

TRANSCRIPT: EPISODE 14

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[INTRODUCTION]

Ryan Lightfoot-Brown (RLB): I'm Ryan Lightfoot-Brown of FundCalibre and welcome to the podcast, investing on the go. We're joined today by Tom Slater, manager of the Scottish Mortgage Investment Trust. Thank you very much for joining us Tom.

Tom Slater (TS): It's great to be here.

[INTERVIEW]

[0:12]

RLB: Can you tell me a little bit about the long-term trends you're seeing in your investments in the portfolio?

TS: Well, so much of what goes on in markets is about whatever today's headline is and we go from being experts in trade negotiations, to predicting the impact of tsunamis, to the outcomes of military confrontations. But actually I think a lot of those things are extremely hard to predict. There are already a lot of really clever, very well paid people who are trying to do it and actually a lot of them are just unpredictable.

For us, we try to focus more on long run underlying trends which actually do seem completely predictable. For example, Moores Law but also if you look at developments in telecommunications networks and this speed of moving data around the world. If you look at the cost of generating energy from solar panels - it's been on an exponentially declining curve. If you look at the cost of energy storage in batteries, it's again on this exponential cost decline curve.

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None of these things are really driven by inventions or technology breakthroughs, they're driven by the application of scale and capital. In that sense they are actually really quite predictable. What we focus on is saying well, if you have some of these trends, which are, almost go so far as to say, inefaceable, what are the consequences of that? If we know that what we're able to do with

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Computers, vision will be vastly better than it is today in five years time. If we know that batteries will be substantially cheaper than they are today in five years time, why would you bet against the fact that we'll move towards electrification of the transport fleet?

Why would you build new coal-fired power stations today if you know that the cost of competing forms of energy generation will be substantially lower in five years time? Actually thinking through which of the companies that are either benefiting from these changes or, in fact, if you look at much of the portfolio, driving these changes and building that future, we think that's a really good way to generate performance for your clients.

[3:11]

RLB: Batteries is perhaps one area we haven't really seen a huge amount of change in the original technology from perhaps it's inception to date. If that's going to be a big thing in five years time do we need a revolution in it or is it going to be an evolution of, like you said, things going at scale?

TS: Yeah, I think the latter. If you look at the progress that Tesla have made in electric vehicles and I think this is a great example - electric vehicles aren't going to come about because the technology somehow was ready and had met it's time. They've come about because of one company and one leader who has pushed through that revolution in electric vehicles and really demonstrated what you could do with this technology. The response from the traditional motor vehicle industry has been cumbersome and slow, I'm sure it will come - I hope it will come.

Change is being driven by a disruptive company pursuing a different model. Even when they launched the Model S, the luxury sedan, it didn't really ring alarm bells across the industry. It was the launch of the Model 3, the mass market vehicle, and suddenly they took a 400,000 preorders in the space of three weeks in the most profitable category of product in the car industry. That's when the boardrooms in Detroit and Munich woke up to the fact that we actually have to implement this change.

[4:36]

So now where do you go from here?

Well, if you look at Tesla's Gigafactory, which is a huge facility producing the battery cells for their electric vehicles, in one facility it will match the entire world output of lithium ion battery cells at the point of the commissioning of the factory. You do that sort of step change in scale and it brings

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down costs. You drive efficiencies in the supply chain, small things like you no longer have to pay import tariffs on bringing these cells over from Japan - that's 2% out of your cost chain immediately. There's all sorts of ways of driving efficiency when you have that scale. And will there be breakthroughs in chemistry and material science? I'd be fairly optimistic that there will, but you don't need those, you need to drive scale and that's what we've seen, that's what's driven this significant improvement in range and performance that you've seen over the past five years.

I think it's pretty predictable that, with continued progress, continued scale, improvements in software, that you follow that type of trajectory and that progress will be much, much faster than you see in traditional internal combustion engines. So the relative position of the two, I think changes really quite dramatically on a five or ten year view.

[6:08]

RLB: And perhaps one of the other technologies we see is going to make a huge change is the implementation of 5G. Do you sort of have any view on where the winners are going to be on that or is it going to be such a big change that it's more about getting any exposure?

TS: It's a really interesting question. I think it's hard to say at this point, if you look at the progress that's been made in improving speed and decreasing latency in these networks. What we've seen to date is the value that's come from that accrued to services companies - it's Facebook, it's Alphabet, it's Alibaba, it's Tencent. It's the companies that provide the services we consume through these faster data pipes. It hasn't generally been in anything like the same way the providers of the infrastructure.

The question then for me is, is there anything that will change that trend of the value accruing to services and then who do you think will provide those services. I think it's reasonably predictable that these big audience aggregation platforms will continue to do well and will be big beneficiaries of faster speeds, but I think it also opens the door and creates opportunities for a whole host of other businesses. So I think we'll see the impacts of that really broadly. I think the companies that will be most challenged by it are those that aren't preparing to take advantage of the new data speeds that we'll see.

[7:46]

RLB: Okay and you touched on Moores Law at the beginning, about the cost of computing power every 18 months, now just 10-12 years ago we didn't even have the sort of computing power you're

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talking about. I mean most people now will be listening now on their mobile phone. Do you think this is going to get exponentially faster or do you still think that sort of 18 month timeline is going to continue?

TS: I think that the whole industry generally is geared towards it continuing at this rate, that's the investment cycle, that's the way the industry works. I think a different way of looking at it is to say in the abstract Moores Law is this concept which we can't really relate well too but think about it in the context of the retail industry.

If I have a physical store, what I can do today in terms of merchandising my products is pretty much what I could do ten years ago. At the margin there's maybe been some improvements, but it hasn't changed dramatically. But if you look at the shopfront of an online retailer today versus ten years ago there's dramatic change: the resolution of the screens, the precision of the images, the detail that you can see, the fact that you don't have to sit down at a terminal with a big monitor to look at it. It's a sleek device you pull out of your pocket that you have with you all the time. You can have real time alerts that can use artificial intelligence to project the clothes onto you that can recognise your face, that the retail experience has got better and better. It's that real work manifestation of the progress in clock speeds and technology that's really shifted the industry.

We're some way into that in retail but I think it has much, much further to go. There are still big categories to unlock but it's all sorts of other industries that have now started to experience that change. Whether that's connecting devices that have historically not been connected to one another, collecting data from sensors across a broad swathe of services and driving the services more efficiently.

Healthcare, a huge one, that again has been relatively slow to change in reaction to new technologies but we think particularly the progress that's been made in sequencing and driving down the cost of genomic sequencing will create massive new opportunities.

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RLB: And are there any other major trends that you're tapping into in the fund?

TS: Well stick with that one for example in genomics, what we're used to in healthcare is that costs go up every year for procedures for tests for doctors, for insurance. The big exception to that has been the cost of genomic sequencing which has fallen a million fold in the past decade.

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That's driving massive progress in our understating on the molecular basis of disease. It's created the opportunity for a whole new different therapeutic pathways and we've seen lots of new drugs enter the clinic which have the opportunity to make a real difference for patients often based on companion diagnostics. So not just trying to give the same drug to everybody, but matching the drugs to the people who will benefit the most from them.

But we also see it in some of the different services that you might be able to provide, so one of our holdings is Grail, a company which does blood tests for cancer. This is something we've never been able to do before because the costs of doing it have been prohibitively high. It's not as specific as doctors would have wanted but, as you follow this trajectory of rapidly improving accuracy, rapidly declining costs, you create this new market which we think will have the potential to be hundreds of billions of dollars in the future. That's one area that I think is quite exciting.

[11:47]

Another [area] would be in the field of autonomous machines, that we've achieved a scale of computer power that we can now drive autonomy into some of the devices that we use. The most high profile and controversial at the moment is in the automotive industry and I think that's becoming a reality right now. I think the real questions are going to be about the regulatory frameworks and how that's governed.

[12:17]

A less controversial example would be our holding in Zipline who make autonomous aircraft, now Zipline's autonomous aircrafts are now delivering blood to patients in need in Sub-Saharan Africa. These supply chains historically have been really challenged in that part of the world because the issue with a shorter shelf life product like blood is either you store it centrally and reduce wastage, or you store it at the points of need. But then you get huge wastage because you have to keep a stock at all these endpoints and you don't know where you're going to need it.

What Zipline allows is you centralise the storage of blood, but then you can bypass the difficult infrastructure and actually get these products really quickly to the places that are needed. They're saving hundreds, if not thousands, of lives already by using autonomous aircraft in this instance to deliver these products.

They're expanding rapidly by geography but also in terms in the types of products that they're delivering so it's not just blood. Something like a rabies vaccine, it has a very short shelf life and

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you need to give it to a patent within 24 hours of them contracting the disease. Again it makes real sense to store it centrally and distribute it. I think that's another really interesting area that's actually moving very quickly.

RLB: Tom that's been really, really, very interesting. Thank you very much for listening. I've been Ryan Lightfoot-Brown and if you'd like to listen to more of our investing on the go podcast please subscribe to FundCalibre.