Goldman Sachs Exchanges

Are AI Bubble Concerns Warranted or Overblown?

Eric Sheridan, US Internet Equity Research Analyst, Goldman Sachs Research

Kash Rangan, US Software Equity Research Analyst, Goldman Sachs Research

Allison Nathan, Senior Strategist, Goldman Sachs Research

Date of recordings: September 26 and October 30, 2025

Allison Nathan: Is there an AI bubble? We've all heard the bull case for AI. That we're in the early innings of a technological revolution that will change the world. And the companies leading this revolution will generate tremendous returns for their investors. But after years of heavy spending and rising stock valuations, we're starting to hear a lot more skepticism. So, are there signs of a bubble? And if we are in a bubble, what does that mean for investors?

I'm Allison Nathan and this is Goldman Sachs Exchanges. Each month I speak with investors, policymakers, and academics about the most pressing market-moving issues for our Top of Mind report from Goldman Sachs Research. This month I spoke with two of my colleagues here in

Goldman Sachs Research, our US internet equity research analyst Eric Sheridan and our US software equity research analyst Kash Rangan.

I started off by asking Eric and Kash about where the AI build out stands today and how that compares to expectations.

Eric Sheridan: On the infrastructure layer, the amount of capital and the amount of spend has surprised to the upside. That level of spend short term is mostly tied to the fact that demand for these services. The compute need generated by you querying ChatGPT is outstripping the available capacity. So, infrastructure has surprised to the upside on the need for capital to meet the demand for services.

The platform layer, arguably, is the handful of companies that are transitioning from just running foundational models to either building API solutions or applications on top of the foundational model. And there's only a handful of those companies that have started to emerge that have the scale of capital and talent to execute against that.

We've seen more applications emerge on the consumer side. Mostly through the usage of ChatGPT and Google Gemini by consumers. And I'll leave it to Kash to talk about the application side for enterprise.

Allison Nathan: Okay. Kash, I do want to get your take.

Kash Rangan: Infrastructure build out has gone on a lot longer than anybody expected. But at the same time, I look at my coverage area, how this activity at the infrastructure layer is percolating up to the platform layer, it's starting to become more discernible. The platform layer is in a much better position today than it was a year ago, two years ago.

The disappointment has been at the application layer. To Eric's point, a lot of consumer applications, they're exemplifying the value of AI, whether it's ChatGPT or Claude application at the consumer level. But at the enterprise level, end user level, there are some signs of life. But we're not where we expected. If you ask me to guess at where these companies would be today, I would have given you a number. And we would be well below that number. But we're getting there. It's not where we expected it to be a

year ago, two years ago, but rather to where we were six months ago, nine months ago. We're starting to see these applications.

Allison Nathan: But ultimately, Eric, there is so much capex going in, so much more than we even thought when there were amazingly high numbers last year. The return potential, has that grown too?

Eric Sheridan: So, I'll make a couple points. The rise in spending in aggregate is a very large number. And it has resulted in a number of investors really asking the ROI question. That question is only going to build in scale, not abate in scale. And I really don't think there's any incentive for anyone to stop playing offense today.

NVIDIA recently put out a number of 3 to 4 trillion dollars between now and the end of the decade. I think most investors we talk to would struggle to justify the return profile on 3 to 4 trillion of cumulative spend, unless AI is the main driving factor in an enormous amount of the economic output of society in some sort of end state.

That being said, there have been computing cycles where

folks like me have not been able to look out six, seven, eight, nine, ten years and say this is what it's going to look like. At different points in time, it was we over built to desktop computing and then Netflix was created, and the browser wars happened, and the portal wars happened. And all of those things drove a lot more desktop usage.

There was nobody when Spectrum and towers and wireless was being built that thought 3 billion people would have smartphones with this battery capability and power capability. Things do change. And I think the most leading-edge companies invest with confidence against the long-term time horizon.

The questions from investors will continue to rise. And I think if the dollars keep rising, I'll be brutally frank, we'll struggle to answer them with what we know today. And typically, through every computing cycle I've ever analyzed, that leads to a trough of disillusionment at some point where either the spend or the adoption rate or some combination of the two don't give a satisfactory six, 12-month answer. And are we going to avoid one this time? I would be shocked if we avoided one.

In any technology cycle that we've covered, there are typically two to three companies that earn their cost of capital and earn an excess return on that cost of capital. The idea that there are four, five, six, seven companies in an industry that do something, and they all earn an excess return in the same vertical or the same product is not typical. And I don't know why this would be any different.

Allison Nathan: Obviously, we're having this conversation because the concerns that there is a bubble forming in the markets when you see how mega cap tech has performed, the valuations where they are today. Do you think concerns that we are now in bubble territory are there? And what are you watching to assess that?

Eric Sheridan: I'm not trying to be flip about this question. There's been more talk of a bubble in a continuous nature for three years. Two other bubbles I've lived through, there wasn't this much talk of the bubble while we were in the bubble. So, look, do I see signs that point me back to the late '90s or the '07 time period? Sure. Private market valuations are well ahead of public market valuations. Public market valuations are above historical norms. But they're also below the peak of public market

valuations that you saw in '99 and 2000. Capital market activity is still well below the levels that were seen in 2020/2021. 2007/2008. 1998 and 1999.

So, I would argue there are signs of exuberance. There are signs that rhyme with past periods of time. But I wouldn't necessarily align it perfectly with some of the lessons we've learned in prior periods, at least not yet. Now, that's arguably a duration narrative that I'm saying that we're just not there yet. That would be one framing I would give.

The other that is a little bit different than prior periods, typically the companies that generate no profits, and in 1999 it was companies that generated no revenue, are the ones that were driving the most exuberant valuations in the market.

The Magnificent Seven, most of those companies generate outsized levels of free cash flow and buy back their stock and pay dividends. There were very few companies buying back their stocks and paying dividends in 1999. So, there are some key distinctions I would keep in mind as opposed to just drawing a straight analogy.

Allison Nathan: Kash, do you have any thoughts about bubble concerns and signs that we may or may not be in one?

Kash Rangan: Certainly not in the stocks that I cover. A lot of software stocks are trading at depressed valuations because of what AI could presumably do to their end markets, whether it's job dislocation, towards consumption, or AI enables you to write software in a cost effective manner because you've got vibe coding and other things that, obviously, need to buy an application software package from the likes of Salesforce, etcetera.

So, we're going through an existential crisis right now that there is a decided discount rather than a premium. And something that is so different about this cycle, which should make even somebody that's normally a bit circumspect, a little bit less cautious is where is this capital coming from?

Eric and I lived through the late '90s and we saw the capital that was deployed in high-risk projects was venture capital and private capital. This time, the capital is coming from well heeled, deep pocketed, hyper scaler giants. Their

cost of capital is quite low. Their ability to take risk with this amount of money is quite high. And even if it means a couple of cycles of trying and finding out what the best way to extract value from AI, they can do it.

So, the availability of so much capital coming from a very different audience, different set of investors, makes this cycle a little bit different. And more tolerant of snafus and missteps, which we will have plenty of these things before we nail the ultimate AI business model.

But we're starting to see a new development whereby entities are being put together that are funded with 80 percent debt, 20 percent equity. And even within the equity piece, there is a collateral that's back to a sponsoring entity. And these entities are able to issue debt at very low cost of capital.

But something we should be aware of as a risk factor is that leverage in the system is starting to emerge. We have to make sure that the system works. That ultimately these companies that are driving the need for capital, whether it's the foundation model companies, what not, are able to hit their numbers. We need to be carefully monitoring if this

math works, because there's a lot of leverage upon leverage on top of a low gross margin business model. So, active monitoring needed.

Allison Nathan: Right. And let me put that back to you Eric because ultimately at the end of the day we have NVIDIA investing 100 billion in OpenAI. And then we have OpenAI pledging 300 billion, which they don't really have, on cloud compute for Oracle. And then Oracle's buying NVIDIA chips. And then NVIDIA is investing in Intel. I mean, the circularity of all this, it just feels like is this all ultimately a house of cards with everyone propping each other up? Does that make you nervous at all?

Eric Sheridan: It does. As I said, I think there are things you can point to going on right now that rhyme with 1998/1999. That would be an example of it. I started my career as a telecom analyst and a telecom investor in the late '90s and early '00s. The era of Global Crossing and Level 3 and Quest and these companies were trading capacity with each other, using debt, and one person's revenue was another person's capacity, and vice versa. And when the debt curve got too high, it all fell apart.

And when you untangled all the revenue, there was nowhere near the revenue you thought there was at the end of that rainbow. That capacity was eventually absorbed by 2003 and 2004 and 2005. But depending on where your entry point was in the market, your return could have been quite low for very long periods of time.

When you start seeing debt, when you start seeing companies investing in other companies, when you start seeing suppliers invest in a company that delivers capacity, investors are naturally and correctly asking questions about untangling it all. And making sure that there isn't compounded effects that could be built up in the system.

Allison Nathan: Very last question, which is Eric, what would make you less optimistic?

Eric Sheridan: I continue to monitor rise in utility, rise in adoption, monetization, and free cash flow. I mean, at the end of the day it'll be very hard to argue if companies spend in a way that eventually puts their free cash flow generation in real risk. And that typically can be a tipping point in the market. People cutting dividends, cutting buy backs, things like that, excessive use of debt. Those are

things that I am watching for.

Allison Nathan: And Kash, what would make you less optimistic?

Kash Rangan: I'd go back to the point that I've made earlier. At the beginning of a credit cycle where new entities are being funded with a lot of debt as opposed to cash from the balance sheet. I'm less worried about the hyper scaler. But more worried about the cultural damage in case the credit cycle does not really cooperate. That's what I'd be watching for. That cycle does not cooperate, it will have a ripple effect through the rest of the tech ecosystem.

Allison Nathan: Let's leave it there. My thanks Eric Sheridan and Kash Rangan. And thank you for listening to this episode of Goldman Sachs Exchanges. I'm Allison Nathan.

The opinions and views expressed herein are as of the date of publication, subject to change without notice, and may not necessarily reflect the institutional views of Goldman Sachs or its affiliates. The material provided is intended for

informational purposes only, and does not constitute investment advice, a recommendation from any Goldman Sachs entity to take any particular action, or an offer or solicitation to purchase or sell any securities or financial products. This material may contain forward-looking statements. Past performance is not indicative of future results. Neither Goldman Sachs nor any of its affiliates make any representations or warranties, express or implied, as to the accuracy or completeness of the statements or information contained herein and disclaim any liability whatsoever for reliance on such information for any purpose. Each name of a third-party organization mentioned is the property of the company to which it relates, is used here strictly for informational and identification purposes only and is not used to imply any ownership or license rights between any such company and Goldman Sachs.

A transcript is provided for convenience and may differ from the original video or audio content. Goldman Sachs is not responsible for any errors in the transcript. This material should not be copied, distributed, published, or reproduced in whole or in part or disclosed by any recipient to any other person without the express written consent of

Goldman Sachs.

Disclosures applicable to research with respect to issuers, if any, mentioned herein are available through your Goldman Sachs representative or at http://www.gs.com/research/hedge.html.

© 2025 Goldman Sachs. All rights reserved.