



# Podcast: How Technology is Driving Global Disruption

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With Portfolio Managers Elisa Mazen (EM) and Pawel Wroblewski, CFA (PW) and Investment Strategist Jeffrey Schulze, CFA (JS)

JS: Hello, and welcome to the latest ClearBridge podcast. This is Jeff Schulze, CFA, Investment Strategist at ClearBridge Investments. ClearBridge is a global equity manager with \$135 billion in assets under management, committed to delivering long-term results through authentic active management. ClearBridge tailors our strategies to meet three primary client objectives in our areas of proven expertise: high active share, income solutions and low volatility. We integrate ESG considerations into our fundamental research process across all strategies.

So, I'm excited to be here today with two portfolio managers on our international growth team, Elisa Mazen, who's head of global growth, and Pawel Wroblewski. And the topic of today's podcast is "How Technology is Driving Global Disruption." Thank you both for joining me in the booth today.

EM: Thank you.

PW: Thank you.

JS: Elisa, it's hard to imagine, but it's been a year since we've had you here.

EM: Wow. (Laughs)

JS: Quite a lot has changed in that year, but some things actually haven't changed. And one of the things that haven't changed is growth outperformance of value. Now, a lot of people think it's just a U.S. phenomenon, but you've actually been seeing it in the international space as well, and ground zero for the outperformance has been information technology. Now I know that your team has a pretty big overweight to information technology; obviously that's a benefit of being an active manager. Can you walk me through how you look for finding these best technology stocks in your portfolio?

EM: Sure, okay. Well, maybe let's first start off with the framework and how we invest in the portfolio. So, as you know, we're growth investors. We're very mindful of valuation and risk, and we construct our portfolios to keep our risk around benchmark level. So, we know that growth stocks can be expensive, they have high valuations, which can bring the potential for volatility if these companies that are investing for growth, including technology companies, perhaps miss sort of market expectation. Risk is something we take very seriously, from stock selection, position sizing, which we think is very important, and portfolio construction, we like to incorporate risk at all levels of our process.

JS: And you even have a risk management team at ClearBridge that even oversees that, so an additional layer.

EM: Correct. So, the stocks that we invest in should always have growth characteristics. That means revenue,

earnings, and trade at a discount to their intrinsic value. So, we invest in high-quality growth stocks, we build portfolios through a systematic bottom-up fundamental process. And naturally we focus on where there are industries and regions where there is more growth, and we underweight areas where there's less; technology is obviously a place where we think that there is rather more. So, while it's true we are currently overweight technology, if you look back at our portfolio, you'll see over time historically the portfolio has always been overweight technology.

The relative weight is a bit larger today. And this overweight has really been driven by relative stock performance, but I think what's important to note is that we actually have been taking some money off the table in some of those stocks as well.

JS: Is it because of the run that technology has had?

EM: It is that, but it's also really trying to understand if you drill down underneath the sector, let's say, allocation, you look at the subindustries. So, within that, there are different levels of risk in each of those different industries. You have internet, you have semiconductors, which is more cyclical, and software.

JS: Semis are more risky, obviously.

EM: Correct. So, where we've been taking actually some money off the table has been in the semiconductor space, which we consider to be cyclical and we consider to be rather topicky. So we have been taking some money off the table, but if you look at the portfolio today, where it's allocated, or relatively overweight is in software. And very diversified among different types of businesses. So we think these are good long-term compounders. They have very different end-market demand drivers. And we feel very comfortable with where our technology stocks are today.

JS: Great. Yes, I think software obviously is an area where you found outperformance in the U.S. space as well, and you think about secular growth themes. You know, themes that are going to go on for 10, 20, 30 years, I think software is going to be one of those areas that you find that.

EM: Absolutely.

JS: So I know that you look at the growth buckets, and you differentiate companies based on their profiles, and you have three different growth buckets in the portfolio. Tell me a little bit about each one of those buckets, maybe the characteristics of them, and maybe a technology company that fits the bill for one of those buckets?

EM: Sure. Absolutely. I think again, when we think about these buckets, each of them, we think, has different risk characteristics, and we want to be very diversified within any sector that we invest in; we don't want to be in all emerging growth, let's say. So we want to have a diversified group of stocks within different sector allocations. So as you know, growth, we believe, is not a one-size-fits-all term. Growth has different sort of risk characteristics.

Now, the way that we think about it is we have three different buckets; we call it emerging growth, secular growth and structural growth. And we think by having a portfolio of sort of a broad allocation in each of those different buckets, first of all it allows us to participate in many different types of market environments, but it also allows us to control risk. So, it has really two functions; it's really to make sure we participate in different market environments, but it also is really a risk control measure.

JS: Right, so if you have a high beta market, I would imagine a lot of the emerging growth stocks are going to outperform, but if you go into more of a risk-off scenario, which the market is prone to very often, maybe the secular growth stories will give you that downside protection?

EM: Correct. So, each of those buckets has very specific parameters as to how large we will let that get. Also when we think about position sizing, which I had mentioned earlier, you'll think about maybe some of your smaller cap emerging market stocks in smaller weights. So, we look at many of these different things.

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Maybe let me quickly describe each of those three groupings. So emerging growth, these are early stage growth companies. There is significant upside if these stocks are successful, but they're riskier and they're more volatile. There are large market opportunities; they tend to be disruptors. Very, very high topline growth, but at earlier stages of their growth, and they invest with growth.

JS: And if they don't have that topline, they can be punished very quickly or vice-versa.

EM: Correct. So, we go zero to 20 percent. And again, it's very valuation-dependent. Secular growth is the largest bucket at any period of time in the portfolio. Well-established companies; winning products or business models. These are good long-term compounders. Revenue growth above the market, but usually earnings growth that is even above revenue growth; 40 to 60 percent. They really do provide stability to the portfolio. And then the residual of that allocation is in what we call structural growth.

So, this includes well-established businesses where we think there is a change in trajectory of earnings from maybe not growing, to growing very quickly, and the market doesn't really correctly anticipate that.

JS: So maybe like a turnaround story. Like there's been some news that's come out that's put maybe a black cloud over the stock; it's taken a beating and it's primed to rebound.

EM: Correct. Within technology, typically we see a lot of some of the secular sort of stories, let's say, in software, as an example, that maybe had stalled in terms of their growth. And then there's some new drivers going on. So, we see them as being sort of structural changes in terms of the earnings trajectory, but there's usually a long-term compounding mechanism behind that.

JS: Pawel, can you give me maybe an example of a stock that falls into one of those three buckets?

PW: Sure, of course. So Temenos would be a good example of a secular growth company. That's a Swiss software developer for the banking industry. Their core product is called T24. It's the most adopted third-party software for banks. And what they benefit from is really an ongoing secular shift from in-house IT systems to third-party software systems. As you probably know, most of the banks today rely on very old inefficient legacy IT systems.

JS: Yes, the Swiss system is antiquated, of course.

PW: Yes, these systems don't allow them to compete with new online entrants. It's very hard for them to comply with more and more complex regulation. So, they really need to cut costs; they really need to adopt more efficient IT systems, and this is where Temenos comes in, but only about 20 percent of the banking industry has moved to a third-party system, so it's very early on, this secular outsourcing trend.

JS: Yes, I think that's a pretty nice growth trajectory.

EM: Right. I mean, if you look at things like the ERP software space, I mean that's typically very well-adopted among many SAPs, etc. You have very, very high adoption rates; people don't try to develop their own ERP system. So, we think that we see a lot of these banking stocks, which generally have been created through multiple, multiple mergers; there's lots and lots of legacy systems. It's really just easier to rip it out and install one Temenos system.

JS: I'm sure it's quite a headache (Laughs) to go through all of those layers, but once you do it, it's a much smoother and more efficient, and most importantly, cheaper proposition.

EM: Absolutely.

JS: Any other examples for the other two buckets?

PW: So, in the structural growth bucket, for example, we have recently invested in a company in China called Baidu. The previous management has made a number of strategic mistakes. They have diversified the business into a lot of noncore assets, and that depressed the earnings and the growth of the company. We're

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really encouraged for the new strategy, new manner which was really cleaning up the portfolio and focusing on AI and search and all the core competencies of the company. So that's why we put it into the structural growth bucket; it's really a restructuring story for us.

JS: So, a big turnaround story.

PW: Correct.

JS: Great. And one area of the world that I think is maybe a restructuring story, if you will, is China. Obviously with the consolidation of leadership for the next five years, a purging of the corruption, leadership is trying to restructure and reorient that economy from more of a manufacturing-led economy to a consumer-led economy. But China, believe it or not, has some of the most dominant emerging technology companies that are out there, outside of Silicon Valley. A lot of these are very key to the Made in China 2025 initiative that Xi Jinping has come out with. And to the forefront are Alibaba and Tencent, so what's really driving this trend?

PW: Look, there are really several reasons why you have so many great tech companies in China. I think first of all, national policies are very supportive. Chinese leadership traditionally has been very supportive to national champions in all sectors, but they want to really develop their own tech ecosystem. Secondly, human talent. China has a large pool of talented entrepreneurs, engineers, scientists and so on.

JS: Well, I think there's been 4.5 million undergraduates in STEM technology over the last decade, which is lightyears ahead of any other country that's out there.

PW: That's true. And if you look at the patent applications, for example, by country, China is already number two, and soon will be probably number one. So, they're really moving on, on the innovation front.

JS: Yes, it's neck-and-neck right now, right, with patents? I think maybe next year they might surpass the U.S.

PW: That's correct.

JS: Just amazing.

PW: Look, also there are other drivers. I mean it's a very big market, so if you have a very successful business model, you scale up very quickly, right? And you have very defensive scale economies. I also think culture and language barriers are important. If you develop a product which is very customized for the local market, you can win. These things favor local companies versus multinationals.

JS: Sure. So, talk to me about maybe Tencent. Tencent is a name that I hear floating around there quite a bit. They aren't just a one-trick pony; they have their tentacles in a lot of different businesses. Why do you like that company?

PW: That's true, that's true. So, look, they are a leader in gaming. China, as you probably know, it's the biggest gaming market in the world, and the fastest-growing gaming market in the world.

JS: I did know that. I'm kind of a nerd.

EM: That's video gaming, not online gaming.

PW: That's online gaming, right.

JS: Well, I don't know if you know this; the world championships at eGaming happened very recently between Korea and the U.S. And the winning team took home \$20 million, and people were paying \$1,000 a ticket to go this event, and that might be even higher than a Super Bowl ticket, so gaming is a very big trend.

PW: Correct. But where Tencent really succeeded is in developing games which are really customized for the local market. So many of their games are based on local characters, local legends and traditions, right? So, they were not able to be produced by outsiders. Their gaming library now counts for about 40 percent of gaming in China. And they develop about 20 new games a year.

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JS: That's a lot of production. I don't know what Electronic Arts does, but I would imagine it's probably less than 20.

PW: Yes, I mean if you look at combined revenues of Electronic Arts and Activision, I think Tencent beats them by a factor of two, so it's way bigger.

JS: Wow. Are they in any other types of businesses?

PW: So, they use the profits from the online gaming industry to develop a number of other successful businesses. They now run the largest social media network in China, called WeChat.

JS: WeChat, that's like the Facebook of China?

PW: It's like a Facebook, right. They also have a type of a Netflix business, which is video-on-demand. They also have music-on-demand, many other ventures where they are very early in monetizing them, so we think there's huge room for growth there.

JS: It seems like Tencent is just staying under one company (Laughs). If you think about it.

EM: It really is. It takes a lot of different types of businesses that we've seen and puts them together in different places. Same thing with Alibaba; there's a lot of different businesses within there, and some of them are at much earlier stages of their growth, so they usually have a cash cow that they sort of take and redeploy into new places, which eventually will continue to keep the earnings and the topline growth growing.

JS: Similar to Amazon.

EM: Correct.

JS: Yes, and isn't Alibaba like the Amazon of China, essentially? Don't they ship a lot of goods and services?

PW: I would say it's even better because their market-share in domestic ecommerce is larger; they have something like 70 percent market-share in China, whereas Amazon here has about 30 percent market-share, so they're much more dominant.

JS: That's amazing.

PW: Right, and earlier in the growth phase as well. Really online penetration is still growing; smartphone penetration is still growing. Chinese are jumping on the smartphones, as you know.

JS: Well they didn't have to go through the brick-and-mortar phase that we did here in the U.S., right?

EM: I mean, that really did allow them to be very successful very early. There really wasn't a well-established retail sort of environment, so it really allowed them to kind of leapfrog that very, very quickly.

PW: Right, and they're also expanding into other regions. They now have some leading ecommerce platforms in some Asian countries. They're also expanding into Cloud computing, into Cloud storage. They have a fantastic online services business called Alipay. So again, it's a very diversified conglomerate right now.

JS: Well, Cloud storage, I know that's a big money-maker for the Microsofts and the Amazons of the world, so I would imagine in the not-too-distant future, once Alibaba goes a little bit more international, that they're going to be bumping up against one another.

EM: Well, really what you're seeing with China is Chinese requiring domestic companies to actually host their products in the domestic Cloud. So, there is almost a natural sort of runway for them to actually drive business for a very long period of time.

JS: Oh, also if you think about what the long-term objectives of this leadership is, One Belt, One Road, there's a whole host of countries and economies that these two leaders will be able to delve into over the next 10 to 20 years. So, I know we talked about a couple of the bigger well-known names that are out there, but your

universe is pretty big. I think at last count, the MSCI ACWI and its small cap equivalent hold over 6,000 companies. That's a lot of companies to be able to go through.

But you have a proprietary quant model that helps you narrow your focus a lot more. So, tell me a little bit about the model. How does it promote a valuation approach to growth and guide you to the best opportunities in technology?

EM: Sure, so we do believe that our factor model is an important tool in our research process, and it really does allow us to set sort of our research agenda for the fundamental work we do. So, everything that we do in terms of buying a stock is really proved out through fundamental work.

But identifying ideas in a very, very large universe of names can be complicated. Across sectors, across geographies, across market caps. So, we really want to understand sort of what's moving. So, a model is really the only systematic way to really understand what's going on with a very large sort of universe of stocks across each different sector, country and market cap.

JS: And to dive deep into 6,000 stocks would take literally an army.

EM: Right, so the way that we've constructed the model is how we like to think about stocks. Again, a valuation approach to growth. So, the model is a multifactor model, and it's weighted roughly 50 percent in valuation factors and quality, and then 50 percent in earnings growth and price momentum. So, it allows us to see a lot of different pieces of data in a very sort of robust format. So, we call it a very data-rich model. We look at this on a monthly basis. We evaluate this data on a monthly basis and we set our research priorities here.

Now, one of the things I'll say, we use the same factors across the sectors, across countries, etc. But one of the things we've done with our model is we've back-tested those factors across each individual sector. We know, as an example, that within technology, valuation doesn't necessarily mean a whole lot. So, we do try to really look at each sector that we're covering and really look at what factors really do express very well and really try to fine-tune that when we are looking at the individual stocks that we're seeing in the model to really identify sort of shortlist ideas.

But there's really no other way to be systematic in looking at the universe beside a model, frankly, and we think every investment process should have one.

JS: And how does it do it? Does it just, like, stack-rank them?

EM: Right. So, we weight all of the factors that we utilize, and then we rank it one to 100. So, with one being the most interesting; 100 maybe being the least interesting. But we actually generally go through the entire model one through 100 just to look and see, because of the data that's provided in that model, we can see even an expensive stock may have really interesting earnings momentum, and we see that in the model. So, then we can look at it and say: Is this a structural story? What may be going on here? So, it just allows us to see a lot of different data points in one very concise format.

JS: And just narrows down that universe, and then obviously you can dig deeper to see whether there's an actual story here and a catalyst that's going to lead to a turnaround.

EM: Absolutely. And then what really helps is to be looking at this every month. How are these things changing, how are they moving in terms of their ranking? Is there something happening up and down, not just with prices, but also with earnings changes? So, it's something that we think is an incredibly useful tool.

JS: Now, if you think about technology, right? And it's all about disruption. Creative destruction, as some would call it. It happens decade after decade, and creative destruction's just a natural part of capitalism. I know you and the team wrote a whitepaper on electric vehicles a couple of years ago as a disrupter, or potential disrupter in the auto industry. What else are you seeing as a major disrupter out there, and are you participating in any of those types of innovations?

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PW: Yes, good question. So correct, about two years ago we have published a note in which we discuss lithium-ion technology and the outlook for electric cars. And in there we argued that electric cars will be disruptive. They're just better. They have better performance and much lower cost of ownership than traditional cars.

JS: Yes, they are very quick.

PW: They're very quick. And it's really driven by the lithium-ion technology, which is an exponential technology which means that it has a very steep learning curve. That means that lithium-ion is improving every year by a factor of 15, 20 percent in terms of dollar cost per kilowatt. So that basically means every year we can build cheaper electric cars. And once you own an EV, of course it is better and cheaper to charge and to maintain.

JS: It's kind of like the TVs a couple of years ago, used to buy a TV very expensive, and then three years later you could get a better TV for even cheaper.

PW: Correct, right. But to be very clear, we are very early at this surging of growth stage here for EVs. EV sales are growing 50, 60 percent a year globally, and that's only about let's say two percent of global sales, so we are really in the early innings of the growth.

JS: The beginning part of the J-curve, if you will. And doesn't China have a very big push to clean up the environment? They're subsidizing a lot of these electric vehicles?

PW: That's correct, they have very attractive subsidies, and now they are pushing subsidies for larger, longer-range electric cars, which will accelerate the growth of the industry. But what we have done, we have actually identified a lot of companies in the supply chain to EVs, which benefit from the growth. So, companies, for example, that supply components to lithium-ion batteries or components to electric motors; that's where we sort of value.

JS: Any company in particular that you like?

PW: So, we have several, but for example, we own a Belgian company called Umicore. They are the producers of cathodes for lithium-ion batteries. Cathode is really the secret sauce of the battery. This is where you can make improvements for energy density, where you can reduce the cost of the battery by tweaking the chemicals, or chemistry of the battery. Umicore right now is expanding their capacity by a factor of six times.

JS: Wow. Wow, and they're probably going to still be behind the curve if you're growing 50, 60 percent per year.

PW: That's probably true.

JS: It's probably nice compounding.

EM: I mean, one of the things that we track is where is electric vehicle penetration relative to those expectations that we set, that we established two years ago? And frankly, they're continuing to beat it. And we think market consensus is actually still behind that, so the market continually does not want to believe that this will be successful, they don't want to believe that Tesla will be successful and so on and so on. And so, what we've been able to do is maintain our conviction on that, track what's happening with electric vehicle penetration across geographies, and really invest in not only the technology sector, but also other sectors.

Umicore is a material stock. We own a company called Voltabox, which is industrial. So, we find a lot of different angles to be able to sort of participate in that growth, rather than just the technology sector.

JS: I think a lot of people forget, too, that it's a lot cheaper to drive an EV when you just need to charge it, versus paying for gasoline. There's virtually no maintenance, because you don't have many moving parts, so last but not least, I think the stigma of an electric vehicle being not cool has been erased with Tesla. They really kind of changed the perception, at least from the U.S. consumer standpoint.

PW: Correct. And the other benefit of EVs, which is emerging now as we have more data, is that they last very long. I mean, because of a few moving parts, that EV can last 300, 400,000 miles. So, way longer than an ICE

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car. So, if you think of fleets and how they think about economics of operating a fleet, they will be shifting to EVs which is a bit of a relief.

JS: And if you get twice as much mileage out of a vehicle, it's obviously going to be a lot cheaper.

EM: Or four or five times. I mean it really changes how you think about the automotive industry; many, many, many things sort of follow on from that. I mean, even the energy space. When you think that gasoline consumption is really driven by cars.

JS: About half of it, yes.

EM: It's something to really consider.

JS: Now, are you doing anything in the robotic space? I know that's a very interesting area for me personally. I'm a big sci-fi fan; I watched a lot of movies as a kid. Where are you seeing disruptive changes there?

PW: Yes, so there's a lot of exciting things happening in the automation robotics. You mentioned what kind of technologies we are monitoring. We're looking at all these exponential technologies, where the learning curve is very steep. So, semiconductor industry was really the most of this one, where this is more slow. But of course, other technologies are also improving every year, like sensors, solar cells, wireless data and so on and so forth.

So, if you think automation, what we are seeing right now is a big penetration of better sensors. Sensors are very cheap. They can be combined with better computing power, with more sophisticated vision algorithms. And you make robots really smart. They can see people around them and they are, for example, safer to work with, with people. So, what it means, we are seeing more applications for robots. They can work in the medical industry, logistics industry, and that drives growth for many companies in the supply chain.

JS: Yes, a lot of people are nervous about robots taking over, but if you look at the countries that have adopted robotics, that Japan, China, Korea, you don't see a lot of unemployment there. Robotics just makes them a little bit more productive.

EM: Well, I think a lot of that really stemmed from sort of the demographic issue that you see in many of those countries, right? I mean, robots really were invented in Japan to really deal with an aggressively aging population, and a lack of basic help. So, the robot really functioned as a helper.

JS: As a need, at the end of the day.

EM: Right. Right, right, right.

JS: I know a lot of these technology stocks, they have high growth, right? So obviously you want to be in front of that, but they do have a lot of risk, if you think about it as well, volatility. How do you manage risk in the sector of IT, and also tell me a little bit about your self-discipline that will offer a support here.

PW: Good question. So, we think of risk all the time. And we control risk on a number of levels, really. On a stock level, portfolio level; we also have corporate risk oversight, as you talked before. On a stock level, of course we have a valuation approach to growth, which means we avoid investing in overvalued companies. We tend to focus on companies with very strong fundamentals, low balance sheet debt, low operating gearing. Companies that typically will do better in a recession. We also set target prices for every company we have, and we react when share prices move up by trimming or selling.

JS: Now, if the information changes, though, that price could change as well, though, correct?

PW: That's right. So, every company has a very company-specific investment thesis, and if the milestones do work in favor as we expected, then we might upgrade the target price and keep the stock for longer. On a portfolio level, we are very careful about position sizes, to adjust the position size of a company to kind of the risk profile of the company. And as Elisa discussed, we want a very diversified portfolio by sectors, by regions, and



also by the buckets of growth, right? So, the more risky companies in the emerging growth bucket will be typically smaller in size.

EM: The other thing that we think about when we think about sector allocations, etc. and not just in technology, is when we look at those over and underweight, we don't make a decision to say: We think we know that this is a great sector, and so we're going to be there. I mean, everything is very built bottom-up.

But one of the things we look at is something called factor risk. So, factor risk is something that it's a risk that you can't predict. Can you predict which way a currency is going? Can you predict which way a country is going to go? It's very difficult to do it. We don't actually think we're very good at that. We do think we're good stock-pickers, so that's what we want to express in the portfolio all the time.

So how do we measure that? We measure that through factor risk. And factor risk versus the stock-picking risk. So, we want to see stock-picking risk within our total risk budget to be at least two-thirds or more of the total risk. So, if we are very overweight technology, or health care, etc. we look at how big, is that really going through our factor risk budget? Is it too high because we have too much exposure in this particular area? If it is, we will look at that and we will bring that back down.

I think what's interesting to note about where our factor risk is today, and where it's trended over the past year, is it's actually been coming down from let's call it about that 30 percent level to even lower. So today, even though we have some of these overweights in certain spaces, the factor risk is currently around 20 percent of the total risk budget.

JS: And I think a lot of portfolio managers, they get into trouble when they think they have a portfolio of something and they have a factor risk that they just didn't see, and it's an outside risk, and it really runs against them. But based on the performance that you have had, it looks like you're managing risk very well.

That's all the time that we have here today. I really appreciate you both being in the booth with me, and again, thank you all for listening. Hope you've been able to take a couple of interesting tidbits away about the IT sector and its opportunity abroad. This is Jeff Schulze, CFA, thank you very much for listening.

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