Magellan – In The Know: Episode 43

The Chipping away at the semiconductor market

Announcement (00:00):

The information contained in this podcast is for general information purposes and does not constitute investment advice. You should seek investment advice tailored to your circumstances before making an investment decision.

Host (00:14):

This is In the Know, a monthly investment podcast brought to you by Magellan Asset Management.

Adrian Lu (00:20):

We've seen a whole lot of excitement around artificial intelligence, and I think a lot of our listeners are probably having a lot of fun trying out all the various chatbots. But what people may not realise, is that these artificial intelligence models often require an extraordinary amount of computing power to run. So, what does that mean for chips? Well, if you need more computing power, you need more chips, or you need your chips to be able to do more.

Host (00:50):

That's Magellan investment analyst, Adrian Lu, explaining how the insatiable demand for computing power is driving increasing demand for chips.

(01:04):

Welcome to Magellan, In the Know. This episode Arvid Streimann is joined by Magellan investment analysts, Adrian Lu and Dom Facchin, to discuss the growth in the semiconductor industry and its extreme importance to the way we all live our lives. It's an engaging conversation, delving into the geopolitics surrounding chip production and its significance for investors.

(01:27):

So, whether you're in the market for a new car, device, or pondering investment exposure in semiconductors, stay tuned. First, here's a warm welcome from Arvid Streimann.

Arvid Streimann (01:40):

Welcome to the latest episode of In the Know. I'm Arvid Streimann, a portfolio manager here at Magellan.

(01:46):

Now, today we're going to be talking about something very small, but very big at the same time, and that is semiconductor chips, sometimes called semis, but we're going to call them chips. Now, they're tiny, but they're absolutely everywhere, and I think that this will be a fascinating discussion.

(02:00):

Joining me today are a couple of analysts who are experts here at Magellan on this topic, Adrian Lu and Dom Facchin. Welcome.

Dom Facchin (02:09):

Hi, Arvid. Thank you.

Adrian Lu (02:10):

Hi, Arvid. Good to be here.

Arvid Streimann (02:11):

Okay, so Adrian, let's start with you. Can you kick us off, maybe, by talking about why chips are so important, and maybe even more important than people think?

Adrian Lu (02:19):

Yeah, Arvid, I feel like chips or semiconductors have really started to gain mainstream awareness over the past three years or so. My benchmark, my gauge, is when I start to hear my dad or my in-laws start asking me about chips. That's when I know that this is really out there in the news, and I think people have really started to pay attention to everything that's going on.

(02:41):

I think it's really helpful for people to think about chips as the building blocks of innovation. So, we've seen so much innovation and progress over the past decade or two, and even the past couple of years, all the developments we've seen around artificial intelligence, we get to benefit and enjoy some of the fruits of these innovations, but it's often easy to overlook the fact that underlying all this, are these tiny bits of silicon that really allow all of this to happen.

(03:09):

So, if we think about things... And from an investment point of view, we like to think about structural growth areas. Examples of that might be artificial intelligence, electrification or EVs as part of that, cloud computing is something that we've talked about pretty extensively, internet of things. And it's great to be able to interface with all of these things. It's great to be able to touch and feel these things, the software, all of these things, they all need to run on something. So, when we think about these structural growth factors, because they need to run all these chips, these are all driving more consumption or more demand for these chips. We can talk about why that's happening a little bit later, but ultimately, for all of these technology trends, we're seeing chips benefit from all of those developments.

(03:53):

So, as investors, we really try to think about, here at Magellan, how companies stand to gain or lose from some of these developments. And that's been the kind of thing that's kept us quite busy, particularly as of late.

Arvid Streimann (04:03):

I think you mentioned a lot of high-tech things there, which use chips, and I'm sure our listeners can relate to your iPhone or your Galaxy and that has a lot of chips in it, but chips are also used in a lot of other things. And can you talk a little bit about that?

Adrian Lu (04:18):

I think a perfect example of that is in the car. We've all seen the shortages that have happened over the past two, three years, and that's largely abated right now. But when I mentioned earlier that the whole notion of chips has captured a lot more public awareness, the automotive shortage was a big part of that. I think we all felt that. I remember a couple of years ago we were looking to replace a vehicle and I went and inquired about a hybrid Corolla at the Toyota dealership, and they told me it'd be a twelve-month lead time to get the car, which was to me crazy to have to wait that long for a replacement vehicle. But that was the norm, and people were really struggling there to get their vehicles replaced.

(04:56):

But I think what it reminds us, is that vehicle functionality is hugely dependent on chips. We may tend to think about some of the mechanical components and the drivetrains that have traditionally been core to the vehicle, but it's actually not just about those mechanical components. There are so many functional aspects of your vehicle that are dependent on chips, even parts that we might take for granted, parts in your safety, that could be your airbags, tyre pressure, traction control, braking assistance, through to convenience features like infotainment systems or your keyless entry, your climate control, sound systems, through to your driver assistance areas like parking and collision avoidance and cruise control.

(05:38):

Then, even in the drivetrain, particularly as we see more electric vehicles, but even in the traditional combustion engines, things like your fuel injection and transmission, they're all related to components that require these seemingly small and insignificant components, but are critical. We ended up in a situation where you would have vehicles worth tens of thousands of dollars being held up by these really cheap components. So, it just speaks to how commodity chips like that could be critical nonetheless.

Arvid Streimann (06:06):

And these chips are even in everyday items like your fridge or your washing machine, and I did read somewhere that in the shortage of chips that Russia is facing because of the international sanctions, they were ripping out some of these chips from these everyday items to put in their tanks. And so I think that's actually quite interesting that these chips are everywhere. And actually at the same time, they're actually very important for military goals as well.

Adrian Lu (06:27):

Yeah, that's a great example. It shows how versatile these things are as well.

Arvid Streimann (06:30):

Yeah.

Adrian Lu (06:31):

And so that's a really big reason why we're now starting to see a lot more governments and countries around the world express intent to build their own chip factories. This whole notion of self-sufficiency or tech sovereignty, for a variety of reasons we've heard them talk about, ranging from economic to political reasons. And I know, Arv, this is an area you spend a lot of time on as well. What are your thoughts on this movement that's happening right now?

Arvid Streimann (06:57):

Right now, I would say that most chips, let's call it three quarters or so, are manufactured in Asia, largely Taiwan, South Korea, maybe a little bit in Japan. And that's a concentration of manufacturing capability in one part of the world. And if we focus on the most high-tech or highest end chips, and they're the ones which cram the most transistors into the given amount of space, 90% of those are built in Taiwan. So, this is a really important region, and I'd say that governments are looking to protect their economic security for a couple of reasons.

(07:28):

So, reason number one is, by building chip factories or fabs in their own countries, these governments are protecting their supply of these chips. And if a country like the US, for instance, if it wasn't able to get their hands on some chips, that would be a pretty big economic impact of that.

(07:43):

So, you talked about the impact on car or vehicle manufacturing, from a chip shortage. Just imagine that was the same thing across many industries. You could imagine the very big economic impact that would have. Now, that's the first thing.

(07:55):

The second thing I would say here, is that there's been incredible gains in supercomputing and AI, and that's made it even more important to have this secure supply of chips. Now, if there is a shortage of chips, let's just say there is, I would say that people are going to be laid off because of this economic impact, or maybe they have their hours reduced. And in every country, and it doesn't matter if you're a democracy, it doesn't matter if you're a dictatorship, unhappy people are going to lead to politicians worrying more about their jobs. And that's the political piece that's driving governments to subsidise the building of fabs in their own countries.

Dom Facchin (08:27):

There's a couple of examples of this happening right now. TSMC, which is the world's largest chip manufacturer, is building two fabrication facilities or fabs in Arizona. And other chip makers like Samsung and Intel are also building or planning fabs outside of Asia. So, in places like the US and even Israel.

Adrian Lu (08:47):

There's been so much activity going on. And on top of that, we've now seen more activity coming up in Japan and Germany and so forth. But Arv, we've seen a lot of encouragement by these governments and ways to provide some economic incentives for these large companies to bring manufacturing onshore in the United States or in places in Europe. What are your thoughts on some of these measures, be it government funding, tax subsidies, do you think it's enough, and how do you think it bodes for increased building activity onshore?

Arvid Streimann (09:20):

Yeah, so I think this is a very important question, because the governments are actually throwing billions and billions of dollars as you know, Adrian, at this problem. Now, a government can subsidise a multi-billion dollar building by offering tax incentives, as you say. And let's just say that building does get built, that fab does get built. Now, you can turn that factory on, but it doesn't automatically start spitting out chips. You need a lot of people in there, highly educated people, people with PhDs, a lot of these people to make these fabs work correctly. And it's not that easy to find these people, because if you think about a country like America, you're actually competing for some very smart people. And these very smart

people can go and work anywhere. They can go work on Wall Street, they can work at Silicon Valley. So why the heck are they going to go work in the middle of Arizona?

(10:03):

So, this is a piece where you'd say, "Well, money's not really going to solve that." Okay, but let's just say that you could get those people in and they did want to live in the middle of Arizona, say, then you have this other problem. And that other problem is this. The cost of those chips that are being produced, is naturally going to be higher than it is in East Asia, Taiwan, because you are subsidising them, and you only ever give a subsidy if the fab plant that you are thinking about is uneconomical relative to what's happening in Taiwan. Because if it was economic, they would be in Arizona already.

(10:39):

So sure, you can build this plant, and if you find the people, and that's going to be a bit of a struggle, but I would say that the cost of these chips is going to be higher than you otherwise would be if you got them from overseas. And that's really the insurance that you are buying. Okay, you're buying an insurance policy, you are paying that extra amount because it's an insurance policy, which is that you can get this guaranteed supply.

Adrian Lu (11:00):

Yeah, I'd agree with that 100%. And to that point, it'll be a good few years before we get to a stage where more material proportion of global ship supply starts to diversify more meaningfully away from that hub of Asia. And the other important thing as well, is around the research and the supply ecosystems, a lot of that has been built around the Taiwanese and Korean supply chain. So, replicating that is also no easy feat.

Arvid Streimann (11:30):

Yeah, and it would take a long time as well.

Adrian Lu (11:31):

Absolutely.

Arvid Streimann (11:32):

Now, I think an important part of this discussion is the demand side. Now, we've talked about supply of chips. Okay, you build more fabs, you get more chips being produced, and so where do these chips go? And I think the question is, and you see this in many industries, if you bring on this supply, who's going to use it all? Because I know in the semiconductor industry, it's a bit of a debate at moment with this semiconductor cycle, and historically you've seen a lot of excess supply, then excess demand, and you've had this semiconductor cycle, which has been, I would say fairly large and from peak to trough. So, what makes you think that this extra supply that's coming on is actually going to be used?

Adrian Lu (12:10):

I actually tend to think of the supply projects within this industry has tended to be demand driven, rather than led by supply. Now, there are exceptions to that rule. So, without getting into the specifics, memory is an example of one segment of chip manufacturing where you can often get the supply lead the demand. But in any case, I touched on earlier, some of the segments that we considered to be these structural growth drivers, areas like AI or cloud computing, and whatever those segments are, I think conceptually it comes down to really a couple of key things that underlie all of this. And I think it's best for our listeners to think of it in this way. Two aspects to why chips will continue to be increasingly used.

One, we're just using more technology, and I can use the past as an example of a way to inform us, which is, you think about the technologies that we carry from day to day. Smartwatches weren't really a thing 10 years ago, nobody was walking around wearing AirPods. And even in areas like computing or cloud computing where we are now using the type of computing resources that weren't available to us in the past. So, that's one. There's just more technology available and we're using more of it.

(13:33):

Now, the second piece of that is, even for those technologies that we already have, we're doing more with those technologies. So, it's not just about the number or the quantity of devices that we have in our hands, but it's also the amount of capability that we're packing into those devices. So, cars are a great example here, I find. It's still the same big thing on four wheels that we use to take our kids to school or get from A to B, but beneath the hood, literally there are a lot more things embedded. I touched on a few of those things earlier in terms of functional capabilities. In fact, when we move to electric vehicles, we can touch on that a little bit later, but that takes it to another level.

(14:16):

I think smartphones is another great example of how we're doing more with the same things that we have over the course of time. You look at the shipments in smartphones, I mean, the market has quickly matured. Smartphone shipments around the world haven't really grown over the past few years, and yet smartphone semiconductor markets have continued to grow at a relatively high pace. Over the course of about five years, from 2015 onwards, the amount of content has doubled in terms of dollar value in a smartphone. So, it's clearly an area where we've seen a lot of innovation take place. And I think Apple's the prime example of how we've been able to pack so much more innovation into essentially the same device in our hands.

Arvid Streimann (15:00):

Okay, so when companies are building things like AirPods or smartwatches and things like that, I think they've got a couple of options here on where they get their chips from, right? They can build their own, do it in-house, or they can buy them from another company. Can you talk about that decision a little bit?

Dom Facchin (15:18):

Absolutely, and Apple are a really great example of a company that started buying off-the-shelf chips and over time began to internalise the design of the chip-making process across all of its devices. Now, they did this first with the iPhone, and Adrian spoke a little bit about that, and they later leveraged this expertise into the MacBook. I'll provide a little bit of background on PC chips, because it's quite an interesting story, and it's a change that happened within the last couple of years.

(15:48):

So, Apple began using off-the-shelf Intel chips for its PC products in early 2000s. In order for Apple to create products that were designed to work with Intel's latest processors, Apple needed to be made aware of the sort of chips that were going to be released several years in advance. And that way Apple could design products to achieve certain performance and battery life outcomes.

(16:12):

There were also physical considerations like whether internal fans were required, which has implications for product design. So, that all seemed to work fine for a few years. It wasn't until 2016 when Intel announced that their upgrade cycle changed from two to three years, and this provided further impetus for a change in Apple's strategy. Now, I know it doesn't sound like a big change, it's just an increase in one year, but increasing the upgrade cycle for chips has real flow-on impacts or business implications for Apple, because they relied solely on Intel processors for their laptop products.

(16:47):

Now, there were customer reviews of overheating on devices, which was largely thought to stem from issues related to Intel's chips. And this impacted computer performance and battery life, which are two key features that really feed into user experience. Importantly, these were problems that the iPad and the iPhone at the time weren't having, as they ran on Apple's own custom processes that was specifically designed for each product.

(17:12):

So, in order to ensure peak performance of Mac laptops, Apple announced in 2020, the production of the M1 laptop chip. Now, these chips are designed differently. They have a certain architecture which is called ARM or ARM architecture as opposed to Intel's X86 architecture. And this architecture along with Apple's system-on-a-chip design, which we won't get into here, that allowed for a far more seamless experience when swapping between tasks on Apple devices. It was more powerful and it was less power hungry than its key Intel peer. So, it was a significant forward. By changing chips, Apple was able to offer more unique, slimmer product designs, given ARM design chips didn't require the same heat-cooling activity that Intel's chips required. So, the key point here that I want people to take away, is that behind this consumer products company that everyone knows as Apple, is actually one of the most advanced semiconductor companies in the world.

Arvid Streimann (18:10):

So Dom, why does Apple go to the expensive effort of designing its own chips when it could probably buy them off the shelf?

Dom Facchin (18:16):

It's really two broad reasons, and those are supply chain management, which has implications for our own assessment of business risk, and the second and most important, and you'll hear Apple talking a lot about this, is controlling user experience. By Apple being able to control and optimise for user experience, Apple are able to charge a premium price for its products, and this is a key input which feeds into company earnings and valuation.

(18:41):

So, let's just start briefly with the supply chain. This change in business or supply-chain strategy in essence, which was moving away from the dependency on Intel's innovation cycle, has allowed Apple to have more influence on chip design. So, by controlling the innovation cycle, Apple was able to develop chips that are custom-made for each individual product. And what this does, is it leads to a better user experience. And the second point is about controlling or maximising user experience, which is one important factor when differentiating Apple's products from its key peers. By offering something that's unique, in this case, a powerful and seamless user experience, Apple is able to attract customers that are able to pay a premium price for its products and services.

(19:30):

Two key quantifiable metrics that we can use as proxies for user experience, are computer performance and efficiency, or battery usage. And on those two metrics, and here we're focusing on the upgrade between the performance of the MacBook Air with the Intel chip, versus the Apple laptop, or the MacBook Air with the M1 chip. So, these are Apple disclose figures on tests that Apple has run, and Apple noted that the M1 delivered up to three times faster central processing unit performance or compute performance, up to six times faster graphics performance, all while enabling up to two times longer battery life.

Arvid Streimann (20:11):

And Dom, are those independent tests?

Dom Facchin (20:13):

Interestingly, these are tests that are designed by Apple for Apple. These are objective measures that we can use as proxies for improved user experience. And I've only spoken about the M1 chip for the laptop, but importantly, we've seen Apple take that same playbook to the watch, the AirPods, and now with the Vision Pro headset.

Arvid Streimann (20:35):

Okay, so Adrian another big user of chips at data centres, and I think of these as just a big building that's full of computers, which we call servers, which themselves are crammed full of chips. Can you talk about how these data centres play into the outlook for chips?

Adrian Lu (20:49):

They're a really big player in the outlook for chips. They've become an increasingly growing share of, call it the chip consumption pie. If you look at Taiwan Semiconductor, up until quite recently, smartphones were the largest part of their business, helped in no small part by Apple and its own custom chip designs. But over the past couple of years, high-performance computing within which data centres are a very large component, has overtaken smartphones for Taiwan Semiconductor, to become the largest component of their business. To use an example today, we've seen a whole lot of excitement around artificial intelligence, and I think a lot of our listeners are probably having a lot of fun trying out all the various chatbots. But what people may not realise, is that these artificial intelligence models often require an extraordinary amount of computing power to run. And so what does that mean for chips?

(21:52):

Well, if you need more computing power, you need more chips or you need your chips to be able to do more. So, as a consequence, we've needed larger and more powerful servers than we've needed in the past. We need more powerful chips, and we've also seen this movement towards an entirely new category of chips, which people can think of as accelerator chips. And here you have things like the GPUs and other chips that companies like Amazon or Google have really innovated on in their data centre, and soon, Microsoft. So, these high-performance computing demands, they pull in a whole lot more other things. So, things that have always been around, but all of a sudden you're needing a whole lot more memory. You need very high speed networking, you need liquid cooling. There are a lot more things that this pulls in to the data centre. So, that's been a very big shift and that's been a big driver of demand, particularly as of late.

(22:55):

But again, I just remind that artificial intelligence is really just one area of this broader transformational shift to cloud computing, which has brought these data centre build-outs to an ever-increasing scale. And we're just going to need a lot more of this stuff if this shift is going to continue, which we certainly believe it will.

Arvid Streimann (23:15):

Yeah, I think so. And earlier we talked about the chips shortages, which are hurting the auto industry, and this, as you mentioned, has largely sorted itself out. But looking forward, how many chips are my new car going to have?

Adrian Lu (23:28):

That's a good question. I wish I knew the answer to the quantity. And I say that, because there is a great deal of variation from one vehicle to another, but I find a very helpful way to look at it, is the value of the chips in your car. I think... I'd seen in the past, even prior to where we are today with all these fancy functions within our vehicle, a typical car might have up to 3000 different semiconductors. Here I may be thinking of just a typical Toyota Corolla, the one I was asked to wait 12 months to take delivery of. But if we look at a modern internal combustion engine or ICE vehicle today, the estimates, it contains about, call it 750, and I'm talking US dollars, of semiconductor content. The equivalent electric vehicle today, by the way, this is not in the future as the chip content will rise, but today will contain about twice that amount.

(24:22):

So, you are looking at, call it $1400-plus of semiconductor content, which is amazing. And a lot of that is actually going into the parts of the vehicle that move, right? So, the powertrain, but also the onboard charging. We talked about winners and losers, and this is where you see companies outside of the traditional high-performance computing areas like data centres, companies in automotive semiconductors, and power and industrial, really take the benefit of this transition to EV.

(24:51):

So, it's similar to smartphones, even if the overall unit demand for automotive vehicles, it doesn't have to grow at some crazy pace for us to really see the benefit when you are seeing each vehicle consume twice the amount of semiconductors in there. As we progress to more vehicle functionality like autonomous driving, we are going to see even more chip functions required, because here you start to encounter things like requiring more sensors in your vehicle for things like collision avoidance and LiDAR sensors and radar communications and connectivity, and high-end processing as well, to the extent that we are running real time artificial intelligence models onboard the vehicle as well. So, it's another lever beyond just the pure electrification of the car.

Arvid Streimann (25:43):

Dom, is this an area that Apple's looking at as well?

Dom Facchin (25:45):

It's a really interesting topic, and we know that they've been doing a lot of work in the automotive area, including in driverless technology, driverless vehicles. It's just not clear how far it's progressed and whether they'll ultimately come to market with something that they'll sell to customers.

Arvid Streimann (26:01):

Okay. Well, keep a look-out at the Apple Store.

Dom Facchin (26:05):

Arvid, Adrian and I have spoken about how we're thinking about semiconductors from an analyst perspective, but could you maybe give us a little bit of background about how you are thinking about it from an investment perspective in the Magellan Global Fund?

Arvid Streimann (26:18):

Yeah. Well, Dom, it's interesting. So I agree with everything that's been said here around the outlook for the chips and the chip industry and everything that's driving the chip industry growth. I think that that's something that we can have a relatively high conviction on. So, that means that it's attractive, and it's

not just the chip makers that are benefiting here. I think Adrian, you did a very good job here of saying, "Well, there's other people that are driving the demand for chips," and they're driving it for a very good reason, maybe generative of AI, and that's a product capability which could create products and probably some pretty good products in the future. But I think that it's very important to figure out where the demand's ultimately coming from. So for instance, companies like Alphabet, which owns Google, Microsoft, and Amazon provide cloud services. They're the three big companies and they themselves generate a lot of chip demand.

(27:03):

So, how do we choose particular companies to put into the portfolio? I'd say there's a three-stage process here, and the first stage is looking at quality. And this is something that I think is very fundamental to Magellan. It's always the first test for us. And if the company isn't of sufficient quality, then it doesn't matter how good the growth outlook is for that company, it's just not going to be something that we invest in. And our investment committee is the gatekeeper here, and ultimately decides on whether a company is high enough quality to make it onto our list. Our analysts do a lot of very deep research and put a report to the investment committee, and the committee decides on whether it's a high enough quality, as I said. So that's the first part.

(27:41):

Then you get to the second part, which I would say is getting conviction around the valuation of the companies. This is really around, well, which companies offer the best risk-adjusted returns? And this goes to many things. It goes to what's the ultimate driver that you're interested in here? Is it the cloud computing, or is it the actual people that make the machines which make the chips? They're very different types of businesses, and you have to be very clear in your own mind as to which one you actually think is most attractive, will give you the best exposure to whatever it is that you think you have the most conviction in. And of course, the company's market position within any of those industries is vitally important.

(28:21):

Then, the third part, which really is a portfolio management process, is thinking about diversification and risk. And what I mean by this is Adrian might come up to me and say, "Hey, I think that I found these five semiconductor-related companies when they're probably all very interesting." But if you have five of these companies in the portfolio and let's just say they're 30% of the portfolio, then you might have too much risk in one part of the portfolio. You might have too many eggs in one basket.

Adrian Lu (28:46):

So are there any companies that you'd like to highlight, that fit what you're describing there?

Arvid Streimann (28:50):

Yeah, sure. So ASML, which is a monopoly in making the machines that are in those fabrication plants or fabs that make the chips. Now these machines are very big and expensive and Adrian, how much do these cost again?

Adrian Lu (29:03):

Well, the modern machine today, you'd be looking at upwards of over 200 million US dollars.

Arvid Streimann (29:07):

Yeah, so that's some pretty big bucks, and that's a very big investment. Anyway, it's very hard to displace ASML within that industry, because the technology is advancing so fast that competitors can't

keep up. Now, if the competitors can't keep up, it's very hard for a new competitor to catch up and then overtake. So, if we're thinking about ASML's market share, it's probably fairly robust. What that means is if they're operating in an industry which is growing quickly and their market share is probably not going to decline much or at all, then they're going to be growing at the same rate as the industry. So, we have a higher degree of confidence that that industry growth rate is attractive. So, almost by implication, that makes ASML attractive, and that monopoly stuff that I was talking about, that really goes to the quality of the company. So, that I think is a very good example.

(29:58):

I want to talk about Amazon as well, and most of the profits, and I would say the value of the company is in its AWS or Amazon Web Services, its business, that's the cloud business. I think most people are probably familiar with Amazon.com, which is its e-commerce business, but it's actually this AWS business which is most of the valuation, most of the share price, if you want to think about it that way.

(30:18):

Now, outside of China, this is roughly a three-horse race with Amazon, Alphabet and Microsoft. But just like with ASML, it's the same kind of argument. If these market shares don't change too much, then all of them should benefit from this very fast industry growth. And if we think about all these companies and Amazon, I'd say that they're also leaders in developing AI, and I think that's going to be a very powerful driver of productivity growth in the, let's call it medium to longer term.

(30:45):

I think that we can have a very high level of confidence that things are certainly going to evolve and they're going to evolve in a very positive way. I would say it's probably going to evolve pretty quickly too. So, you want to find those companies that are at the forefront of that evolution. Apple, which Dom was mentioning earlier, obviously this sells iPhones and iPads and say that these consumer devices are fairly indispensable in a modern life, and it's pretty hard to escape the Apple ecosystem if you're in it. It's a bit like being in Supermax Jail, it's very hard to get out. But I would say also that we're very confident in Apple's ability to grow the amount of money that they make from each of their users over the time. It's not so much about how many new users come in, although that's important, it's maybe becoming more important about how much that they're monetizing each of those customers. If you look through the accounts, it's all about the subscriptions revenue there, and that's what people are focusing on quite a lot. Some of these additional things that they sell, like the AirPods, which you mentioned, they have a lot of chips in them as well, and the goggles as well. So I would say that they're impacted by the semi-industry as well.

Adrian Lu (31:49):

I can confirm that we're definitely living in an iPhone, Apple Alcatraz back home with the array of Macs and iPads littering the household, and AirPods. We're definitely in Alcatraz there,

Arvid Streimann (32:01):

And I think there's a few people in that jail as well.

Dom Facchin (32:03):

And Arvid, do you want to talk a little bit about the risks of investing in some of these companies that are exposed to semiconductor growth?

Arvid Streimann (32:11):

Yeah, sure. So let's talk about the big one, I think, which is Taiwan and something that Adrian and I spend a fair bit of time thinking about. And of course the risk here is that China looks to invade Taiwan or actually invades Taiwan, and that threatens the supply of chips into Western economies.

(32:25):

Now, I don't think that China's about to invade Taiwan, and up until recently, the US never explicitly said whether they would defend Taiwan if China attacked it without provocation. But you may know that Biden recently did say that he would. Now, my logic here is that I think that the US economy is so reliant on chips. So, if there was a military threat to its supply of chips and that led to some economic risks, I think the Americans almost have to try and protect Taiwan. That doesn't mean that they have to send the planes and the tanks in. What they can do, and what they're essentially doing now, is try to deter China from attempting to do this. So it doesn't actually have to go to war.

(33:07):

I think deterrence is a very important part of this, and I think the likelihood of China attacking is a lot lower than what people think because of their economic issues. That's because when economic growth slows, citizens become less happy. I think that if things get worse in China, we all know their economy's under a bit of pressure, if things get worse, I think the government doesn't look to go for some attack in Taiwan to bolster its domestic support, I think that they'd probably look to maintain domestic stability in a different way and focus inward rather than outward. So, I think that's what's happening more recently with the Chinese economy, actually reduces this threat a little bit. So, the Taiwan thing, you can never really know, but I think that that's a low probability.

(33:50):

The second risk that we are thinking about here, is really an economic risk. And for sure there's going to be an economic cycle. We've seen this in the past and there's also going to be a semiconductor industry cycle. But the very strong structural or maybe long-term growth outlook that we've been talking about, means that you can probably look through this cyclical downturn to some extent, okay? You can't look through it completely, but to some extent. I think it gives you a fair bit of leeway there.

(34:17):

Now, what would be more concerning to us, is if there was some oversupply. Let's just say there are many, many of these fabs produced and it was well in excess of the likely demand, then I think you start to get a higher probability of a cycle, which would lead to lower prices, lower volumes, and things like this. So, I think you really need to look at the supply-demand balance.

(34:42):

I think we've had a very good discussion about semis and how we're thinking about semis in Magellan and in the global fund. So I want to thank our two speakers, Dom and Adrian, and our listeners as well.

Host (34:52):

That was Magellan's head of Global Equities and portfolio manager, Arvid Streimann, joined in conversation with investment analysts, Adrian Lu and Dom Facchin.

(35:02):

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