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ADI - Analog Devices Inc at Nasdaq OMX Investor Program

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PRESENTATION

Craig Hettenbach - *Morgan Stanley - Analyst*

Good morning, everyone. Thanks for being here. My name is Craig Hettenbach; I cover the analog, remote control, and components space at Morgan Stanley.

Pleased to have with us Analog Devices today. It's a \$19 billion market cap leading analog company. To my left is Rick Hess, Senior Vice President. Rick runs the comms and autos business at ADI. To his left is Ali Husain, Investor Relations. So welcome, guys.

Rick Hess - *Analog Devices, Inc. - SVP Communications & Automotive*

Thanks.

Craig Hettenbach - *Morgan Stanley - Analyst*

I figured, Ali, maybe I'll start with you, just kind of bigger picture, particularly for some of the investors that might be new to ADI, just high level what ADI is, what your strategy is, important end markets, if you would kick us off.

Ali Husain - *Analog Devices, Inc. - Treasurer, IR*

Sure. Thanks for joining us and taking some time out of your day to learn about ADI.

So Analog Devices, we are a \$3.5 billion revenue analog semiconductor Company. And what our technology really enables our customers to do is bridge the gap between the physical world and the digital world. So when you think about the thesis about ADI really being that if you believe that the world is going to become more connected and the world is going to become more intelligent, then you need evermore virtual bridges to connect the physical world to the digital world.

When you look at the underlying foundational technologies that you need to connect the physical to the digital, those are data converters and high-performance amplifiers. And those are both product categories where ADI has half the market and we lead the market, in fact, by a pretty meaningful amount.

So we tend to develop these very high-end technology platforms that we've developed, frankly, over the last 50 years of our existence. And then, we point those applications -- those platforms to as many applications as possible, particularly focused on the industrial, healthcare, automotive, and infrastructure spaces.

What that generally lets us do with a very CapEx-light model is generate a lot of free cash flow. We have a model to generate 28% to 32% of free cash -- of our sales in free cash flow. And we have a model to return 80% of everything we generate back to shareholders, primarily in the form of a growing dividend.



We've also laid out -- quite interesting for a semiconductor company, but we've also laid out an earnings target that we believe we can hit by 2020. So that target is \$5 in earnings. We recently completed our fiscal year at \$3.17 in EPS, so we think that's a pretty meaningful increase for our EPS number. I think if you apply a pretty reasonable multiple to that, that should imply a pretty good stock price.

And so, that's really ADI in a nutshell. I think the real thesis on ADI is if you think that there is going to be a more intelligent and connected world, if you think that infrastructure spending will go up over time, and if you think that there's more electronic content going into applications to make industrial machinery smarter, for example, to make cars safer, smarter, greener, to make bandwidth possible for all the various applications that we have that need bandwidth, then ADI is a good Company to at least look at.

Craig Hettenbach - *Morgan Stanley - Analyst*

Got it. And maybe just as a follow-up to that, as we look across the analog landscape, right, and clearly ADI is dominant in converters and known for that. But more broadly when you look at companies like Texas Instruments, Linear Tech, Maxim, Ali, what is it that differentiates ADI versus the competitors?

Ali Husain - *Analog Devices, Inc. - Treasurer, IR*

That's a great question. I think it's really a twofold answer.

Number one is we focus on sustainable innovation. That means we focus on very, very hard things to do. You've got to remember the analog space isn't like digital where there's a blueprint for how to do it. The analog space is something that you learn over time.

And in fact, many of the folks that we hire into the Company as engineers come in with very basic sort of electronic engineer degrees, but they are generally on the leading edge kind of semiconductor. And when they come into ADI, they spend probably the first five to seven years learning the art and the craft of analog. And that actually ends up creating a pretty wide and sustainable moat around our business.

So it's really this focus on very tough things, very tough innovation challenges that need to get solved. That's where we focus on. We focus on these markets that are very fragmented, tons of customers, tons of products, where any one individual product or customer generally can't really move the needle. And so, I think that places a very good moat around our business.

Secondly, I'd say, specifically related to the competition, ADI is a signal processing company at our core. And what that means is it's that -- it's the building of those virtual bridges that connect the physical to the digital. And ADI has a fantastic market-share position in that space as a result of spending the last 50 years working on that particular technology.

I'd say most of the competitive group, they tend to lead with power management. They are generally power management companies. And then, there is some capability in building these virtual bridges. But where ADI stands, the virtual bridge building is our business and we've got the number one market-share position in the fundamental technologies, the bricks and mortar of those virtual bridges. And that's what ADI does.

Craig Hettenbach - *Morgan Stanley - Analyst*

Got it. I want to bring Rick in. Rick is the former CEO of Hittite, which ADI acquired. Certainly, M&A has been a big, important theme for the space in the last 12 to 18 months. So, Rick, maybe you can just give us a background in terms of why ADI was the right fit for Hittite and we can build from there.

Rick Hess - Analog Devices, Inc. - SVP Communications & Automotive

Yes, and there's clearly a lot of similarities. Hittite was a much smaller company than ADI, but in many ways very similar in that Hittite was a very engineering-driven, innovation-driven, high-performance company, very similar, again, to Analog.

The reason why the companies fit so well is because the cultures, the capabilities, desires on how we do business were very similar. But the products were very complementary. So there's very little product overlap.

Hittite really specialized in high-frequency microwave and millimeterwave high-performance devices for, again, a broad base of industries and a broad base of applications, very similar to what ADI does, where ADI was really experts in the lower-frequency side of the signal chain. So the two technologies have come together extremely well and made great fits for the Company.

And again, as Hittite, as we looked out as to who the potential acquirers of the company were, Analog was number one on our list because, again, the cultural fit, the business model fit, and the innovation fit, and fit for our engineering community.

Craig Hettenbach - Morgan Stanley - Analyst

Got it. I know it's still early going in terms of the acquisition. But are there any anecdotes? You mentioned that it was complementary in terms of what you are doing. So as you look across your customer set, are there signs that you are seeing in terms of inquiries that you are getting that you wouldn't have gotten if you weren't part of ADI?

Rick Hess - Analog Devices, Inc. - SVP Communications & Automotive

Yes, absolutely. You say it's early days; it seems like years ago. But clearly, putting the two companies together is really giving us a more complete offering of the complete signal chain, as Ali said, from the physical interface back to the digital world.

And it has really filled that gap, and so our customers are very excited. We've got a lot of new opportunities and new capability that we've put in. And we've elevated our strategic level at many of our key suppliers across our markets because of this new capability that we have to reach beyond just the lower-frequency side of the business into -- all the way up to 100 gigahertz applications.

And again, that spans automotive radar at 77 gigahertz; communications certainly as 5G moves up into the millimeterwave frequencies; industrial, aerospace, and defense. Even healthcare applications are all moving higher in frequency to get higher bandwidths and higher-speed communication. So it really has been a great fit of the technology and gives ADI a much stronger capability that has really worked well.

Ali Husain - Analog Devices, Inc. - Treasurer, IR

And I would just add to that, Hittite, if it hadn't been a standalone company, would have had a record revenue quarter this quarter and that despite a fair amount of its business coming from the communications infrastructure market, which, as you know, Craig, has been quite depressed of late. So I think that's quite an achievement.

The business is doing extremely well. I think the design process is well ahead, frankly, of where we thought we would be when we were doing the due diligence last year. So that's usually a pretty good indicator of revenue synergies that we think should start to kick in around the 2017 timeframe.

And I would just simply add on the cost side, we had cost targets to hit in 2015. Our teams hit those cost targets. We think those cost targets will accelerate in 2016. There's a little bit of manufacturing that needs to come out and move into the ADI facility. That should help the earnings number as well for 2016.

So I think overall it's gone extremely well.

Craig Hettenbach - Morgan Stanley - Analyst

That's very interesting context, given how depressed some of the end markets are today. Rick, since you lead the comms and autos after that, I definitely want to dig into those markets. Comm, in particular, it can be kind of a volatile market. So, would love to get your take of lay of the land, what you are seeing today in terms of demand, and then we can get into some of the longer-term growth drivers as well.

Rick Hess - Analog Devices, Inc. - SVP Communications & Automotive

Sure. Certainly, comms has been lumpier than we would all like to see. 2014 was a great year. We saw great growth in 2014 in the comms market, largely driven by the China LTE rollout.

And then, 2015 certainly slowed down dramatically, driven really by a lot of different factors, certainly a slowdown in the rollout in China driven by audits and all kinds of things, interactions going on in the Chinese market; some slowdown in the US in infrastructure investment in some of the major communications drivers. So it was kind of a compounding of several markets slowing down at the same time.

We certainly, through the last quarter, have seen return to growth in that business. It's not back to the levels that it was in 2014 or the beginning of 2015. But it did recover dramatically in the last quarter. And we see that growth recovery continuing throughout 2016. We don't see any dramatic changes, but we certainly see continued growth and recovery of that market, again driven somewhat by China market is clearly recovering. They are installing again and that market is growing.

We see some other areas, like India just announced yesterday a major infrastructure investment -- or continued infrastructure investment. So we see growth in that market. We see other areas, like Mexico, as the consolidation occurs that is happening there that we think there's going to be continued rollout of new infrastructure investment there. And we see the US continuing to invest and we think will continue to roll out new generations of technology. We see some small cell expansion in the US, as well as China.

Certainly, the data demand around the world continues to grow. So we see the long-term view of the comms market to continue continued growth. And we do see that there will be some ups and downs in the market, but as new generation of technologies, 4.5G now, the massive MIMO array antenna we see expanding in the next couple of years, and then eventually moving to 5G, the next generation of technology. So we think that market still has a lot of room to grow. Again, it may not be as smooth as we want, but we see in the long term continuous growth in the market.

Craig Hettenbach - Morgan Stanley - Analyst

Got it. And typically, you see the opportunity to increase content when you go from like 3G to 4G, and 5G will be on the horizon. Can you talk about some of the technology that ADI bears in terms of to drive that, like what is key for you in the sustainability of that?

Rick Hess - Analog Devices, Inc. - SVP Communications & Automotive

Yes. First of all, I think one of the things ADI has done in this current LTE generation of technology that works into small cells and massive MIMO is our transceiver development, where ADI was one of the few companies in the world that has the complete signal channel all the way from the antenna back to the digital.

And so, we were able to combine our signal processing and our converter technology with the RF and microwave technology, and certainly taking advantage of the Hittite capability that came into the Company, so that we really had all the solution and were able to integrate that now into one device. And again, there are very few companies in the world that have that capability.

And that's really driving growth and driving market share for us in the radio channel. And again, that works in macro base stations. It works in small cell, which we have a very strong share in, and will continue to work as you go into the phased array massive MIMO type antenna structures where

the radio channels now have to be very small and very integrated and very compact. And we continue to evolve that technology and, again, are working with all the major Tier 1 suppliers in the industry to make sure that that happens. And so, I think that drives our capability.

And again, as you move to 5G and you move technologies up into millimeterwave, again we have great strength there and technology that other people in the world don't have. So I think this is really going to continue to drive our growth in the comms business.

Craig Hettenbach - *Morgan Stanley - Analyst*

Got it. I want to shift over to the automotive space. Clearly in recent years, that's something the investment community has embraced in terms of the dollar content theme. But what we hear from investors in terms of -- they want to get in company by company, right? Like many companies are benefiting from it. So for ADI specifically, what are you leveraging in automotive? And again, what do you see as the sustainability of the growth in that market?

Rick Hess - *Analog Devices, Inc. - SVP Communications & Automotive*

Yes. Certainly, the electronic content of the car is growing. I think we all understand that. But there are certain areas, obviously, where ADI has expertise, again, that we are trying to leverage into that business.

So we look at the automotive in three different segments that we focus on. The first one is safety. And there's two pieces to safety. One is sensors, where we have a very strong position in MEMS sensing for both crash sensing, as well as gyro and stability control, as well as ADAS and all of the radar, LiDAR, other functions in the cars that are continuing to be -- grow very rapidly. Our ADAS business grew by over 30% last year in the automotive area. So we see continued growth in that side of the business.

The second area we focus on is power train, so in areas like battery management, so start/stop control, and in electric cars, the battery control and battery management in electric cars is also very critical. But again, the electrification of all of the other functions of the car, so you think about steering and braking and acceleration now that used to be mechanical systems have all converted now to electric systems, and the continued sensing in the engine compartment of everything that goes on to make the car more efficient and greener clearly goes more and more to the electronics side and electronic sensing, where ADI really has some strong expertise.

And then, the last piece is in infotainment and infotainment is an area where ADI has been a leader for many, many years. We continue to introduce new technologies. One of the technologies we are introducing as we speak is a technology called A2B, which is an audio bus system that really helps integrate all the microphones, the antennas, the speaker systems, all the communication around the car and audio functions around the car into a unique bus that's really defining a new architecture for the automotive manufacturers that reduces weight and increases performance of the audio system.

So, we continue to innovate and introduce new technologies in the automotive space. And again, we see the electronic content growing and our capability growing with that that will continue to drive great growth in that market.

Craig Hettenbach - *Morgan Stanley - Analyst*

Great. I wanted to switch back over to Ali and talk about the industrial market, which is your largest end market at over 40% of sales. There certainly seems to be some blurring of the lines, right, as semis mature and even from the investment community looking at a typical semi company versus an industrial company. So, what do you see as the parallels and what is ADI leveraging in industrial to drive growth?

Ali Husain - *Analog Devices, Inc. - Treasurer, IR*

Yes, great question. So the industrial market, as I said, really the true lifeblood of the Company. It's half of our revenue. This is where we really generate the long life cycles of our products, the very strong cash flows. This business earns above corporate average gross margins.

On the growth side, it tends to have a growth profile that's some function of certain GDP type growth. So put a multiplier on that, but that's generally how that market trends. But it's got some fantastic characteristics to it.

For us, the industrial business, I'd say about half of industrial for ADI is made up of industrial automation and industrial instrumentation. Generally speaking, those two businesses run at, as I said earlier, some kind of a multiple of GDP in terms of growth profile. I'd say the remaining areas within industrial, we have a very strong aerospace and defense business and that has some pretty good legs to it in terms of growth and obviously in terms of the margin profile as well.

And the renewable energy space is one that's important for ADI. We don't have much of an oil and gas exposure, per se, so actually our industrial business has been doing relatively well. Of course, the macro backdrop, I would say, is probably weaker this year than it was last year. But overall, I'd say the business has trended quite seasonally here in the most recent past.

And then, we also have a healthcare business within our industrial business. And there are some terrific trends around healthcare, particularly around taking clinical-grade measurements of vital signs and taking that and making that portable and for folks to bring that into the home.

So those are some of the trends that are driving, I think, the longer term. But also, there's this concept of having more and more machines connected up. Some folks call it industrial 4.0. Some folks call it the Internet of Things for industrial. But it's very real and it's certainly happening.

And I think in many cases customers who have historically been selling jet engines, for example, are now looking to instrument those very same jet engines and sell the data that gets generated by these machines. And in some cases -- and there's a case to be made for this, that that data in and of itself is actually more valuable than the value of the machine itself that they may have been selling in the past.

So this creates a very exciting environment for the customers. And really, when you think of it, at the heart of it this is a physical world to digital world challenge. And I would argue that nobody does that better than ADI, particularly in these very tough-to-solve problems.

In the near term, I would say things are certainly weaker than they were last year at this point. The macro environment has not helped.

But I will tell you that we are bringing our utilization rates down in our fabs to about 60%. A lot of our industrial business is indeed fabbed internally. And we're generally seeing a pretty seasonal environment with inventories in the distributor channel in line with their historical norms. We recognize 100% of our revenue only when distributors sell through to the end customer. So we tend not to see a lot of this sort of volatility around inventory management in the channel, certainly as it would affect revenue.

So I think we are guiding to what would seem to be a pretty seasonal first quarter, getting our inventories in order, as I mentioned, or bringing our utilization rates in our fabs down to pretty low rates so that hopefully as things progress in the second quarter, which for us is our April quarter and seasonally our best quarter for industrial, that not only do we have a good growth profile lined up for the second quarter, but that our gross margins should also respond quite nicely.

So I think that's the long term and the short term as regards to industrial. But I don't know if, Rick, you would like to add anything.

Rick Hess - *Analog Devices, Inc. - SVP Communications & Automotive*

Yes. I think really for the long-term industrial, we think about all of those, the sensors and the smartness that is going to happen in smart cities, smart agriculture, smart health, as Ali talked about.



And so, it's the ability to apply the sensors, the communication, the processing capability, put that altogether in one device and really combine all those semiconductor functions together -- and again, that's where our strength lies -- and then communicate all of that data and that information back to the cloud or back to whatever source is collecting the information.

So I think there's a great future for ADI in the industrial business, even though it may look different than it does today in that it's much more using broader capabilities that the Company has from what we traditionally did, even though the base we are supplying into and the customers we are supplying into are very much the same.

The other area Ali mentioned quickly was the aerospace and defense business, which, by putting the capability of Hittite together with the capability of ADI, again has been a great strength. And I think that was probably the biggest surprise as we put the two companies together was the strength that it gained us in the aerospace and defense business and completing that signal chain and capability where, in this case, Hittite probably had stronger relationships and stronger positions with the aerospace and defense customers that was able to bring ADI along, where in many of the other markets ADI led in the strength with its customer base. So it's an area where we've grown quite dramatically in 2015 and we see we can get continued growth in that area.

Craig Hettenbach - *Morgan Stanley - Analyst*

Got it. And Ali, just going off of industrial is the lifeblood, you've also seen a resurgence in the consumer business. And certainly there's a visible product driver, and of course, [hutch] has helped that. But a very different dynamic in consumer from a product cycle versus some of the industrial. So, how does the Company manage that and what is your approach to markets like consumer?

Ali Husain - *Analog Devices, Inc. - Treasurer, IR*

Yes. So we haven't and we don't talk about customers and we don't talk about specific applications or products. And generally, our customers don't like us talking about those things, particularly in the consumer space.

I guess let me just give you a little bit of background on ADI in the consumer space, and then we can get into some more of the detail. I think fundamentally ADI leads with innovation. We lead with innovation generally by developing very hard-to-solve problems that are developed in these technology platforms that are either around very, very high speed or very, very high precision.

What we are doing -- and then, by the way, those platforms then, once they are developed over the course of many, many decades, you can cross-purpose them and tweak them up with fairly incremental, I'd say, low R&D spend and point them towards certain applications, because at our core the two tenets that we live by is sustainable innovation and the diversity of our business. And so, really, it's about creating very, very unique technology platforms that can then get pointed at as many markets and customers and applications as possible.

And the general philosophy then is to focus in on the very, very hard-to-solve problems, which, generally speaking, tend to be in the industrial space, the automotive, the healthcare infrastructure spaces. And that has been the case throughout ADI's history.

Interestingly, I would tell you that what is really quite exciting these days is that some consumer companies who have historically been consumer companies are looking for these very, very innovative technologies to be put into their current devices or applications. And interestingly, many of these companies are amorphous in a sense where today they may be consumer companies, but over the course of time they may be more healthcare type companies or automotive type companies or infrastructure type companies. And those are precisely the applications that suit our technologies the best.

So I think it has been -- when you look at ADI in 2015, we closed the year off and we grew quite nicely in a year where our industrial, automotive, and communications infrastructure businesses were flat to probably down, given macro headwinds and cyclical headwinds, I'd say, in the communications space. But the business grew overall precisely because of this focus on very sustainable innovation that we can then drive across



as many markets and customers as possible. And so, we had a very good year in the consumer business because we're managing a portfolio of businesses.

Now coming back to this question about the near term and the consumer space, I would say the way you manage that is obviously very different than the way you manage an industrial type characteristic of any industrial type customer. The ramps are very quick. The innovation cycles are very quick as well. And, obviously, you have to manage the supply chain a little bit differently.

I would tell you that we are not new to the consumer space. We have been through these ramps in the past, and so we have been able to manage that very, very well. There have been no lead time extensions and we have been very good at servicing our customer. And so I think from that point of view, it has gone extremely well.

And if you look at -- generally speaking when folks look at consumer and they say, well, that's a terrible business to be in, I think despite having a higher consumer exposure this year, our gross margins are still within our operating margin model range of 65% to 68%. We entered the year at 66% gross margins. And yet, these forays tend to be quite operating margin accretive because, as I mentioned earlier, we are generally developing these platforms over the course of many decades, which can then be reoriented to attack these various opportunities. And so, the operating margins actually closed the year -- the fourth quarter had operating margins of close to 36%, which is the high end of our operating margin model range.

So I think this -- for ADI, it tends to be innovation first, number one. And then, secondly, is it at the core of what we do, i.e., signal processing, i.e., that bridge between the physical and digital world? And if it meets those two criteria, we tend to be pretty market agnostic because I think the market takes care of itself and the financial profile takes care of itself if you are working on those very highly innovative applications at the core of what you do, i.e., building those virtual bridges between the physical and digital worlds.

Craig Hettenbach - *Morgan Stanley - Analyst*

Got it. Last one, for Ali, just capital structure and really capital allocation, right? So you've had a balanced approach in terms of growing the dividend consistently, opportunistically buying back stock. You did the Hittite deal, which was kind of a technology focus, really good margin. On the M&A side, what are you focused in? What appeals to ADI? And then on the cash return side, how do you balance between dividends and buybacks?

Ali Husain - *Analog Devices, Inc. - Treasurer, IR*

So look, from our point of view, our model is to generate 28% to 32% of our sales in free cash flow. And then, we return 80% of everything we generate to shareholders. Mostly what that looks like is sort of a two-third/one-third split between -- favored towards the dividend versus the buyback.

And then, we look for opportunistic opportunities, if you could say that, in the M&A space. We did Hittite last year; that was an example of that strategy. And again, the strategy around M&A for ADI is very much innovation first. We are usually complementing our existing technologies to get more scale with our customers, I would say. Again, this is more along the lines of that physical-to-digital bridge.

And that's generally the philosophy for ADI. We have a balance sheet that is capable of supporting a little more leverage. We have a balance sheet that's capable of supporting a pretty good M&A program. I would say, for us, the scale that we need in the areas that we plan, we have plenty of that. It's more along the lines of where can we tuck in and add in some more really good technology that makes a real difference for our customers.

Craig Hettenbach - *Morgan Stanley - Analyst*

Got it. With that, we are on time. So Rick and Ali, thanks so much.



Ali Husain - Analog Devices, Inc. - Treasurer, IR

Thank you, Craig.

Rick Hess - Analog Devices, Inc. - SVP Communications & Automotive

Thanks.

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