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Earnings Call

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OVERVIEW:

Co. reported 2015 revenue of TWD844b or \$26.6b. EPS for 2015 was TWD11.82 and 4Q15 was TWD2.81. Based on current business outlook and FX rate assumptions of \$1 to TWD32.50, 1Q16 revenue is expected to be TWD198-201b.



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PRESENTATION

Elizabeth Sun - *TSMC - Director of Corporate Communications*

Happy New Year to everyone and welcome to TSMC's fourth-quarter 2015 earnings conference and conference call. This is Elizabeth Sun, TSMC's Director of Corporate Communications and your host for today.

Today's event is webcast live through TSMC's website at www.tsmc.com. If you are joining us via the conference call, your dial-in lines are in listen-only mode. As this conference is being viewed by investors around the world, we will conduct this event in English only.

The format for today's event will be as follows. First, TSMC's Senior Vice President and CFO, Miss Lora Ho, will summarize our operations in the fourth quarter of 2015, followed by our guidance for the first quarter of 2016.

Afterwards, TSMC's two Co-CEOs, Dr. Mark Liu and Dr. C.C. Wei, and CFO Lora Ho will jointly provide our key messages. After that, TSMC's Chairman, Dr. Morris Chang, will host the Q&A session.

For those participants on the call, if you do not yet have a copy of the press release, you may download it from TSMC's website at www.tsmc.com. Please also download the summary slides in relation to today's earnings conference presentation.



As usual, I would like to remind everybody that today's discussions may contain forward-looking statements that are subject to significant risks and uncertainties, which could cause actual results to differ materially from those contained in the forward-looking statements. Please refer to the Safe Harbor notice that appears on our press release.

And now I would like to turn the podium to TSMC's CFO, Miss Lora Ho, for the summary of operations and current quarter guidance.

Lora Ho - TSMC - SVP & CFO

Thank you, Elizabeth. Good afternoon, everyone. Welcome to join us today. My presentation will start with the financial highlights for the fourth quarter and a recap of the whole year 2015, followed by the guidance of the current quarter.

In the fourth quarter, customers continued to carefully manage their inventory and our revenue declined by 4.2% sequentially, which is in line with our guidance.

Despite lower revenue, gross margin rose slightly to 48.6% as cost reduction efforts and the favorable foreign exchange rate more than helped to offset impact of lower utilization.

Operating margin of 38.3% reached the higher end of our guidance as we were able to keep a similar level of operating efficiency in the third quarter despite a drop in revenue.

In non-operating items, we recognized TWD724m or TWD0.02 in EPS from ASML share disposal gains. Overall, our fourth quarter EPS reached TWD2.81.

Now let's take a look at revenue contribution by application. During the fourth quarter, communication remained flat sequentially, consumer and industrial/standard decreased 23% and 12% respectively, while computer increased 5%.

On a full-year basis, revenue from communication increased 16% year over year and represented 61% of our total wafer revenue. Industrial and standard also saw 22% year-over-year growth, driven by increasing usage of MCU, Flash controller and the power management IC.

Now let's take a look at revenue by technology. As we have said before, we saw a strong ramp of 16-nanometer in the fourth quarter. And together, 16-nanometer and 20-nanometer contributed 24% of our total wafer revenue in the fourth quarter.

On a full year basis, 20-nanometer and 16-nanometer accounted for 20% of our total wafer revenue in 2015 versus 9% in 2014. And we remain confident that the combined revenue contribution from these two technologies will continue to grow meaningfully in 2016.

28-nanometer also held up very well and accounted for 28% of our total wafer revenue in 2015.

Moving into the balance sheet, we ended the fourth quarter with cash and marketable securities of TWD586b, an increase of TWD61b. On the liability side, current liabilities increased TWD11b.

On financial ratios, accounts receivable turnover days decreased 1 day to 41 days, while days of inventory increased by 3 days to 62 days, reflecting higher working process inventory at advanced nodes.

Now let me make a few comments on cash flow and CapEx. During the fourth quarter we generated about TWD145b cash from operations and spent TWD85b in capital expenditures. As a result, we generated free cash flow of TWD60b this quarter and our overall cash balance increased TWD47b to TWD563b at the end of the quarter.

In US dollar terms, our fourth-quarter CapEx was \$2.6b and reached \$8.1b for the full year 2015.

Now I would like to give you a recap of our performance in 2015. Despite a challenging year as the inventory corrections of fabless customers occurred continuously, we managed to grow our revenue 10.6% year over year to reach TWD844b or \$26.6b in US dollar terms.

Gross margin saw an 80-basis-point decline from 2014 as the decline in capacity utilization overweighed a more favorable foreign exchange rate. Despite a drop in actual gross margin, continued improvement in our manufacturing efficiency led to a structural improvement in profitability.

Our operating margin also declined 0.9% mainly due to higher R&D expense for 10-nanometer development as well as a TWD2.3b impairment loss related to our solar operations.

In 2015, gains from share disposal totaled TWD24.7b or TWD0.84 EPS compared to TWD2.4b or TWD0.08 EPS in 2014.

Our effective tax rate in 2015 was 13.5%. And the full-year earnings per share was TWD11.82.

On cash flow, we spent TWD258b in capital expenditure, while we generated TWD530b in operating cash flow. Accordingly, our free cash flow more than doubled in 2015 to TWD272b, which is the second year in a row it has more than doubled.

Our 2015 whole-year ROE also came out to be 27%.

I have finished my financial summary. Now let's turn to the outlook for the first quarter 2016.

While the China smartphone market has shown some signal of recovery, customers remain cautious in general. Based on our current business outlook and the foreign exchange rate assumptions of US dollar to TWD32.50, we expect first-quarter revenue to be between TWD198b and TWD201b, which represents 1.3% to 2.7% sequential decline; gross profit margin to be between 47% and 49%; and operating margin to be between 36.5% and 38.5%.

This concludes my remarks. Now I would like to turn the podium to Mark Liu for his comments.

Mark Liu - TSMC - President & Co-CEO

Good afternoon, everyone. I will start with the demand outlook messages.

As the semiconductor supply chain went through a very severe inventory reduction during the fourth quarter 2015, our fast 16-nanometer shipment ramp-up during that quarter somewhat mitigated the inventory management impact to our sales revenue.

As Lora just reported, in the fourth quarter 2015 we finished our revenue with quarter to quarter of minus 4.2%, and TSMC concluded our 2015 full year with 10.6% revenue growth.

This severe inventory reduction in the fabless industry during the fourth quarter brought fabless days of inventory to about or slightly below the seasonal level as we exited 2015. However, the strong US dollar environment and a volatile financial market that dampened the demand for overall semiconductor last year may continue for some time. Therefore we expect our customers will likely remain cautious in their inventory control and keep inventory close to seasonal level.

For our first quarter 2016, this quarter, we see a reduction of high-end smartphone demand. On the other hand, demand for smartphones in China and other emerging markets show signs of recovery, with an upward momentum. We thus forecast a mild revenue decline of minus 1.3% to minus 2.7% quarter to quarter for the first quarter 2016.

Beyond the first quarter 2016, we expect to be back to a growth trajectory. For 2016, we forecast the world smartphone shipment unit growth rate to be plus 8%, PC minus 3%, tablet minus 7%, and the digital consumer electronics minus 5%.

Smartphones will continue to be a major driver for TSMC business in 2016. TSMC's silicon content in an average high-end and mid-end smartphone are increasing significantly while TSMC's silicon content in an average low-end smartphone remains approximately the same. Therefore TSMC will participate broadly in this overall 8% smartphone unit growth.

From the process technology perspective, we had a very successful ramp-up of 16-nanometer customer products, with yield performance ahead of our plan in 2015. This demand continues to be strong and the ramp-up will continue through this year.

Given this current macroeconomic environment, we now estimate the 2015 growth rate of world semiconductor to be about 2% year on year and 2016 growth rate of world foundries to be about 5% year on year. And TSMC growth rate is expected to be between 5% and 10%.

Now I would like to give you -- deliver messages on our leading-edge technologies.

Our 10-nanometer technology development is on track. We are currently in intensive yield learning mode in our technology development. Our 256-megabit SRAM is yielding well. We expect to complete process and product qualification and begin customer product tape-outs this quarter.

Our 7-nanometer technology development progress is on schedule as well. TSMC's 7-nanometer technology development leverage our 10-nanometer development very effectively. At the same time, TSMC's 7-nanometer offers a substantial density improvement, performance improvement and power reduction from 10-nanometer.

These two technologies, 10-nanometer and 7-nanometer, will cover a very wide range of applications, including application processors for smartphone, high-end networking, advanced graphics, field-programmable gate array, game console, wearables and other consumer products.

We see major product advancement in three major product sectors in the next two years from 2015 to 2017. First sector is high-end smartphone. We expect to see between now and 2017 a more than 1.5 times of transmission speed increase and greater than 2.2 times of visual experience in high-end smartphones. Meanwhile, data sensing will move towards context awareness sensing. All those advances will be supported by TSMC's 10-nanometer and TSMC's 7-nanometer technologies.

Second sector is high-performance computing. We expect to have a 2 times of CPU cores in a processor unit to carry the needed data processing. The computing network infrastructure will need 1.6 times bandwidth for higher data rate. Again, all those advances will be supported by our 10-nanometer and 7-nanometer technologies.

Third sector is on emerging applications, such as virtual reality, gaming and automotives. For example, the advanced driver assistance system, ADAS, on cars can greatly enhance the safety on the road for the overall automotive industry. The processors typically will need 20 times of computing power from today's level to serve that purpose. These applications will also supported by TSMC's 10-nanometer and 7-nanometer technologies and we're looking forward to that.

I also would like to update you on the development progress beyond our 7-nanometer. We have a sizeable third R&D team developing our 5-nanometer technology for more than a year. Several innovative features and capabilities on transistor, contact and interconnect have been demonstrated. Our 5-nanometer technology is planned about two years after our 7-nanometer.

We made significant progress on EUV to prepare for its insertion likely in 5-nanometer for process simplification and cost-effective density scaling. At the present time, we are installing the third generation EUV tools in TSMC fabs.

We also have an extensive pipeline of technical innovation to extend the Moore's Law, including advanced patterning, high mobility channel materials, new nano-wire transistor structures, low resistance and low capacitors, contact and wires. Our goal is to further double the data processing throughput for application processor, graphic processor, field-programmable gate array and other process at our every nodes.

Above is my message. Thank you very much. I'll turn the podium to C.C. Wei.



C.C. Wei - TSMC - President & Co-CEO

Thank you, Mark. Good afternoon, ladies and gentlemen. Today I will update you the status of our 28-nanometer, 16-nanometer, InFO, and followed by comments on our specialty technologies.

First, 28-nanometer. The utilization rate of our 28-nanometer has recovered to a level close to 90% in first quarter this year and also the wafer demand increases. We expect this utilization rate to remain above 90% for the remainder of this year.

In addition to wafer demand increases, we also observed an increased number of tape-outs in 2015. And those tape-outs will mostly be produced in 2016. Most of the new tape-outs are on TSMC's latest addition to 28-nanometer family, namely 28-HPC and 28-HPC Plus.

TSMC's 28-HPC and 28-HPC Plus offer higher performance and lower power consumption as compared with previous solutions. It is suitable for applications in smartphone, digital TV, consumer and networking products. In addition, due to the -- its low power characteristic, customers are able to design their product for low-voltage applications, which are very important for the IoT devices.

In summary, TSMC's 28-nanometer technologies are highly competitive in both technology and cost. We are confident that our 28-nanometer will contribute to -- significantly to 2016 revenue. And we expect to maintain or even expand our market segment share at this node.

Now 16-nanometer. We have successfully ramped up the production of 16-nanometer starting third quarter last year with very fast pace. Manufacturing indices, such as the yield and cycle time, were achieved three to four months sooner than our 20-nanometer node and are ahead of plan.

In addition to 16-FinFET Plus, in fourth quarter last year we have completed the development of 16-FFC, the low-power and low-cost version for the 16-nanometer process.

TSMC's 16-FFC incorporates the process simplification and optional optical shrink for further die cost reduction. It also shares the same design rule with 16-FF Plus, so customer can directly transfer their product to 16-FFC. As a result, we expect 16-FFC will enter volume production in this quarter.

As customer accelerated their technology migration into 16-nanometer node, we anticipate a significant demand drop in 20-nanometer in 2016. However, we also expect a continual ramp-up of 16-nanometer this year and expect it to contribute more than 20% of wafer revenue in 2016.

We estimate our foundry market segment share of 16/14-nanometer node increases from about 50% in 2015 to above 70% in 2016, exceeding the previous prediction we made in mid-2014.

Now let me talk about InFO. We have successfully completed InFO process installation in the new Longtan site and are in product qualification stage right now. We are on track to start InFO volume production in second quarter 2016. Because of the very custom nature of our current-generation InFO technology, we do not expect adoption by a large number of customers. However, we do expect a few very large-volume customers.

The majority of InFO applications are for mobile devices, including IoT products. While we are ready for the first generation InFO volume production, we are also developing next-generation InFO technologies for better performance and lower cost.

In summary, we believe TSMC's InFO technology can enhance our customers' products in performance and lower the products' power consumption. Our expectation of InFO contributing more than \$100m quarterly revenue in 4Q this year remains unchanged.

Now let me talk about the specialty technology and IoT. We believe IoT-related application will be an important part of semiconductor growth in the future. In order to capture the opportunity of IoT business, TSMC has been developing technologies that fit IoT product requirements, such as high-speed computation, just mentioned by Mark, ultra-low-power transistors, sensors in many kinds, connectivity, and etc.

Some examples I would like to share with you here. First, we are developing process to meet automotive standard for smart cars. We also developed the most advanced CMOS image sensor with multi-million contact between the stacked chips. We have delivered the smallest footprint image sensor for various applications. We have developed the ultra-low-power Bluetooth solution for connectivities.

Specialty technologies are an important part to TSMC revenue. In 2015, more than 70% of TSMC's 8-inch wafer business was contributed by our specialty technologies. We have also observed the increasing demand of our 12-inch wafer business has been contributed by specialty technology as well. We expect the trend will continue in the near future -- in the future.

Thank you for your attention. Now I turn the podium to Lora.

Lora Ho - TSMC - SVP & CFO

I have a few comments to make. Let me start with CapEx. Our CapEx for 2016 is expected to be between \$9b to \$10b, representing a 10% to 20% increase year over year. About 70% of the capital budget will be used for capacity build-up for the leading-edge technology, majority 10-nanometer, and R&D CapEx.

Of the \$9b to \$10b number, about 10% will be used for backend, mainly InFO, and 5% for China fab. With this CapEx our 2016 capacity will increase by about 10%.

To talk about TSMC's structural profitability, TSMC's structural profitability is measured by its standard gross margin rate, SGM, which refers to a gross margin calculated at 85% utilization rate. In the past few years, TSMC has been able to steadily increase our SGM from the mid-40s level to a high-40s level despite higher CapEx, which led to a substantial increase in depreciation expenses.

The improvement of our structural profitability is mainly due to the following. First, very careful planning and build-out of capacity. Second, intensive cost reduction through productivity improvement and the better asset effectiveness. We are confident that we will be able to continue increasing our SGM in 2016.

Now a few comments about China investment. On December 7 last year, we submitted the application to the Investment Commission of Taiwan's Ministry of Economic Affairs for an investment project to build a wholly owned 12-inch wafer manufacturing facility and a design service center in Nanjing, China.

The main purpose for this investment project is to enhance our access to business opportunities in China market. With the establishment of a 12-inch wafer fab and a design service center in China, TSMC will be able to provide closer support to our customers in China and to extend our ecosystem to that market. We will commence the investment project upon receiving the approval from the Investment Commission.

My last comment is about the dividend. As you remember, our dividend policy is a sustainable and trending to increase cash dividend per share. With our healthy free cash flow, we are considering an increase of cash dividend in 2016.

This concludes my remark. Thank you.

QUESTIONS AND ANSWERS

Elizabeth Sun - TSMC - Director of Corporate Communications

All right. This concludes our prepared statements. Before we begin the Q&A session, I would like to remind everybody to limit your questions to two at a time to allow all participants an opportunity to ask questions.



Questions will be taken both from the floor and from the call. Should you wish to raise your questions in Chinese, I will translate that to English before our management answers your question. (Conference Instructions).

Today's Q&A session is hosted by our Chairman, Dr. Morris Chang. The Chairman will answer some of your questions and will pass the rest to the Co-CEOs or the CFO. So we'll begin the Q&A.

All right. I think we will let Credit Suisse, Randy Abrams, to ask the first question.

Randy Abrams - *Credit Suisse - Analyst*

Yes. Thank you. The first question -- congratulations first on last year and also a good outlook for the coming year.

The first quarter, it seems like it's holding up relatively well, factoring in some of the high-end smartphone weakness. I guess if you can go through just what's driving the strength. How much is TSMC-specific as far as share gains or how much is coming from end markets or from other end markets outside of smartphone?

And off this higher first quarter, what's your expectation for continued improvement in second quarter, because last year first quarter held up well, but then we saw a slowdown after that. If you think there's any inventory build again in the first quarter this year.

Morris Chang - *TSMC - Chairman*

You are asking, Randy, why is the first quarter holding up for us?

Randy Abrams - *Credit Suisse - Analyst*

Yes, why the first quarter is holding up. And then if you fare with this strength, how you expect the next couple of quarters, if it could be the start of another build.

Morris Chang - *TSMC - Chairman*

Well actually, I wasn't surprised by our first quarter. You seem to be saying that it's holding up while the market's not holding up. I really think that if we have gained any share in the first quarter -- if we gain any share in the first quarter, I think it will not be significant.

I think that's the way the foundry market will be in the first quarter, at least as far as I can see now. I don't think we have any -- nor will we be losing any share. I suspect that we may be gaining a little share in the first quarter, but I don't think it's significant.

As to what sectors, well, the same sectors that we do our business in. Communication of course is the big one. Mobile products I think is a big one. Then I think Lora has told you, consumer and then -- I don't see anything unusual. Well, actually, markets talk about the end of inventory, of surplus inventory. We think that at the end of the fourth quarter, although the numbers are not out yet, but we think that at the end of the fourth quarter inventory is -- supply chain inventory is already, what, about 2 days, 2 days below seasonal.

So because of that, I really, for a while, expect the first quarter to be stronger than what we are forecasting now. But the way we are forecasting it now is pretty much, pretty normal seasonally. If you look at our past couple or three years' record, I think the first quarter was always -- has always been a bit, a few percentage points below the fourth quarter. I don't know, as far as I can see, I think we're managing the Company well. But I don't think that's unusual.

Randy Abrams - *Credit Suisse - Analyst*

I'll ask the follow-up on two technologies. I think there's some change. 16-FFC, which is a lower cost, I think you mentioned it's actually in production this quarter, if I heard right. And if you could talk about how meaningful because that will lower cost on 16, in getting customers to migrate from 28 to 16, if you see a more meaningful ramp of that node through this year.

But the other side, InFO, it felt like last quarter you were talking about more customers beyond the high-volume application. If you're seeing some delays or change in other customers or additional customers adopting InFO.

Morris Chang - *TSMC - Chairman*

About the InFO or on the 16?

Randy Abrams - *Credit Suisse - Analyst*

It was a two-part question.

Morris Chang - *TSMC - Chairman*

I know. The first part I know is about the 16.

Randy Abrams - *Credit Suisse - Analyst*

FFC.

Morris Chang - *TSMC - Chairman*

16-FFC. And the second part is InFO, right, where you asked about whether more customers are using something?

Randy Abrams - *Credit Suisse - Analyst*

16-FFC -- that's right, InFO. InFO customers.

Morris Chang - *TSMC - Chairman*

Okay. C.C., would you answer the question?

C.C. Wei - *TSMC - President & Co-CEO*

16-FFC first. You, Randy, you ask whether it is a meaningful cost reduction or something like that, lower cost.

Randy Abrams - *Credit Suisse - Analyst*

Actually a meaningful ramp, if you expect a meaningful ramp, migration from 28 to 16.



C.C. Wei - TSMC - President & Co-CEO

Yes, it's a meaningful ramp.

Randy Abrams - Credit Suisse - Analyst

Through this year?

C.C. Wei - TSMC - President & Co-CEO

Yes, this year. Did that answer your question?

Randy Abrams - Credit Suisse - Analyst

I suppose, yes.

C.C. Wei - TSMC - President & Co-CEO

Okay.

Morris Chang - TSMC - Chairman

I think his question was whether it's already in production, 16-FFC.

C.C. Wei - TSMC - President & Co-CEO

Yes.

Randy Abrams - Credit Suisse - Analyst

So it's a pull in by a few quarters.

C.C. Wei - TSMC - President & Co-CEO

And it is actually faster than we thought because of very successful technology introduction and using the same design rule, we don't have to change any design architecture or design ecosystem. So it's just a few minor characterization that was necessary. But it's okay. So it's a meaningful volume production.

Now InFO, this is -- the last time I reported that, so we have a lot of customers working with us on the InFO application to their own -- to their products. The cooperation continues. Again if it is a -- InFO early stage is very customer-specific. Your layout, your die size, your application, your requirement on the total thickness is all different.

So now we are focused on very large-volume customers because we want to ramp it up quickly. And other application right now we are going to introduce in the new generation with lower cost and better performance.



Randy Abrams - *Credit Suisse - Analyst*

Timing for the new generation?

C.C. Wei - *TSMC - President & Co-CEO*

Next year.

Randy Abrams - *Credit Suisse - Analyst*

Next year. Okay. Thank you.

Elizabeth Sun - *TSMC - Director of Corporate Communications*

Then the second -- well, we'll go to Deutsche Bank, Michael Chou for the second question.

Michael Chou - *Deutsche Bank - Analyst*

Thank you. The first question is regarding your 7-nanometer progress, it seems like you can enter 7-nanometer mass production in the first half 2018. Is that correct?

Morris Chang - *TSMC - Chairman*

Mark?

Mark Liu - *TSMC - President & Co-CEO*

We will -- that's correct. Yes, that's correct.

Michael Chou - *Deutsche Bank - Analyst*

So does that mean that you will be ahead of all your competitors by at least one year in terms of mass production schedule?

Mark Liu - *TSMC - President & Co-CEO*

I do not -- well each company's technology may be different, so each company have their own product road map. So we don't compare just by the dates. It also depends on the content of those technologies. But that's our schedule if -- and that fits to our customers' product development.

Michael Chou - *Deutsche Bank - Analyst*

Can we say your 7-nanometer performance will be ahead of all your competitors? Your 7-nanometer performance would be ahead of your competitor given that your timeframe will be quicker.



Mark Liu - TSMC - President & Co-CEO

I wouldn't want to comment on this. We don't know the competitors' specific numbers.

Michael Chou - Deutsche Bank - Analyst

Okay. Second question is regarding the EUV in 5-nanometer. You highlight that it could be adopted, EUV could be adopted for EUV for 5-nanometer mass production. So will that help you expand your addressable market in 5-nanometer versus 7-nanometer or will that be bigger for 5-nanometer TAM, versus 7-nanometer if you can use EUV?

Mark Liu - TSMC - President & Co-CEO

You mean the demand?

Michael Chou - Deutsche Bank - Analyst

For demand. Since that smaller IC house can use EUV, if you can -- I mean if you can use EUV for 5-nanometer, can we say that?

Mark Liu - TSMC - President & Co-CEO

Your question is will EUV improve the -- increase the demand of our 5-nanometer?

Michael Chou - Deutsche Bank - Analyst

Yes, versus 7-nanometer, given that 7-nanometer will not use EUV.

Mark Liu - TSMC - President & Co-CEO

It's hard to compare because these two technology, the purpose we use EUV to -- is to simplify the process flow, therefore the yield can be higher. Secondly is to reduce the cost if the EUV's source development is according to that plan, to current plan. So for both factors, it will help our 5-nanometer, both yield and cost. And if you translate that into demand, I think that's enable more affordability of the 5-nanometer.

Michael Chou - Deutsche Bank - Analyst

Any way you can disclose your average output for your EUV a day now?

Mark Liu - TSMC - President & Co-CEO

Okay. EUV, we are working on the second-generation EUV tools. And we are installing our third generation EUV tools. And for the EUV, currently for the tool we have, we try to improve the reliability of the tools. And that is from the cost. We run several hundred wafers a day continuously so that we can debug the tools, and that will prevail for quite some time to do that.

Michael Chou - Deutsche Bank - Analyst

What kind of output do you expect that you can use the EUV for the 5-nanometer mass production?

Mark Liu - TSMC - President & Co-CEO

At what time, you mean?

Michael Chou - Deutsche Bank - Analyst

In one day, in average.

Mark Liu - TSMC - President & Co-CEO

Okay. At this time we are -- we have demonstrated 500 wafer per day every day for over a period of time of a full months. So that was the demonstration. Then the rest we are working on. We don't push to extreme of the move, but rather we focus on the reliability of the tools. So the demonstrated is 500 wafer per day.

Michael Chou - Deutsche Bank - Analyst

So does that mean if you can demonstrate that stably over the next 12 months, you will use that for 5-nanometer mass production? Can we say that or --?

Mark Liu - TSMC - President & Co-CEO

Yes. Yes.

Michael Chou - Deutsche Bank - Analyst

Thank you.

Elizabeth Sun - TSMC - Director of Corporate Communications

All right. The next question comes from the floor, and that will be from Citigroup's Roland Shu.

Roland Shu - Citigroup - Analyst

Thank you to taking my question. Happy New Year, Chairman and CEOs. I think that my first question --.

Morris Chang - TSMC - Chairman

Same to you.

Roland Shu - Citigroup - Analyst

Thank you. First question is that you started your 28-nanometer with almost no competition in the market at that time. However, for last year when you started 16-nanometer, I think that we had a big competitor in the market. So the question is that when now we are moving to 10-nanometer, how do you think about the competition landscape will be? Will it be more like 28-nanometer or it's more like 16-nanometer last year? Thank you.



Morris Chang - TSMC - Chairman

The last part of your question, say it again.

Roland Shu - Citigroup - Analyst

So when you migrate, when we start 10-nanometer mass production in -- at end of this year, how do you think about the competition landscape? Will it's more like 28-nanometer or more like 16-nanometer?

Morris Chang - TSMC - Chairman

Well, on 10-nanometer, we intend to begin with a very high market share. We will intend to begin with a very high market share. And we intend not to lose it.

Roland Shu - Citigroup - Analyst

Okay. Understood. So and then a follow-up question would be, Chairman, you comment for 16-nanometer this year --.

Morris Chang - TSMC - Chairman

Foundry. Foundry market share anyway.

Roland Shu - Citigroup - Analyst

Yes. Yes. Understood.

Morris Chang - TSMC - Chairman

Yes. What's your next question?

Roland Shu - Citigroup - Analyst

I think the Chairman's comment on 16-nanometer this year is having bigger market share in a much bigger market.

Morris Chang - TSMC - Chairman

I think C.C. said 70% foundry market share.

Roland Shu - Citigroup - Analyst

70% for the 16-nanometer?



Morris Chang - TSMC - Chairman

Didn't you?

C.C. Wei - TSMC - President & Co-CEO

Yes, above.

Morris Chang - TSMC - Chairman

Above 70%, he said.

Roland Shu - Citigroup - Analyst

Okay. Understood. But that one, is it a much bigger market share you thought two quarters ago, above 70%?

Morris Chang - TSMC - Chairman

I didn't understand your question.

Roland Shu - Citigroup - Analyst

You said you expect much bigger market share. So this 70% is -- did this beat your expectation then?

Morris Chang - TSMC - Chairman

I think it exceeded the prediction we made a year and a half ago. As far as what I was expecting a year and a half ago, I don't even remember myself.

Roland Shu - Citigroup - Analyst

Understood. Okay. Thank you. Then the second question is to Lora. I think in October you -- at that time you commented about the investment, 12-inch investment in China, you think the manufacturing cost will be higher in China than in Taiwan. So at that time you said TSMC was still evaluating the investment in China. However, I think in December you decided to set up a plant and also design center in China. So what has changed during these two months for you to decide to invest in China? Thank you.

Lora Ho - TSMC - SVP & CFO

The cost doesn't change in two months. Okay? The cost in China will be still higher than Taiwan on an apple-to-apple basis. I think we have stated the purpose for us to put a 12-inch fab in China is to pursue the potential market growth. This is the main reason for us to invest in China.

So at that time, I think we are still evaluating. And we are also in discussions with the China part -- counterpart. And early December we have pretty much finished the discussion. And we made a decision to go ahead with the application for set up a 12-inch fab and the design center.



Roland Shu - Citigroup - Analyst

So how about the ROI for the investment in China? So is that would be low -- much below corporate average? Or that probably would be improved over time. Is that right?

Lora Ho - TSMC - SVP & CFO

For a case like this, we don't measure ROI. Okay? We just know that for manufacturing part, because the scale is smaller and the costs will be higher, but we hope it can be compensated by the market share gains, by doing more business in China.

Morris Chang - TSMC - Chairman

Well we do measure ROI, even in this case. But remember, our first priority, the rationale, let's say, of setting up a 16 FinFET plant in China is to enhance our access to the growing Chinese market. So while we do measure the ROI of the plant there, you also have to take into account that the increased sales that this plant is going to bring to us.

And -- but to answer your question simply, we still measure the ROI. But the ROI, well, since the investment is relatively small, frankly, and we don't -- we put it really second to the increased sales that it will bring in, yes, that this plant will bring in.

Roland Shu - Citigroup - Analyst

Very clear. Thanks, Chairman.

Morris Chang - TSMC - Chairman

Yes.

Elizabeth Sun - TSMC - Director of Corporate Communications

All right. Next question actually will be coming from a new analyst arriving at Barclays, and that's Bruce Lu. Bruce?

Bruce Lu - Barclays Capital - Analyst

Thank you. Chairman, the question is that so basically the revenue guidance for 2016 is somewhere around 5% to 10%. But I do recall that earnings CAGR in the coming three, four years will be 10% and above. So which means do we expect some margin improvement this year? And what's more important is that as coming into 2017 or after, where -- when the 10-nanometer and 7-nanometer will play a much more important role, do we expect the earning growth coming from the top line or from the margin improvement?

Elizabeth Sun - TSMC - Director of Corporate Communications

All right. I think Bruce's question is if we guide 2016's growth being only 5% to 10%, but then we also said that our net profit will grow 10%. That was our five-year, whatever, objective. So his question is does this imply that we will have an improvement in margin? And whether this improvement coming from the top line or from the profitability?

Morris Chang - TSMC - Chairman

Well --.

Bruce Lu - Barclays Capital - Analyst

That's more for the -- 2016, well probably can you expect or do we expect some profitability improvement in 2016? And what's more important is moving to 2017, when 10-nanometer play a more important role.

Elizabeth Sun - TSMC - Director of Corporate Communications

Okay.

Morris Chang - TSMC - Chairman

Well, I'm sorry. He apparently clarified your interpretation, so I didn't get that. I understood what you said, but I don't --.

Elizabeth Sun - TSMC - Director of Corporate Communications

The only difference is that he's thinking beyond 2016.

Morris Chang - TSMC - Chairman

All right. He's thinking -- you are thinking beyond 2016 and you refer back to the earlier target that we set, that we will grow profit 10% a year. It's a good answer. And let me try to answer it now. Did I say it's a good answer or did I say it's a good question? It's a good question. It's a good question. Let me try to answer it now. We set that target in late 2014, I believe. We said that we want to grow. We said that in the next five years we want to grow profit, actually operating profit, not necessarily net income, operating profit 10% a year. And that was more than a year and a half ago, I believe.

Much has happened since then. Last year was a difficult year. I said 10% compounded annual growth rate. Now back when we set the target in late 2014, we were looking at a very good -- we thought we were looking at a very good 2015. Now 2015 turned out to be disappointing, as everyone knows. But we still managed to grow our operating profit by about 10%.

And 2016 will also be -- it will be -- I think it will be better than 2015. So we are at least mildly optimistic about 2016. So we have now, as Mark said, identified our growth in 2016 as 5% to 10%.

Now, what he meant was revenue. But our -- but Lora also said that our structural profitability actually is still improving. So I'm saying now, while Mark meant revenue, I'm saying now that our operating profit will also grow 5% to 10% this year, hopefully 10%, or even hopefully, even more hopefully more than 10%. Okay?

So all right, what I'm saying is that we set the 10 percent compounded annual growth rate a year and a half ago, when things looked might brighter. Much has happened. But we still managed for one year, and it appears now we'll manage for the second year, of this five year, above 10%. But I'm not repeating my pledge, my prediction that 2017, 2018, 2019 will continue to grow at 10% a year. We -- I think that the likelihood of -- well, if you just look at the semiconductor market, the prediction about the future semiconductor full market, it's 2%, 3% a year for the next 5 or 10 years.

Well we have a premium. We have a growth premium. Now a year and a half ago, I thought our growth premium, our revenue and profit growth premium was at least 5%, because back then the prediction about the semiconductor growth was better than it is now.



Now I still think we have a premium of some magnitude. But the -- you will hear from me sometime what our rolling five-year projection is. The last time you heard it was a year and a half ago. And so far we have fulfilled it, even though the circumstances were much more difficult than we thought they were going to be when we made the prediction, when we made the target. Did I answer your question?

Bruce Lu - *Barclays Capital - Analyst*

Yes. Thank you. Okay. My second question is that one of the best things TSMC did in past several generations is that 28-nanometer ramped up much faster than 40; 20 ramped up much faster than 28, and so did 16. That is -- can we expect that for 10-nanometer?

C.C. Wei - *TSMC - President & Co-CEO*

Yes.

Bruce Lu - *Barclays Capital - Analyst*

Thank you.

Elizabeth Sun - *TSMC - Director of Corporate Communications*

So that's nice; short and easy. Next question will come from the floor and it will be HSBC's Steven Pelayo.

Steven Pelayo - *HSBC - Analyst*

Let's start with Lora. 2011 I think is when you guys started this -- capital spending ticked up for 28-nanometer. I think you went up to 45% to 50% of revenue for a few years and dominated 28-nanometer. Now this year at 8b -- last year at 8b, this year up only 10% or more, is now, I think, in the 30%, 35% of revenue levels. So this is what's generating in the free cash flow and the potential for your higher dividend. But also what does it mean for your depreciation?

And I'd also like you to answer that question maybe in terms of if you did start that big 28-nanometer CapEx five years ago, is there a roll-off benefit that's going to be starting happening soon as well?

Lora Ho - *TSMC - SVP & CFO*

I can talk about depreciation for this year. With 9b to 10b, the growth will be smaller than last year. Last year I think it was 11%. This year we expect to be a mid to high single-digit, less than 10% growth.

Morris Chang - *TSMC - Chairman*

Growth in depreciation.

Lora Ho - *TSMC - SVP & CFO*

Depreciation year-over-year growth.



Morris Chang - TSMC - Chairman

When you talk about growth, people usually associate positive meaning with -- this is a decrease of depreciation.

Lora Ho - TSMC - SVP & CFO

Increase of depreciation, increase.

Morris Chang - TSMC - Chairman

The growth of depreciation, the growth rate of depreciation is going to slow down.

Lora Ho - TSMC - SVP & CFO

Mid to high single-digit. Yes. And your second question referred to -- because a couple of years ago we had very high capital expenditure. And after the five year it will be depreciated, that's true. That's true. I think in the next few years we are going to see a lot of tool that has gone through the depreciation period. That's right.

Steven Pelayo - HSBC - Analyst

Okay. Fair enough. And maybe if I could just get a quick follow up to C.C. To Randy's question, I actually wanted to know about 16-nanometer FinFET, FFC, ASP versus cost. Is this a higher-margin opportunity for you here?

C.C. Wei - TSMC - President & Co-CEO

I said it's a lower cost. I did not comment on the price. Alright.

Steven Pelayo - HSBC - Analyst

The margin opportunity for FFC versus FF -- FinFET Plus?

Morris Chang - TSMC - Chairman

Higher, yes. Well this actually -- Lora gave the answer, I think, in her structural profitability discussion. We've managed that very, very carefully. Structural profitability basically is projected price divided by projected cost, or whatever, just those two variables, and manage it that way.

And actually I want to go back a little bit to the answer. I want to add to the answer I gave to Bruce. You said that he was new. He is new from --?

Elizabeth Sun - TSMC - Director of Corporate Communications

He was from CLSA, now jumping ship to Barclays.

Morris Chang - TSMC - Chairman

Barclays? Yes. Okay. And I really think the key factors, why do we have a premium on -- over semiconductor market growth? Why do we have a premium, meaning that our growth rate, our revenue growth rate, top-line growth rate is likely to be higher than the semiconductor market growth



rate? It's because in two very simple words, it's because we are everyone's foundry. Being everyone's foundry has advantage of participating in the growth of whoever succeeds the best, wherever customer succeeds the best.

We've participated in it and we have been everyone's foundry ever since -- well maybe not when we started up, but certainly for the last 10, 15 years we have been virtually everybody's foundry. And we intend to remain that way. Being everyone's foundry, fulfilling our mission of being the trusted technology and capacity provider to the IC industry, it means that whoever in our customer -- among our customers succeed the best, we participate in that success. That's why I think that we have a premium of growth over the total IC market.

Now, let's talk about the bottom line. Now, that's where structural profitability comes in as important. And we want to manage it such that the bottom line grows proportionately with the top line. And so just keep that in mind. And we're improving it actually. We're improving the structural profitability. We're improving what we call the standard gross margin, as Lora said. And we have improved it by several percentage points in the last few years. It depends on -- in fact, if I -- I usually look back to six years ago. And since then we have improved by at least by 500 basis points. And we expected it to improve.

Now, being everyone's foundry and maintaining or improving our structural profitability still further puts us in the right place. And while I cannot answer you at this moment that 2017, 2018, 2019 will still be 10% a year profit growth a year, I cannot answer that. But I'm just saying that I have my -- I put my trust in our ability to be those two things, to maintain, to do those two things. First, be everyone's foundry. And second, maintaining our structural profitability.

Steven Pelayo - HSBC - Analyst

I'm sorry. Elizabeth, can I just quickly follow up on that? So if depreciation growth is slower, if you have higher margin, faster ramp of 16-nanometer FinFET compact, if you have currency tailwinds as well, if you have rising utilization rates, are we going to see a few quarters of above 50% gross margins this year? Or is that a natural ceiling? I don't know. I'm just curious.

Morris Chang - TSMC - Chairman

Well if things suddenly -- if demand suddenly surges and as a result our utilization suddenly goes up, yes, you will see 50%. But this is, in a restaurant, you care about the margin on your meal, right. But you care even more about filling the restaurant with customers. That's our utilization, you see? That's very, very important. Yes.

So, anyway, that also explains why we are -- Lora said it, we're very careful in building out capacity, in building up capacity. You don't want to rent a big hall for a restaurant and then not have enough customers. So that's why we are very careful in building capacity. And I have said that many times in the past. We don't build capacity unless we have a very high confidence that we will have customers using that capacity.

Elizabeth Sun - TSMC - Director of Corporate Communications

All right. Next comes -- questions comes from Goldman Sachs, Donald Lu.

Donald Lu - Goldman Sachs - Analyst

Congratulations for a very good result. Two questions. One is on InFO. So for the InFO, we are talking about different road maps. Can we understand that for the same customer over the years with different generation, you are going to generate more revenue per customer per product? In other words, are you going to package more and more chips or doing something more so that you can generate more revenue per customer?

And then the second question is you will expand to other customers. So how can we forecast your InFO revenue growth in the years ahead?

And also just to confirm, the CapEx for InFO this year is 10% of the total CapEx? So that's almost double last year. So is that a leading indicator for your revenue growth?

C.C. Wei - TSMC - President & Co-CEO

Donald, you ask whether we package more chips or package more volume in the InFO business?

Donald Lu - Goldman Sachs - Analyst

Yes, per package. In other words, you can charge more and more revenue per smartphone, per customer. Let's say for one iPhone you generate \$1 this generation. Could that be \$1.2, \$1.3 the next generation? And how fast it will grow?

C.C. Wei - TSMC - President & Co-CEO

Okay. Let me answer that. We continue to improve the process and then coming out with the new generation of InFO technology. That will have more applications and certainly we expect the revenue will go up. Right? Profitability, that's our goal, of course. And so if you're asking whether that with the same customer we continue to migrate into the new generation, the answer is yes. And we are developing the technology that can be adopted by a lot of customers. Today we are not at that stage yet. Today it's a very specific, customized technology. Does that answer your question?

Donald Lu - Goldman Sachs - Analyst

Yes. And how can we predict the revenue growth pace of InFO? We have a base. It's over USD100m by Q4. And more than USD400m next year, or some --?

C.C. Wei - TSMC - President & Co-CEO

Yes. It will be more than USD400m next year. And it will grow. But I cannot give you exact number because we are working still with -- we're working with our customers. Today we just can tell you that we have a few large-volume customers.

Donald Lu - Goldman Sachs - Analyst

Okay. Thank you. Second question is for Chairman. You just talked about you want to capture and be present in China. But I noticed that TSMC has been generating 60%, 70% revenues from US customers over the years. But TSMC has never built a foundry -- there, you have a small foundry in the US.

Morris Chang - TSMC - Chairman

That's right.

Donald Lu - Goldman Sachs - Analyst

What's the difference between China and US?

Morris Chang - TSMC - Chairman

Well that's because US and China are two different countries.

Donald Lu - Goldman Sachs - Analyst

Well that we know. But for doing business, what's the point? They can come to Taiwan, it's even closer than US.

Morris Chang - TSMC - Chairman

Well, I'm proud of the US. But, US and China are two different countries. Even the Chinese will tell you that; the Mainland Chinese, I mean. Yes. Did I answer that question? Did I answer your question?

Donald Lu - Goldman Sachs - Analyst

I wish to hear more.

Morris Chang - TSMC - Chairman

Well I should say that we have used the phrase that our objective is to enhance our access to the Chinese market. I've used that phrase -- we have used that phrase quite a few times. And I must say that we don't say that in vain. We say that with some degree of assurance from the authorities, some degree of assurance that building a plant there will indeed enhance our access to the Chinese market. And reversely, not building a plant there will not enhance.

Donald Lu - Goldman Sachs - Analyst

Okay. Thank you.

Morris Chang - TSMC - Chairman

Yes.

Elizabeth Sun - TSMC - Director of Corporate Communications

All right. Next question comes from Daiwa's Rick Hsu.

Rick Hsu - Daiwa Capital - Analyst

Happy New Year, Mr. Chairman and all the management. My first question is about the capacity. I know Lora talked about this year capacity increase is about 10%. Could you give us more color in terms of breakdown, 28-nanometer, 20 and 16 in terms of year-on-year increase, some rough idea for these different technology nodes?

Lora Ho - TSMC - SVP & CFO

I will not give you a breakdown by each node. But what I can tell you is very big portion of our CapEx goes to 10-nanometer. So you can imagine a majority -- vast majority of the CapEx increase will be on the leading-edge technology.

Morris Chang - TSMC - Chairman

He was asking about last year, 10% increase last year.

Lora Ho - TSMC - SVP & CFO

It's about this year, 10%? You were talking about this year?

Rick Hsu - Daiwa Capital - Analyst

Yes, I'm talking about this year.

Lora Ho - TSMC - SVP & CFO

You want me to give you breakdown. Okay.

Rick Hsu - Daiwa Capital - Analyst

Yes, I just wanted to get some idea. I know your 20 should be declining, because this year 20-nanometer is not your focus. And 16 and 10 should increase a lot, and 28 maybe not much. But I just want to get some more color about how much increase or decrease by different technology node on a year-over-year basis.

Lora Ho - TSMC - SVP & CFO

What you said is correct. And we are not increasing any 20-nanometer. It will be migrated to 16 or 10-nanometer along the way. All the newly added capacity will be on 10-nanometer, as the vast majority capacity increase. Yes. And 16 will continue to increase. But we had a huge amount of CapEx last year for 16 build-out. But this year we still spend some money, but it's tailing capacity.

Elizabeth Sun - TSMC - Director of Corporate Communications

I probably need to add that we also have productivity improvement in 16-nanometer. So that will give us capacity without spending much money.

Lora Ho - TSMC - SVP & CFO

It's a very good point.

Rick Hsu - Daiwa Capital - Analyst

Okay. Thank you so much. And my second question is I recently talked to some of your large-volume fabless customers. And it seems to me that they're complaining that even they migrate to 16-nanometer this year, they're not going to enjoy much cost saving on per-unit basis. So will you consider it, when you ramp up more 16-nanometer contribution, will you consider yield some pricing to your customers?



C.C. Wei - TSMC - President & Co-CEO

We did. And I'm not very sure that whom you talked to, but most of the customer enjoy that 16 FinFET, 16-nanometer performance and cost. All right?

Rick Hsu - Daiwa Capital - Analyst

Thank you.

Elizabeth Sun - TSMC - Director of Corporate Communications

Next question comes from JPMorgan's Gokul Hariharan.

Gokul Hariharan - JPMorgan - Analyst

Thank you. My first question is on compute, since you already mentioned compute as one of the biggest drivers, high-performance computing. Now just wanted to understand that a little bit further. The traditional understanding of compute has been it's been an X86 Intel-dominated market. So when we talk about compute growth, should we think about TSMC taking -- TSMC enabling some of your customers to take share from that market? Or is it completely greenfield areas where there's no standards, like automotive and stuff like that you mentioned?

And since you mentioned this is a two-year kind of thing, where you start seeing growth coming through, could we have some quantification, if it's possible, in terms of what growth could be coming from compute as a segment? Right now I think what you define as compute is probably about 8% of revenues, 8% to 9% of revenues. That's my first question.

Mark Liu - TSMC - President & Co-CEO

Okay. When you -- when we talk about computing, we're really not just including the data center and PC tablets. We also include the infrastructure as well as the edge computing devices. So our -- my definition of computing is, actually for TSMC, is more opportunity in the infrastructure and edge computing.

Among the edge computing I mentioned a couple of our innovator product advancement. One of them is I mentioned about cars. And that is an area of very active innovation we see. We work with our customers, working on it. And how far that product will come up is everybody's guess.

But if you want a paradigm, the semiconductor content of a car today is about 6 times of the average smartphones. And because of the innovation of that electronics in cars, we see this 6 times will increase to 10 times by the year of 2020. So that is the promising we see. And also that is very, very practical purposes for that to be proliferated. Yes. Okay.

Gokul Hariharan - JPMorgan - Analyst

And just a subset of that question, I think you mentioned about the ARM server efforts, of non-X86 server efforts. Could you give an update on what you're seeing on your customers' side, because I think until now that has been a very small proportion of the market. But we've seen ARM itself give pretty bullish guidance for 2020 in terms of 20% of the server market, etc. Could you give us some color in terms of what you're seeing, given that you're the foundry for pretty much everybody, as Chairman mentioned, in the ARM server market?



Mark Liu - TSMC - President & Co-CEO

Okay. That's a tough question to answer. You know the datacenter and PC is a stronghold of a major player already. It's incumbent, very strong. And, however, the industry, many other players are looking for options at least. So we see. Our view is we see a lot of innovators, product innovators working in that area. And following that is only the industry estimates about how far the ARMs can move into the space.

And for the easier one, I think it will happen first in the tablet and PC. And I see, before 2020, range from 10% to 30%. It's in anybody's guess. But I just ensure you that a lot of innovators are working on that area and a lot of customers are looking forward to that happen.

Gokul Hariharan - JPMorgan - Analyst

Yes. My second question is one of your bigger customers is moving to a competitor for a flagship chip. I think that's very well-known right now.

Morris Chang - TSMC - Chairman

One of our --?

Gokul Hariharan - JPMorgan - Analyst

One of your biggest fabless customers is moving to a competitor for a flagship chip this year. Now Chairman mentioned that in 2017 with 10 nanometer, you're going to start with extremely high market share and intend to keep that share. Could you share about -- could you think -- let us know what you're thinking is about winning back share in this customer, because historically we've seen whoever has left TSMC has come back maybe after one year, after one generation or two generations?

Morris Chang - TSMC - Chairman

We are thinking about it all the time. And I'm not going to tell you anything more than that.

Gokul Hariharan - JPMorgan - Analyst

Okay. So on the 10-nanometer side, so the confidence in terms of starting with extremely high market share, should we say this is going to be like higher than the 70%-plus market share you will have in 16-nanometer when you start in 2017?

Morris Chang - TSMC - Chairman

Not -- well I just don't want to be quantitative at this point. But actually that was how we started with almost every node. Now 16 turned out to be a discontinuity, 16. Yes. And we hated that. And so a year and a half ago I vowed that we will recover it, and we have recovered it. But we would rather not have the same thing happen again. So we want to put 10 back into where things were, where the order was before 16, yes.

Gokul Hariharan - JPMorgan - Analyst

Okay.

Morris Chang - TSMC - Chairman

Okay.

Elizabeth Sun - TSMC - Director of Corporate Communications

All right. I think we should go to the call. Operator, please have the next caller on the line.

Operator

Brett Simpson, Arete Research.

Brett Simpson - Arete Research - Analyst

Thanks. Thanks very much. I just had a question on smartphones. Can you talk about what growth you saw from smartphones in 2015 and how you see this trending in 2016, building on the rising silicon per unit that you see?

Morris Chang - TSMC - Chairman

Is he asking about the market or is he asking about TSMC?

Elizabeth Sun - TSMC - Director of Corporate Communications

I think, Brett, you were asking about the market, right?

Brett Simpson - Arete Research - Analyst

Yes, TSMC.

Elizabeth Sun - TSMC - Director of Corporate Communications

Okay.

Brett Simpson - Arete Research - Analyst

No, no. Sorry, I'm asking about TSMC.

Elizabeth Sun - TSMC - Director of Corporate Communications

TSMC.

Brett Simpson - Arete Research - Analyst

TSMC smartphone, yes.

Elizabeth Sun - TSMC - Director of Corporate Communications

TSMC's smartphone growth in 2015, whether -- well, whether we see rising silicon content continue in 2016?



Morris Chang - TSMC - Chairman

Mark, can you answer the question or do you even have the data that --?

Mark Liu - TSMC - President & Co-CEO

I mentioned that for every high-end smartphone, our per-phone, the wafer value we get this year will be increased by 8%, 7% or 8%. So that number is smaller than from 2014 to 2015. I don't remember the 2014 to 2015 number.

Brett Simpson - Arete Research - Analyst

Okay. Let me add just a follow-up on 28-nanometer. I think you said in the past, Mark, that 28-nanometer is going to grow in revenue terms in 2016 after declining somewhat in 2015. Can you give us an update on how you see 28-nanometer outlook this year? Thank you.

Morris Chang - TSMC - Chairman

Go ahead.

Mark Liu - TSMC - President & Co-CEO

On the 28-nanometer revenue, C.C. can you comment?

C.C. Wei - TSMC - President & Co-CEO

We see the increased demand. And you're asking about the revenue growth? Probably.

Brett Simpson - Arete Research - Analyst

Yes. Yes, what growth, yes.

C.C. Wei - TSMC - President & Co-CEO

Probably flat considering that more demand but pricing drop. So you've got the probably flat. I would have to say that.

Brett Simpson - Arete Research - Analyst

Okay. Thanks. And just one final question. Lora, I think you said China is 5% of CapEx this year, the China facility. Can you talk about what the total CapEx will be for China and how might you fill the fab? Will you be transferring equipment already in operation or will this be incremental capacity for TSMC? Thank you.

Lora Ho - TSMC - SVP & CFO

This year the China CapEx will be about 5%. That's a couple of hundred million US dollars. This is a multiple-year project. And the current plan for China is to install 20,000 wafer as a starting point and to be manufacturing in 2018. So from now, 2016 to 2017 will be the construction period for



the new fab. So this year with be couple of hundred million. Next year will be bigger. Actually 2017 will be the most bigger one. The total investment that, based on 20,000 wafer, is approximately \$3b, multiple-year project.

Brett Simpson - *Arete Research - Analyst*

Thank you very much.

Elizabeth Sun - *TSMC - Director of Corporate Communications*

All right. We still have another caller on the line. Operator, could you please proceed to the next caller?

Operator

Mehdi Hosseini, SIG.

Mehdi Hosseini - *SIG - Analyst*

Yes. Thanks for taking my question and happy New Year. I wanted to ask you about the key assumptions that are going to be the year-end guidance of 5% to 10%. What is your assumption if revenues were to be up 5% and what is your assumption if revenues are up 10%?

Morris Chang - *TSMC - Chairman*

As it relates to our revenue growth? As it relates to the semiconductor market growth?

Mehdi Hosseini - *SIG - Analyst*

TSMC's revenue guide of 5% to 10% growth.

Morris Chang - *TSMC - Chairman*

Yes. Our -- wow. That estimate is actually -- is made on two bases. The first base is the semiconductor market growth and the foundries growth, which Mark already mentioned. We estimate the semiconductor market growth will be 2% and the foundry growth will be 5% this year.

And we also have a few other relevant growth indices, such as fabless growth and our customers' collective growth, and, well, I think those are the most relevant indicators. And so that's the first base. That's the first basis on which we estimate our growth this year.

The second basis that we do, we estimate, is from the field, from the regional, our own field sales estimates. Each region reports its own estimate of the growth in its region.

Actually we have a third estimate, but the third estimate is basically a synthesis and a reconciliation between the first two. So I hope that answers your question.

Mehdi Hosseini - *SIG - Analyst*

Great. Sure. And just as a follow-up to this, I wanted to understand some of your conservatism built in this guide. This time last year you were expecting revenue to grow by more than 15%. But unfortunately overall end market demand wasn't that strong.

Now we're starting the year at a lower growth rate. What are the key assumptions for handset sell-through? It seems to me that the Chinese handset OEMs are building inventory. There is a risk that sell-through is not going to be there. One of the key, leading US-based handset maker is facing some challenges. And in that context, how much of a conservatism is dialed into these guidance?

Morris Chang - *TSMC - Chairman*

Well I think Mark said that our estimate of handset smartphone sell-through is 1.5b units worldwide. 8%, I think. 8% growth over last year.

Elizabeth Sun - *TSMC - Director of Corporate Communications*

Mehdi, I guess your question is whether or not we have been too conservative or been too optimistic about our forecast of the smartphone growth?

Mehdi Hosseini - *SIG - Analyst*

Yes. Yes. Thanks for clarifying that.

Mark Liu - *TSMC - President & Co-CEO*

Yes. I have some -- let me add some comments on this question. Compare this year and last year, there is at least two major differences make --lead us to make the current forecast. One is that when we entered the beginning of last year, we did not know the inventory build-up is very, very high. I still remember 11 or 12 days above seasonal. And then this year, however, we considered the drastic reduction of the inventory during the fourth quarter. We have a better estimate about the starting point of the year.

And secondly, of course, is the macroeconomics of this year, as you know, is still several uncertain factors in it. Therefore we were just taking those two factors in account to make our current forecast, and therefore it will lead to a bigger range.

Mehdi Hosseini - *SIG - Analyst*

Got it. Thank you very much for detailed color.

Elizabeth Sun - *TSMC - Director of Corporate Communications*

Thank you. And let's come back to the floor. There are quite a few hands raised up. I will ask the people who have not yet had the chance to ask questions first. And that first one goes to, all right, Sebastian, CLSA.

Sebastian Hou - *CLSA - Analyst*

Thank you for taking my questions. So my first question is regarding the 10 nanometers. So earlier Chairman said that he intends to maintain high market share initially at the beginning. So do you have any sense in mind that what kind of revenue contribution you see by fourth quarter 2017? Would it be similar to by 15% to 20% you had back in fourth quarter 2014 on 20 nanometers?

Morris Chang - TSMC - Chairman

Well, C.C., do you have any idea? He's talking about 2017.

C.C. Wei - TSMC - President & Co-CEO

Yes, I know.

Morris Chang - TSMC - Chairman

Fourth quarter.

C.C. Wei - TSMC - President & Co-CEO

The fourth quarter. If you -- I don't estimate customers' demand, but if I can give you an answer, that would be a little bit higher. Because by every year --.

Morris Chang - TSMC - Chairman

A little higher than --?

C.C. Wei - TSMC - President & Co-CEO

You higher than the 20 nanometer in the fourth quarter of 2014. Higher than the 16 we've had in the fourth quarter.

Sebastian Hou - CLSA - Analyst

Okay.

C.C. Wei - TSMC - President & Co-CEO

Because the continual growth.

Sebastian Hou - CLSA - Analyst

Thank you very much. So, and also on the 10 nanometers earlier, Bruce asked about the faster ramp. And C.C., you answered that will be faster ramp compared to the previous node. So does that mean that the yield ramp or the yield learning curve will be faster? That means you are going to reach the corporate average margin faster than the previous nodes.

Morris Chang - TSMC - Chairman

Well, not necessarily, because the margin is determined by price and cost. You may learn faster on the cost, but basically we look at the total Company structural profitability and we maintain that. So I don't really particularly want to talk about node-by-node profitability.

Of course, in the past we have said, under pressure from you, how soon we'll reach corporate average, etc., etc. But today, and actually last few times, I kept assuring you that we are looking out. We're looking out for the corporate average. The corporate average of course has got the new node in it. And the new node factor is likely to be a very important part of the corporate average. But we looked at the whole thing, yes.

Look, we manage a portfolio; we don't manage this single stock. I'm talking figuratively. We manage a total portfolio of technologies, not just a single one.

Sebastian Hou - CLSA - Analyst

Thank you.

Morris Chang - TSMC - Chairman

Yes.

Sebastian Hou - CLSA - Analyst

My second question is -- sorry. My second question is on specialty technologies that the -- we heard that a lot of the foundries, even the tier-two, tier-three foundries are promoting their specialty technologies for IOT and more-than-Moore. So we wonder what's the special strategy that TSMC has in this field. And do you think you lead those foundries by a lot?

Morris Chang - TSMC - Chairman

What was the question?

Elizabeth Sun - TSMC - Director of Corporate Communications

All right. Sebastian's asking when we talk about specialty technologies, he also noticed that there are a number of other foundries that are also claiming to working on IOT and more and more. What is going to be TSMC's differentiations? Do we have a substantial lead over other foundries?

Morris Chang - TSMC - Chairman

Definitely we differentiate by the customers trusting us. We differentiate by the technology we have. We differentiate by our manufacturing ability.

Sebastian Hou - CLSA - Analyst

Thank you. So what kind of the growth of these specialty technologies do you expect to contribute to TSMC in the next five years?

Morris Chang - TSMC - Chairman

C.C.?

C.C. Wei - TSMC - President & Co-CEO

Would you please repeat your question again?

Sebastian Hou - CLSA - Analyst

Yes.

Morris Chang - TSMC - Chairman

How much will IOT contribute to our revenue? I think that's your question, right?

Sebastian Hou - CLSA - Analyst

Yes. Thanks, Chairman.

C.C. Wei - TSMC - President & Co-CEO

All I can say is increasing. I give you a number, a specific number on the 8-inch wafers. Now it's moving into the 12-inch wafer business and it's increasing. So it will depend on the market situation, so how fast that IOT will grow. All right?

Morris Chang - TSMC - Chairman

The growth rate is enormous but the base is relatively thin.

Sebastian Hou - CLSA - Analyst

Okay. Thank you.

Elizabeth Sun - TSMC - Director of Corporate Communications

All right. Next question goes to Morgan Stanley's Charlie Chan.

Charlie Chan - Morgan Stanley - Analyst

Thanks for taking my question. My first question is on the capital intensity. So if we average out this year and the last year capacity is around \$9b per year. And that is similar level to 2014 CapEx. And our revenue growth is growing at 10%, and this year high single digit. So that means capital intensity is declining. So I would like to get your updates also on the capital intensity, whether this is an industry phenomenon or it is because of much better execution from TSMC.

Morris Chang - TSMC - Chairman

Well we predicted our capital intensity, the way you define it, CapEx divided by current year revenue, we predicted quite a few years ago that it would go down, and it's going down. So the update is that, yes, our prediction was correct. It will go down.

Elizabeth Sun - TSMC - Director of Corporate Communications

But I think Charlie's question is whether or not this decline is TSMC-specific or it is an industry-wide phenomenon.



Morris Chang - TSMC - Chairman

I think it's -- I hope, I do think it's TSMC-specific because we -- I think we do a better job in improving our asset effectiveness.

Charlie Chan - Morgan Stanley - Analyst

Okay. Thank you. And then my next question is on potential dividend payout increase. And so, Lora, can you quantify the increase of your cash dividend payout this year, no matter in dollar per share or the payout percentage? Thank you.

Lora Ho - TSMC - SVP & CFO

I said we consider an increase, but we need to discuss with the Board. Before we do that, I will rather not to quantify that. But I can tell, it's not going to be a trivial number.

Charlie Chan - Morgan Stanley - Analyst

Thank you.

Elizabeth Sun - TSMC - Director of Corporate Communications

All right. Now there are follow-up questions from Credit Suisse, Randy. Randy Abrams.

Randy Abrams - Credit Suisse - Analyst

Yes. The follow up, in the pack, your currency last year was TWD31.7. And we're currently at TWD33.5. Could you clarify the 5% to 10% sales and margin, if that's US dollar? So in NT dollar you would grow 10% to 15%? And then also for margin, if structural profitability, if that factors a currency benefit.

Morris Chang - TSMC - Chairman

Sorry, I need to hear your numbers again. Well Lora will answer the question, but I was curious. I want to hear your numbers.

Randy Abrams - Credit Suisse - Analyst

So NT dollar, like in the packet, it was TWD31.7 for the average last year. Today it's TWD33.49. So you're getting a pretty big benefit both on sales and margin.

Morris Chang - TSMC - Chairman

Well, but today it's only, what, the 14th day of the year.

Randy Abrams - Credit Suisse - Analyst

Okay, but --.

Morris Chang - TSMC - Chairman

Well will you make a prediction to me, please, what this year's exchange rate will be?

Randy Abrams - Credit Suisse - Analyst

I can't predict the exchange rate, but is your guidance based on US dollar -- US dollar or is it based on local currency?

Morris Chang - TSMC - Chairman

Well anyway, look -- well Lora, why don't you? You heard his question, right? Okay.

Lora Ho - TSMC - SVP & CFO

I heard you. I think you're probably saying we are conservative, and we have not reflected the potential upside from FX gain.

We have said many years ago there's a rule of thumb, any 1% of exchange rate change we have about 0.4 percentage point to our margin. This formula still works. So you can work on your math. If the exchange rate moves 1%, that's 0.4 percentage point to our profitability. And we sell 100 -- almost 100% in US dollars. And our guidance was in NT dollars, based on a 33 -- 32.5 exchange rate for the first quarter.

Randy Abrams - Credit Suisse - Analyst

And that's your full year is based on that, the 5% to 10%?

Lora Ho - TSMC - SVP & CFO

No, no, no. This is only -- we are talking about the first quarter. You're saying Chairman's 5% to 10% growth based on what?

Randy Abrams - Credit Suisse - Analyst

Yes, based on what currency? Is it based on US dollar?

Morris Chang - TSMC - Chairman

The 5% to 10% growth rate, revenue growth rate, it will be either US dollars or NT.

Lora Ho - TSMC - SVP & CFO

Yes, it will be all within that range.

Randy Abrams - Credit Suisse - Analyst

Okay. Great. Okay. And then the follow-up question. You had a lot of reuse from 20 to 16. 28's had a long life. But as you start to migrate customers to 16 with the FFC, can 28 be migrated efficiently to FinFET or 10 or do you expect to keep that node at 28? Can you migrate and reuse the 28 if demand starts to fall in the next couple of years?



Morris Chang - TSMC - Chairman

I'm sorry, I didn't hear the question.

Elizabeth Sun - TSMC - Director of Corporate Communications

So, Randy, you are asking whether or not 28-nanometer capacity can be migrated to produce FinFET?

Morris Chang - TSMC - Chairman

28-nano can be migrated to what?

Elizabeth Sun - TSMC - Director of Corporate Communications

Produce FinFET tech.

Morris Chang - TSMC - Chairman

Produce FinFET? 28 to FinFET? Well, I imagine -- well does somebody --? Well the simple answer is some of it, yes. Okay? Some of it will be. But do you have a bit more detail?

Mark Liu - TSMC - President & Co-CEO

We have done that. But we see the 28-nanometer demand continue to be sustaining what the capacity we are having today. So hopefully we stay competitive and keep that demand.

Randy Abrams - Credit Suisse - Analyst

Thank you.

Elizabeth Sun - TSMC - Director of Corporate Communications

All right. There's a hand.

Morris Chang - TSMC - Chairman

We still have one-micron, one-micron equipment that's being utilized now. So to convert one node of the equipment to another node is not our first priority.

Elizabeth Sun - TSMC - Director of Corporate Communications

Okay. I see a hand over there, but I do not really know you. Can you identify yourself?

Ken Koyanagi - *Nikkei Asian Review - Media*

Yes. My name is Ken Koyanagi, with Nikkei Asian Review, from Japan. I understand you made a decision about China investment after last fall election. And I'm just curious how you reached that condition -- decision, after assessing how -- what particular risks are involved in this investment? How did you assess the political risks? Especially after the election and right before the election, which will probably change the political landscape of the cross-strait relationship?

Morris Chang - *TSMC - Chairman*

What do you mean by political risks?

Ken Koyanagi - *Nikkei Asian Review - Media*

Well I think you can think of a lot of scenarios. There will be more tensions between the two territories between the channel, strait, and which might affect how you will be treated by the Mainland Chinese government.

Morris Chang - *TSMC - Chairman*

Well we are a business, and a lot of businesses, a lot of Taiwan businesses are in China. And we are really among the ones that are investing in China the least. We are among Taiwan companies, I think, we are perhaps the -- if we consider the relative size and so on, we still have more than 90% of our people, of our employees in Taiwan. And the capital investment we have made in China so far was miniscule compared to the investment that we have made in Taiwan.

So yes, we have considered all these risks. In fact, we've discussed our proposal with a lot of people. So -- and we did reach this decision of making investment in China, building a plant, and also setting up a design center, a design service center. That's important too. That's important for enhancing our access into the Chinese market.

So yes, we have considered all these risks. Yes. Well, if you call them risks. It seems to me it's -- a lot of people have -- well, the US, emerging companies have made a lot of investments in China too. And so yes.

Elizabeth Sun - *TSMC - Director of Corporate Communications*

HSBC, Steven Pelayo, has a follow-up question.

Steven Pelayo - *HSBC - Analyst*

There's been an unprecedented amount of semiconductor M&A in the last, I don't know, 15 months or so, more than the last 15 years. I'm just curious if you're seeing any short-term impacts, as these companies consolidate and rationalize, that's impacting any of your near-term demand? And then if you have any thoughts maybe longer term in terms of the purchasing power of a much larger, stronger customer?

Morris Chang - *TSMC - Chairman*

Well the three big ones last year, as far as we were concerned, were Intel, Intel's acquisition of Altera, Avago and Broadcom, NXP and Freescale, yes. All six of them, I'm talking about both the acquirer and the acquired, all six of them were our good customers. And after the combination there'll be three. And I hope and I have reason to expect that the three combined entities will continue to be our good customers. That's what being everybody's foundry means.

Steven Pelayo - HSBC - Analyst

One more follow up.

Morris Chang - TSMC - Chairman

That's not your question? Your question?

Steven Pelayo - HSBC - Analyst

Well near term as well. I'm curious as they're trying to rationalize their businesses and consolidate these two, are they slowing maybe their order activity to figure out what their final company's ultimately going to look like? Are you seeing any short-term impacts?

Morris Chang - TSMC - Chairman

No, we don't see any short-term impact.

Steven Pelayo - HSBC - Analyst

No? Okay. And then my second question was you had an anchor customer at 16-nanometer in the second half of 2015 that appears to be staying on 16-nanometer as they go into 2016. Does this mean there could be die size increases as they add more functionality and perhaps more wafers needed from you?

Morris Chang - TSMC - Chairman

C.C.?

C.C. Wei - TSMC - President & Co-CEO

Your question is whether they increase the die size?

Steven Pelayo - HSBC - Analyst

I'm saying that two years ago you went from 20 to 16, so you had this node jump so they could -- your customers could keep their die size the same by adding more functionality. Now they're staying at 16-nanometer, some of the anchor customers, and so I'm wondering if maybe that means the die size is going to increase and thus require more wafers from TSMC to meet the same units.

C.C. Wei - TSMC - President & Co-CEO

Well, I don't comment on the die size, but I can tell you that they add a lot of functionality inside. So you look at the smartphone, they have become better and better.

Steven Pelayo - HSBC - Analyst

Okay. Fair enough. Thank you.



Elizabeth Sun - TSMC - Director of Corporate Communications

All right. Due to the time consideration, we will conclude our conference at this point.

So before we conclude today's conference, please be advised that the replay of the conference will be accessible within three hours from now. Transcript will be available 24 hours from now. And they are all available through our website.

Thank you for joining us today. We hope you will join us again next quarter. Goodbye, and have a good day.

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