

Investor Webinar: Your Questions Answered

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Your capital is at risk. Past performance is not a guide to future returns.

Claire Shaw (CS): Good morning, and welcome to this Scottish Mortgage investor webinar. I'm Claire Shaw, portfolio director, and today I am joined by investment managers, Tom Slater and Lawrence Burns. If you've joined us on one of these webinars before, you'll be familiar with the structure.

But, if we are welcoming you for the first time, the purpose of today is simple, to answer as many of your questions as we can. We have 45 minutes set aside to cover the topics on your minds. But if we're still seeing high volumes of questions coming in, we'll run up to the hour. Thank you to those who submitted questions in advance, but you can also ask questions throughout the webinar by using the Q&A function on the screen.

It's been nearly a year since we last hosted a, your questions answered webinar, and in that time, the share price is up 40 per cent. We've had two companies make the transition from private market to public market with IPOs and Tempus AI and Horizon Robotics.

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There has been a seismic shift in the geopolitical landscape with the re-election of President Trump, and AI capabilities continue to evolve at an unprecedented pace. I'm sure we'll cover all of these topics today. However, one of the big talking points for Scottish Mortgage last year was the announcement we made in March 2024, when the board stated their intention to buy back at least £1 billion worth of shares.

So, perhaps to kick things off, as we've had a large volume of questions coming on this topic, Tom, if I can come to you first. Please can you provide an update on the buyback, how much you've bought back, is it working, and are there plans to buy back more?

Tom Slater (TS): Thanks. So, we made that announcement that we would buy back at least £1 billion worth of shares. I checked the number this morning. We've bought £1.6 billion worth back at this point. The discount when we announced the buyback was about 14.5 per cent. Today it's about 8.5 per cent. So, I think working is quite a challenging way to put it.

What we want to do, ideally, is to facilitate trading around about the asset value of the fund. And the buyback is an attempt over time to make sure that we can try and match supply and demand to achieve that aim. So, I think we've made some progress. I don't think we are yet where we want to be.

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CS: And then perhaps following on from that, the investment trust sector has been in the headlines a lot over the last couple of months, particularly the actions by the activist US hedge fund, Saba Capital. So, the question we've had come in is, I'm glad that the share price is increasing and now over the £10 mark. What was the catalyst for this? And do you think you're safe from the likes of Saba?

TS: Well, if you look at the delivered performance of Scottish Mortgage over 100 years, what you will see is that it's volatile from year to year, and it's very difficult to say in the short term what's going to happen. But what we believe is that if we can identify the right long-term growth companies, that over time, they would deliver attractive returns for shareholders.

It's been a more volatile ride than we would have wanted over the past five years, and trying to say when in that evolution that would drive returns is very difficult. But the key for me always is to go back to fundamentals. What are we seeing at the companies? And we're seeing attractive growth rates. We're seeing improving margins. We're seeing big opportunities. And I think that's what's driven the appreciation in our asset value and the share prices has followed it.

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Now, I think the way the question was put was, are we safe. And I don't see it in those terms. Instead, are we delivering for our shareholders? Because that's the question, and I think if you don't do that, anybody can buy the shares. An activist will come looking for you if you're not living up to your shareholders' expectations. And so, the way I see it, we have to deliver, and it's not about safe or not safe.

CS: Perfect. Thanks, Tom. And the buyback generated a lot of questions, but it might come as no surprise, the other topic that a lot of shareholders asked in advance of the webinar was around Trump. And so, the very common question on

shareholders' minds was around this concept of what will be the impact of Trump's administration on markets, in the portfolio, and how do you see Trump impacting the Scottish Mortgage Fund specifically?

TS: For me, the most important drivers of returns are not generally to do with macroeconomics, not generally to do with politics. They're to do with big, long-running, underlying changes in the structure of the economy.

Now, I think what you have at the moment, not just with Trump but with the Republican clean sweep of the Congress, of the House, the Senate, and the Presidency, is that you're open to a wide range of outcomes. The US politic system generally drives stasis, because there are so many seats of power.

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You've had this sweep, and I think it allows the Republican agenda to be pushed and we just don't know where that leads. And I think anybody that thinks they can accurately predict that is lying. So, what becomes more important is, are you companies resilient? Are your companies adaptable? Can they deal with that changing environment?

And the good news there is if I look at the portfolio, you've seen a significant increase in resilience and adaptability over that past couple of years, partly as a response to COVID. But you've seen companies grow whilst really controlling costs, driving free cashflow, driving margins, and I think that puts them in a strong position to deal with whatever may be thrown at them.

CS: And we can't talk about Trump without obviously talking about Mr. Musk. And I'll lump a few questions together at this point here, Tom. But there's a very common theme here which is around, please can you comment on Musk's recent behaviour and if you have any concerns about the impact it will have on Tesla and SpaceX holdings. Basically, are we comfortable holding investments over which he has stewardship?

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TS: Well, the challenging thing with Tesla has been that you've seen a very strong appreciation in the stock price through the back end of last year without really any fundamental news, any fundamental change. So, we put on half a trillion dollars of market capitalisation. And so, the challenge for us as long-term investors is, what do you do with the stock that has appreciated that much where there hasn't really been any fundamental driver of that news.

And therefore, we've made some very significant reductions to Tesla through the past few months. It's less than 1 per cent of the portfolio today. I think there's a different calculus at SpaceX which is the other company, it's our largest holding, the other company where he has a big influence. And there, I think the changes

that you're seeing in the US are likely to be pretty positive for SpaceX, because one of their biggest headwinds has been regulation.

And you'd think that such a strategically important company for the US generally, that actually they would have a fairly clear path from a regulatory standpoint, but that has not been the case. But I think the direction of travel today is that you're going to see more deregulation that will allow the launch cadence to pick up, and that's the key to generating value in that business. So, I think those are the important things from a fairly narrow Scottish Mortgage perspective.

CS: Maybe if I stick on SpaceX, the questions that are coming in right now on this, Lawrence, I'll come to you next, are on very similar theme which is around, do you think it'll ever IPO? What if it doesn't? It's now shown as the largest holding on the fact sheet. How do you determine its value?

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Maybe some comments around SpaceX's IPO prospects and the valuation. That seems to be a common theme coming in.

Lawrence Burns (LB): Yes, maybe starting with the valuation first. It's probably quite important to reiterate that what we're doing with our private company valuations is assigning what we think is a fair value for the asset today. And that means a few things. It means it's the estimate of, if we were to go out and sell the shares in this private company today, what do we think we would get for them? And that requires us, our process requires a robust valuation process, but it also requires a valuation process that ensures fresh valuations.

So, a lot of the time, if you look at the last 12 months, we'll have revalued our private instruments about 500 times, which give you an idea of trying to keep pace with any changes. And there are, broadly speaking, three things that lead to valuation changes. There's a transaction at arm's length. There's a change in operational performance. There's a change in the public market peer group.

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In the case of SpaceX, what's setting the valuation at the moment is you had a very large arm's length transaction in December. It's about \$1.5 billion. You had SpaceX and other investors buying back shares from other investors. And so that's given us a valuation of \$350 billion and that's what's setting SpaceX's valuation.

And you asked about IPO. I think the key things to bear in mind with SpaceX is that they're just in a very, very strong position. They can choose what they think is the best way to maximise long-term value. They don't need capital. There is

huge demand in the private markets for their shares as that tender showed at \$1.5 billion.

Operationally, they're doing very well. You mentioned the cadence of launches. I think they went from 90 launches in 2023. They increased those by about 40 per cent to around 140. So, I think the question for them is, they don't need to IPO. They don't need the capital. How do they maximise long-term value creation? And I think they're going to be very resistant to giving away value early.

CS: Maybe let's just stick on US for now, because there was a lot of questions coming in around valuations in the US market, talks about a bubble again. So, Tom, the questions that we've had on this topic are around, do you think there is a bubble being created, especially in the US with the NASDAQ at record highs?

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Do we think the US might one day face a sudden slump, much like the dot com bubble, but possibly faster? And the key question, I guess, to follow on from that is, what precautionary measures does SMT have in place against such an eventuality? So, maybe just covering that sort of topic.

TS: I think it's quite difficult to talk about valuation in aggregate for the market. And I think it tends to be easier if you break this down by sectors. And what's really been driving the US market is the Magnificent Seven, this small group of very large US technology businesses. And even using a term like that is quite misleading, because actually even within the Magnificent Seven, there's some different trends at play as well.

So, you've had big businesses like Microsoft and Apple who've become truly gigantic, but partly because their valuations have moved up a lot rather than because they were growing particularly. You've had something like NVIDIA where you've just seen this huge surge in revenues and profitability, and again, driven it to be one of the world's largest companies. And that's quite different again from Tesla.

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So, I think that's been responsible for a large part of what's happened in the US. Do we worry about it? Well, it's more, again, going back to we own a very small number of companies relative to the broader market, and it's, are they making progress? Do we see opportunities for them and not worry too much about where the market's going. I think one of the big drivers of value creation within the Scottish Mortgage portfolio if you look over the past 20 years, is that we haven't worried about a top-down asset allocation.

So, if you look at some of the big positions we had in Chinese companies through the 2000s and the 2010s, we had a very big waiting in the US tech sector for much of the 2010s. We just don't view it through that lens. It's, can you find these attractive companies? And where you find the most attractive opportunities that you think are undervalued, then you buy those companies in size and hold them for long periods of time. So, in short, no I don't worry about the level of the market in aggregate. It's thinking about opportunity sets.

CS: And Tom, you mentioned NVIDIA. Somebody's just written to say, the decision to reduce NVIDIA appears to have been well-timed. Can you tell us why you've become less bullish on the stock? Lawrence, maybe I'll ask you to take that one.

LB: Sure. Again, I suppose context. I think one thing that's helpful with NVIDIA, as an example, is we often talk about how trends are driven by a small number of big winners.

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And NVIDIA is, in some ways, the perfect example of that. So, in terms of RORE upsides since we took the holding, it's gone up about 83, 85 times. The initial capital we put in was about £64 million. Because of that outlier upside, we've been able to take out about £1.5 billion of profit effectively. And today it's still a decent sized holding, but it's a much smaller holding. We have around £500 million invested.

And the reasons for that are, I think the first one would be at different points last year, NVIDIA became the world's most valuable company. It became a \$3.3 trillion, \$3.5 trillion. When we were trying to do our scenario now in the sense of what is the upside from here, how do you make several multiples, that became increasingly challenging at that level and that scale, to get a risk reward that looked attractive enough to be the trust's largest holding.

And then I think the second reason was, we were hearing from AI companies that actually, there was a shift between RORE compute driving future performance towards more algorithmic changes. We thought that would have an impact potentially on the level of demand over the very long run. The second one is that the cost of AI appeared to potentially be looking like it was going to change from the training stage to the infant stage.

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And NVIDIA's competitive position is incredible in the training stage, but there is a little bit more reason to think that the infant stage would be more competitive. So, it was those fundamental reasons and the scenario announcements that the feeding in of that reduction. Now, I think a key point is, yes, we've taken down the NVIDIA holding, but actually, our enthusiasm and conviction about the

change that generative AI can bring over the next five to ten years has probably never been higher.

And if so, if you look at some of those reductions, it's gone into companies that we think are going to be beneficiaries of that in a different way, in companies like Meta in advertising, Shopify with their ecommerce tools, and a range of different companies that we think benefit from generative AI as a toolset coming through the portfolio.

CS: So, Lawrence, one of the questions, maybe quite a nice segue from that, somebody's asked, apart from the obvious semi-conductor names, which NVIDIA is one of them, which other upstream, downstream sectors and companies are likely to be the long-term beneficiaries of the current AI boom? So, maybe just your thoughts on that as well.

LB: So, the way of trying to describe it at Scottish Mortgage is that it's three layers effectively of exposure that we have.

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The first layer is the hardware. That's the companies that are designing and producing the chips. It's NVIDIA, it's TSMC, it's ASML, they'll have very dominant positions. There's been a lot of value creation already. That's the hardware layer.

The second layer is the infrastructure layer. That's companies that are helping other companies use and access AI. So, it'd be cloud services, for example Amazon Web Services. It will be companies that are helping the day-to-day space like Snowflake. It will also be companies like Cloudflare that make up this infrastructure layer.

And then the third layer is the application layer. And that's companies that are using AI in the real world as part of their commercial products and for consumers. And there we have companies like Tesla with autonomy, you have Meta with advertising, Shopify with ecommerce tools, and you have Recursion and Enveda where they're using AI to improve drug discovery.

And I think there are probably signs that we're getting more strong today than before, that when we're going around and talking to companies, that they're integrating AI into their business in more meaningful ways than we've heard before, and in more credible ways in terms of the upside and in terms of the cost.

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And I think there's probably an argument that there'll be greater degree of value creation in the application side. And I think that's particularly exciting for us, because we have a range of companies that are in the digital and the software space that are well-placed to use that toolset.

- TS: I think almost with reiterating that point. We're reducing NVIDIA because we don't think they can continue to take the same level of supernormal profits out of the ecosystem. And for that reason, AI gets cheaper, it gets more ubiquitous. The applications become more broader spread. It's a huge shift, it's a 20-year change, and it's going to create massive opportunities. It's a really exciting driver of returns.
- LB: What we're seeing is the dollar cost of intelligence keeps improving, and so the ROI of for those that are using the applications is just getting better. And that's where I think we're starting to see a trend where actually the impact has just grown and grown and grown for everyday companies that are using that toolset.
- CS: Thanks, Lawrence. And someone just picked up that you mentioned you've taken a lot of profits out of Tesla, taken a lot of profits out of NVIDIA. Could you please explain where you put that cash to work? Tom, maybe start off.
- TS: Yes, I'd pick up on one very recent purchase. We made an investment in the private company, Revolut.

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So, we think banking is an industry which has evolved only relatively slowly. And there is a huge population of people whose first experience of banking will be digital. So, we took a holding in Nubank, the Brazilian digital bank, partly on this basis. And now we've taken a holding in a British company, Revolut.

And we think they've really understood how to provide banking as a digital service without the balance sheet exposures that have made the traditional banking industry such a difficult place for it to operate and to invest in. And you can see that model getting real scale. So, they're a big player here in the UK, but actually, the UK is only a relatively small part of their broader business.

And when you have that massive scale, what you can do from the product standpoint, from the quality of the digital experience that you give your customers, I think it's a really interesting story, a really driven, determined founder who has huge ambitions for what he's trying to achieve.

So, that would be part of it. As Lawrence has touched on this point that investing in these companies that sit at the application layer for AI, I think that's another really interesting set of opportunities. And I don't know, Lawrence, maybe you might want to pick up on some of the international ecommerce companies that we've been investing in.

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- LB: So, throughout this year, towards the start of last year, we took a holding in See, for example. There's a few, you start at a high level, what you see is See operates in Southeast Asia. You see the connection there quite quickly, the letters.

Dynamic region of the world, very fast growing, and they're really a digital consumer platform. They started in gaming. They've moved into ecommerce. They have probably around a 50 per cent share of ecommerce in the region.

Give an idea of that dominance, that share is probably higher than Amazon's share in the US. And they have an opportunity, building on the Revolut one, of what we're seeing interesting things in financial services, to offer digital financial services products to the region that hasn't been particularly well-served in the past. And the so that's been a particularly exciting opportunity for us.

We've also put a bit more capital to work in Coupang, more mature ecommerce market with a really efficient logistics network that's being able to take substantial share. We've also taken a holding in BYD. BYD I think is a fascinating company because it provides some of the answer of, Tesla produce truly great cars, but the ability to get cars of around \$10,000 or \$13,000 that are EVs so the rest of the world, particularly to developing markets, is a huge lead.

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And BYD, through scale and ruthless efficiency, are being able to produce those cars profitably and at scale, both in the ferociously competitive Chinese market, but also overseas. And so, we're seeing really great progress there as well.

CS: Okay, so let's stick on China then, Lawrence. One of the questions that came in was, Scottish Mortgage had a huge fall in share price at the end of 2021 and 2022. And if I recall correctly, this was blamed on over-exposure in China. So, what lessons were learned from this? What has been put in place to avoid some more losses in the future?

And then maybe just following on from that, could you maybe just give an update on our Chinese companies, are you overweight China, for example. Maybe just covering that would be great.

LB: Yes, so I think the fall in 2021, 2022, three reasons, historic rise in interest rates compressing valuations, a slow down in some of the adoption of digital products and services as COVID lockdowns ended, and I think the third was China. I'd probably put it in that order of importance. China exposure's come down a lot, so it's around 11 per cent. That will be an overweight, but it's come down a lot. And what we're trying to do is a few things.

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One, we've reduced overall exposure, and that's really in recognition of two risks when investing in China. The first is a regulatory risk. The second is a geopolitical risk. And what we've tried to do is retain some exposure, because I think China still has some of the world's most interesting and innovative companies. It's a

market of near-unique scale. There are two really large consumer markets in the world, the US and China.

It's a market where the companies have shown a huge ability to innovate in ways that are then copied around the world, and you can see that to a certain extent, that ability to innovate unexpectedly, for example is the developments we've seen in DeepSeek. And the other thing we've been trying to do is refine the exposure. So, it's been recognised that there are these regulatory and geopolitical risks, but it's about making sure that if you're taking a degree of risk that you're sufficiently compensated on the upside.

And so, we've tried to concentrate our exposure into a smaller number of companies that we think offer tremendous upside if they're successful. So, effectively give bang for buck for that China exposure. And so today we have about nine Chinese companies. A lot of that is focused in three: Meituan, PDD and ByteDance, all of which are anomalously low valuations but operationally performing superbly well. And so, I think more broadly in terms what have we learnt from China, some of that's talking about that refinement of the exposure.

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But I think it's also ensuring that we're building in the fact that we are in a more geopolitically volatile world, a more uncertain world. And I think that speaks to some of Tom's earlier points on resilience. And we're just have to build those into scenarios that there is a risk that things change in unexpected ways and building that in as we think about those valuations.

CS: So, Lawrence, people online have picked on DeepSeek that you mentioned. A couple of questions coming in, which is, how does DeepSeek's low price matter? Can it transform the portfolio more broadly? So, maybe, Tom, just some thoughts from yourself on DeepSeek.

TS: So, firstly for those that have no idea what DeepSeek is, one of the interesting developments over the past year is these big AI models have turned out, it's turned out that it's quite difficult to differentiate yourself hugely in producing these things. So, OpenAI is the most established provider of AI models but whether it's Claude from Anthropic, or Grok from xAI, or now DeepSeek, you've had these different providers of these capabilities.

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And I think that's a really healthy thing, actually, because it's really competitive and it's part of what's driving the incredibly rapid progress in the capabilities of these AI systems. So, DeepSeek grabbed the headlines for a couple of reasons. Firstly, because you had this AI model that was really at the cutting edge of

capabilities come from a Chinese company, because hitherto it had all originated in the US. And so, I think that's forced a reappraisal of the geographic nature of competition in this market.

But second of all, you had a system which was capable of delivering at a much lower price point than had been available by some of these cutting-edge models already. What are the implications of all of that? Well, I think the lowering of price or the capability that you can get per dollar, as that continues to improve, it just means much wider deployment of these systems that you will get intelligence built into more and more of the products and service that we use.

What does it mean beyond that? I think the question that we've covered already about what does it mean for demand for chips? There'll be more chips needed for running these systems., because if they're already at a level of affordability where we can find use cases, then we move very quickly from using chips to actually run the systems rather than to create them.

I think it changes the prospects of the big Chinese online companies, because they've been limited in their access to this technology.

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The services that they've had have not been as strong as their Western counterparts. You've now seen them catch up, then they can start to deploy this at scale. And I think it opens up the prospect, as well, of a model that we've seen play out in lots of other industries, where you have the tech development happen, and then you see the Chinese pick up that technology and run with it and drive the price down and drive the scale up. And I think that's a really exciting dynamic.

CS: So, you just mentioned something there, Tom, which somebody's just typed in at the same time, which is, staying on China, big tech, Tencent and Alibaba, no enthusiasm anymore. Maybe just a couple of comments on that area as well.

TS: So, we sold out of Alibaba and Tencent, but as Lawrence has mentioned, we have big holdings in PDD, in Meituan, in ByteDance. So, we haven't owned those two, but we have had exposure and retained exposure at a time where everybody else had really given up on China.

We've not been of that mindset. We still think it's, depending on your measure, the world's largest or second-largest economy. It's still really innovative. It still occupies a lot of thought time for us. Now, we sold out to those companies because of some of what Lawrence has talked about, about thinking through what is the multiples of upside that we can make from an already large starting point in a more difficult environment.

But I do think we also have to be open-minded. I think I wrote in the annual report, I can't remember if it was last year or the year before, that we'd sold Tencent, but we think that team is exceptional, but they were just in different circumstances. But I think those circumstances are evolving. So, if we get another opportunity there, I would be delighted.

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Equally, we retain exposure to the Alibaba Group more broadly with our exposure to Ant Financial. That business is doing pretty well. Again, I wouldn't say never, because these are some really smart people. They've got some of the best tech in China. So, we're not wholly against. We just currently don't have exposure in what is a relatively concentrated portfolio.

CS: And, Lawrence, maybe if I can come to you. There's quite a few questions coming in on ByteDance, particularly around the concept of what can it deliver, what's it worth. So maybe just some comments from you on ByteDance at the moment.

LB: Yes. I think ByteDance, in some ways, is one of the more fantastical companies in the world in terms of the scale at which they're operating. It's short-form video social media, but they've shown, and particularly in China, the ability to leverage that position and to provide other products and services tangential to that.

So in ecommerce, they're one of the largest ecommerce companies now. They've developed in local services, and they continue to innovate, at real great pace, of what else that they can do.

I mentioned earlier anomalous valuations for Chinese companies, and if you compare ByteDance to Meta, the valuation of Meta is probably about six times higher. The revenue over the last 12 months is probably relatively similar, and I suspect, ByteDance, that it will have a very impressive growth rate as well.

And so that's some of what we're seeing, and I've put that in the context of some of the things that Tom was saying, is not just good operational performance and innovation, it's also getting that at a price point that is very, very unusual and is in stark contrast to what you're paying for US valuations. And that makes it interesting.

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The other one, building on the situation is always evolving, has been interesting over the last few days. A lot of what kicked off the regulatory difficulties was Jack Ma's speech in October 2020 about Ant, and he was basically effectively kicked out of the country around a lot of that. But to see him invited to a Xi Jinping symposium recently in the last few days and to have photos of him shaking Xi Jinping's hand, I think tells you that there is something that is changing in China

and a recognition that these companies were more important to delivering prosperity, perhaps, than was realised four or five years ago.

CS: Great, thanks.

TS: I must draw out another point on this one, which is around... We've talked a bit about resilience and adaptability in the face of geopolitical developments or Trump. I think it's just a great example of that, right, that, both from the Chinese side and from the US side, you've seen these really breakneck developments. So in the case of ByteDance, it was, TikTok is going to be banned in the US, unless it's sold. And then it was a reprieve with the election of Trump.

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On the Chinese side, the private tech sector has been out in the cold from a political standpoint and under a lot of regulatory pressure. And now Xi Jinping is shaking Jack Ma's hand. So it's really unpredictable, but the good news is, if you're ByteDance, that you've grown rapidly, you have great technology, you have a strong balance sheet, you have good cash generation, and you can withstand that challenging, changing environment.

CS: Perfect. Thanks, Tom. China seems to be a popular topic. Maybe this one bridges two topics which is China and our private companies. So somebody's asked then, Horizon Robotics, what's the story? It's not very well known. So, Tom, I'll come to you on that one. Horizon.

TS: So Horizon makes the chips and the software systems for autonomous vehicles. And this is an area that we've been interested in for a long time. We have exposure through Tesla, we have exposure through Aurora which makes self-driving trucks. And we've also been very interested about how this also plays out in China because, again, geopolitics make it a quite distinct market from other Western markets.

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And our hypothesis was that Horizon could be one of the really important facilitators of autonomy in China. And I think that thesis continues to play out. We bought it as a private company. We've held it for a number of years. You've seen very recently, for example, that Tesla wants to release its full self-driving product in China, but the Chinese won't let the data they're collecting leave China, and the US won't let their AI algorithms be deployed anywhere other than the US. So it's how do you get the compute and the data together. And you can see, therefore, why having a Chinese company could be quite important in this.

And what we like about it, you have leadership who've got real AI credentials. You've got a proven track record in delivery from delivering driver assistance systems, and a clear path to autonomy.

And I think it illustrates the importance of getting to know these companies when they're private, being able to own them through a transition and support them through a transition to public markets, because you really understand the people, you really understand what they're trying to achieve. And it gives you a much better sense on how that underlying opportunity is developing.

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CS: And then maybe just on that, Lawrence, so maybe just pivot to you now, picking on what Tom said there. One of the questions we had come in in advance, actually, was is your investments in private companies actually helping Scottish Mortgage?

LB: I think the answer to that would be very significantly, but also in multiple ways. I think the first way is that it opens up a broader world of insight for us to learn from and try and understand how the world's changing. So it's the ability, for example, to meet a lot of the private companies that are developing large language models that are not public, to be able to meet some companies that are at the cutting edge of AI that might be private.

And if you're not doing that, it's very hard to understand how the world is changing because you're missing half of those conversations and you have less differentiated knowledge to draw on to make your decisions. So the insight is important.

The other form of the insight is, I think we've found it really helpful to get to know companies when they're private a number of years in advance of going public, a bit like you were saying of Horizon Robotics. Because I think that is a more helpful environment under which to get to know companies because you don't have the pressure of it being listed and you are providing, often, primary capital. And I think that establishes a more engaging relationship straightaway.

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So I think through Spotify which we owned before it went public, and how helpful that has been in terms of ensuring it's been a large holding of the trust, Meituan, Wise.

And then I think the third reason is that actually, even the insight aside, there's the ability to generate a very good return from these private companies. And if you look at the companies that Scottish Mortgage have owned, with the top ten in terms of return since we first invested, I think three of them all feature now in the top ten. So you'll have SpaceX, Wise, and Spotify. And I think the upside from them will range from seven to 13 times. So that shows you that there's also an impact in terms of the return that you're getting.

I think we've got to be aware that, in private companies in particular, the market can be cyclical. But I think over the long term, it's a differentiated for Scottish Mortgage, and it's a huge value-add for us.

CS: Perfect. Thanks, Lawrence. Tom, maybe just a quick one to you. Where do you foresee IPOs in the next three years?

TS: Well, you've been through a period where there have been very few IPOs, and that capital market activity has pulled back very significantly. It seems likely that you will start to see that pick up. Interest rates have almost certainly peaked and are coming down. You've seen a more buoyant stock market. Those are usually the ingredients of companies moving from private to public.

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But on the other hand, if you look at some of the really successful private companies, they've been able to access huge amounts of capital without needing to come to the public markets.

So if you take one of our larger holdings in the private space, Databricks, they did a capital raise recently of the order of \$10 billion. That's probably more than they would've raised in an IPO. And they would obviously do that transaction privately. And because of that, there was no pressing need for them to go public. And you've seen that dynamic at other successful private companies. And so if that's the case, then those companies might wait.

But I would tie it to one of the earlier questions about 'why has the SM share price been doing well recently?'. As you've seen a more buoyant environment return to the privates which, as Lawrence said, is cyclical. That is a helpful tailwind, but it's not going to be smooth. It's not going to deliver a very predictable return.

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I can understand the questions about why bother with private because they haven't generated a significant component of our returns over the past couple of years. But if you take a ten-year view, we think, through that period, it will be the underlying operational performance of the business that matters. And we can't predict which year it will be in, but these companies will come public, you'll see that performance in public markets, just as you have with Tempus AI and Horizon Robotics last year.

And so it's just having that patience, having that long-term view, which I think is going to be necessary for our shareholders to generate the returns.

CS: Perfect. Thanks, Tom. Just maybe shifting around a little bit here. Lawrence, maybe I'll put this one to yourself. Please can we have an update on the Moderna holding. Why are you hanging on? What's the outlook?

LB: Yes. So, very briefly, Moderna has a technology platform based around mRNA, and that's the ability to effectively give the body instructions to naturally produce proteins to specific requirements. And the reason why we invested in it is because that technology platform is potentially hugely broad in terms of the amount of ailments that it can address.

And if we fast forward what's happened, I think two things have made it difficult. I think we've made a mistake in terms of our initial holding size. So I think the attraction for Moderna is clear, and it still exists today, but the holding size we had, I think, was, in hindsight, too large relative to the maturity and the long journey that some of those drugs and products were going to have to go on.

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The second is from the company. I think execution's been poor, commercial planning's been poor, communication with the market has been poor. But actually, and this goes to why I hang on, scientific validation has been pretty good. After COVID, they've gone on and developed leading vaccines for flu, virus V, and particularly, their cancer product is showing some remarkable signs. This is a personalised cancer vaccine for melanoma that's been shown to reduce the chance of death by 44 per cent. And so you are seeing that scientific validation come through.

And so as we look forward, we do think, actually, Moderna, it's been a very tough journey, but it actually still has that potential to deliver a very large multiple return and actually be one of the largest healthcare companies in the world. I think that should still represent a small holding reflective of some of the difficulties of getting there and a volatility of the journey. But the scientific validation is why we're holding on. Actually, these products are showing real-world impacts, and it's that possibility for multiple upside that leads to that.

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CS: Maybe just following on from that, I'll put this one to you, Tom. Somebody's just written in, RFK Jr., is his appointment not a massive curveball to all of this?

TS: Well, I think there's the rhetoric, and then there's what actually happens. And you have to go back to the data. And actually, it's been a really complicated picture in vaccines since COVID that I don't think you've had a public response that corresponds to what the data tells you.

And so the undying question is does this remain a political issue, or does it return to being a science-based decision? Because if you stick with the COVID vaccine, it's pretty clear that for certain demographics, certain parts of the population, it makes a great deal of sense to do this, to take this vaccine. For others, it makes less sense. But that scientific logic does not map onto people's actual behaviour.

CS: Perfect. Maybe, again, just shifting out a little bit here, Lawrence, I'll put this one to you. Could the managers clarify the situation regarding Northvolt? Is the company still trading, and if so, has SM retained any of its shareholding in it? Maybe an update on Northvolt would be helpful at this juncture.

LB: So, again, context, why did we invest in Northvolt in the first place? It was because we knew that Europe, along with the rest of the world, would have a huge need for batteries, for electric cars, and then increasingly for storage. And Northvolt was Europe's answer to not being dependent on China and Korea for a lot of that renewable energy and infrastructure. And it was the ability to offer someone that could produce batteries at scale at a decent cost point that was zero-carbon and wasn't dependent on outside supply chains.

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I think very unfortunately for Europe, that hasn't come to fruition. And I think part of the reason is execution, overexpansion, and also the difficulties that the European OEMs who have made less of a success of them electric vehicle lineups than would've hoped.

Where we are today is that Northvolt are going for a review, they've had to cut back on a lot of their expansion plans, their CEO has stepped down, they've filed for chapter 11 in the United States. I think it's very difficult at this point to say exactly what the outcome is going to be, and it's very fluid and fast-changing.

But in terms of how that affects Scottish Mortgage at the moment, last year, as I talked about earlier, we've adapted our valuations to reflect that. So the equity is currently, I think, held at zero, and the convertible is held at \$20 million. And so the valuation has come down to reflect a lot of that.

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But I think there's also a broader context of what we've always tried to say is, we're going to try and invest in some transformational companies. Some of them will not work. Northvolt is going to be one of those. But it's the winners that will ultimately drive the performance because of their outlier potential. And you see that in 2024 because just the mere change in the fair value, so the addition of how much SpaceX has gone up in valuation, has more than offset how much Northvolt has gone down.

And I think that, over the long period, is what really matters. It's about making sure that there's a few very big winners. But to do that each time, we're going to have to take a degree of risk, and we're going to get some things wrong. But as long as those big winners come through, we're confident we can deliver a good overall outcome to shareholders.

CS: Perfect, thanks.

TS: I'll maybe just add quickly on Northvolt. The key to it is, there's \$6 billion of CAPEX in the ground to make batteries. What they need to do is make enough batteries to justify that capital spend. If they can do that, they can use this chapter 11 process to refinance the business, our convertible instrument will have a claim against the value of that business, and you'll likely see that valuation written up over time.

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If they're unable to get the production of batteries up to a satisfactory level, then there won't really be much value to reclaim. So I think Lawrence makes very good points about the philosophy behind it, just on the specifics of what might happen with Northvolt from here.

CS: Okay, thanks for that update. Another one come in here. Congratulations on having the nerve and conviction to hold Cloudflare through the trough without flinching. Now please explain where you think this can go in the long term and what gives you the confidence they will succeed in justifying their enormous valuation. So, Tom, I want to maybe come to you for Cloudflare. Maybe just explain what it does to those that don't know as well.

TS: Yes. So Cloudflare provides infrastructure to support online services. So if you think about it, if you look at online services, you generally have the big cloud players, so Amazon, Google, and Microsoft, and they communicate with devices all around the world. Cloudflare sits between those two things. It doesn't sit at the centre of the network, it doesn't sit at the edge of the network. It sits locally. So it has infrastructure in individual cities.

And why that's important is it allows services to run very fast, very close to the point where you have the device. So I'm not waiting for an Amazon datacentre that's 5,000 mi away. I'm communicating with a Cloudflare server which is very close by.

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And having built out that so-called edge network, there's various services that you can offer. And what Cloudflare has been very good at is actually think about that infrastructure and thinking about the services they can deploy better than anybody else. And you've seen these various products grow pretty quickly.

So to the question, how have we held it, what do we think about what happens from here. Well, one of the reasons we've been excited about it is because we just think there are so many things that they can do. If you like, think about it as their addressable opportunity just keeps getting bigger and bigger.

But as with any enterprise software company, as it scales, you have to think about how you sell the product. And that is a piece that has trapped so many software companies.

So what Cloudflare have done over the past two years is completely, they brought a new head of sales, they've completely reorganised their go-to-market function. And it's very rare that you see a business do that which doesn't see a significant hiccup in their revenue growth over that period. What's remarkable about Cloudflare is it's continued to grow at about 30 per cent despite basically taking the wheels off the vehicle while it's still moving.

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So why am I still excited about it today? Well, because you basically threw that reorganisation of the go-to-market function. So I think the growth can accelerate simply because you've sought it out and brought in some really high-quality people to lead sales. And if you can sell it when nobody's trying to actually do that, then I think the logic is that once you have a good system in place, you accelerate.

And then the other piece is that I think the world has come to Cloudflare. We've talked a lot about AI and inference. So where is inference going to sit? If I want to run a generative AI process on my device, where is it going to be? Well, I don't think it's going to be in that Cloud 1.0 infrastructure 5,000 miles away because I want the answer now.

I think that infrastructure starts to sit at the edge of the network, and Cloudflare has the products and services to be a key player in that delivery of AI to the masses. And so if you look at it as a multiple of today's sales etc., it is very expensive relative to its history, but I just think its prospects are so much better than at any point in its history.

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CS: Perfect. Thanks, Tom. We're at 10:50, so questions are still coming in thick and fast so we'll go to the hour, if that's okay.

Lawrence, maybe I'll just put this one to yourself. Shareholders have experienced a painful few years. Though I understand extreme growth, long-term investing requires riding out volatility. Have you put any measures in place to try and prevent as big a downturn in the future? Maybe just underline the process. Over to you.

LB: So I think part of the honest answer has to be some of the things that we've talked about, that to deliver, I think, exceptional returns within the growth philosophy, there will always be a degree of volatility. And I think that is a cost to

delivering some of those returns, it's why other people don't want to do it or embrace it to the same degree.

Now, how do we reflect on that? I think there's a few things within that that we've been thinking about. I think one would be, actually, if you look back in time, we've probably had a little less exposure to companies like Ferrari which have held for a long time and make it within the top ten. We've also taken a holding in Hermès. And this isn't so much to dampen that volatility, but it is to recognise that there's possibly a broader ray of a couple of business, and this is only a very small number, that have exceptional characteristics, can deliver outlier returns, but are also more resilient across different conditions.

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And so that's been one of the attractions of those type of companies, but they can stand on their own two feet. If you look at the top ten returning companies, Ferrari is up there. So I think that's been one thing that we've considered.

I think the other thing that we've thought about a lot is the resilience of companies, as Tom was saying earlier, and thinking through what leads to resilience in particularly what I suspect is a more uncertain and volatile world. So those are some of the things that we're trying to do and think about, but it's about maximising long-term returns.

Is there anything you'd add to that?

TS: I think you put it well, that we've made mistakes through that process. We own those mistakes and we try and learn from them. But fundamentally, when long-term growth is out of favour, we will do badly, and we're not going to shy away from that, we're not going to hide from that. You could see a scenario where you see significant downside again, but we think it's worth doing because actually accepting that volatility is what drives the long-term returns.

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I think it is worth thinking about the order of the way those returns were delivered. So 2020 was an exceptionally strong year for us, calendar 2020. Calendar 22 was an exceptionally bad year. So 2020 will drop out of the five-year number over the coming months. And so you'll see volatility, what's represented in that five-year number. The full picture will be captured in the ten-year number.

But what matters to us is owning the world's best long-term growth companies, being upfront with people that it will be a volatile ride, but in the long term, we think it's worth it.

LB: I mean, to add, I do think there's a point where if you start to manage the volatility, it's very hard to then remain long term. And if you start to manage the

volatility, you become increasingly like everybody else in the market and your ability to deliver returns that are different, therefore, disappear very quickly.

CS: Well, somebody actually just wrote in, what's this, you're apart from other global growth funds? I think you both just perfectly answered that with your previous answer, but I think there's quite a few around the same topic.

Here, maybe just to bring things to a close, which is around this concept of, what are your favourite new blue-sky themes? What research is most exciting you these days? So I'll ask both of you because I'm sure you'll both give different answers. So, Lawrence, maybe I'll come to yourself first on your favourite new blue-sky themes.

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LB: So I'll give a broader one. I do think it is really interesting how AI has the potential to both create huge amounts of value but also actually destroy lots of value, because that's the nature of disruption. And if you then single that down to a particular area, we talked about financial services earlier. I think it is interesting how you could potentially use AI to deliver financial services that are cheaper and much more affordable for a broad range of people.

So if you think about it today, it can be quite tricky sometimes to more bank. It can be quite hard to know what the best financial product is if you're an individual.

But if you give the example of AI, and David, the founder of Nubank, says this, it becomes a sort of private banker in your pocket. It's the ability to go as an AI agent on your behalf and negotiate with every possible bank, knowing who you are on your financial profile, and get you the best possible interest rate. And then come back to you and say, I got you a better interest rate than you have right now. Do you want to swap over? And you just go, yes, and it's done.

I think it's those types of possibilities that become really interesting and really broad in impact. And banking is one example, but you could run that in a lot of different industries of what AI agents that are able to scan and take in all knowledge and able to act on that, can potentially do.

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And I think one of the impacts of that becomes that AI as a technology set, in the very long run, should actually be hugely deflationary. It should take out costs. And it has the ability to attack quite large profit pools. And I think there'll be a lot of businesses, hopefully the number of which we own the portfolio will be able to take advantage of that, and there'll also be AI-native companies that come along as part of that as well. And I think that is really exciting.

And the final one, just to sum that up, is I do think there's this... You asked about DeepSeek earlier. There's a lot of signs of accelerating technological change. And I think technological progress is almost always going to be a good thing for both how we invest and also our portfolio companies. And so that, I think, is really exciting.

CS: Thanks, Lawrence. Tom, what's your thoughts?

TS: I pick up on robotics. So if you look at Zipline, for example, which is a drone company for doing delivery, autonomous systems, has launched commercially in the US now. I think that's going to be transformational because it's going to lower the cost of delivery. It's going to improve the efficiency of delivery. I think this idea that you wish for something and it appears is going to become reality in very short order.

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I see the same thing happening at Aurora with self-driving trucks. They reiterated this week they're going to be launching in April of this year commercially in the US. We see it in Joby Aviation, this idea that you're going to get electric aircraft. So you can see these real-world physical examples of autonomous system deployment. And we've talked about this for a long time, but you can see it happening in the world today, so I think that's one theme that's material to the portfolio that you can see happening right now.

CS: Perfect. Thanks, Tom. Well, unfortunately, that is us out of time. However, this session has been recorded and will be available on the Scottish Mortgage website in due course.

Before we go, I'd like to remind you that the best way to keep updated on Scottish Mortgage is by signing up to our emails, and you can do so on the website at scottishmortgage.com.

And finally, if you'd like to hear more about our companies, season three of our podcast, Invest in Progress, is now live. So please do subscribe to it and have a listen wherever you get your podcasts, and give us feedback. We'd be delighted to hear from you.

So thank you very much for joining us today and for your ongoing support.

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Annual Past Performance To 31 December each year (net %)

	2020	2021	2022	2023	2024
Share Price	110.5	10.5	-45.7	-12.5	18.8
NAV	106.5	13.2	-39.0	10.1	23.9

Source: Morningstar, total return, sterling.

Past performance is not a guide to future returns.

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