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PRESENTATION

Pradeep Ramani - *UBS Investment Bank, Research Division - Equity Research Analyst of Semiconductors*

Welcome to the UBS TMT Conference. My name is Pradeep Ramani, and I cover Analog Devices at UBS. We're delighted today to have with us Prashanth Mahendra-Rajah, CFO of Analog Devices; and Michael Lucarelli, VP, IR and FP&A. Welcome to both of you.

QUESTIONS AND ANSWERS

Pradeep Ramani - *UBS Investment Bank, Research Division - Equity Research Analyst of Semiconductors*

And maybe I'll start with a high-level question so that you can sort of set the stage here. When I sort of launched on the analog space, one of the fascinating things that I found was that the strategies vary a lot between the analog companies. Some are focused on cost leadership and capital return, others on EV content leverage and -- or others on margin maximization or vertical specialization and so on.

But where I see ADI as being sort of unique is in its ability to blend all of these strategies for a very balanced sort of growth focus. And so maybe as a quick intro to investors who are sort of new to the space, could you elaborate maybe on what is unique about your growth strategy and why this drives GMs that have been best in class for a very long time?

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

Yes. Great. Great. So pretty first, let me thank you for inviting us to the UBS conference and also for adding ADI to your coverage universe. I think I mentioned this to you when I got your initiation report, one of the most comprehensive and thoughtful initiation reports I've seen in a while. So kudos to you and your team for spending as much time on the ADI story before launching coverage.

I think your comment on balance is a good way to think about the ADI story. For investors who have many options in semiconductors and many options in the analog space, particularly, what I would call their attention to is the diversification of our end markets. First, as a highlight for both the defensiveness of our business in just the barriers to entry that we've created across multiple end markets, but also how we are attached to really all of the important secular drivers in this space and the technology investments that we make really are very much in line with what is enabling some of those secular trends.

So for investors who think about Analog Devices, what you get is you get diversification, and then you also attach yourself to all key secular drivers, whether it be electrification, whether it be Factory 2.0, whether it be the communications wireless space, I could go on for a bit, and I won't because it's easier for an investor to read your initiation report. But that diversification and that we play at the high end, which is reflected in our margins, a very strong margin profile, is a reflection of the innovation that we create with our customers. You do not get 70-plus percent gross margins without being able to add significant value to your customers. And that value we create is what drives their growth and what creates, I think, ADI the opportunity to be a growth company with a strong diversified customer base.

Pradeep Ramani - *UBS Investment Bank, Research Division - Equity Research Analyst of Semiconductors*

Yes. And let's start with the growth aspect of it because I find that most interesting about ADI as well. So on your call, Vince talked about double-digit revenue growth in 2022 on top of what has already been a very strong 2021. And you sort of said that there's going to be some catch-up pricing tailwinds in 2022. And just given that you have such a disparate collection of businesses with very different dynamics.

But at a high level, can you sort of parse for us how you get to sort of a double-digit growth type of an environment in terms of pricing versus a volume contribution and more so because we still operate very much in a supply-constrained world?

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

Yes. Yes. So '22 is probably not the best year for us to highlight the strength of our growth story, because we are so capacity constrained. We will have a great '22. And as Vince mentioned, we certainly feel confident about double-digit growth. That double-digit growth is being driven predominantly by volume. So price is an adder, but price is not a meaningful contributor to that volume.

But the reason why I say it's a bit of disappointment is I think most of the industry is going to have a great '22 because there is so much unmet demand. So I think it becomes a little harder to distinguish the great performers from the good performers, when everyone has such strong backlog. And in our case, I feel very good about us being in a strong growth situation for at least 3 quarters. I'm hesitant to make a call on the full year, so I'll make a call on 3 quarters of the year, that for 3 quarters, I think we're going to be doing extraordinarily well. And that fourth quarter is also when we see a step-up in our ability to supply, when we begin to debottleneck some of the constraints we have at Maxim. So if the environment holds, I think you'll see an even stronger inflection in growth in our fourth quarter.

But as you and most of the industry is, we are watching a lot of indicators out there, and I think we do need to be mindful that today's economy is driven by goods versus services. And it is hard to continue driving at this level of growth if the Fed makes a strong determination that they do want to begin to tamp things down a bit. So we should all keep that in mind, but ignoring macro factors, we feel very, very good about '22, and we feel very good about our design win portfolio that's going to set us up for growth in '23 and beyond.

Pradeep Ramani - *UBS Investment Bank, Research Division - Equity Research Analyst of Semiconductors*

And maybe just sort of following up on this. So as we said, for fiscal '22, there's 3 quarters of, call it, pretty constrained growth and 1 quarter of, call it, unconstrained growth. And you sort of get to a double-digit growth number there. What would 4 quarters of unconstrained growth look like in this sort of demand environment? How would we sort of think about it in terms of just how much you're undershipping or because of supply constraints?

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

That's a -- I mean, I appreciate the question. That's a very hard question for us or I think anyone really to answer. Maybe the way to think about it is on two sides of the ledger, right? We've got very strong demand that is being driven by clear secular drivers, the move to electrification, the digitalization of health care, the move to indigenize more of manufacturing be it in U.S. or Europe, so clear secular drivers. We have a strength in economy, which is driven more by goods versus services. That's also underlying that.

We've got a design win portfolio that we have continued to do very well, even during the COVID shutdown where we were continuing to work quite closely with customers on a virtual basis and secured a number of impressive design wins during that -- during sort of the shutdown that happened for several quarters there. So lots of tailwinds have come into this. But we are capacity constrained, and as a result of that capacity constraint, there is a -- there is probably some level of orders that are on ADI that it's tough to measure how much of that is real versus conservatism by our customers. I would say what I would point to as giving us some confidence is lead times have stabilized. So that means that customers are comfortable now with the -- with today's environment, and you don't see that continued sort of build of order capacity. Inventory levels are extraordinarily low, and that bodes very well for continued growth.

But really being able to dissect how much of the growth would be in an unconstrained environment, I like the way Mike says it, is it would be more, but that's about the best that we can quantify at this point.

Pradeep Ramani - *UBS Investment Bank, Research Division - Equity Research Analyst of Semiconductors*

Okay. And with respect to the lead times and the backlog piece, what gives you sort of confidence on your backlog? And maybe can you speak to how much of it is noncancelable? And lead times have stabilized at a pretty -- still at a pretty high level. So how should investors sort of think about lead times, just in context of revenue growth in 2022? And how do you superimpose those two?

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

Yes. Mike, do you want to talk to numbers and then I'll talk to the environment?

Michael C. Lucarelli - *Analog Devices, Inc. - Senior Director of IR*

Sure. So on lead times, you're right. I mean, Prashanth, as we said on the earnings call and Prashanth has reiterated, there is some stabilization over the past couple of months. I wouldn't call it a trend yet. A few months doesn't make a trend in this environment, so we'll see what happens. But I think it actually -- it's actually a positive that lead times are stabilizing. And at the same time, demand's remaining strong, right? The worry always is lead times stabilize, people cut orders, cancel, pushouts, et cetera, et cetera. None of that's happening. The orders remain strong, no cancellations, no pushouts. So that gives us confidence about the strong demand continues as you look into the -- into 2022. And about the second part of your question?

Pradeep Ramani - *UBS Investment Bank, Research Division - Equity Research Analyst of Semiconductors*

Yes, how do you...

Michael C. Lucarelli - *Analog Devices, Inc. - Senior Director of IR*

The backlog side?

Pradeep Ramani - *UBS Investment Bank, Research Division - Equity Research Analyst of Semiconductors*

Yes, on the backlog side...

Michael C. Lucarelli - *Analog Devices, Inc. - Senior Director of IR*

Sure. Sorry. On the backlog side, you're right. What we've done over the past, call it, 6 months, we changed the noncancelable. It used to be 30 days. Now it's 90 to 135 depending on product and market. So that gives us really good visibility into the next quarter. So each quarter, going into the next quarter, we have basically 100% coverage. And our backlog covers most of next year and each quarter we roll into, there's no non-cancellations. So we really feel good about being able to deliver our outlook.

Now where do we kind of get some hiccups in there is supply. It's not a demand issue, it's a supply issue. But we've changed that program to have better visibility into that demand being real. And we think 90 to 135 days is a good conservative value both for our customers and us so we can plan better, without forcing our customers to overextend their commitments to us.

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

Pradeep, maybe just a couple of other things in terms of what we're watching, which gives us good confidence here. So one, although half of our business goes through distribution, we have a data exchange with our distributors that require us to provide weekly input on where are our products going, which customers, which product. So we really look at our data set on a sell-through basis and sort of ignore what happens in the channel in terms of measuring demand first.

Second is we have a meaningful percentage of our automotive business on consignment, meaning that Mike's team in his new FP&A role can go into the SAP system and he can look at what is the inventory levels for our auto parts at key automotive manufacturing locations. And as we've done that more recently, what we would say is that if you look at inventory levels on a unit basis, in consignment, it is down modestly from where it was pre-pandemic, which tells us that our auto suppliers for our specific parts are not building inventory, meaning that they have -- that they're still a bit short in the factories versus what they would have had pre-pandemic.

The other item that we are -- we sort of quantify, a qualitative metric, is we're tracking escalation calls. What are the calls coming in from our customers that are going either to our senior leadership or to the CEO? And our thesis is that when a customer is calling and escalating to Vince to say, I need a part and you need to help me, they're escalating because they're at risk of getting a line shut down, not really at risk of having excess inventory. So these are a number of metrics, and then I would probably add inventory in the channel, not only do we look at what our distribution partners have in the channel, we look at where it is.

So it's not an aggregate number, but we're looking at by disty warehouse what's going on at the geography level. So a variety of metrics that the team is looking at that continue to give us confidence that despite kind of the -- some of the macro clouds that are building, the demand and the mismatch between supply and demand for ADI's products is still strong, and that's what gives us great confidence that we certainly got a couple more quarters before we come out of this.

Pradeep Ramani - *UBS Investment Bank, Research Division - Equity Research Analyst of Semiconductors*

Got it. And maybe we can switch gears a little bit and start talking about the individual businesses, because I like your industrial business. It is sort of -- to put it bluntly, pays the bills. And if ADI has to grow, the industrial piece has to be a big contributor to that.

If you sort of zoom out away from the 2022 picture, would you say that industrial could grow at somewhere around 1.5 to 2x sort of a global GDP number? And maybe one of the things that's probably less appreciated is how difficult it is to get into industrial sockets. And maybe could you speak to the barriers to entry in your industrial businesses? And maybe also speak to the growth dynamics for IA, the industrial automation and instrumentation piece?

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

Yes. Yes, there's a lot in that question, so let's take a few minutes. First, I'm glad you like our industrial business. I love our industrial business. It is really one of the crown jewels in ADI. It represents about half of our revenue and a few dynamics, I guess, for investors who may be less familiar with it. Highly, highly diversified business. So we'll talk about the submarkets that we wrap into industrial. But before I do that, let me characterize a few things.

Our industrial business is where we have our stickiest socket, so a win in industrial has incredible long life to it. On average, Mike, 15 years?

Michael C. Lucarelli - *Analog Devices, Inc. - Senior Director of IR*

Over 15 years.

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

Over 15 years. So I think it's hard for tech investors to really get their arms around, you win a socket in industrial with technology that was developed 20 years ago and you still have it today, and you're still selling that same product. So incredible stickiness to it, which is what allows it to be so cash flow accretive to us.

Extraordinary high margins because it is a long tail of customers, these are customers who don't have the same type of purchasing dynamics as some of our more concentrated or larger customers. And because they don't have those same purchasing strength and dynamics, we tend to do extraordinarily well from a margin standpoint. What makes this business so defensible is the same, I guess, characteristics that make it so profitable. The fragmentation makes it very hard to get into industrial.

Industrial customers are looking for customers and partners who can bring them a more comprehensive solution set, typically built off standard products because they don't have the purchasing volume to drive customized products. So it is where can you bring engineering know-how to help take a group of standard products and develop a solution based off that standard products and give them something that is easier for them to adopt. And once they've adopted it, they don't have the engineering resources to go back and do an engineering change, which is why you have such a long life to it. Now in our industrial business, we characterize a number of segments. I'll let Mike kind of breakdown and size those for you here.

Michael C. Lucarelli - *Analog Devices, Inc. - Senior Director of IR*

Sure. Yes, if you look at what Prashanth laid out, industrial is half of our business. If you look at just the industrial bucket, instrumentation is our biggest piece at just over 25%, and then automation is about 25%. So those 2 make up about 50% of our industrial business. Next is aerospace and defense, which is just under 20%. Health care is right around 15%. And sustainable energy is just below 10%, but a very fast grower and probably close to 10% over the next few years here. And then I'll call other -- the others, the remainder of that bucket, it's diverse by customers' applications, as Prashanth said, end markets.

And the one thing I'd add to what Prashanth said about the pricing power in this market, another differentiator is things we sell into this market cost millions of dollars. So our ASP is small. It's not like a consumer market where you ship a $1 product, something that costs $200. You're shipping $1 product that costs millions. So from that standpoint, they don't care about the price as much, they do about the performance. So you get paid for the performance in this market and it lasts 15, 20 years, right?

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

As a percentage of the bill of materials, we are almost always insignificant, which can be extraordinarily good margins for ADI. But from a customer's perspective, if they're getting the performance, then they're willing to pay up for it quite easily because it's not a real needle mover in the cost of their goods.

I think the last part of your question was on industrial automation. So let's double-click on that for a minute. There is a clear trend that I think is an outcome of this -- of the disruption that we saw from COVID in supply chains as well as, I think, some of the rift that is building between the East and the West, that is causing a lot of our customers to rethink at where they make stuff.

COVID and I think the conflicts with China have exposed that many of our customers have some risks in how they think about enterprise risks that they're now trying to resolve. An easy example for investors to understand is just to look at what's happening in the semiconductor space and the desire to bring so much more manufacturing into the U.S. Now that's getting a lot of profile because there's a lot of publicity around it. But that same trend applies across the manufacturing space, whether it be in pharmaceuticals, whether it be in industrial manufacturing. And that effort to bring more manufacturing into higher-cost locations like the U.S. or Europe, the way to make a factory productive in a higher-cost labor location is through more automation.

That's how you get to the same manufacturing cost versus a very labor-intensive solution that you might have used in Asia. So that desire to do more automation and incorporate more technology to adjust for basically a lower labor content, that feeds wonderfully into our business, whether it be in communications, whether it be in precision controls around safety, power consumption and really all aspects of our business, isolation, I can go on. So it's a trend. Now it's a great trend for us.

The challenge is that this is not a hyper-growth market, right? Companies that build out increased manufacturing capacity do it in a very methodical way. These are very large investments, and they take their time to roll out. So you should think about growth in industrial automation really as a long continued slow burn versus something that you're going to see more peak-ish as you might see in other vertical markets.

Pradeep Ramani - *UBS Investment Bank, Research Division - Equity Research Analyst of Semiconductors*

Got it. And your health care business is sort of one piece that I also wanted to touch upon. I mean, it's approaching close to $0.5 billion even without Maxim. And investors generally view health care as a little less sensitive to the macro and the GDP fluctuations. How do you see sort of the combined strengths of what Maxim brings you together in health care, specifically? And is it -- is your health care growth actually dilutive to your industrial margins? And any color on the trajectory of their growth as well would be helpful.

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

Yes. Yes. Good question. All right. So health care has been a great growth driver for the industrial. I think we are on 5 or 6 years, Mike?

Michael C. Lucarelli - *Analog Devices, Inc. - Senior Director of IR*

6 years.

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

6 years now of consecutive growth in our health care business. And all indications are that FY '22 will be another growth year for the health care. From a margin standpoint, health care is right in line with our industrial margins. As a matter of fact, there is a lot of commonality in components that are sold to industrial customers that serve the same purpose and are sold to health care customers. So a good deal of overlap in terms of product SKUs, where we sell standard products to a long list of health care customers.

What I think is particularly exciting for us on health care as we look forward is we're going to continue to have great growth, driven by the performance of our products in what you consider big iron, large pieces of equipment, items that are really more applicable for hospitals and health care center environments, and that's really been kind of the core of much of our business growth.

We're going to -- but what's more exciting, I think, is as COVID has shown the effectiveness of remote health care, we are seeing an incredible amount of start-up activity in this space, an extraordinary large number of health care or device companies that are experimenting with different ways to bring quality-level clinical measurements in a remote location, so that can be coupled with the virtual or the Zoom doctor experience that is now becoming quite prevalent. And so now I think those 2 will merge. But for us, I feel very much like we're an arms supplier because we are feeding all of these startup companies. We're not sure which one is going to be successful. But if we continue to lay the landscape and continue to get our products designed in, some of those are going to become the unicorns of the future. And when they grow, we're destined to grow with them. So that's an exciting space for us.

Maxim, particularly, I would say one area that I think we're pretty interested in is they have this concept of nanopower, right? The ability to really control the efficiency of power at a very -- at a remote kind of battery-level consumption. And with health care devices, as we begin to incorporate more remote monitoring and sort of Internet of Thing-type devices in the health care space, that battery consumption and that optimizing power is a nice complement to the precision measurement and the sensing that ADI was already bringing to this space. Mike, anything you would add to that?

Michael C. Lucarelli - *Analog Devices, Inc. - Senior Director of IR*

On the second, on the -- Maxim also brings some new VSM or vital signs monitoring sensors and technologies as additive to our portfolio. So as you think about more health care from anywhere or health care from the home, we have more solutions to sell to those customers across precision, signal chain and also sensing with Maxim and Power, as Prashanth laid out.

Pradeep Ramani - *UBS Investment Bank, Research Division - Equity Research Analyst of Semiconductors*

Okay. And switching gears to comms. I mean, comms has always been sort of a lumpy business. But just given your strength in comms, I mean, just the competitive positioning with your data converter franchise and transceiver franchise, do you think in the near term, so for 2022, comms could probably be one of your fastest-growing businesses, just given the tailwinds you were seeing from 5G? But do you see sort of any impact from the FTC and FCC sort of conflicts on the views around 5G adoption and so on impacting ADI?

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

Yes. Okay. So the -- when -- first, let's take a moment to describe our comms business, right? We have a wireless business and a wired business. Our wireless business is really built on, as you mentioned, kind of that franchise of having a software-defined transceiver. Now this business does have some lumpiness to its growth. And that's largely because our customers tend to do a design solution, then do a build-out, do a deployment and then restart the procurement for the next build-out. So it moves in lumps because of how -- the procurement process.

The -- but when you look at it over a period of time over multiple quarters, then you can really see that underlying growth quite clearly. It's a business that has had some challenges from a growth standpoint over the last couple of quarters because of what's happened in China, right? We've had some significant challenges related to our ability to sell to certain customers in China, which has put a challenge on the overall growth of the business. But as we look forward to '22 and while we feel good about FY '22 being a growth year is the growth in '22 and '23 that we've modeled in is really coming from outside China. We're going to continue to see the 5G deployments in the U.S. and in Europe. We're already beginning to get the order activities for more of the orders for more 5G deployments in the U.S. Have we named the customer on that, Mike?

Michael C. Lucarelli - *Analog Devices, Inc. - Senior Director of IR*

No, not yet. I'll take that one. Our press release is coming out tomorrow about our next-gen transceiver and a lead customer with that, so you can wait for that for tomorrow.

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

All right. Thank you. That was not a setup. I had actually forgotten about that press release. All right. So that's on the -- that is on the 5G side. Now for us, when we think about 5G, a couple of things come to mind. First, we have extraordinary share in 5G. And that when I think about the phases of that 5G deployment, you're going to continue to see in '22 and into '23 5G deployment through the traditional large wireless infrastructure manufacturers who serve Asia, ex-China as well as U.S. and Europe. We are also beginning to see more design activity in the O-RAN space. And that is another growth vector for us as more wireless providers are looking to white box their solution using an O-RAN architecture, and that also is extraordinarily good for our business, and frankly, good margins for us as well. I would say better margins than we get on the -- that we get through the infrastructure guys.

And then the third phase of that, which is at the very -- I wouldn't say very early, but early design phase because conversations with customers continue to go on, and we're beginning to see some of the activity is around using the 5G technology for private communication networks and as alternatives to other communication protocols out there or other communication methods out there.

So not in -- not being used for mobile or cellular, but really being used for companies that want to architect, whether it be remote monitoring or just from a manufacturing standpoint or infrastructure standpoint, private communication models. So I think that this 5G portfolio that we have built has several years of growth to run, and it will be unlike what you've seen with 3G or 4G, where it sort of peaks and passes and the next technology rolls, because there are more legs to how this is going to deploy out.

On the wired side, I think most folks think in the data center, and I would talk about the combination between ADI and Maxim. So ADI's strength is in -- is 2 areas: optical, so really think about the metro long-haul switching capabilities as well as in the data center with using the linear portfolio to help manage on the board itself. Maxim adds really our capabilities in the data center. And as you continue to see more demand, and I think yesterday's outage at AWS, it's just another great example of how there has to be more spend in this whole infrastructure space. And our share position, the combination of ADI and Maxim, as we continue to have more build-out in data centers, is going to bode well for the growth of our business into '22.

So circling back to the top of the house and your question on will comms be our fastest, it wouldn't surprise me if it is our fastest. But I don't know that we have enough visibility given supply constraints, whether that would be an area that's going to get a disproportionate share of our products to allow it to be our fastest growing.

Pradeep Ramani - *UBS Investment Bank, Research Division - Equity Research Analyst of Semiconductors*

Anything to add, Mike?

Michael C. Lucarelli - *Analog Devices, Inc. - Senior Director of IR*

No, I think Prashanth did a great job outlining that business, both on wired and wireless side. I think you talked about the China, rest of world dynamic. I think we've talked about that in previous earnings calls where over the past year, what's happened is our business in comms has tilted now more to rest of world. It's probably about 80%, rest of world; 20%, China. And in our outlook for a strong double-digit growth year, our assumption is China is kind of flat. If it does better, we'll do better. But it's really unknown at this point, so we'll see. But we don't need China to grow our business, which is different than it has been over the past couple of years.

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

Right. Our growth in '22 for comms will be like the rest of our business. It will be constrained by capacity.

Pradeep Ramani - *UBS Investment Bank, Research Division - Equity Research Analyst of Semiconductors*

Got it. So maybe we can shift a little bit to, I guess, the automotive side and because I think Maxim sort of -- they built a very impressive automotive business and almost from the grounds up. And they have sort of doubled the size of your BMS business is what you've said in the past. And my sense is that Maxim has sort of turned out to be a lot better than most people would have expected at the time when the acquisition was announced and the macroenvironment [it's on].

So could you sort of speak to where you are specifically on BMS, along with Maxim? And as a percent of your TAM and sort of baseline the TAM for us, and give us an idea of like how -- what percent of your -- what share you have in BMS?

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

Sure. So for folks who may be less familiar, BMS is the battery management system. And the role of BMS is to help regulate and identify where in the charge cycle is the battery, keeping it from overcharging and keeping it from zeroing out. So the precision in which you can measure that battery charge translates into additional range on the vehicle. And that is why ADI, these legacy products, have such a strong position, particularly with full EV. It is because we have the ability to measure the precision of the battery charge at a level that's meaningfully better than our competitors.

And therefore, our customers stretch the use of their batteries to the -- further to the edges, and that allows them to push their products to a longer range. And I guess, I would say as a general observation, when you look at a full EV, those full EVs that have a -- are being recognized for being extraordinary good in their range, you'll usually find ADI is behind that. The ADI-Maxim combination now provides us a pretty significant share position in BMS. I think we are -- we're estimating that we are over 2x that of our closest competitor. So there really isn't a #2. I think you'd consider ADI-Maxim #1, and then there's -- #2 is pretty distant to us.

The other comment I would make is that when you think about electric vehicles, there's really 2 categories you should think about. There is full EVs and then there's hybrids. Today, hybrids make up a larger number of vehicles, but the battery content and the BMS dollar content on a hybrid is considerably lower, but you make up for it on volume. For full EVs, you're going to have a much larger battery stack and therefore, a lot more semiconductor content. But to date, there have been lower production volumes of full EVs.

But as you look forward and you look at any of the press releases from pretty much any major OE, you see that they are all moving to more and more full EV solutions. So the mix, although electric vehicles themselves are growing faster than ICE, even within electric vehicles, the growth is going to be disproportionately in favor of full EV versus the hybrid. And that full EV is really the sweet spot for ADI. Today, we have -- I think we have 7 out of the top 10 selling full EVs. And that share position really is a reflection of the performance that we create, which when you've got a full electric vehicle, performance matters because that translates immediately into range and we see that in our -- in the demand and the design work that we have with our customers.

The other product that we're talking about related to BMS is our wireless BMS technology. So we have re-architected how customers design their battery stacks. And what wireless BMS allows you to do is you create a battery stack and the communication among the batteries is now done wirelessly versus through a very dense and kind of robust wired network. What this allows our customers to do is a lot more flexibility to how they design vehicles. One battery stack can be much more easily modified for different vehicle shapes and styles. We have one large customer, General Motors, which has been extremely public about how the Ultium battery, which is built on ADI's wireless BMS technology, gives them a significant advantage in moving that battery stack from a sedan to a pickup truck to an SUV, without the same level of engineering effort that's required.

That wireless BMS technology has been adopted at another very large OE. We haven't named that customer. And I would personally be quite surprised in a few years if you don't see a majority of the full EV customers adopting wireless, just because the value proposition is so compelling for them.

Pradeep Ramani - *UBS Investment Bank, Research Division - Equity Research Analyst of Semiconductors*

Anything to add, Mike?

Michael C. Lucarelli - *Analog Devices, Inc. - Senior Director of IR*

Yes. I mean, I think the one thing I would add, if you look at our business for how big is BMS for us, it's about 15% of our automotive business is electric vehicle or BMS, which is it's significant. I think there's very few companies out there that have that much EV exposure, and it's probably -- not probably, it is one of the fastest growing...

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Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

It is. The growth rate has been phenomenal.

Michael C. Lucarelli - *Analog Devices, Inc. - Senior Director of IR*

And that should continue. That will continue to grow as a percent of our overall business and of our automotive bucket.

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

So BMS in the quarter that just closed, Mike, BMS doubled...

Michael C. Lucarelli - *Analog Devices, Inc. - Senior Director of IR*

Last year. Over last year.

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

Yes. Over last year.

Michael C. Lucarelli - *Analog Devices, Inc. - Senior Director of IR*

So '21 growth versus '20, on a normalized basis, meaning ADI and Maxim pro forma, it doubled. And there's no reason to think it can't continue. I don't know if it doubles every year, but well above, call it, 20% growth is definitely doable.

Pradeep Ramani - *UBS Investment Bank, Research Division - Equity Research Analyst of Semiconductors*

Great. And one of the angles that investors look at when they look at EV is the content leverage from the power side is obviously much more. And however, the aspect that's sort of, I think, less appreciated is the margins are a lot better on the BMS side. And the opportunity -- I mean, it is much harder to sort of commoditize all new entrants to come into the power side, especially from other geographies. Now just given that China is actually driving a lot of what's going on in EV, can you sort of speak to the efforts there to sort of localize the EV component supply chain and how you are thinking about your position related to that?

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

Yes. Yes, great question. So maybe the -- I'll state the obvious here, but the underlying challenge in electric vehicles is range, right? How much energy can you put in them and then how far can you get before you have to recharge? So anything in the vehicle that is drawing electricity, you are taking away mileage in return for anything else, whether it be your infotainment systems, your lighting, whatever.

So having high-performance power products across the electric vehicle all matter because it translates into additional range. And where -- what is Linear's strength and the business we bought when we acquired Linear is that high-performance power management, the ability to really be super efficient in the use of energy. And so that is what positions us so well for the growth that we're going to see in full EVs.

In China, I think you're correct in that there will continue to be an effort, given the importance of electric vehicles to -- strategically to the Chinese, that there will be -- continue to be an effort by the Chinese to indigenize parts of that vehicle manufacturing. Certainly, they're going to continue to invest in batteries and motors. There's a variety of areas that I expect that we will continue to see them look to indigenize.

We are not as concerned really at the BMS level and at the high-performance level, because these are areas that we've been competing with local competitors in China for decades really and nothing changes there. It is the performance that matters because that performance translates into range. The biggest obstacle continues to be range anxiety. Can I make it to my next location before I have to charge and that plays to ADI's strength.

So I do think that there are players in the semiconductor space who have more standard products, more standard performance products that are going to continue to face pressure. Some of them, I think, are already facing that pressure and struggling with some of their China growth numbers. But that's a reflection of where can you localize and where can you not.

Pradeep Ramani - *UBS Investment Bank, Research Division - Equity Research Analyst of Semiconductors*

Great. And if we sort of step back a little bit and just look at ADI plus Maxim a little bit more holistically and in context of what ADI has typically done in the past, I mean when I look at your track record, you have a very solid track record of growing acquired businesses. So the Hittite acquisition was a great one. You doubled the growth rate. And Linear is also, I believe, the growth rate has doubled.

Would you -- just given that Maxim has sort of been changing the nature -- the structure of its business, even before restructuring and moving away from sort of the consumer piece, even prior to the merger, if you sort of assume a low single-digit type baseline growth for Maxim, would you say that you're in a good position to sort of double that and maybe put some time lines around that as well? Or is the bar much higher, given just what a high-quality franchise Maxim already is coming into ADI?

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

Yes. So I thank you for setting us up for our April Investor Day. So we will -- at our Analyst Day, we will talk about the new operating model, and we're going to specifically double click in on how we are going to grow the Maxim business and kind of the targets around that. So I don't want to get in front of that now, except to say that we feel confident that there are meaningful opportunities for us to pivot Maxim to more growth, just as we did with Hittite, just as we did with Linear.

We know ADI's customer engagement model is the one that our customers want. We've already been really inundated by calls from customers to ensure that we're going to be moving Maxim over to that model. We are making investments, meaningful investments in capacity. We talked about that in the earnings call, particularly in Beaverton, where Maxim has a significant manufacturing presence to expand their ability to supply.

So we're coming up on the end of our time here. So I don't want to go over here but to say that we feel very good about our ability to grow the Maxim business. We'll share more about what that model looks like. Our goal is that we have a franchise here that's $10 billion in revenue, over 70% gross margins. We do not require additional OpEx investment to continue to grow this franchise. So very accretive to cash flow, and we'll talk about how we're going to drive the top line growth of that franchise. And I think there that it's pretty hard to find an investment option that has our scale, our defensive position and our growth opportunity with our profitability.

Pradeep Ramani - *UBS Investment Bank, Research Division - Equity Research Analyst of Semiconductors*

Great. Since we're out of time, I'd like to thank Analog Devices and Prashanth and Michael for spending time with our clients today, and we look forward to continuing the dialogue. Thank you very much.

Michael C. Lucarelli - *Analog Devices, Inc. - Senior Director of IR*

Thanks so much.

Prashanth Mahendra-Rajah - *Analog Devices, Inc. - Senior VP of Finance & CFO*

Thank you.

Pradeep Ramani - *UBS Investment Bank, Research Division - Equity Research Analyst of Semiconductors*

Thank you.
