ADI.OQ - Analog Devices Inc at Nasdaq Virtual Investor Conference

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Great. Well, thanks, everyone, for joining. This is Craig Hettenbach with Morgan Stanley. Very pleased to be hosting Analog Devices. Prashanth Mahendra-Rajah, CFO; and Mike Lucarelli in Investor Relations. So welcome, guys.

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

Good morning, Craig. Thank you for having us.

Craig Matthew Hettenbach - Morgan Stanley, Research Division - VP

For sure. And I guess just before we start off, I just have to remind people for disclosures, you can see them at the morganstanley.com website, /researchdisclosures.

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

Yes. I think Craig, (inaudible) back at our fiscal '20, which just ended in the end of October, we saw a pretty substantial change between the first half and the second half. I -- that gives me encouragement as we go into calendar year '21 that things are -- really from our business standpoint, the environment is improving, and we're optimistic that fiscal '21 for us will be a growth year.

Craig Matthew Hettenbach - Morgan Stanley, Research Division - VP

Got it. And then as you think about fiscal '21, I mean, any particular end markets that you're most excited about from a growth? And are there any markets -- I know some of your markets actually hold up pretty well despite the downturn. Could you see some moderation? Like what are some of the puts and takes by markets?
Prashanth Mahendra-Rajah - Analog Devices, Inc. - Senior VP of Finance & CFO

We're a very broad business. And investors who know us understand that we pretty much serve all the end market for technology is an element of their manufacturing process. But as I think about '21, I would probably rank order in terms of robust growth for next year: automotive, #1; the industrial markets, #2; consumer at long last will be #3 in a growth market for us; and then communications, just given the tough compares, will probably be fourth on that list.

Craig Matthew Hettenbach - Morgan Stanley, Research Division - VP

Got it. And then maybe moving over to margins. The business performed very well through the downturn, profitability in particular. I know in the earnings call, you guys talked about kind of variable comp coming back in. So can you maybe just set the tone from kind of where you are today and how to think about the progression as you go through 2021?

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

Yes. So maybe I'll tell -- talk kind of the full margin picture there. So our operating model is -- or investor model is for gross margins to be north of 70%, and we're confident that '21 will be in that model range.

OpEx, on a year-over-year basis, is going to be up largely driven by 2 items. During the pandemic, we made a decision to (inaudible) merit increase to our organization during a period of uncertainty where it was unclear what demand would look like. Given how robust the second half of the year has been, we reactivated that merit increase towards the end of our fiscal year. It was not retroactive, but it was on a go-forward basis. So that is one piece of headwind that we'll have going into '21.

And in addition, our variable comp is designed to be a pretty significant shock absorber. So it will swing down as it did during the first half of the year under the -- some of the compression we were under with the global economy. It's coming back now in the quarter and in the (inaudible) as well. And then I would add, as we look forward over '21, we're likely to have another piece of variable compensation come in, in the April time frame, Mike? Could that be -- yes. So I think around April, the next piece of it. So a little bit more lift off of the Q1 guide and then sort of flattish through the rest of the year.

Op margins, I think Vince and I have said this many times, but we feel very good about the level of spend that we have in OpEx. And so outside of the merit increases that are really driving this, that op margin spend and that R&D spend, we feel, really well sized. So with revenue growth, we (inaudible) and incremental operating margins. Given that we're also a relatively light user of our cash, all of that flows out through free cash flow.

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

I think, Craig, at a high level, we guided to 40% operating margin for 1Q. And given what Prashanth said, there's a little more OpEx uplift in 2Q, but gross margin also would get better throughout the year. Net-net, op margins to get progressively better as you go through fiscal '21.

Craig Matthew Hettenbach - Morgan Stanley, Research Division - VP

Got it. Great. I appreciate that color. Maybe on the gross margin point, I know you guys have talked about some of the savings as you consolidate Linear's footprint. If you can just give an update there, like when will we be at kind of run rate savings? And what does that do?

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

Yes. So for investors who may not be familiar with us, our investor (inaudible) is [postmarked to be 20%]. And we feel good about that for FY '21. I sometimes get the question, how high can gross margins go? And I would guide folks think about that as we are really focused on driving that
operating margin. So it is striking the balance between where gross margins are, how much we spend to kind of make sure that we're getting incremental op margin leverage.

As we go into 2021, we have the tail end of shutting down 2 facilities that we acquired as part of Linear. And those should be completely shut down by the second half of 2021. There's one in Singapore. There's one in California, Northern California. We're in that phase right now. So that will all be incremental to gross margins as it has been for the second half of 2020.

And then on top of that, I would also expect utilizations continue to improve as we roll through FY '21 as volume is continuing to look fairly robust here as we look at '21.

Craig Matthew Hettenbach - Morgan Stanley, Research Division - VP

Got it. Understanding investors always want more, but 70% is not a bad place to be from a gross margin perspective.

Great. Maybe we can move on to Maxim. I really would love to get your thoughts on just strategic for us, so we can kind of contrast as we move on to some of the deals you've already done. But just if you can just level set people for kind of Maxim, what the appeal was there and what it really means for ADIs to go out in time?

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

Sure. So in July, we announced the acquisition of Maxim for an all-stock deal value depending on where the stock price is at any given time, but let's call it $21 billion. Maxim is the third significant acquisition in ADI's history. We purchased Hittite Microwave, which brought us some tremendously valuable RF capability, which we've now really integrated across the product portfolio. We purchased Linear, which brought us a Power products platform, really focused on the broad market. And now Maxim really helps increase some of our vertical market capabilities. It gives us power opportunities or applications in the vertical as well as some very exciting automotive and data center applications in the vertical.

So we're very excited about the complementary nature of Maxim to the series of acquisitions that we've done over the last couple of years in giving us both greater scale as an enterprise but also greater scope to serve our customers.

It's early days now. We're still in the regulatory approval. So the amount of integration discussions that we've had are fairly limited. But I think I can comfortably say that all of the interactions and the engagement we've had with Maxim since the deal announcement have only further emphasized that this is going to be a great combination.

The partnership that we're seeing with the employees of Maxim, what we're learning about their business and how well it's going to complement our -- some of our strengths is -- it gives me just more and more encouragement that this is going to be another really good deal for ADI shareholders.

Craig Matthew Hettenbach - Morgan Stanley, Research Division - VP

Got it. And if I think about power management, I mean, Linear certainly was an area where it really propelled you in that segment. Maxim, like you said, has some -- in addition to broad markets has some application specific, which is nice. But how much this kind of scale come into play in terms of resources and what you're able to do in terms of drive your longer-term growth?

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

Yes. So good question. I think that one of the strategic underpinnings for the Maxim deal is the access to Maxim's analog engineering talent. We've been talking about this thread for a couple of years now. And it see -- it shows no sign of slowing down.
Analog engineering talent is becoming a very scarce commodity in the world. We continue to see at our customers that as some of their analog engineering resources approach retirement age, they are replacing that talent with a different skill set. They’re pivoting their R&D dollars and their OpEx dollars into digital areas where they’re bringing in machine learning, software algorithm skills, and they’re relying on their supply base to provide more of that analog engineering capability.

In the universities, we are not seeing an increase in the amount of engineering graduates for sort of the core analog electrical engineering. Most of the growth in the [EE] departments you’re seeing go more into the computer engineering and computer science areas. So all that’s creating an environment where having the country of the best and brightest analog engineering talent not only helps us with our product innovation, but it really helps us engage with our customers and continue to be their source of engineering expertise to solve their analog engineering problem.

So as we look at the Maxim acquisition, one of the elements that I mentioned that we’re excited about is adding that engineering talent to ADI. And I think when all is done, Mike, we’re going to have over 10,000...

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

Yes.

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

Over 10,000 engineers across ADI, and that’s a very exciting prospect for how we’re going to be able to focus those engineers on areas that today we simply couldn’t get to, given the constraints that we had in managing our P&L.

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**Craig Matthew Hettenbach - Morgan Stanley, Research Division - VP**

Got it. And maybe we can wrap up on Maxim before we get into some of the end markets. But certainly, the Linear Tech deal has gone well. So how much of a factor does that help as you kind of prepare for another acquisition?

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

It certainly helps a great deal. I think for investors who know these companies and for those who have talked to it, this is a very different thing, right? Linear was a phenomenal acquisition. It had a very unique culture to it. I think that Maxim’s organizational culture and values are probably a little closer to ADI’s than what we experienced with Linear.

So I expect, one, we’re more experienced on how we do acquisitions and we’re also acquiring a firm that is more like us than not. And so I’m very confident that this is going to move along pretty swiftly. We also now have more of a real kind of center of influence in Silicon Valley because of Linear, which makes that integration with Maxim even more smoother than it would have been with Linear where we didn’t have a stronger presence out there.

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**Craig Matthew Hettenbach - Morgan Stanley, Research Division - VP**

Got it. Excellent. So maybe we can shift to some of the end markets. And starting with industrial, your biggest market. Certainly, your diversity has served you well this year in terms of some of those puts and takes, and it’s performed well. On a more secular basis, how do you view some of the growth drivers? Like what are you really excited about within industrial to drive growth?
Prashanth Mahendra-Rajah - Analog Devices, Inc. - Senior VP of Finance & CFO

Yes. So Mike, do you want to take that one? Go ahead.

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

Yes. For sure, yes. Actually, there's a lot of secular growth drivers within that diverse market. I think one I'll call out is factory automation. It's been a market that's been really under pressure for the past 2 years.

Look at our revenue in automation. It peaked in 2018. It's been down every quarter year-over-year for the past 2 years. It grew for the first time in 4Q year-over-year, which have another nice growth quarter in 1Q for us on a year-over-year basis. And to give you some context, it's down almost 40% on that quarterly run rate it was in 2018.

And if you look at that market, there's more demand today and as more customers are moving to more robust supply chains, more localized supply chains, ensuring more connectivity on the supply chains. There's no reason to think as you look out the next 2, 3, 5 years that we don't have a new peak in the factory automation as there's more factories being built and more content per factory that we supply into those factories. And that is one I'll call out.

But as you said, it's all different business. We have aerospace and defense. We have more content going in there. We have space. You see new legal applications, legal satellites going up in the air there. Instrumentation, everything out there that needs to be tested, 5G needs more testers than 4G. So there's more content there. So really, industrial is a great market. It's very broad and diverse, and there's different additional silicon you need per application within the industrial market.

Craig Matthew Hettenbach - Morgan Stanley, Research Division - VP

Got it. Maybe we could just follow-on that, particularly factory automation in the talk of kind of industrial 4.0, and you touched on some of it. But just do you feel like you have all the pieces in terms of where the growth is? And how much does that help you from a content perspective as we go forward?

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

Yes. I think that when we think about factory automation, it is a really broad set of products, but what are the kind of core skills you're trying to bring. So you are -- in the automation space, you need the sensing to -- as you have humans and machines working in close proximity, safety becomes paramount. And having the ability to use our technologies like time of flight and others to be able to know where you are from a position standpoint so people aren't getting hurt as factories are running is a key element.

You've also got significant power that is being consumed, and you want to be able to isolate your employees or protect your employees from the high voltage that is used to run these machines. And our isolation, digital isolation technologies become very critical there.

We also have voluminous amount of data that is being generated. And you need to move all that data into environments, more so cloud now than kind of the traditional back-office factory servers that used to run. And moving all of that up requires that high-speed communications link, which we also provide.

So number of different areas that I think are all fitting really well into what analog technology and ADI specifically are bringing to that space. And I think what makes us quite unique from our peers in this space is deep domain knowledge, really deep domain knowledge. We have spent time over years, maybe decades even building our understanding of working with our customers in these spaces. So we understand the problems that they're trying to solve. And that I think is it's more than just creating components and parts that these automation customers want to purchase.
It's the partnership in knowing what problems they're trying to solve as they instrument out or introduce more advanced technologies. Anything to add, Mike?

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

That's a good recap of automation. It's a lot of different content, a lot of different options on the factory floor. Cobots as an example, cobots and humans that are going to interact more closely together, you need more sensing technologies around that cobot. And that's what we can supply to those customers.

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

Deterministic Ethernet, the ability to really kind of use that Ethernet framework down to kind of IP addressing for specific factory equipment, which really kind of is a re-architecture of how you wire up and connect factories. There's quite a bit of exciting stuff going on in that space. There hasn't been the production environment that's created the demand. And I think so now those 2 are coming together.

The technology in factory automation is advancing. We have the demand environment as GDP continues to grow. And now you have this drive to onshore, both in the U.S., Europe and in other countries, and this onshoring only makes sense if you can solve the labor arbitrage, right? You don't get the benefit of using more attractive labor in developing countries. So how do you solve for that? You have to automate your factories.

Craig Matthew Hettenbach - Morgan Stanley, Research Division - VP

Sure. Excellent. Maybe we can switch over to comm. And you mentioned for 2021, you do have tough comps, right? That business performed well. But if we put the comps aside, just from a high-level growth perspective, particularly around content, can you just remind us of some of the trends you're seeing from market share and content in 5G?

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

Yes. Sure. On the market share side, I’ll say our market share there have been higher or more balanced, which is very important. We have a very good market share across the ecosystem. But Huawei aside, that's a different ballgame very well because of the restrictions there. Our revenue to Huawei in '21 will be 0. It was, call it, 2% to 3% of the total sales or 10% to 15% of comps in '20. So that's a tough compare we're talking about.

Let's talk about the guys we can ship to. We are very good and high share there with our integrated transceiver technology. We continue to innovate in that transceiver technology, adding new features to it to increase our content per system. If you look at what is the content per system, what's happening in 5G is in 4G, you have 4 radios or 8 radio channels per base station. That's up to 64 now. So as channel count increases, we need more of what we supply, both on the transceiver side, also on the elevated front-end switch side and on the power management side.

So there's a lot more content to be had, and our share is more balanced. So as a result, if you look at 4G, we grew about 5% or 6% CAGR through this life cycle. There’s no reason to think in 5G over that, call it, next 5-plus years, we should grow well above that 5% CAGR.

Craig Matthew Hettenbach - Morgan Stanley, Research Division - VP

Got it. How about from a geographic perspective? I mean, China initially led the charge. In 2021, how do you see the different regions kind of spending coming in?
Prashanth Mahendra-Rajah - Analog Devices, Inc. - Senior VP of Finance & CFO

I think we would expect that China is going to continue to have some spend. I think that we will have more clarity on that -- on the Chinese deployment probably in the February, March timeframe, probably a little later than usual, just given kind of the transition that's going on with the U.S. administration. But in terms of outside China, the markets that we're excited about, Korea, is going to be an opportunity for us. And then the U.S., more likely in the second half, second half calendar year of '21 will be moving into their deployments.

At this point, our view is Europe is probably going to push to '22. There's just -- it still seems a bit fragmented. There's no doubt that Europe will deploy. But given there is a large number of carriers and still sort of a fragmented distribution of how the -- how that market is developed today, I'm not sure we'll see that in '21, maybe '22.

Craig Matthew Hettenbach - Morgan Stanley, Research Division - VP

Got it. And then I feel like one part of comm that gets overlooked just because there's so much attention on base stations is the wired part. Can you maybe just touch on some of the growth drivers there? And then also perhaps how Maxim comes into play because I know they have some interesting capabilities as well?

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

Sure, I'll get that. So our wired business, we are the leader in optical control path from, call it, data center to data center or service providers and carrier networks. One optical control path is it modulates the laser I just transferred. And over long medium to long haul is where it's really where we play.

And you're right, if you think about 5G, it's a virtuous cycle. As you pull more data on the air in the base station, you need more backhaul for that. And that benefits our wired business. And we had a good year for wired for us in '20. We think '21 is going to be another good year for us, given more of our data center being built and there's more data out there, whether it's 5G data or just any sensors out there. So that's a long-term growth driver as well for us. You're right. I would say wireless gets all the airplay. But on the wired side, too, it's a good growth market and very good -- pretty healthy gross margins as well for that business.

And on the Maxim side, if we look at Maxim, what we do, we did a more metro long-haul data center stuff. That is a lot of intra-data center connectivity. So it's very complementary that way where different reaches, both optical, but very complementary of how far those reaches are; and two, what Maxim has that we don't have is processor power. So they do power management for servers and data centers. And that's a really big growth market as you see more and more server density per server farm.

Craig Matthew Hettenbach - Morgan Stanley, Research Division - VP

Great. We can segue into consumer. Prashanth, you made the comment after a long time, right? It's been a bit of a drag. But how do you think about that market as it recovers? What's a reasonable long-term growth rate? And what are some of the drivers?

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

Yes. Consumer, for us, we have repositioned our consumer business to really be very similar to our analog -- sorry, our industrial. And by that, I mean, a large number of customers where the portfolio is pretty broad across that group. And so as we think about 2021 and beyond, we'd be looking for consumer business in general to kind of get back to GDP plus. We have de-risked kind of that single-source or single-socket customer risk that we've been dragging for the last couple of years.

So now as the business continues to grow, it will continue to grow in portables as well as in prosumer, but we're talking about multiple sockets across those dimensions and some pretty interesting technology that we were beginning to introduce more into consumer, including time of
flight, including some of the Linear power management capabilities now that we've been able to bring in ADI manufacturing to help them drive the cost of those products down. So multiple growth vectors. So we're excited about consumer over the coming years.

Craig Matthew Hettenbach - Morgan Stanley, Research Division - VP
That's great.

Prashanth Mahendra-Rajah - Analog Devices, Inc. - Senior VP of Finance & CFO
With FY '21.

Craig Matthew Hettenbach - Morgan Stanley, Research Division - VP
Excellent. Maybe we can move over to autos. You guys have had early leadership in BMS, and then you announced wireless BMS this year. So looks like you're continuing to kind of lead the market from a technology perspective. How important is that from a wireless BMS? And what's the initial customer reaction?

Prashanth Mahendra-Rajah - Analog Devices, Inc. - Senior VP of Finance & CFO
Yes. The customer -- well, maybe I'll take a minute for the -- for investors who may not be familiar just to level set on what is wireless BMS. So the BMS product is used to measure the charge in batteries. And for most investors, you probably know that you don't want to drain your battery to 0 as it can impact the life of the battery very meaningfully. And obviously, we can't charge it. You don't want to charge it over 100% because that could create a safety risk.

So measuring the charge in the battery so that you know where that charge is, is mission-critical for the BMS system. Our product, well recognized by all the manufacturers as being the most precise measurement, allows the auto vehicle manufacturer to really stretch the limits of the charge, which allow them to get more range out of the vehicle.

So in a full EV solution, you're probably aware that range anxiety is one of the big obstacles that vehicle manufacturers are trying to help consumers overcome. So by stretching that range, it makes a real difference to the adoption of electric vehicles.

What wireless BMS does is it takes the wiring harness that is used to connect up all those batteries and makes it a wireless solution. And that gives you a couple of big benefits. One, by making it a wireless solution, the -- it allows vehicle manufacturers to have a much more flexible design of their battery packs. So if you think about, I have to design a battery pack for a sedan, for an SUV or a pickup truck, what that battery pack looks like is going to be different in each of those solutions. And with a more traditional wired structure, you are designing a different pack for each of those vehicles.

A wireless solution allows you to use a platform-based approach, and it really helps you on your engineering costs and your [homologation] time. We've announced one large customer publicly, General Motors. They're not our only customer but one large customer, General Motors, has been public that they're using our wireless BMS in their Ultium battery line. We have another very large customer who we're not naming at this point who's also adopted. So we feel pretty good that this is going to continue to pick up speed, and we're going to continue to see adoption over the coming years. And as electric vehicle penetration continues to grow, this is really going to position us well.

You add to that our great infotainment business, where we have this platform that we called A2B, which allows you to really re-architect how you deliver audio in the vehicles through a very simplistic solution that saves weight and allows a lot more flexibility in wiring up the car. I think we have -- I always lose track here that's why I ask my company customers. We have over 20 OEMs signed up, and we're shipping on...
Michael C. Lucarelli - Analog Devices, Inc. - Senior Director of IR

Just half of them.

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

Half of them. Thank you, Mike. So with continued interest on that product, now some of those OEMs have even gone to the next generation where they're now -- where we are now offering noise-canceling capabilities as part of that B2B platform. So if you imagine for those folks have -- who fled off -- of noise canceling headphones to help you when you travel, same technology but now in the vehicle.

What does that do? It allows you to reduce insulation in the vehicle because we can control the environment, the noise environment, and therefore, the car doesn't need as much insulation to protect it from road noise. That saves weight, increases range. The other product -- the other capability that we're bringing is driving power through that same A2B. And now you can imagine using that same A2B platform to drive your significant speakers, subwoofers, et cetera.

Craig Matthew Hettenbach - Morgan Stanley, Research Division - VP

Excellent. All right. I think we're coming down on the half hour in time. So Prashanth and Mike, thanks so much for spending the time today. This has been great to kind of dig into the business and really appreciate it.

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

Thank you so much, Craig.

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

Thank you.

Craig Matthew Hettenbach - Morgan Stanley, Research Division - VP

Great. Thanks.