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OVERVIEW:

Co. reported full-year 2012 revenue of TWD506b and EPS of TWD6.41. 4Q12 revenue was TWD131b and EPS was TWD1.61. Expects full-year 2013 revenue to grow much higher than 7% and 1Q13 revenue to be TWD127-129b.



CORPORATE PARTICIPANTS

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Morris Chang *TSMC - CEO*

CONFERENCE CALL PARTICIPANTS

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Roland Shu *Citi - Analyst*

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Rick Hsu *JP Morgan - Analyst*

Steven Pelayo *HSBC - Analyst*

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PRESENTATION

Elizabeth Sun - *TSMC - Director of Corporate Communications*

Welcome to TSMC's fourth-quarter 2012 earnings conference and conference call. This is Elizabeth Sun, TSMC's Director of Corporate Communications and your host for today.

The event is webcast live via TSMC's website at www.tsmc.com. If you are joining us through the conference call your dialing 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, Ms. Lora Ho, will summarize our operations in the fourth quarter and for the full year 2012, followed by our guidance for the first quarter 2013. Afterwards TSMC's Chairman and CEO, Dr. Morris Chang, will provide his general remarks and a couple of key messages. Then we will open the floor to questions.

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 download the summary slides in relation to today's earnings conference presentation.

Before we begin, 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, Ms. Lora Ho.



Lora Ho - TSMC - VP, CFO

Thank you, Elizabeth. Good afternoon, everyone. Thank you for your participation today. My presentation will start with financial highlights for the fourth quarter and a recap of 2012 financial performance, followed by the guidance for the first quarter.

In the fourth quarter, despite inventory crashing in the IC supply chain, demand for our products was higher than we expected three months ago, resulting in above-guidance revenue and a profit margins. On a sequential basis our fourth-quarter revenue decreased 7% to TWD131b. Gross margin was 47.2%, down 1.6 percentage points from the third quarter. This is mainly due to lower capacity utilization while cost improvements and a favorable inventory evaluation adjustment offset some of the decline.

Operating margin was 35.2%, down 2 percentage points from the third quarter. Operating expense as a percent of revenue increased 0.4 percentage points on a smaller revenue base. Non-operating items were small losses of TWD7m (sic - see presentation "TWD0.01b") in the fourth quarter and as we recorded an impairment charge for certain invested companies. Overall, our fourth-quarter EPS was TWD1.61, ROE was 23.8%.

In terms of revenue by application, as I just mentioned, inventory correction in the IC supply chain has affected overall demand for TSMC's wafer. However, demand for mobile computing devices remained firm, making communication the only growing segment in the fourth quarter, while demand for computer, consumer and industrial-related product all declined by double digits. As a result, revenue contribution from communication-related applications further increased from 49% in the third quarter to 54% in the fourth quarter.

On a full-year basis, communication increased 23% and represented 50% of our revenue -- wafer revenue. The major contributing segment includes application processor, baseband, CMOS image sensor and wireless LAN, reflecting the strong demand for mobile computing devices.

Another fast-growing application is Industrial & Standard, which grew 42% year over year. The growth was mainly contributed by the increasing usage of power IC, data converter, touch controller and Flash controller within mobile devices. This also reflected our success in developing specialty technology businesses.

If we look at the revenue by technology, thanks to customer's strong demand for TSMC's 28-nanometer technology and the excellent execution by the operation team, revenue contribution from this node jumped from 13% in the prior quarter to 22% in the fourth quarter. We see 28-nanometer as a very successful node for TSMC, which already accounts for [12%] of our full-year revenue in 2012. Looking forward, we remain confident 28 revenue contribution will exceed 30% for the whole year in 2013 and margin will be at corporate level starting from this quarter.

Taking a look at the balance sheet, on the asset side, cash and marketable securities ended the quarter at TWD151b, slightly increased from last quarter. Long-term investment increased to TWD66b, mainly due to the TWD31.5b investment in ASML shares. This strategic investment will be recognized as available for sale in our balance sheet.

On the liability side, current liability increased TWD23b, mainly due to increase in payables to contractors and equipment suppliers as well as increase in short-term loans for hedging purpose.

Long-term debt increased by TWD4.4b to TWD82b as we issued more corporate bonds in the fourth quarter.

Our days of inventory increased by six days to 50 days, mainly due to higher working process for 28-nanometer product in response to a strong market demand and an increase of raw material.

On the cash flow side we generated TWD85b from operations in the fourth quarter and invested TWD60b in capital expenditure. Overall our cash balance increased TWD5b to TWD143b at the end of the fourth quarter. Due to higher operating cash flow and the lower capital expenditure, free cash flow improved from negative TWD2b in the third quarter to positive TWD26b in the fourth quarter.

Now let's take a look at the capital expenditure. We spent \$2b on capital expenditure in the fourth quarter. As a result full-year CapEx ended at \$8.3b, in line with our prior guidance.



Let me make some comments on our capacity plan. As we continued adding capacity for 28-nanometer process technology, our total capacity increased 4% to around 4m 8-inch equivalent wafers in the fourth quarter. For the full year our 12-inch capacity had increased by 21% and the total annual capacity increased by 14% to reach about 15m wafers. We expect the total capacity to continue to increase -- to decrease slightly by 1.2% in the first quarter of 2013 due to fewer working days and a scheduled maintenance.

Now I would like to give you a recap of our performance in the year of 2012. 2012 is a record year for TSMC. Our strength in technology and manufacturing made us well positioned in the mobile computing market. We are happy to mark the year with record sales and profitability despite difficult macroeconomic environment.

Compared with 2011, our revenue increased 18.5% year over year to reach TWD506b. We continue to outperform the semiconductor and foundry industries.

As for profitability, although the rising depreciation and fast ramp of 28-nanometer have indeed put pressure on our gross margin, nevertheless our gross margin has increased to 48%, a 2.7-percentage-point increase from 2011 thanks to higher utilization of the capacity we invested in.

Earnings per share increased 23.8% to TWD6.41. And ROE for the whole year was 24.6% compared to the 22.3% in 2011.

Before I dive in the first-quarter guidance, I would like to brief you about the changes in our effective tax rate in 2013. TSMC's tax rate is projected to be 14% in year 2013, which is significantly higher than 8.7% in 2012. The higher tax rates are due to the following reasons.

First, the introduction of capital gain tax in Taiwan, coupled with the increase of the AMT rate from 10% to 12% will cause our effective tax rate to increase by 2 percentage points. Second, higher tax penalty on appropriated retained earnings as we are making more net income by keeping the same dividend. This will add 1.7 percentage points to our effective tax rate. Third, a 0.9-percentage-point increase caused by an expiration of certain tax exemptions. Lastly, the 0.7 percentage points is attributed to the absence of certain subsidiaries' loss carry-forward.

Under the current tax environment we expect the tax rate for 2013 and 2014 will be around 14%.

I have finished my financial report. Now let me provide you our first-quarter guidance. Based on our current business expectation and forecast, foreign exchange rate of TWD28.90, we expect our revenue to be between TWD127b and TWD129b. In terms of margins, we expect the first-quarter gross margin to be between 43.5% and 45.5% and operating margin to be between 31.5% and 33.5%.

This concludes my remarks. Let me turn the podium to our chairman and CEO, Dr. Morris Chang.

Morris Chang - TSMC - CEO

Good afternoon, ladies and gentlemen. I'll make a few comments on last year's achievements, on this year as a whole and specifically on the first quarter. And I will also comment on 28-nanometer technology and on 20-nanometer and the 16 FinFET, and then finally on CapEx -- this year's CapEx.

Lora has already reported the financials of last year to you basically. Last year was a year of achievements for us. Revenue grew 18% to reach \$17.1b and the EPS grew 24% to reach TWD6.41 per share.

28-nanometer technology was a resounding success. The production in 2012 increased more than 30-fold over 2011. And we have enjoyed throughout the year, in spite of a lot of attempts of the competition, we've enjoyed throughout the year close to 100% foundry market share in 28-nanometer technology.

We have also in the year 2012 further strengthened our R&D. Our R&D expenditure increased from TWD33.8b in 2011 to TWD40.4b in 2012. Our R&D people increased from 3,400 at the end of 2011 to 3,900 at the end of '12.



Now a few words on 2013 and the first quarter of 2013. For the full year 2013 we are forecasting a global GDP growth of 2.6%, which is a bit higher than last year's global GDP growth for 2.4%. Now we are forecasting 2.6% for next year -- I'm sorry, this year. We are forecasting a world [SC] market growth of 3%. We are forecasting a fabulous, fabulous Company growth of 9%. We are forecasting a foundry industry growth of 7%. And we are forecasting a TSMC revenue growth much higher than 7%. So those are our forecasts for the full year 2013.

For our first quarter 2013, I have some comments on supply chain inventory to make. Three months ago, in the last investors' conference in October, we expected the supply chain inventory to decline from 7 days above seasonal in the fourth quarter to 1 day below seasonal in the first quarter. That was our expectation three months ago, that the supply chain inventory would decline from 7 days above seasonal in the fourth quarter to 1 day below seasonal in the first quarter, all together an 8-day decline.

Now, because many mobile product manufacturers have accelerated their new product launch this year, instead of late in the year they have now pulled ahead to earlier in the year, and therefore they need IC supplies, IC inventories earlier. So the supply chain inventory now is forecast to decline only slightly from fourth quarter to first quarter. Instead of 7 days above normal to 1 day below normal, we are now forecasting that the inventory will decline from 6 days above seasonal, well, instead of 7 days.

Three months ago we thought it was -- the inventory was going to be 7 days above seasonal. Now we have better information and we think it's 6 days above seasonal in the fourth quarter. But the big change is that we are forecasting it to decline to only four days above seasonal in the first quarter, which is only a 2-day -- equivalent 2-day decline instead of the 8-day decline that we had forecasted three months ago.

All this resulted in a higher first quarter than we thought three months ago. So now we expect the first-quarter revenue to decline rather than -- three months ago we expected it to decline, the revenue, we expected it to decline from the fourth quarter. We now expect the first-quarter revenue to be essentially flat in US dollars from the fourth quarter -- essentially flat from the fourth quarter in US dollars.

A few more words on 28-nanometer technology. After accomplishing a 30-fold increase in production, 28-nanometer capacity and output continued to ramp up aggressively this year. Production of 28-nanometer wafers in 2013 will triple that of 2012. I think the newcomers may ask do we have customers. The old customers I think know us well enough not to ask that. Yes, we have customers.

High-K metal gate will surpass oxynitride, that's in the 28-nanometer. We have, as you know, actually four types; three of those are high-K metal gate and the earliest type that we introduced was the oxynitride. And indeed, last year the majority of the production was the oxynitride. But the more advanced version, high-K metal gate, will surpass oxynitride in the third quarter this year. And in the fourth quarter it will even surpass oxynitride even more.

Gross margin percentage of 28-nanometer in 1Q '13, which is this quarter, will be slightly higher than corporate average and is expected to remain so in 2013. This is neither dragging the corporate average down, nor is it pulling it up.

Now a few words on 20-nanometer and 16 FinFET. Both technologies are in progress in R&D. Both represent state-of-the-art, leading-edge-type technology, not just in foundry but in the whole SC industry. And enough discussions have taken place with enough customers with large requirements to lead us to believe that in both its first and second year of production, in both the first and second year of production of 20SoC, and the first year will be next year, 2014. Second year will be the year after that, 2015. In both those years of 20SoC production, the volume of 20SoC will be larger than 28-nanometer in its first and second year of production, which were last year and this year. That's a long sentence, but let me repeat it in slightly different words.

We think that our volume of 20SoC next year, 2014, will be greater than the volume of 28-nanometer last year. And we think the volume of 20SoC in 2015 will be greater than the volume of 28-nanometer this year. Our CapEx plan is therefore in accordance with that belief.

So a few more words about CapEx. This year it will be about \$9b, give or take a few hundred million, \$9b. 88% of it will be for 28-nanometer, 20-nanometer, 16-nanometer building facility equipment. But basically 88% will be for 28, 20, 16, everything. Building -- we are building new buildings now in fact. Facility -- or we have been building new buildings for quite a while, facilities and equipment.



5% will be for R&D equipment; that's basically 10-nanometer and beyond and [CoWoS] and whatever. 2% for specialty technology equipment; that is [CoWoS], embedded Flash, microcontroller, imaging and so on. 2% of capital. And 1% is for the piece of land that we just acquired in Zhunan. I think I told you about it last time, did I not? I think I told the conference about it. We bought a piece of land in Zhunan, which is about, I understand, 15 or 20 minutes' driving from our Hsinchu headquarters.

So those are the comments that I have prepared.

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 from both -- both from the floor and from the call. Should you wish to raise your question in Chinese, I will translate it to English before our CEO or CFO answers your question.

For those of you on the call, if you would like to ask the question, please press the star then one on our telephone keypad now, star then one. Questions will be taken in the order in which they were received. If at any time you would like to remove yourself from the questioning queue, please press the pound or the hash key.

Now, let's begin the Q&A session. First question goes to Deutsche Bank, Michael Chou -- comes from Michael.

Michael Chou - Deutsche Bank - Analyst

Hi, Chairman. Could you give some update for your LED and solar business? Thank you.

Morris Chang - TSMC - CEO

Yes. LED, on both LED and solar our strategy is, first, to achieve a technological distinction, either better performance than competitors, than current competitors, or better cost than current competitors. Anyway, a technological distinction before we start large-scale production, before we put a lot of capital money into, etc. That's the philosophy. That is the strategy, philosophy, for both solar and LED.

At this point I think we are perhaps a little further ahead in LED than in solar. I think the environment is a bit more friendly to the LED also. So in LED we are forging a way ahead. And in fact in the fourth quarter, last quarter, we already had some commercial revenue, by commercial revenue I mean more than samples, but really real product for real money. So we already had some revenue. And we expect the revenue to increase pretty dramatically this year. I don't know whether it's going to be 30-fold or not, but it will increase pretty dramatically this year.

Now on solar, as I said, the environment is not as friendly because the world has a at least silicon solar capacity glut. And major countries are putting up incentives for more production. And however, we think that our thin film, our CIGE technology is a pretty promising one and we are spending a lot of R&D money to try to achieve a distinction with the CIGE technology. But we are not in the commercial production, commercial revenue stage yet.

Michael Chou - Deutsche Bank - Analyst

Thank you. The follow-up question is would your LED be based on silicon substrates or traditional sulfur substrates?



Morris Chang - TSMC - CEO

I guess -- I think we said that earlier.

Elizabeth Sun - TSMC - Director of Corporate Communications

We actually have both. We have both.

Morris Chang - TSMC - CEO

You answer the question. You answer the question then.

Elizabeth Sun - TSMC - Director of Corporate Communications

Yes, I think we have both.

Michael Chou - Deutsche Bank - Analyst

Thank you. The second question is --.

Morris Chang - TSMC - CEO

I'm not sure her answer is right but hopefully [we'll let you know].

Elizabeth Sun - TSMC - Director of Corporate Communications

I will verify this and let you know.

Michael Chou - Deutsche Bank - Analyst

Okay. Thank you. My second question is what is your total capacity increase in 2013 and would you increase on capacity for 20-nanometer as well? Thank you.

Lora Ho - TSMC - VP, CFO

We the rise in CapEx we expect to increase the total capacity this year versus last year about 10%. And we are putting money on 20-nanometer. Yes, we have a small, small pilot line for 20-nanometer.

Morris Chang - TSMC - CEO

Why do you think I composed that long sentence? I said we are planning our capacity accordingly, that means we are spending money on 20. We will be spending money on 20-nanometer capacity.

Michael Chou - Deutsche Bank - Analyst

Thank you.

Elizabeth Sun - TSMC - Director of Corporate Communications

Next question comes from Citi's Roland Shu.

Roland Shu - Citi - Analyst

Hi, Chairman and Lora. My first question is to Lora. Under your TWD9b CapEx standing this year, so how has the depreciation increased this year?

Lora Ho - TSMC - VP, CFO

We spent TWD9b, which is very much frontend-loaded, about two-thirds frontend-loaded in first half and one-third in second half. We expect depreciation is -- will go up around 23%, 24% year over year. This is very similar to this year. This year depreciation went up by 22%.

Roland Shu - Citi - Analyst

Okay. So this is a bigger -- a little bit bigger than 20% you guided us last quarter. So what is the reason?

Lora Ho - TSMC - VP, CFO

This, as I just said, will be frontend-loaded so depreciation will happen earlier for the whole year.

Roland Shu - Citi - Analyst

Okay. So how about the first-quarter depreciation? First-quarter depreciation.

Lora Ho - TSMC - VP, CFO

First-quarter depreciation will be only slightly higher than fourth quarter. But starting from second quarter it will increase faster.

Roland Shu - Citi - Analyst

Okay. I think my follow-up question for this one is under IFRS, actually the depreciation years actually can be revisited every year by the Company. So are you considering to change your depreciation year on your 28-nanometer, 20-nanometer or even 16-nanometer investment, since most of this investment on this [backend and life] equipment for this metal interconnection actually can be shared? So that means that investment on the [backend and life] of this technology, the lifetime definitely will be longer than previously (inaudible) node. So are you considering to revisit the depreciation years for the investment on this node?

Lora Ho - TSMC - VP, CFO

Actually our economical life of our technology has always been longer than the depreciation year, which we use five years. We have no plan to make it longer. But for certain tools, actually the economic life might be lower than five year. For those parts we may consider to use lower depreciation years.



Roland Shu - Citi - Analyst

Okay. Thanks.

Morris Chang - TSMC - CEO

That's the other way. I think he is suggesting that since a lot of equipment can be used for 20 nanometers and 16 and so on, we can make the life longer. Well thank you for the thought. We will think about it.

Roland Shu - Citi - Analyst

Yes. Okay. Thank you. My second question actually is to Chairman. I think Chairman is commenting this year TSMC growth will be much greater than 7% of the foundry. So can you comment about what's the growth driver to drive such great growth? And also do you see any momentum change for the IDM outsourcing in this year? Thank you.

Morris Chang - TSMC - CEO

Well first of all let me say that I'm not trying to be coy when I say that our growth will be much higher than 7% without specifying a number. I'm not trying to be coy. It's just that if I say -- if I predict more specifically I think that we'll get a call from the Taiwan SEC. They will want it, so that's the reason.

So no, you asked about the driver. The driver is the 28-nanometer. And you -- just a quick back-of-the-envelope calculation will show you that the growth of 28-nanometer this year will actually be greater than the total growth of the Company, if the total growth of the Company -- even if the total growth of the Company is much higher than 7%. I was talking about a -- what, this year's production of 28, triple, yes. So that growth is -- and I think your question was originally on what customers, and I'm not going to comment on customers. But I will say that the driver is 28-nanometer technology.

Roland Shu - Citi - Analyst

So how about the IDM companies' contribution this year, because IDM -- especially for Japanese IDM company?

Morris Chang - TSMC - CEO

You know the answer or should I answer it? Should I answer it with --?

Lora Ho - TSMC - VP, CFO

I also know the answer.

Morris Chang - TSMC - CEO

I think, yes, I do expect the IDMs in Japan to contribute more. But compared to the contribution that the 28-nanometer technology will make, the Japanese IDMs' increased outsourcing to us will be relatively small. Yes.

Elizabeth Sun - TSMC - Director of Corporate Communications

All right. I think somehow at this time there are quite a few analysts who used to attend our conference in person here are actually overseas this time and they are on the call. So I think we will now take our next question from the call. Operator, please proceed with the first caller.

Operator

The first question on the line today comes from the line of Daniel Heyler from Merrill Lynch. Daniel, please go ahead.

Daniel Heyler - Bank of America-Merrill Lynch - Analyst

Thanks for that. Thank you, Elizabeth. I'm sorry that I couldn't be there at this time. Just a quick question, I guess two. First relates to Dr. Chang's growth outlook. As you mentioned, foundry growth up 7%, fabless up 9% in 2013, TSMC much bigger than that, and you did mention 28-nanometer. I want to ask, maybe talk a little bit more in terms of some of the end markets because I did notice that your computer and consumer businesses were pretty good in 2012, showing a strong -- pretty strong growth. I'm wondering in the non-communications business what your prognosis is for your business in 2013.

Morris Chang - TSMC - CEO

I didn't get it.

Elizabeth Sun - TSMC - Director of Corporate Communications

If we exclude the communication-related applications, what would be the growth for TSMC, the non-communication related business growth?

Morris Chang - TSMC - CEO

Well I think that almost all the 28-nanometer is communications-related, right?

Elizabeth Sun - TSMC - Director of Corporate Communications

There are some -- there are some computers too.

Morris Chang - TSMC - CEO

There are some computers.

Elizabeth Sun - TSMC - Director of Corporate Communications

Yes.

Morris Chang - TSMC - CEO

But what would you say? I'm here roughly calculating with you, Dan. So I think that maybe one-third -- one-third is computers. One-third of the 28-nanometer growth is computers. So that leaves two-thirds communications-related. So with that growth, then if we try to answer your question now, I think the rest is, I think, is almost the same; it doesn't change very much.



Daniel Heyler - *Bank of America-Merrill Lynch - Analyst*

Okay. Great. So fair to say you don't need to see significant --?

Morris Chang - *TSMC - CEO*

You are coming through loud but not very clear. So if you maybe slow down a little bit, Dan, and so -- and pronounce each word more clearly, maybe it will help, yes.

Daniel Heyler - *Bank of America-Merrill Lynch - Analyst*

Thank you. Thank you. I'm trying to save time for my colleagues. Okay. So fair to say that the growth this year that you're bullish about, you really don't need to see necessarily a big recovery in consumer or computer to achieve your bullish forecast, that you can pretty much generate that kind of growth particularly from communications. Is that a fair summary?

Morris Chang - *TSMC - CEO*

Yes. I'd say a fair summary, but I think really a more basic answer is that we intend to generate our growth with new technology.

Daniel Heyler - *Bank of America-Merrill Lynch - Analyst*

Great. Okay.

Morris Chang - *TSMC - CEO*

Yes.

Daniel Heyler - *Bank of America-Merrill Lynch - Analyst*

Great. My second question relates to the cost of 28-nanometer. There's many companies, fabless included, have obviously again concerns that perhaps 20-nanometer cost per transistor would see a pretty significant uptick. You have a pretty bullish forecast as well and outlook for that. Do we need to see pricing increase either by chip companies and others to pay for this or do you think Moore's law is pretty much intact at 20-nano?

Morris Chang - *TSMC - CEO*

Moore's law is what?

Elizabeth Sun - *TSMC - Director of Corporate Communications*

I think Dan's question is some customers are saying that when we get to 20-nanometer, the cost per transistor actually is higher. Will TSMC pass on the cost to our customers?

Morris Chang - TSMC - CEO

I'm not going to answer that. I will just repeat what I said earlier in my statement that enough discussions have taken place with enough customers who have large requirements to lead us to believe that the volume will be very large.

Daniel Heyler - Bank of America-Merrill Lynch - Analyst

No, that's fine. No, I'm actually wondering if -- some of the chip companies have said they may need to increase their prices and, yes, they're willing to try to do that. So your expectations are that costs will be higher generally, I think from your customers, so I just wanted to get your perspective on that.

Morris Chang - TSMC - CEO

Well, again, you're asking me to say something about price and I really am not going to say anything about price. But I will just say that enough discussions have taken place with enough customers. Of course those discussions involve price discussions too, Dan. They are not just -- they were not just technical discussions. So they --.

Daniel Heyler - Bank of America-Merrill Lynch - Analyst

Yes, not so much about price, just kind of the economics. But obviously the design ecosystem is getting very, very good and manufacturing is getting better, I just wondered how things are progressing. Thanks.

Morris Chang - TSMC - CEO

Thank you.

Elizabeth Sun - TSMC - Director of Corporate Communications

Okay. We will continue on the call. Next question will also be coming from the call. Operator, please proceed to the next caller.

Operator

The next question on the phone line today comes from the line of Randy Abrams from Credit Suisse. Randy, please go ahead.

Randy Abrams - Credit Suisse - Analyst

Okay. Thanks so much. My question first is on competition. You mentioned in the prepared remarks near 100% share on 28-nanometer last year. Could you talk about how you're viewing the effective capacity and competition on 28-nanometer as it matures this year and whether you're seeing competitors ramp up, and if you could give an early view on your market share in the early stage of 20-nanometer?

Morris Chang - TSMC - CEO

I don't know what the 28-nanometer capacity is. Incidentally, when I say 28, I mean -- when I said 28, I meant 28 and I don't include 32-nanometer. If you include 32-nanometer, which is not 28-nanometer, by the way, but if you include that then you of course -- we have a lower market share than almost 100% and the capacity will be correspondingly a lot bigger.

Randy Abrams - *Credit Suisse - Analyst*

Okay. But could you say if you're seeing more competitors on the, say, 28/32 as the node matures this year? And as you look at the tape-out activity on 20, do you see --?

Morris Chang - *TSMC - CEO*

We don't group them together. 32 is not 22 -- 32 is not 28. Randy, isn't it?

Randy Abrams - *Credit Suisse - Analyst*

Yes, Randy.

Morris Chang - *TSMC - CEO*

Hi, Randy.

Randy Abrams - *Credit Suisse - Analyst*

Okay.

Morris Chang - *TSMC - CEO*

Yes. Now can I say something about competitors in general, the advanced technology competitors? Well you know who they are as well as I do. So I think every one of them is a formidable competitor. But I also think that we are ready to tackle, to fight every one of them as we have always been ready to fight every new competitor.

I remember all the grilling that I went through when we had UMC, when we had SMIC, when we had the Global Foundry, and now we have Samsung and we have Intel. Well every one of those are, I think -- every one was a formidable competitor at that time; everyone was. And we take everyone very, very seriously. But we also fought with everyone in the past and with the current competitors that have just appeared on the scene. We always -- we have always felt that we have a lot of strengths. And I think in the past I have gone over our strengths. And if you want me to repeat them, I'd be very happy to repeat them, but I'm just afraid of boring you.

Randy Abrams - *Credit Suisse - Analyst*

Okay.

Morris Chang - *TSMC - CEO*

Yes.

Randy Abrams - *Credit Suisse - Analyst*

Okay, they're good. If I could follow up on the R&D investment where you had significant growth in 2012, could you talk about whether you expect the same growth in R&D and OpEx as a percent of sales? Or as you accelerate your sales growth rate, do you think there's a bit of operating leverage?

Morris Chang - TSMC - CEO

Well we expect a great deal from our increased R&D spending from our strengthening of the R&D, more and more strengthening. First of all, I said a little earlier that the growth engine in the next few years is going to be technology. Our growth engine is going to be technology. And we have proven that now already with 28-nanometer and we are going to prove it with 20, with 16, and then, a little later, with the 10.

So, why are we -- why have we so dramatically increased our R&D effort in the last few years? Number one, all right, because technology is going to be our growth engine. And I have said more than once, more than two or three times, in fact, that as far as Moore's law is concerned, if anyone is going to pursue Moore's law to the end, we will be there. So a large part of the money is being spent on the further pursuit of Moore's law. And that of course also includes UV, the investment that we have made in ASML, and it also includes the more path-finding type of R&D to improve transistor performance.

So now, a smaller part will be spent on CoWoS. And then another part, which is perhaps a bit greater than was spent on CoWoS, will be spent on specialty technologies, in better Flash and imaging power, power management, and all those specialty technology, that we expect to fill our more mature capacities. So we grow on new technology and we stay profitable, both with the new technology and with the backfilling of the capacity by specialty technologies.

I guess those are about the main uses of R&D fund, R&D money. Those are the biggest reasons for us to expend R&D. First, relentless pursuit of Moore's law, all facets of it, performance as well as cost as well as density, and including UV and transistor performance improvement. Second, CoWoS and specialty technologies. So those are the main uses.

Elizabeth Sun - TSMC - Director of Corporate Communications

Chairman, I think Randy's question also includes, with all these increases in R&D, whether R&D as a percent of revenue will go up.

Morris Chang - TSMC - CEO

No. I -- well I'm not going to predict for the very distant future. But for this year, and my plan now is to keep it at about 8% because, as I said, the next few years will be either growth years or strong growth years. Each one of the next few years will be either a growth year or a strong growth year. Well, by strong I mean double-digit. By growth year, well, I don't consider 1% growth a growth year, so I mean 1% to 10% is a growth year. And strong growth year is double digits. So over the next few years I expect every one of them will be either growth or strong growth. And so our R&D expenditure will go up even though the percentage as a percent of revenue is not going to change very much. I don't think it's going to decrease.

Randy Abrams - Credit Suisse - Analyst

Thank you, Dr. Chang.

Elizabeth Sun - TSMC - Director of Corporate Communications

Okay. I think we'll come back to the floor now. Our next question comes from Donald Lu from Goldman Sachs.

Donald Lu - Goldman Sachs - Analyst

My first question is, if I hear correctly, Chairman, you said fabless growth is 9%, foundry is only 7%. Why -- foundry usually grows even faster than the fabless --.



Morris Chang - TSMC - CEO

I think it must have to do with the inventory change and all that stuff.

Donald Lu - Goldman Sachs - Analyst

So maybe --.

Morris Chang - TSMC - CEO

Yes. I saw the numbers and I really had the same question, but it wasn't important for me to ask. I didn't feel it was important enough to ask the guy that gave me the numbers. The guy that gave me the numbers is our veteran forecaster, who is sometimes right and sometimes wrong.

Donald Lu - Goldman Sachs - Analyst

Okay. So not really -- not very important.

Morris Chang - TSMC - CEO

I think it has to do with the inventory change, yes.

Donald Lu - Goldman Sachs - Analyst

Okay. Just to follow up on that, communication in terms of demand is growing really strong in the last few quarters. What's -- how much is your revenue from smartphone and tablet today?

Morris Chang - TSMC - CEO

How much from smartphone and tablets? Why don't you say it?

Lora Ho - TSMC - VP, CFO

It's about 32%.

Donald Lu - Goldman Sachs - Analyst

32%, okay. My next question is more on the --.

Morris Chang - TSMC - CEO

You mean our total revenue, 32% is from smartphones and tablets?



Lora Ho - TSMC - VP, CFO

Mobile --.

Donald Lu - Goldman Sachs - Analyst

That is for the whole year?

Lora Ho - TSMC - VP, CFO

Yes.

Donald Lu - Goldman Sachs - Analyst

Last year?

Lora Ho - TSMC - VP, CFO

2013.

Donald Lu - Goldman Sachs - Analyst

In 2013, 32% are from smartphone and tablets? And that's including like touch controller, all those --?

Lora Ho - TSMC - VP, CFO

Right. Right.

Donald Lu - Goldman Sachs - Analyst

Components. Okay. My next question is on structural profitability.

Morris Chang - TSMC - CEO

Yes. My favorite subject.

Donald Lu - Goldman Sachs - Analyst

Great. The first part is the currency is moving in an adverse kind of direction. What's the impact of the currency on gross margin in Q4 and Q1 so we have idea on the apple-to-apple basis?

Lora Ho - TSMC - VP, CFO

Every 1% of FX change will have a 0.4 percentage point of our margin impact.



Donald Lu - *Goldman Sachs - Analyst*

Okay. And for the whole year would we expect structural profitability to trend in either direction?

Morris Chang - *TSMC - CEO*

Actually our structure profitability this year will be slightly better, about 1 percentage point better than last year, 100 basis points better than last year. On the other hand, we have a couple of uncertainties, one quite large and one not so large. The quite large one is the loading of the more -- the mature, all the technologies except 28. 28-nanometer, we are quite confident will have a utilization rate of around 100%. But all the other technology lines may have a lower utilization than last year.

Keep in mind that last year was a tough comparison. Last year everything was slow, the [coast] to 100%. And so I'm not saying at all that this year our utilization will be bad, but I'm saying that last year was a tough comparison.

And so even though -- now our structure, our definition of our structural profitability is -- leaves utilization to one side. So our structural profitability this year will be better than last year, a little less than 1 percentage point better than last year. But if you start to talk about actual profit margin then you have to take into account the utilization. And, as I said, the large uncertainty is utilization. And utilization, we have quoted numbers before.

Lora Ho - *TSMC - VP, CFO*

Yes. 1% utilization translates into about 0.35 to 0.4 percentage points.

Morris Chang - *TSMC - CEO*

Almost like the exchange rate. Every percentage less utilization means 0.35 to 0.4 percentage points less gross margin. So anyway, utilization is a greater uncertainty. And then exchange rate, of course, is an uncertainty too. Here it's only -- I say it's perhaps not as big an uncertainty because, my goodness, I sure hope that the exchange rate doesn't vary over the map. So -- okay.

Elizabeth Sun - *TSMC - Director of Corporate Communications*

Okay. Next question will also stay with the floor and comes from Morgan Stanley's Bill Lu.

Bill Lu - *Morgan Stanley - Analyst*

Yes, hi, Dr. Chang. Hi, Lora. Dr. Chang, if I hear your comments today, it seems like you are positive for the next multiple years and not just this year, whether it's the CapEx comments, whether it's saying that 20-nanometer is going to be bigger than 28, it all points towards several good years ahead of us. Now for that to happen, I think obviously technology you need to migrate, and I think we feel also pretty good about that. But the end market also has to be going at a much bigger -- faster pace than before as well. I'm wondering if you could talk about what gives you the confidence in multiple years out, because it's a very different comment than just saying customer forecasts are good for a couple of quarters.

And then secondly, what signs are you looking for that things aren't going to be that good?

Elizabeth Sun - *TSMC - Director of Corporate Communications*

I think, Bill, your question is, what is -- what will be the growth drivers for the end market, right? End market.

Bill Lu - Morgan Stanley - Analyst

Yes.

Morris Chang - TSMC - CEO

In multiple years, I mean four years, all right? Last year I meant five years and now I mean four years, okay? So it's not multiple, multiple, multiple years. It's four years.

And then the -- you are concerned that the world may end in the next four years. Anyway, the economy makes for that. No, of course, we're not predicting anything like that. And we are just following the conventional, consensual economic scenario, which is that the developed countries, US and Europe, will grow very slowly -- well actually US will grow medium slowly, 2.5% perhaps. And Europe will do worse. And Japan also will do worse than the United States. Of course one never knows what the new Prime Minister is going to do. One knows what he has already done, and what he has already done seems to be a bit on the positive side. But anyway, we're assuming that.

And we are also assuming that the developing economies will do quite well, China principally, but also a lot of other countries that China now exports to. Now all these smartphones and some tablets that China makes are not for Chinese consumption; they go to other countries. They go to other developing countries. And we believe that those developing economies will do quite well. So that's our macroeconomic scenario.

As far as the market is concerned -- the application market is concerned, we are -- we predict that the mobile products will be the dominant new products on the computer scene. And I think that they will continue to eat into the traditional notebook PC market. So I think these are really not -- they are pretty conventional assumptions. And those are the assumptions that we're making when we say that we are going to grow quite strongly in the next four years now, 2013, 2014, 2015, 2016, yes.

Bill Lu - Morgan Stanley - Analyst

I'm also wondering if there's anything that you're looking at that might change your mind.

Morris Chang - TSMC - CEO

Well, a lot of things could change our mind. A lot of things could change my mind, yes. But what do you have in mind that would change my mind? I think a lot of things could change my mind. If the US economy suddenly falls apart, then -- well then there's -- that will be a very big change, a pretty significant change. It won't change everything but it will be a significant change, yes.

Bill Lu - Morgan Stanley - Analyst

Same question is maybe for Lora. We're now in I guess, what, the fifth or sixth quarter of 28-nanometer production and typically you would expect to see pricing start to come down a little bit. But this year there's also a move from poly to high-K metal gate. So can you help me with how you think about pricing for 28 this year versus how I forecasted the previous nodes?

Lora Ho - TSMC - VP, CFO

We should -- we look at the structural profitability other than just looking at the pricing. So we have to work both on the pricing and also for the cost end. I think Chairman and I just said from this quarter, the 28-nanometer with higher utilization will track to corporate level margin and going forward we'll keep our intent like that. I think on the longer term that's what we also intend to do to maintain the similar level or even slightly higher than standard gross margin.



Elizabeth Sun - TSMC - Director of Corporate Communications

Bill, as you know that we cannot talk about specific prices. All right? Thank you for the understanding.

Now we'll go back to the call. Operator, please proceed with the next caller.

Operator

The next question on the phone comes from the line of Andrew Lu from Barclays. Andrew, please go ahead.

Andrew Lu - Barclays - Analyst

Thank you. Dr. Chang and Lora, thank you for taking my question. My first question is regarding earlier Dr. Chang mentioned year 2014 the 20-nanometer volume will be higher than '12 and '15 will be higher than '13. Is that including 16 FinFET in the year 2015 as well?

Morris Chang - TSMC - CEO

No, it does not.

Andrew Lu - Barclays - Analyst

So only the 20 high-K metal gate.

Morris Chang - TSMC - CEO

Right.

Andrew Lu - Barclays - Analyst

Okay. Thank you.

Morris Chang - TSMC - CEO

Now if you go to 2016 then I would tell you something different. But let's not go there for the time being.

Andrew Lu - Barclays - Analyst

So do you suggest there will be no 16 FinFET production in the year 2015?

Morris Chang - TSMC - CEO

I think it will be relatively small.



Andrew Lu - Barclays - Analyst

Thank you. My second question is the CoWoS, the 2.5G packaging. If you are charging customers \$5,000 per wafer, if you are doing a turnkey for customer on CoWoS, what additional value you can get from this customer basis?

Morris Chang - TSMC - CEO

Well I think the advantage that a customer will get is that we will be in charge of everything. We will be responsible for the whole thing till it's all packaged. And so if we -- if he uses another [OSAP] then who is going to be responsible for the yields? I think it will be a more difficult situation. So our advice to our customer is to let us handle the whole thing.

Now of course we have to be competitive in price and all that, and of course we're willing to do all that. But at the end I think that it will be advantageous for the customer to have us handle the whole thing.

Andrew Lu - Barclays - Analyst

Yes. But can we make some revenue by the CoWoS? For example, if we charge the customer \$5,000 a wafer, can we get additional \$2,000, \$3,000 on this kind of [holding back end]?

Morris Chang - TSMC - CEO

Well things are getting a little expensive aren't they? But then applications still grow and I think that of course in a free market economy, every price finds its equilibrium. So there needs to be enough demand and enough supply for there to be a price. So that's how it works.

And we feel quite confident that we can find this equilibrium and it will make it worthwhile for both a customer and for us to do this thing. Otherwise it won't be a business and we think it will be a business. We think it will not be a significant business until 2015/2016. As I said earlier, even a year ago I said that it will not be a \$1b or more business until 2015 or 2016, and I still feel that way.

Andrew Lu - Barclays - Analyst

Thank you.

Elizabeth Sun - TSMC - Director of Corporate Communications

We will continue with the call. And operator, please proceed with the next caller on the line.

Operator

The next question on the phone comes from the line of Mehdi Hosseini from SIG. Mehdi, please go ahead.

Mehdi Hosseini - SIG - Analyst

Yes, thanks for taking my question. I have one question for Dr. Chang and one for Lora. It was interesting to hear Intel as part of your competitors. Dr. Chang, could you please elaborate at what technology node and what kind of an end market application or segment you view Intel as becoming a more fierce competitor?

Elizabeth Sun - TSMC - Director of Corporate Communications

So Mehdi, your question is, according to TSMC's view, at which technology node will Intel becomes a more fierce competitor to us. Is that right?

Morris Chang - TSMC - CEO

Did he use the word fierce?

Elizabeth Sun - TSMC - Director of Corporate Communications

Yes.

Morris Chang - TSMC - CEO

Intel is very fierce to me now already, whether they are a competitor or not. At what node? Well, my goodness, I think that they are a competitor to us. Don't they have at least two foundry customers already? Is it two or is it more? Two, yes. So they are a competitor.

And I do believe that, I think Intel said it themselves and I believe them, that they will be very selective and they will not go out in a general way. They are not going to be like a TSMC. I don't know whether they said it complimentarily or deprecatingly. I imagine it's the latter actually. But anyway, I believe it. They are going to -- they're not going to be like a TSMC, which means that they will be selective and they will not be a general competitor.

Now as a selective competitor, I think they're already a competitor. And I think they intend to be a bigger competitor in the future. And they can do that any time they become qualified.

Mehdi Hosseini - SIG - Analyst

Got it. And then my final one has more to do with the P&L. If R&D is going to stay around 8%, how should we think about SG&A for 2013? Is that also going to stay in the 4% to 5% range?

Lora Ho - TSMC - VP, CFO

SG&A is in the 4%, roughly 4% range. If gross revenue gets higher growth, it can be nearly 3.5% to 4%, in that range.

Mehdi Hosseini - SIG - Analyst

Okay. And then one final question. Is there any way you can elaborate the number of tape-outs at 20-nanometer or if you can elaborate or quantify how many customers or anything that would give us a sense how the early demand looks like.

Morris Chang - TSMC - CEO

Well, Lora, you want to answer that question or you don't want to answer that?



Lora Ho - TSMC - VP, CFO

I don't.

Morris Chang - TSMC - CEO

Up to you. It's up to you whether we answer the question or don't answer the question.

Lora Ho - TSMC - VP, CFO

I will not answer this question.

Morris Chang - TSMC - CEO

He's asking how much of our --

Lora Ho - TSMC - VP, CFO

Tape-outs in 20-nanometer.

Morris Chang - TSMC - CEO

How much of CapEx?

Lora Ho - TSMC - VP, CFO

Tape-out.

Morris Chang - TSMC - CEO

Tape-out for 20.

Lora Ho - TSMC - VP, CFO

Tape-out. New product tape-out.

Morris Chang - TSMC - CEO

Okay. For 20-nanometer, no. I guess I would just limit myself to the comment that I already made that we have had enough discussions with enough customers who have large requirements that lead us to believe that the volume required in 2014 and in 2015 will be bigger than the 28-nanometer volume in 2012 and 2013 respectively. Did you get that this time?

Mehdi Hosseini - SIG - Analyst

Yes.



Morris Chang - TSMC - CEO

Thank you.

Elizabeth Sun - TSMC - Director of Corporate Communications

Okay. Now we are coming back to the floor. Any questions? Okay. Next question comes from JP Morgan, Rick Hsu.

Rick Hsu - JP Morgan - Analyst

Happy New Year, Chairman and Lora.

Morris Chang - TSMC - CEO

Likewise to you.

Rick Hsu - JP Morgan - Analyst

Thank you. Just one question from me. You mentioned earlier about your customer inventory, it's going to be still 4 days above seasonal in Q1.

Morris Chang - TSMC - CEO

Supply chain inventory.

Rick Hsu - JP Morgan - Analyst

All right, supply chain inventory, yes, rather than 1 day below seasonal in Q1. So would that negatively affect your second-quarter loading because that means your customers may exit Q1 still with excess inventory?

Morris Chang - TSMC - CEO

That's pretty smart.

Elizabeth Sun - TSMC - Director of Corporate Communications

Rick.

Morris Chang - TSMC - CEO

Rick, yes. Yes, I think it means that the second-quarter growth may not be quite as strong because first quarter is higher than we thought. Our scenario three months ago, six months ago, was that the first quarter would be low and second quarter, I think six months ago I even used the word strong rebound, did I not, Rick?



Rick Hsu - JP Morgan - Analyst

Yes.

Morris Chang - TSMC - CEO

But three months ago I deliberately omitted the word strong, but I said there'd be a rebound. So now I can maintain my words that I used three months ago. There will be a rebound. But it will not be a strong rebound as we thought it was going to be six months ago. Six months ago we thought first quarter would be quite low. In fact, six months ago we thought the fourth quarter and first quarter will be quite low. And it has now turned out that the fourth quarter was quite a bit -- quite a lot stronger than we anticipated six months ago and that the first quarter is also stronger than we anticipated six months ago.

But then in the second quarter the strong rebound that I referred to six months ago in the second quarter will not be quite as strong as we thought six months ago. All this came about because I said too much, I guess. So maybe the thing to do is not to say very much and just keep my mouth shut, and I think it would be a less interesting conference though.

Rick Hsu - JP Morgan - Analyst

Thank you.

Elizabeth Sun - TSMC - Director of Corporate Communications

If there's no more questions from -- there is, okay. Next one, well, the next question comes from HSBC, Steven Pelayo.

Steven Pelayo - HSBC - Analyst

Just two quick questions. One on some of the longer-term concerns to follow up Bill's question. I think we are in the steepest part of this transition now to the smartphone revolution. I think maybe it's even a majority of smartphones that are shipping today than feature phones. So it's the glory days, I guess you could say. And we were talking a year or two ago about how much your dollar content increased with the silicon content increase. So this is a 1b-unit market, maybe a 2b-unit market even in a couple of years. But clearly we are passing that threshold of now 50%. So we do worry two years from now, three years from now, where maybe smartphones are --.

Morris Chang - TSMC - CEO

You said a \$1b, \$2b market?

Steven Pelayo - HSBC - Analyst

No, 1b-unit.

Morris Chang - TSMC - CEO

1b units, yes.



Steven Pelayo - HSBC - Analyst

So we do worry what's that next 1b-plus-unit market that's going to have the same kind of silicon content increase that we've enjoyed in the smartphone revolution.

Morris Chang - TSMC - CEO

I wish I knew. I wish I knew. Does that answer your question?

Steven Pelayo - HSBC - Analyst

I don't know as well. The one follow-up I will say is that I think the math says that your 28-nanometer revenues now are bigger than all of UMC, so congratulations. That formidable competitor is a distant image in the rearview mirror.

Morris Chang - TSMC - CEO

I think it's a lot bigger than UMC.

Steven Pelayo - HSBC - Analyst

I think it is a lot actually. But I do want to talk a little bit about the surrounding nodes, first going up to 40-nanometer, because a lot of guys are still there and it is still more than 20% of revenues for you. Is there any more intense pricing environment or intense competition? Are people picking up second source in 40-nanometer here?

Morris Chang - TSMC - CEO

We -- I think that our 40-nanometer market share has dropped. I know it has dropped. We are just -- and we anticipated that and we certainly -- we're not going to just fight to -- we're not going to lower our price below what we intended to lower it to. We had our price strategy and we're not going to do anything different on price to -- in order -- just in order to keep the market share. But we do try to let it drop in a controlled manner.

And the way we do fight to make the drop a sort of controllable one is to backfill the capacity with specialty technologies. Specialty technologies are actually migrating upwards. They are just two or three or four generations behind the latest graphics, the latest APs and so on. Imagers were still at -- they are still at -- which generation?

Elizabeth Sun - TSMC - Director of Corporate Communications

90.

Morris Chang - TSMC - CEO

90, yes. But they will be migrating to --?

Lora Ho - TSMC - VP, CFO

65.



Morris Chang - TSMC - CEO

65, yes. So -- and they had migrated from 0.13 earlier. That's just taking one example. And another example is all these microcontrollers and so on. They're still at, what --?

Elizabeth Sun - TSMC - Director of Corporate Communications

0.18.

Morris Chang - TSMC - CEO

0.18. And they'll be migrating into 0.13 and so on. And the power stuff is --?

Elizabeth Sun - TSMC - Director of Corporate Communications

0.25.

Morris Chang - TSMC - CEO

0.25, yes, and they've been migrating to 0.18 and so on. So that's the picture. That is the strategy. And as I said earlier, I said a small part of our R&D money is being spent and a small part is really not that small. It's quite a large group. It's of course much smaller than the more [slow pursuit], but it's important to us to develop these special -- to let them migrate into the older technologies, very important to us.

Steven Pelayo - HSBC - Analyst

Can I just do two quick follow-ups to that? I really appreciate you guys commenting on 28-nanometer mix for the full year and corporate average gross margin. Could you just help us think, if we were trying to forecast the bottoms-up gross margins for you by node, so what is the 40-nanometer relative to your corporate average? What is a mature node relative to your corporate average gross margins? You don't have to be specific, but help me understand as I'm trying to think about bottoms-up gross margin forecasting.

Morris Chang - TSMC - CEO

I will give you a general philosophy, all right? It was a philosophy that I started 27 years ago when TSMC was started. My philosophy then and my philosophy now is I want all the products we make to be within a pretty narrow gross margin range. So that remains true till today.

I don't want to have -- the reason I started this -- that philosophy was because I hated to have to pick because of the gross margin. Capacity becomes tight. You make more risk because it's high margin and that was such an unnecessary burden on the manager's mind. I didn't want that. And now I still don't want that. I don't want to have to pick between the various opportunities just because of gross margin.

So a simple answer to your question is that we try to keep the margins on all products within a pretty narrow range. I would say it's a 10-point range. But -- well, not even that big. I would say it's a 7-, 8-point range.



Steven Pelayo - HSBC - Analyst

And my last question was just on some of the -- expanding your addressable market into things like LEDs, solar, packaging. If I try to corner you and ask you when do you think those would be 5% of revenues, would you give me a year?

Morris Chang - TSMC - CEO

Solar did you say?

Steven Pelayo - HSBC - Analyst

Your new markets, solar, LED and packaging. When do you think they could be 5% of total TSMC?

Morris Chang - TSMC - CEO

I'm not even counting on solar and LED. Those we have already [spun out]. Packaging, as I said, will be a \$1b in 2015, 2016. \$1b by then, it's only a few percent.

Steven Pelayo - HSBC - Analyst

Thank you.

Elizabeth Sun - TSMC - Director of Corporate Communications

All right. I see there's still one caller on the line who has been waiting for a long time. So operator, let's open the line to the next caller.

Operator

Your next question on the line comes from the line of Brett Simpson, Arete Research. Brett, please go ahead.

Brett Simpson - Arete Research - Analyst

Yes. Thanks very much. Dr. Chang, you mentioned this year wafer capacity for 28-nanometer will triple for TSMC. But how do you assess the total industry supply at 28-nanometer this year for foundry? And what level of increase do you see overall? So what level of increase do you see overall? And what market share do you think might be achievable for TSMC at 28-nanometer this year?

Elizabeth Sun - TSMC - Director of Corporate Communications

All right. Brett, your question is what is our view on the overall supply of 28-nanometer this year and what TSMC's market share is going to be on 28-nanometer this year. Is that correct?

Brett Simpson - Arete Research - Analyst

That's right. Thanks.

Morris Chang - TSMC - CEO

Overall supply/demand?

Elizabeth Sun - TSMC - Director of Corporate Communications

Capacity of 28.

Morris Chang - TSMC - CEO

What is the number?

Elizabeth Sun - TSMC - Director of Corporate Communications

Yes, right. Because we will be triple. What about the other people?

Morris Chang - TSMC - CEO

I don't think we give -- I was going to give the capacity but then our CFO told me that we don't do that.

Now market share, there since our CFO didn't tell me not to do it, so I'll venture forth and say that I said that the last year it was almost close to 100%. So I do expect that it will drop slightly from there. But I think that this year maybe we'll be close to 90%.

Brett Simpson - Arete Research - Analyst

Okay. That's helpful. And can you talk a bit about the 20-nanometer ramp schedule? So when specifically might we start to see first revenues for TSMC at 20-nanometer?

Elizabeth Sun - TSMC - Director of Corporate Communications

When will we see 20-nanometer revenue?

Morris Chang - TSMC - CEO

When? We are going to see quite a bit in 2014. Didn't I say that 2014 will be bigger than 2012?

Elizabeth Sun - TSMC - Director of Corporate Communications

That's right.

Morris Chang - TSMC - CEO

Yes. 2014 will be bigger than 2012. 28, 2012 for 28, yes.

Brett Simpson - Arete Research - Analyst

Okay. And then maybe just a final question on inventory. Dr. Chang, you mentioned that the inventories -- supply chain inventories aren't falling aggressively in Q1 as you first thought. How do you assess the situation beyond Q1? Do you think that the industry inventory levels get back to normal levels in Q2 or do you think it will take longer before this equilibrium takes place?

Morris Chang - TSMC - CEO

Well you're asking me about second quarter, and really we aren't ready to give our second-quarter guidance yet. But I will say that our current view of second-quarter inventory, supply chain inventory in the second quarter is also going to be higher than our previous view. In other words, the change from our previous view of inventory is that the previous view forecasted a pretty steep decline of inventory in the fourth quarter, in the first quarter and in the second quarter. And our current view is that the inventory will stay a lot flatter.

Brett Simpson - Arete Research - Analyst

Great. Thanks very much.

Elizabeth Sun - TSMC - Director of Corporate Communications

Okay. We are coming back to the floor. Next question comes from Goldman Sachs, Donald Lu.

Donald Lu - Goldman Sachs - Analyst

My first question is on tax. We have a new tax rate this year which is quite taxing, in a way.

Morris Chang - TSMC - CEO

You are right.

Donald Lu - Goldman Sachs - Analyst

And there are various ways you might be able to reduce that, for example, going to a less taxing jurisdiction, like Intel always does that. For example, Intel built a fab in Israel, Ireland, Dalian, etc. Would TSMC considering that given the change in tax rate?

Lora Ho - TSMC - VP, CFO

I think we may consider that not only for the -- not purely on the tax reason, because to build a fab outside of Taiwan is a big thing. We have to look into the efficiency, the cost and the local environment etc., etc. So currently we are not thinking just for the tax reason to go offshore. But maybe for the overall growth reason and any other reason, bigger-picture reason we may consider that.

Morris Chang - TSMC - CEO

I think Donald is thinking about Cayman Islands and so on. Maybe he's not thinking of moving our factory offshore, I don't think. Right?



Lora Ho - TSMC - VP, CFO

He's talking about that.

Donald Lu - Goldman Sachs - Analyst

I think both. Whatever works, so that in the future years maybe we can model the tax rate might decline again at some point.

Morris Chang - TSMC - CEO

I'm not very optimistic about that. Yes, we are paying 14% this year and I think you just said that you expect to pay 14% next year also.

Lora Ho - TSMC - VP, CFO

Yes.

Morris Chang - TSMC - CEO

But basically the Taiwan corporate income tax rate is still not very high; it's 17%. The United States has a 35% income tax rate. And now actually I looked at the -- I looked up -- (inaudible), you looked up Intel's effective tax rate for me, right? What was it? Do you remember?

Lora Ho - TSMC - VP, CFO

It was like 27%, yes.

Morris Chang - TSMC - CEO

No, no. You looked up for me. It was a lot lower than that, I think. Well, nobody knows.

Lora Ho - TSMC - VP, CFO

It's 27%.

Morris Chang - TSMC - CEO

Was it 27% for the year?

Lora Ho - TSMC - VP, CFO

Yes. We looked at the number.

Morris Chang - TSMC - CEO

I thought it was lower than that. But, yes, I thought it was lower at least in the first/second. But anyway it was -- all right. But the United States has a corporate income tax rate of 35%. And so anyway, we do have a lot of things to consider. But I agree with you that the 14%, a jump of 5 points, some points between last year and this year, I think that's certainly not a good thing for us.

Donald Lu - Goldman Sachs - Analyst

Okay. Second question is on the treatment for ASML investment. You just said you are putting that all in the investment ready for sale. But there are two portions of that; one is for the stock, one is for R&D investment. But the later part, what can you sell, the part you give ASML to help its R&D?

Lora Ho - TSMC - VP, CFO

That R&D support will be expenses, will be R&D expenses when it comes.

Donald Lu - Goldman Sachs - Analyst

And that would be expensed over certain years or --?

Lora Ho - TSMC - VP, CFO

Five years.

Morris Chang - TSMC - CEO

Starting this year, right.

Lora Ho - TSMC - VP, CFO

Yes.

Donald Lu - Goldman Sachs - Analyst

Okay. So that's part of the R&D expense already.

Lora Ho - TSMC - VP, CFO

Yes.

Donald Lu - Goldman Sachs - Analyst

Okay. Great. Thank you.



Elizabeth Sun - TSMC - Director of Corporate Communications

All right. If there's no further questions I think we'll conclude this quarter's investors conference. Thank you very much for joining us and I hope we will see you next quarter.

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