who needs a billion-dollar model that can cure cancer, write a PhD-level paper, and walk, talk, and chew gum at the same time? Why not just license ChatGPT and build something custom on top of it or use free open-source LLM code to create all sorts of little purpose-built bots that solve distinct problems? In this analogy, LLMs become more like electrical utilities, which the LLM companies are literally trying to become to feed their own data centers. The electrical power game is incredibly important, but it is even less profitable than manufacturing, to say nothing of SaaS.

In this scenario, it would be the yet-to-emerge specialist firms who would make the big money by building products fitted to specific industries, use cases, and users and by paying much more commoditized rates for LLM processing power and chips. A bit like Netflix and Facebook benefiting from the costs sunk into internet infrastructure or Ford and General Motors cruising along on the fruits of the Federal-Aid Highway Act of 1956.

As we said at the top, a lot of investors have done very poorly betting against the scrappy innovators of Silicon Valley. But now that they are mega-cap behemoths run by mega-billionaires trying to outspend each other, maybe the Mag 7 will be outmaneuvered by their true heirs, another group of as-yet-unknown young innovators who are toiling away all over the world in garages far less expensive than the $1,700/square foot you have to pay to live in the cushy confines of Silicon Valley.