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# *SCOTTISH MORTGAGE – THE NEXT GENERATION OF WINNERS*

*AN INTERVIEW WITH TOM SLATER BY CLAIRE SHAW*

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In this interview, Investment Specialist Claire Shaw is joined by Tom Slater, Joint Manager of the Scottish Mortgage Investment Trust PLC. Shaw sets the scene by describing the trust's unrelenting pursuit of ambitious, disruptive companies and the importance of Moore's Law, before going on to ask Slater about which industries he thinks the big winners of the future will come from. Healthcare, transport, transactions and food delivery appear to be the ones to watch.

*All investment strategies have the potential for profit and loss. Past performance is not a guide to future returns.*

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**Clare Shaw (CS):** Hello, and welcome to the Next Generation of Winners. I'm Claire Shaw, an investment specialist on Scottish Mortgage. Scottish Mortgage is well-known for being early backers of long-term winners such as Amazon, Tesla, and Alibaba. But we do not rest on our laurels and are unrelenting in our pursuit of finding the next generation of superstar businesses, that small percentage of companies that generate outsized investment returns. These are often founder-led businesses that have identified deep structural trends and are on the right side of disruption.

So how do we identify them? Well, this will be determined by the amount of economic and social change that takes place from here and central to this will be Moore's law, the doubling of computing power every two years. What this means in practice is, come the early 2030s computing power should be 60 times more powerful than today and this has huge implications for industries that are ripe for disruption. To discuss this and more, I'm joined by Tom Slater, Joint Manager of Scottish Mortgage Investment Trust. So, Tom, thank you very much for joining us today.

**Tom Slater (TS):** Thanks for having me.

**CS:** So, Tom, in terms of industries that are ripe for disruption, I know that healthcare is one area of particular interest for you right now, especially against this backdrop of Moore's Law. So can you perhaps talk about what implications this has for some of the holdings in the portfolio?

**TS:** Yes, sure. I think what's really exciting about this area is that we've traditionally seen progress move at the pace of the lab bench or the capabilities of individual humans. But as we see technology applied to a greater breadth of healthcare applications, what you do is kick that pace of progress onto the trajectory of Moore's Law.



So you can see that, for example, in genetic sequencing. The number of base pairs of DNA that can be sequenced for a dollar is increasing at an exponential rate. But we see it in other areas of medicine too, and this is tied to the use of data and pulling together genetic data, but also molecular data or phenotypic data, so data about an individual's disease state. If you can tie all of those together, you generate huge volumes of data on which you can run machine learning and generate new insights.

So if you look at our healthcare portfolio, yes, we have some companies that are following a more traditional drug company, drug discovery pathway. You're increasingly seeing companies that are applying technology to address some of these data problems and to just move at a much faster pace in terms of drug discovery, in terms of analysing compounds and analysing the impacts of different drugs on disease states.

So if you think of that in terms of individual companies, the largest healthcare holding in the portfolio is Illumina. That's a very long-standing holding. We think its technology is absolutely fundamental to the progress that you're seeing across a wide range of healthcare applications and these tools are used for sequencing DNA of individuals but in all sorts of other areas.

There are other holdings. So, for example, Moderna which is using the tool of mRNA, messenger RNA, which takes the data in your genome and is used by cells to produce proteins and that's a technology platform which we also think has a lot of potential. But through on to different holdings, ones like Tempus Labs which are really digging deep into this data problem.

So there are lots of ways that we're exploring this area and we think there is huge potential from applying this technology, but also seeing that technology just get better and better over time to produce good outcomes for patients.

**CS:** So that's really interesting and it sounds like it's really the first evidence last year that this industry is really starting to be transformed by these advances in computing power that you mentioned. You mentioned Moderna there and obviously within the healthcare field this is one company that's generated a lot of headlines last year given their success in developing a Covid vaccine. I think one of our colleagues gave us this great anecdote which was, only thinking about Moderna as simply a producer of the Covid vaccine is like thinking about Amazon as a bookshop. It's a huge disservice to the scale of their ambitions and its long-term opportunity set.

So I'm wondering, Tom, if you can elaborate on why we think Moderna's quite a different proposition as a biotech company. You mentioned earlier about companies following a traditional trajectory, but it'd just be interesting to explore how you think their views on scale and how the culture that Stephane Bancel has helped create really drives this goal for Moderna.

**TS:** I think it's fascinating. You mention there Covid-19 and the impact that it's had. One observation I would make is that we have been incredibly reliant on technology advances to address this crisis.

From this disease being identified, it took two days for Illumina's machines to sequence the disease, identify its genetic code and publish that on the internet, and then it took another two days for Moderna to come up with an effective vaccine. The vaccines that are being rolled out globally came from that process with no modification. Two days. The long intervening gap until these things are being rolled out to populations is, first, due process in terms of safety trials and ensuring these treatments are okay to use at scale, and then scaling up the manufacturing process.

But the actual process of discovery itself was really, really short and that is remarkable. It's unprecedented that we can, that technology and science can give us the tools to address this in such a short period of time.



I think what we ought to take from that is that the potential to address all sorts of other areas with this technology is hugely increased.

Now, in the case of Moderna itself, the company has always had very large ambitions. What Covid has allowed it to do is go from an interesting company with interesting science, with interesting technology but in the experimental phase to a company which is generating substantial revenues, has a significant cash position and therefore can invest heavily to commercialise this technology in lots of other areas.

Now, the areas that I think are de-risked by what's happened in Covid the most are vaccines for other diseases.

You mentioned culture and I think this is really important. This is a company which is using this technology which has such broad application and isn't looking to just advance one drug at a time specialising in a particular area, but bring a whole new category of medicines.

So that ambition has been there right from the start, the vision, and the company now has the resources to drive that vision forward. So people think of the stock as one that has benefited from Covid and as Covid is addressed and becomes less prevalent, the company becomes less relevant. Our take is very different. That what has happened has proved the case for a new category of medicines and this company has the vision and the resources to now go pursue a really big opportunity.

**CS:** Absolutely. It's definitely one of the most ambitious companies that we have in the portfolio today. I guess speaking of ambitious companies, I was struck by a conversation that you recently had, Tom, with Keller Rinaudo who is the founder and CEO of Zipline, a drone delivery company. He said to you that he thinks that we at Scottish Mortgage had the most exciting combination of transport companies in the world, which I thought was quite a compliment actually.

Now, obviously a lot of people are aware of our holdings related to the electrification of the automotive fleet. Our holding in Tesla is very high profile. The Chinese manufacturer NIO was actually our best performing electric carmaker last year. But, Tom, I think what's perhaps less well-known is this revolution in the skies that's taking place and enabling us to invest in some really exciting opportunities, everything from space rockets to flying taxis and drone delivery. So I'm wondering, could you perhaps elaborate on some of our newer holdings exposed to those areas?

**TS:** I think this is a really exciting area. The link to the portfolio, and I think this is a really important point to understand, is that we don't really invest in technology companies per se. What we're interested in is areas where the application of technology can enable new ways of doing things, new business models in industries which perhaps haven't seen the pace of progress that we've seen in areas like media or e-commerce.

Healthcare is one of those. It's a really big addressable market, it has its own idiosyncratic challenges, and transport is another. We think as you take ever more powerful software, you take the technologies of electrification and electric propulsion, you can unlock some really interesting possibilities. So take the example of delivery. Our model for delivery at the moment is having people in vans with internal combustion engines driving from delivery centres to people's homes.

But there is the potential to look at solutions that, A, don't involve humans in the driving part of that process, instead we use artificial intelligence, and there is the potential for that technology to be a lot safer than using human drivers. We can also use electric propulsion which will be a much more sustainable approach to delivery because of the much lower carbon footprint. So you can see that in some areas of the portfolio.



You touched on Zipline. This is using autonomous drone aircraft to make deliveries. That is already having really valuable application in healthcare and so it's a company which bridges with healthcare and transport delivering, for example, blood supplies in sub-Saharan Africa. But that technology is very rapidly moving on, both geographically, so they're launching in the US at the moment, but also in categories. So it's moving into the pharma area with Walmart as an example of that.

We also invest in Neuro which does delivery robots, but these are electric vehicles that travel on residential streets and, again, a technology which we think can take significant cost out of delivery models and therefore enable very different behaviours from the ones we have today. Right through to space transport.

We have a holding in SpaceX. What's really interesting about that company is that they're driving down the cost of access to space and not just incrementally but by orders of magnitude. As you lower the dollars per kilogram of cargo into space, you open up huge new applications which are potentially really interesting. One of the first is in telecommunications, so moving away from having mobile phone masts to provide communications access to doing that from satellites. But we think there's all sorts of applications that this enables.

In the same vein, we own Relativity Space and they're using new manufacturing techniques, so additive manufacturing or 3D printing to build rockets, again bringing the cost down maybe for smaller cargo volumes but addressing this really large pool of demand that is being unlocked by lower prices. So there's all sorts of areas within transport which we think are really interesting and where there hasn't been much progress over recent decades but where there are all these tools now that new companies can bring to create new opportunities.

**CS:** Thanks, Tom. It's interesting you mentioned Neuro there because I think their business model is interesting from the perspective that it could have a real positive impact on the food delivery space. As you say, enabling this more cost-effective and scalable solution for the physical delivery of food for their partners and I know the companies, our exposure in the portfolio to companies who have been revolutionising food consumption is well-established.

Our connection with many of these companies goes back quite a long way. If you think we've had Meituan Dianping while it was still private. We've had Delivery Hero from day one as its existence as a public company. But last year you further enhanced our exposure in this field adding DoorDash and Ocado, so I'm wondering can you maybe talk through what characteristics attracted you to these holdings?

**TS:** Yes, sure. I think the food industry is really interesting as we move into this age of digitisation and maybe counterintuitive, but you have to think about how inefficient our model for food consumption is today.

One of the ways into this has been around delivery of prepared food, that actually having centralised kitchens and an efficient delivery network may be more attractive as a model for end consumers and more sustainable and more efficient as well. You also see that in some of meal kit companies, so we own HelloFresh, a slightly different approach, not delivering prepared meals but delivering the ingredients. If you can do that for a million meals a day, you can buy those ingredients much more efficiently, you get much less food waste, again, more of an attractive model.

What's interesting about DoorDash and Ocado is that they are reaching the point where they can bring some of these technologies and actually disrupt and establish infrastructure, DoorDash in the US or Ocado starting in the UK but very rapidly expanding that model.



That starts in delivery of prepared food, but for DoorDash with its increasingly dense delivery network, you can expand into adjacent categories, grocery convenience as examples of that. As you get greater propensity to order, the economics get more and more attractive and the service gets better and better because you bring down those delivery times.

In the case of Ocado, the model of online food delivery that we have here in the UK is actually really quite advanced in terms of its penetration relative to other countries. But what we think Ocado has done is find the model that works for grocery that allows costs to remain very low. You're not paying a significant premium for delivery and you can actually take that, the infrastructure that lies behind that in terms of warehouse automation and the logistics network and apply it in all sorts of other markets.

So markets that have seen much lower penetration of online grocery are now starting to take up this technology and what Ocado can point to is a functioning model in the UK which actually has better margins than the big UK grocery chains through an online model. That's a really powerful example to be able to take to supermarkets in other countries and make it really desirable for them to take on this technology offering.

**CS:** Absolutely. As you say, it seems like the food industry really has seen this huge shake-up by the likes of a DoorDash and Meituan. Delivery Hero really disrupted, as you say, with established infrastructures.

I think another industry which probably suffered from similar archaic and outdated characteristics would be the finance industry. We've long thought that western financial systems were flawed and ripe for disruption. Tom, we're now really witnessing that those traditional banking incumbents are being outpaced by this breed of ambitious, efficient, dynamic, new companies offering faster, cheaper, more consumer-friendly services.

I know you've talked about many examples in the portfolio we have, things like Stripe and TransferWise, but last year we added Adyen to the portfolio so it'd be interesting just to hear your thoughts on, what is it about Adyen that makes you think it has the potential to be one of those outliers that we look for and can deliver those extraordinary returns.

**TS:** Finance for me is an interesting industry when we think about innovation. It's probably the one industry where innovation has generally been a bad thing rather than a good thing. One of the lessons we should take from the financial crisis is too much innovation in finance can be quite a scary thing, but the types of companies we're talking about here are not banks coming up with exotic financial products. They are much more companies that are focused on small business, on retail and providing greater capabilities and more efficient capabilities for these companies.

Payments is in some ways the gateway to that. Small businesses have faced a huge challenge over the past three or five years, which has only been really intensified by Covid. If you're a small retail business, you would probably have some physical premises where customers came to you and bought items at the point of sale and went away. But today you probably have to have a social media presence to actually have those customer relationships, manage those customer relationships. Potentially customers can buy your products over social media.

You probably have a direct online presence where, again, you want to enable customers to buy your products. You probably sell through third party retail channels as well and then you have the physical store. In Covid-19 you possibly had kerbside pick-up, you possibly added in delivery. So you've just had this huge wave of complexity thrown at you and all these different distribution channels to manage and you have to be able to take payments across all of those channels as well.



If you want to manage your business effectively, you need to be able to take all of that data, all of those different channels and actually understand the patterns of your customer behaviour. So there's just been this explosion in complexity and that's driven demand for tools and services that can help you manage all of that. So a service like Shopify might be the starting point that really provides that operating system for managing this complexity and then you look at payment providers.

So something like Stripe becomes really valuable because not only does it allow you to do point of sale, but it allows you to take payments across all these other channels. That can dramatically expand the reach of your business because actually trying to take payments in different jurisdictions or different geographies is a vastly complex process which you can now completely outsource.

Now, that's for small businesses. For larger businesses, these things get exponentially more complicated and that's where a company like Adyen comes in because they can help the biggest retailers, companies like McDonalds, for example. If McDonalds want to take payments in lots of different countries, if it wants the online channel, the huge volume of transactions, it needs some pretty powerful tools that have a level of complexity you don't see for the small retailer.

We think Adyen is doing a really great job of providing that much more complex set of tools and a deeper level of integration with those enterprise customers.

So there's this huge new opportunity that's arisen because of all of these different channels and we think these payment platforms and associated companies as a result have just this vast opportunity in front of them.

**CS:** Thanks very much Tom. I think those examples that you mention really highlight our relentless focus on identifying companies that can contribute towards transformational change and deliver that exponential growth. We do believe that investment returns are concentrated in those small number of companies and our task at Scottish Mortgage is to find those companies, whether they're public or they're private.

So thank you again, Tom, for your time. It's been fascinating listening to your thoughts on everything from genomic sequencing to flying taxis to how we pay for our Big Macs in McDonalds. We'll be bringing you more about the next generation of winners in a series of articles over the coming months which we hope you enjoy. You'll find these on our website and if you are signed up for our email alerts you will receive them that way. So, Tom, thank you very much again.

**TS:** Thanks for the interesting questions and thank you to everybody for listening.

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