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Q1 2020 Taiwan Semiconductor Manufacturing Co Ltd Earnings Call

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## PRESENTATION

**Jeff Su** *Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR*

(foreign language) Ladies and gentlemen, welcome to TSMC's First Quarter 2020 Earnings Conference Call.

This is Jeff Su, TSMC's Director of Investor Relations and your host for today.

To prevent the spread of COVID-19, TSMC is hosting our earnings conference call via live audio webcast through the company's website at [www.tsmc.com](http://www.tsmc.com), where you can also download the earnings release materials. (Operator Instructions)

The format for today's event will be as follows. First, TSMC's Chairman, Dr. Mark Liu, will provide the opening remarks. Next, TSMC's Vice President and CFO, Mr. Wendell Huang, will summarize our operations in the first quarter 2020, followed by our guidance for the second quarter 2020. Afterwards, Mr. Huang; and TSMC's CEO, Dr. C.C. Wei, will jointly provide the company's key messages. Then Dr. Liu will host a Q&A session, where all 3 executives will entertain your questions.

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 call over to TSMC's Chairman, Dr. Mark Liu, for his opening remarks.

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**Mark Liu** *Taiwan Semiconductor Manufacturing Company Limited - Chairman of the Board*

Good afternoon, everyone. My name is Mark Liu, here.

Before we start our financial report, I want to take a moment to thank each of you for joining us online today. To many of you from different parts of the world, in this very time of devastating pandemic, our thoughts and hearts are with you. TSMC, so far, safeguarded our global operations successfully, but we do not take it for granted. We will continue our utmost efforts to weather this storm, and we are in this together. In the meantime, I want to extend our best wishes to you and your families for staying safe and healthy.

So now let me turn the microphone over to Wendell for the summary of operations and current quarterly guidance.

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**Wendell Huang** *Taiwan Semiconductor Manufacturing Company Limited - VP & CFO*

Thank you, Mark. Good afternoon, everyone.



My presentation will start with the financial highlights for the first quarter, followed by the guidance for the current quarter.

First quarter revenue in NT decreased 2.1% sequentially, which is less than seasonality, due to the increase in HPC-related demand and the continued ramp of 5G smartphones. Gross margin increased 1.6 percentage points sequentially to 51.8%, thanks to a higher level of utilization, which was partially offset by an unfavorable exchange rate. Total operating expenses decreased by TWD 2.6 billion, mainly as 5-nanometer technology moved from R&D stage to mass production during the first quarter. Operating margin increased by 2.2 percentage points sequentially to 41.4%.

Overall, our first quarter EPS was TWD 4.51, and ROE was 28.4%.

Now let's move on to the revenue by technology. 7-nanometer process technology contributed 35% of wafer revenue in the first quarter. 10-nanometer was 0.5% and 16-nanometer was 19%. Advanced technologies, which are defined as 16-nanometer and below, accounted for 55% of wafer revenue.

Now move on to the revenue contribution by platform. Smartphone decreased 9% quarter-over-quarter to account for 49% of our first quarter revenue. HPC increased 3% to account for 30%. IoT increased 8% to account for 9%. Automotive decreased 1% to account for 4%. Digital consumer electronics increased 44% to account for 5%.

Moving on to balance sheet. We ended the first quarter with cash and marketable securities of TWD 562 billion. On the liability side, current liabilities remained relatively flattish. On financial ratios, accounts receivable turnover days was 42 days. Days of inventory decreased 2 days to 53 days with higher wafer shipment in the quarter.

Now let me make a few comments on cash flow and CapEx. During the first quarter, we generated about TWD 203 billion in cash from operations, spent TWD 193 billion in CapEx and distributed TWD 65 billion for second quarter '19 cash dividend. We also increased TWD 20 billion in short-term loans mainly for hedging purpose. Overall, our cash balance decreased TWD 25 billion to TWD 431 billion at the end of the quarter.

In U.S. dollar terms, our first quarter capital expenditures reached USD 6.4 billion.

I have finished my financial summary. Now let's turn to our second quarter guidance. Based on the current business outlook, we expect our second quarter revenue to be between USD 10.1 billion and USD 10.4 billion, which represent a 0.6% sequential decrease at the midpoint. Based on the exchange rate assumption of USD 1 to TWD 30, gross margin is expected to be between 50% and 52%, operating margin between 39% and 41%.

Now I will hand over the call to C.C. for his key message.

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**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

Thank you, Wendell. Good afternoon, ladies and gentlemen. We hope everyone is staying safe and healthy.

Let me start with COVID-19 preventive measurement at TSMC. To prevent the epidemic of COVID-19, many of us around the world have had to change the way we live and work since mid-January. Let me start with by sharing something that -- what we take at TSMC. Our top priority is to protect the health and safety of all our employees at all time. At the outbreak of COVID-19, we immediately suspended all noncritical business travel and restricted visit on-site access, with mandatory self screening. All employees are required to do daily temperature checks, with self declaration; wear masks all the time; and practice social distancing in the office. Since late March, we have taken further preventive actions such as having employee work from home where possible, physically separating on-site employees into red and blue teams to reduce the risk of community spread.

On March 18, we found one employee who tested positive for COVID-19 and immediately began receiving appropriate care. Today, this employee has recovered, is out of the hospital and is staying at home for additional quarantine. We were able to swiftly trace all the other individual who were in contact. The neighboring employees have all tested negative, while all other employees who were in contact has

entered and completed the 14-day self-quarantine and now back to work. As a result of the strict preventive measure taken by TSMC, we have not seen any disruption of our fab operations so far.

Now I will talk about our near-term demand outlook. We concluded our first quarter with revenue of TWD 310.6 billion or USD 10.3 billion. In line with our guidance given 3 months ago, our first quarter business declined about 1% sequentially, which is much less than seasonality, due to the increase in HPC-related demand and the continued ramp of 5G smartphone. Moving into second quarter 2020, we expect our revenue to be flattish, as weaker mobile product demand is expected to be balanced by continued 5G deployment and HPC-related product launches. While we have not seen significant order reduction from our customers, so far, we do observe supply chain dislocation and weaker end market demand from COVID-19 in the first half of this year. In the near term, we have observed weaker end demand in applications such as consumer electronics and automotives. Meanwhile, we have also observed better demand from HPC, as compared to 3 months ago, driven by the trends such as work from home.

Looking ahead to the second half of this year. Due to the market uncertainty, we adopt a more conservative view as we expect COVID-19 to continue to bring some level of disruption to the end market demand. For the whole year of 2020, we now forecast the overall semiconductor market excluding memory growth to be flattish to slightly decline, while foundry industry growth is expected to be high single-digit to low-teens percentage. For TSMC, although this uncertainty exists, we believe we can do better and grow at mid- to high-teens percentage in 2020 in U.S. dollar term. All the above forecasts for semiconductor exclude memory market; foundry; and TSMC are based upon the assumption of COVID-19 stabilizing in June of this year.

Now let me talk about the progress and development of 5G and HPC. With the recent disruption from COVID-19, we now expect global smartphone units to decline high single digit year-over-year in 2020. However, 5G network deployment continues and OEMs continue to prepare to launch 5G phones. We maintain our forecast for mid-teens penetration rate for 5G smartphone of the total smartphone market in 2020. We continue to expect faster penetration of 5G smartphones, as compared to 4G, over the next several years, with substantially higher silicon content. Thus, we believe 5G as a multiyear megatrend is still strong and will fuel the growth of all 4 of our growth platforms in the next several years. HPC will be another major long-term growth driver for TSMC. In the next few years, a smarter and more intelligent world connected by 5G networks will require massive increase in computation power. CPU, networking and AI accelerators will be the main growth area for our HPC platform. Thus, while near-term uncertainty exists, we will continue to invest in our R&D and technology capabilities to capture the future opportunities from the strong 5G-related and HPC megatrends.

We reaffirm our goal to grow at the high end of our long-term growth projection of 5% to 10% CAGR in U.S. dollar terms.

Now let me talk about the ramp-up of N7, N7+ and the status of N6.

In its third year of ramp, N7 continued to see very strong demand across a wide spectrum of products for mobile, HPC, IoT and automotive applications. Our N7+ is entering its second year of ramp using EUV lithography technology while paving the way for N6. Our N6 provides a clear migration path for next-wave N7 products, as the design rule are fully compatible with N7.

N6 has already entered risk production and is on track for volume production before the end of this year. N6 will have one more EUV layer than N7+ and will further extend our 7-nanometer family well into the future. We expect our 7-nanometer family to continue to grow in its third year and reaffirm it will contribute more than 30% of our wafer revenue in 2020.

Now let me talk about our N5 status. N5 is already in volume production with good yield. Our N5 technology is a full node stride from our N7, with 80% logic density gain and about 20% speed gain compared with N7. N5 will adopt EUV extensively. We expect a very fast and smooth ramp of N5 in the second half of this year driven by both mobile and HPC applications. We'll reiterate 5-nanometer will contribute about 10% of our wafer revenue in 2020. N5 is the foundry industry's most advanced solution with best PPA. We observed a higher number of tape-outs, as compared with N7 at the same period of time. We will offer continuous enhancements to further improve the performance, power and density of our 5-nanometer technology solution into the future as well. Thus, we are confident that 5-nanometer will be another large and long-lasting node for TSMC.

Finally, I will talk about our N3 status. Our N3 technology development is on track, with risk production scheduled in 2021 and target

volume production in second half of 2022. We have carefully evaluated all the different technology options for our N3 technology, and our decision is to continue to use FinFET transistor structure to deliver the best technology maturity, performance and costs. Our N3 technology will be another full node stride from our N5, with about a 70% larger density gain, 10 to 15% speed again and 25% to 30% power improvement as compared with N5. Our 3-nanometer technology will be the most advanced foundry technology in both PPA and transistor technology when it is introduced and will further extend our leadership position well into the future.

Now let me turn the microphone over to our CFO.

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**Wendell Huang** *Taiwan Semiconductor Manufacturing Company Limited - VP & CFO*

Thank you, C.C.

Let me start by making some comments on our second quarter and second half profitability outlook. We have just guided second quarter of 2020 gross margin to be similar to the first quarter. Looking ahead to second half, we expect the steep ramp-up of our 5-nanometer will dilute our second half gross margin by about 2 to 3 percentage points. In addition, our overall capacity utilization may be impacted by the uncertainty from COVID-19. Thus, our gross margin in the second half of this year may be several percentage points lower than in the first half. Looking at our other profitability factors: Our leadership in technology development and ramp-up remains strong. We continue to provide value to our customers and drive aggressive cost reduction. Thus, we believe our long-term gross margin target of about 50% is still a good target.

Now let me talk about our capital budget for this year. Every year, our CapEx is spent in anticipation of the growth that will follow in the future years. While the impact of COVID-19 virus brings near-term uncertainties, we expect the multiyear megatrends of 5G-related and HPC applications to continue to drive strong demand for our advanced technologies in the next several years. Thus, we reaffirm our 2020 capital budget to be between USD 15 billion and USD 16 billion.

Now I will make some comments on our capital management and shareholder returns.

The objectives of TSMC's capital management are to fund the capital -- the company's growth organically, generate good profitability, preserve financial flexibility and distribute a sustainable cash dividend to shareholders. With our solid financial performance, strong balance sheet and cash position and capacity to take on debt, we're able to aggressively invest in our future to enhance our technologies and capabilities. This enables us to continue to outgrow the semiconductor industry even in an extreme macroeconomic environment like this year. With our rigorous capital management, we remain committed to sustainable cash dividends on both an annual and quarterly basis. Meanwhile, with the semiconductor industry's highest credit rating, we're able to bolster our cash balance by issuing corporate bonds at a low interest rate.

That concludes my message.

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**Jeff Su** *Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR*

Thank you. This concludes our prepared remarks.

(Operator Instructions) Should you wish to raise your question in Chinese, I will translate into English before our management answers your question. (Operator Instructions)

Now let's begin the Q&A session. Operator, can we please proceed with the first caller on the line, please? Thank you.

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## QUESTIONS AND ANSWERS

### Operator

The first question we have is from the line of Randy Abrams from Crédit Suisse.

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**Randy Abrams *Crédit Suisse AG, Research Division - MD and Head of Taiwan Research in the Equity Research Department***

First question is just 2 parts, wanted to go into the change in forecasts versus January, if you could give an update on the change in expectation across our growth platforms. Which areas are you revising? And have you seen -- interested if you've seen a change in customer orders or you're proactively expecting this to come. And the second part, if -- you sometimes give a view on inventory levels. Factoring your sales have held up in planning guidance, if you could give an expectation on where you think inventory levels at your customers are trending and if you're factoring in any risk of correction of inventory levels and some of the supply bottlenecks ease.

**Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR***

Okay. Randy, please allow me to try to make sure and repeat your question. So your first question is 2 parts. You want to know what is driving the change in our forecasts as compared to what we have said in January. Have we seen any change in the outlook for our different platforms? Have we seen changes in customer orders? Or is part of our forecast assumption sort of what will happen in the second half? And then the second part of the question is on the fables and the inventory level that we see. Is that correct?

**Randy Abrams *Crédit Suisse AG, Research Division - MD and Head of Taiwan Research in the Equity Research Department***

Yes, that's correct.

**C. C. Wei *Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO***

All right. This is C.C. Wei. Let me answer that why we changed our forecast. Because we do observe some of the end markets become soft. As I state in the statement, that we saw some consumer electronics such as smartphone or those kind of thing has been in the end market become much softer than we thought. However -- so we do the forecasts not based on the customers' order because of, customer today, as I said, we did not see any significant reduction in our customer demand. But we do expect the end demand will have some impact in the following second half of this year. As a result, we changed our -- well, we modified our forecasts as compared with January's number. To be specific: Except for the HPC -- the HPC has been very strong. All other 3 area, like smartphone, IoT or automotive, are decreasing our forecasts as compared with that we announced in January.

**Wendell Huang *Taiwan Semiconductor Manufacturing Company Limited - VP & CFO***

Okay. Let me take the inventory part. The inventory level of our fables customers that we track was healthy exiting fourth quarter of last year. However, given the disruption from COVID-19, we currently expect that inventory level to rise in first half of '20 before digesting in second half of '20.

**Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR***

Okay. Randy, yes, do you have a second question?

**Randy Abrams *Crédit Suisse AG, Research Division - MD and Head of Taiwan Research in the Equity Research Department***

Yes. Okay. Second question, and it really gets into the U.S. There's been press stories about them considering equipment license restrictions. And I'm curious if you could discuss how you're managing the risk or how much risk you see from that equipment license requirement that could affect one of your key customers. And in terms of the CapEx budget for this year, do you still have flexibility to make any changes to this year either for this factor or for COVID-19 if the impact appears a bit worse? Or is it pretty much locked in for 2020?

**Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR***

Okay. Sorry, Randy. You're a little bit breaking up, so let me try to summarize your question. So your second question, first, you relate to some of the news reports on the potential for U.S. equipment license restrictions. So you want to understand how does TSMC manage this risk. And then also as related to part of that, what is our CapEx flexibility for 2020 in case COVID-19 situation or these restrictions? Is there flexibility in our CapEx?

**Randy Abrams *Crédit Suisse AG, Research Division - MD and Head of Taiwan Research in the Equity Research Department***

Yes, that's correct.

**Mark Liu Taiwan Semiconductor Manufacturing Company Limited - Chairman of the Board**

Okay, let me answer the -- your question as much as I can. We are now aware that the -- recent development of U.S. trade rule changes. However, these rule changes have -- is still under draft. And they are -- there are informations, but we know that the final rule is not yet finalized. And after the finalized draft, there will be another 30 days of grace period for the industry to respond. In general, we share the concerns, all the concerns of U.S. semiconductor communities such as voices from SEMI or from SIA. While the draft is not finished, we are -- we have studied various scenarios. And yes, there may be some near-term impact. And we will take -- work with our customer dynamically, and we will take appropriate measures so that to minimize the impact to TSMC. However, for the mid- to long term, we think the underlying megatrend still holds. And some supply chain will be readjusted, and to balance this out. So we will be able to -- still to capture mid- to long-term growth opportunities. And therefore, the current long-term CapEx, we do not see, is impacted by this change.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. Does that answer your question, Randy?

**Randy Abrams Cr dit Suisse AG, Research Division - MD and Head of Taiwan Research in the Equity Research Department**

Yes. And maybe just to continue, if there's any flexibility, either from this factor if it does go ahead; or if it's more -- would be more on a forward basis. But is your flexibility -- say the COVID-19 doesn't get contained. Is largely most of the spending already planned out kind of timed to those megatrends, but it's -- but if you do have flexibility to adjust that or any potential in a downside case.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

So you -- okay. So Randy is asking, do we -- then for our 2020 CapEx, is there any -- what is our flexibility in case of COVID-19 uncertainty and such?

**Wendell Huang Taiwan Semiconductor Manufacturing Company Limited - VP & CFO**

Right. We will remain as flexible as we can as we continue to monitor the virus situation and work very closely with our customers. At the same time, the majority of our CapEx is spent on advanced nodes that drives our growth in the next year and beyond. As we expect the multiyear megatrends of 5G-related and HPC applications to drive strong demand for our advanced technologies in the next several years continuing, we will continue to prudently invest for our future growth.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. Thank you, Wendell.

**Operator**

The next question is from the line of Gokul Hariharan from JPMorgan.

**Gokul Hariharan JP Morgan Chase & Co, Research Division - Head of Taiwan Equity Research and Senior Tech Analyst**

So could we go through a little bit in terms of how we think about forecasting growth? I think given that, if we look at the last 2, 3 times where we've had economic corrections, it seems like the industry has seen meaningful declines in revenues. Now we are looking at largely flattish for semi ex memory. So are we expecting that we get a pretty strong rebound into the second half of the year in terms of -- so I just wanted to go through TSMC's process of thinking about overall semiconductor industry growth and since we also expect small inventory correction happening in second half of the year. And I have a follow-up question as well.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. Gokul, let me summarize your question. I think your question is asking, in the past when there's a severe economic correction, the semi industry also sees a large revenue decline, so why is semi ex memory this year kind of flattish? And how do we explain our full year outlook of mid- to high teens? And do we expect a more meaningful inventory correction in the second half of this year? Is that right?

**Gokul Hariharan JP Morgan Chase & Co, Research Division - Head of Taiwan Equity Research and Senior Tech Analyst**

That's right, yes.



**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

Well, the semiconductor excluding memory, as I said, that the end market in the consumer electronics will decline. However, as -- I also mentioned that because of work from home or those communications created a lot of demand on the server and the wired communications. So the HPC will be very good, as compared with our forecast in January. Net-net, so we give kind of the semiconductor industry's growth this year, probably is a low single digit or to be a little bit negative. That's based on what our forecast today. And what is the second question?

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

He's asking sort of then do we expect a meaningful inventory correction going into the second half.

**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

We cannot forecast so accurately, but...

**Wendell Huang Taiwan Semiconductor Manufacturing Company Limited - VP & CFO**

Let me add something, some color. Now as C.C. just mentioned, based on our current outlook, our second half revenue is somehow flattish or may decline slightly. That really gives you an ideas that the inventory is digesting in the second half of the year as for now, as we can see.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. Gokul, does that -- yes. Go ahead, your second question.

**Gokul Hariharan JP Morgan Chase & Co, Research Division - Head of Taiwan Equity Research and Senior Tech Analyst**

Yes, that addresses my first question. Second question, could you talk a little bit about the shape of the 5-nanometer ramp-up in second half of the year? I mean previously, I think, we have talked about this being faster than 7 nano in 2018 and probably around 10% of revenues. Are you seeing any changes to that as a result of some of the weakness that we have seen in the consumer electronic vertical? Or for 5 nano, we are still expecting a similar kind of ramp as we expected in January.

**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

To be sure: We don't expect any change as compared with in January, our forecast. Today, we still see the tape-out very on schedule, and the ramp-up is also on schedule, although we did see some of the equipment delivery have been delayed a little bit, but we are working with the equipment vendor. All in all, we think that 5-nanometer's ramp-up is on track, and we still say that it will contribute about 10% of the total revenue, wafer revenue.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. Thank you, C.C.

**Operator**

We have the next question from the line of Roland Shu from Citi.

**Roland Shu Citigroup Inc, Research Division - Director and Head of Regional Semiconductor Research**

First, I congratulate for a very good first quarter result. I will have a follow-up of this whole year revenue growth question. I think now you are looking for this mid- to high-teens percentage point growth for the whole year revenue, so my question is then do you factor in any equipment, material or any kind of ramp-up schedule disruption by -- for this supply chains due to the travel bans.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay.



**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

No, we did not see any disruption from the material supply or any supply chains activity that have been in disruption mode, although I did say that -- because of shelter in home, that some of the tool delivery has been delayed from 2 weeks to about 1 month. However, as I said, we continue to work with tool vendors and minimize the impact on the capacity building. So for the whole year, we don't expect it to have a big impact.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Do you have -- yes.

**Roland Shu Citigroup Inc, Research Division - Director and Head of Regional Semiconductor Research**

Understood, but how about from the equipment start-up point of view? Because for this shelter-in-home or travel ban, I think equipment vendors probably won't have enough engineer to do the equipment start-up. Will that affect your situation?

**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

Well, that has been planned from the outbreak of COVID-19. We already work with equipment vendor. So they arranged enough engineering resources in Taiwan or all over the world, so we don't worry that portion.

**Roland Shu Citigroup Inc, Research Division - Director and Head of Regional Semiconductor Research**

Okay. For my second question, I would like to ask about your capital management. I know, I think, in the past you funded all of your CapEx spending from your operating cash flow. And now you just -- partly fund it by issuance of the corporate bond. Again, Wendell explained this actually. We'd like to preserve our cash level -- invest for next growth. So my question is in, first, for this issuance of the corporate bond. Is there any upper limit you have, I think, in order to fund your CapEx? Well, will you continue to issue this corporate bond?

**Wendell Huang Taiwan Semiconductor Manufacturing Company Limited - VP & CFO**

Roland, first of all, the -- we expect our operating cash flow to continue to be sufficient to finance our capital expenditure. Secondly, the decision to issue corporate bond was before -- was made before the COVID-19. We look at our future expansion plans. We look at the current interest rates, and we decided it's a good timing to issue a low-cost corporate bond just for any uncertainties.

**Roland Shu Citigroup Inc, Research Division - Director and Head of Regional Semiconductor Research**

Understood. Okay. And for your cash dividend, I think -- Wendell, you said that you would like to maintain sustainable dividends in both quarterly and annual basis. So understood. I think that your annual basis policy is paying total cash not less than previous year's. And how about your quarterly cash dividend policy? Is this like the TWD 2.5 per quarter -- per share per quarter policy to TSMC?

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay, Roland. So your question on the cash dividend, you say that we will not -- our sustainable cash dividend policy on an annual basis means we will not pay less than TWD 10 in any year going forward. Then your question is, on a quarterly basis, will we pay less than TWD 2.5 on a quarterly basis.

**Wendell Huang Taiwan Semiconductor Manufacturing Company Limited - VP & CFO**

No. No.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Yes. Okay.

**Roland Shu Citigroup Inc, Research Division - Director and Head of Regional Semiconductor Research**

Well, the quarterly cash dividend will be subject to change. However, the whole year annual cash dividend have been -- that will be still maintained not less than previous year's, right?

**Wendell Huang Taiwan Semiconductor Manufacturing Company Limited - VP & CFO**

No. Roland, the quarterly cash dividend will not be lower than the previous quarter. And as a result, you won't have lower annual dividends than the previous year.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Right.

**Roland Shu Citigroup Inc, Research Division - Director and Head of Regional Semiconductor Research**

Okay. So even though -- so let's say from now we are paying TWD 2.5 per share per quarter. So it means that going forward our quarterly cash dividend won't be less than TWD 2.5 going forward, right?

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Yes, you are correct.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Yes.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. Thank you, Roland.

**Operator**

Next question is from Bill Lu from UBS.

**Bill Lu UBS Investment Bank, Research Division - MD and Asia Semiconductors Analyst**

Yes. My first question is on 5 nanometers. It is TSMC's first full EUV node and it is now in production. So 2-part question. One is I know, this year, it is on track, but if you look at the customer adoptions going to 2021, can you give us some ideas for maybe the number of customers that are going to use 5 nanometers or maybe revenue contribution? Secondly, now that we're in production, can you talk about the learnings on 5, so far? Specifically, can you talk a little bit about maybe cycle time versus 7 nanometers, that yield ramp; and maybe on the cost side how it compares to 7? Just because it is the first EUV node.

**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

All right. You will repeat the question again. Or I take it...

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Sure. Okay. So Bill's question is on 5-nanometer and EUV, 2 parts. One, he wants to know that we are ramping -- we see a steep ramp in the second half of this year, but what does 5-nanometer look like for 2021 in terms of customer adoption, the number of customers or the revenue percentage contribution in 2021? That's the first part. And then the second part is can we share some of the learning that we have seen on our 5-nanometer in terms of cycle time yield or costs versus 7-nanometer.

**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

Well, Bill, let me answer the first part of -- first. This year, as we said, we are going to ramp up, well, steeply and smoothly. And how about the 2021? Well, continue to ramp up. That's that I can answer you. So how many customer or how many tape-outs in -- actually the customer come from everywhere. I mean that's a mobile phone, HPC related and maybe some of them from the IoT and automotive. We don't know yet, but today we've got a lot of tape-out from mobile and HPC related. The cycle time, the yield today is quite good. Actually, it's ahead of our plan. And what is the cost? Cost is reasonable. Of course, we are continuing to work on productivity improvement so that we can share with our customer, but as far as I can know, I can understand, the cost, the cycle time are all very good. That's all I can say.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. Do you have any second question, Bill?

**Bill Lu** *UBS Investment Bank, Research Division - MD and Asia Semiconductors Analyst*

Yes. The second question is on COVID-19. And it looks like the company is doing a really good job of managing it in terms of fab operations, but I'm wondering if you could talk a little bit more about how this might impact your decision-making longer term. How would you change how you're managing the company given that -- given COVID-19? For example, does this change your view at all in terms of building a fab in the U.S.?

**C. C. Wei** *Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO*

I don't think that because of COVID-19 we change our decision-making process where we reduce our efficiency. I do believe this is a temporary phenomena and although I did say that we have red and blue teams. I did say that we have practiced some work from home, but I don't anticipate that this one will continue. So for the long term, just no change. TSMC will continue to work closely with the customer. We'll devote our resources into R&D, and we are pursuing the manufacturing excellence. Affecting the fab, to build a fab in U.S., I'll let Mark to make some comment.

**Mark Liu** *Taiwan Semiconductor Manufacturing Company Limited - Chairman of the Board*

Well, we do the long-term planning always to the interest of TSMC. And currently, this U.S. fab planning is more to, for the long term, tap global talent for TSMC rather than risk management because we think this COVID-19 is a impact on human being, mankind, but it's once in a century. And I think we'll learn to deal with COVID-19 as a global community and while keep our supply chain cost effective and efficient at the same time. So that is what I think. So there's no abrupt decision change because of COVID-19 regarding this fab construction.

**Jeff Su** *Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR*

Does that answer your questions, Bill?

**Bill Lu** *UBS Investment Bank, Research Division - MD and Asia Semiconductors Analyst*

Yes.

**Jeff Su** *Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR*

All right. Thank you.

**Operator**

The next question is from the line of Bruce Lu from Goldman Sachs.

**Bruce Lu** *Goldman Sachs Group Inc., Research Division - Research Analyst*

Let me just ask about the 5G smartphone. So management mentioned that 5G total -- the total smartphone (inaudible) consumers, but the penetration with 5G remain unchanged, so can you tell us that -- with this COVID-19 world current situation, any product mix shift you used in the revision? Or why is that -- high-end 5G phone or low-end smartphones, they decline the same. Why is the penetration remain unchanged? And in addition, do you see that -- 5G smartphone penetration in different geographies, do you see any changes when you do this revision?

**Jeff Su** *Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR*

Okay. Bruce, sorry. Let me repeat your question to make sure we understand. Your question is on the 5G smartphone. As C.C. highlighted, the -- we revised the total shipments down to a high single-digit decline, but why do we still maintain a mid-teens penetration rate for 5G smartphones? You want to know if we can talk about any product mix shifts that we see in these smartphone, for example, high-end versus mid-end, versus low end; and why our mid-teens has not changed; and also if we can add some detail or color by geography.

**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

All right. Let me answer the question first. We did lower down our expectation or our forecast on the smartphone, the total unit, by high single digit. However, we still see the penetration of the 5G smartphone at the same kind of mid-teens percentage. But the number of the 5G smartphone also reduced. Because of the same percentage with the total number being reduced, so the 5G phone also reduced. That's one thing. And what is the second question?

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

And then Bruce wants to know, do we have any detail on between high, mid, low end or by geography...

**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

That's too much of the details. I cannot release the information, but let me say that 5G smartphone has been very, very popular, And we expect that one to grow. Okay.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. Do you have -- yes.

**Bruce Lu Goldman Sachs Group Inc., Research Division - Research Analyst**

I'll try to follow up this because, for the first quarter, we definitely see that, expensive or higher-priced smartphones, the sell-through is much weaker than the mid-end and low-end one. So that's why we are surprised that the penetration rate for the smartphones of 5G model remain unchanged. Do you have any rationale to support the forecast?

**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

Well, there is a section named, called 5G, right? And all I can say is that it's going to be very popular.

**Bruce Lu Goldman Sachs Group Inc., Research Division - Research Analyst**

I see. Okay. The second thing is that we have a lot of investor asking that, because of current situation, the end consumer, the demand is facing some correction. Why is that TSMC, as a foundry supplier for everyone, did not see a move for orders cut as of now. I mean, do -- why is that to cause this kind of big time lag between the real end demand situation and their production?

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. Let me just repeat your question, Bruce. Your question is when you -- investors are asking. When you look at the end consumer, you can see a very big correction, but why is TSMC not seeing any types of order cuts? Why is there a -- the deviation between what we are saying and the end market?

**Bruce Lu Goldman Sachs Group Inc., Research Division - Research Analyst**

For the big time lag. Because as management mentioned earlier, management also expect or prepared some orders cut in the second half. So the time lag between the production control and the consumer demand correction is means (inaudible). Why is that caused this delay?

**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

First, you are talking about TSMC's observation from the end market to TSMC's business. TSMC has a leadership in the technology. And we are ramping up the 5-nanometer and 7-nanometer, and that have been very popular and widely used by all the customer. And not every foundry offer this kind of a technology coverage, right? And so we are not -- we -- in our technology and our ramping up, we are not seeing any big effect yet. So that will be some delay, the end market to TSMC's business, but we do see that the end market is dropping, so we also expect some demand from TSMC's customer will be adjusted. However, in this COVID-19's impact, we do believe that TSMC will be less affected as compared with other foundries.

**Bruce Lu Goldman Sachs Group Inc., Research Division - Research Analyst**

So do you expect orders cut in the second half with more of the legacy node instead of our leading node that's why TSMC can be better than competitors?

**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

I would like to say yes, but let's wait and see.

**Operator**

The next question is from the line of Sebastian Hou from CLSA.

**Sebastian Hou CLSA Limited, Research Division - Research Analyst**

First one, I'd like to follow on the CapEx. So historically when TSMC, if I remember it right. When TSMC -- every time we have TSMC lower revenue guidance within a year, CapEx will be adjusted lower accordingly. Even if just a 5% adjustment on the revenue, you also adjust CapEx, sometimes even bigger magnitude. This time, in this guidance the revenue adjustment is as large as 8% or high single digit, but CapEx remained the same. So my question is, first, is it because that TSMC (inaudible) comfortable in the pipeline through the end of this year and to 2021 that you -- triggered you to spend no matter what? Or TSMC started leading on some, let's say, limitation or given that some equipment supplier or maybe one particular equipment supplier has very long lead time and have a lot of power, to some extent, and we are also fighting either competitors, starting to fight equipment availability. So we don't want to cancel that at this point. Which one is more true?

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay, Sebastian. Let me summarize your question to make sure we understand. Your question is on our CapEx. And your question is that, while we have our full year outlook, we have adjusted versus what we said in January, we are reaffirming our CapEx guidance of January. So you want to know why are we not adjusting our CapEx or because our full year outlook has been adjusted. And you propose 2 reasons. Is it because, a, we have confirmed customer demand profile that goes into 2021 and beyond so that's why we continue to invest? Or is it, b, that certain of our equipment suppliers may have a very strong bargaining power so we have no choice, so to speak, but to continue to spend because our equipment supplier has a strong position? Is that correct?

**Sebastian Hou CLSA Limited, Research Division - Research Analyst**

Exactly.

**Wendell Huang Taiwan Semiconductor Manufacturing Company Limited - VP & CFO**

Sebastian, as we mentioned earlier, that we are looking at this megatrend, multiple year of megatrends of 5G-related and HPC applications. And this trend continues. The demand for our advanced technology will continue. Most of the CapEx that we spend this year is for the growth of next year and beyond. And that is the reason that we are reaffirming our CapEx numbers at this moment. To a certain extent, it may tend to go with your number one options, option a.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

I think that's quite clear. Do you have...

**Sebastian Hou CLSA Limited, Research Division - Research Analyst**

Okay. Yes, okay. So my second question is I think, last quarter, the company gave us some guidance about the 4 major platforms, HPC, mobile growing 20%-plus; IoT, auto growing mid-teens. Can you give us an update now?

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. So Sebastian, you're -- you want to know what is our updated forecast for the 4 growth platforms for 2020.

**Wendell Huang Taiwan Semiconductor Manufacturing Company Limited - VP & CFO**

For the whole year?

**Sebastian Hou CLSA Limited, Research Division - Research Analyst**

Yes, for this year.

**Wendell Huang *Taiwan Semiconductor Manufacturing Company Limited - VP & CFO***

Okay. Smartphone and HPC platform growth will be slightly higher than the corporate average. IoT will be similar, and automotive will be below corporate average. That -- those are all in U.S. dollar terms.

**Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR***

Okay. Does that answer your question, Sebastian -- yes.

**Sebastian Hou *CLSA Limited, Research Division - Research Analyst***

Okay. All right. You have answered it, but I have to follow on this one, if I may, that the smartphone is still above the corporate average. So that means this market will still grow mid- to high teens. And so I think with -- the TSMC forecasts the smartphone shipment to decline high single digit, so this year. So this means that the content imply that content increase for TSMC is, I had is like 20%-plus this year in total. Is that right?

**C. C. Wei *Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO***

You have a very good calculation, and you are right.

**Operator**

The next question is from Charlie Chan from Morgan Stanley.

**Charlie Chan *Morgan Stanley, Research Division - Technology Analyst***

So I have 2 questions. One is more short term; and another a bit the long term, maybe even 1- or 2-year later. So first of all, I compared your guidance versus the previous forecast. It seems like order cuts reflects through to your third quarter revenues. So do you think, this year, the third quarter revenues is going to be sub seasonal? And I mean in terms of Q-on-Q growth. And second one is 7-nanometer remains pretty tight throughout the year...

**Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR***

Charlie, we cannot hear you clearly. Can you please move closer to the phone line and start -- we couldn't hear your first question. Please repeat it.

**Charlie Chan *Morgan Stanley, Research Division - Technology Analyst***

Okay. I actually use Airpod Pro. So let me try again. So first question is about your third quarter revenue. Do you expect the growth is going to be sub seasonal? And do you expect some smartphone order cuts. Do you still see 7-nanometer capacity is in shortage in 3Q?

**Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR***

Okay. So Charlie is asking a short-term question on third quarter. Do we expect our revenue to be -- third quarter revenue to be sub seasonal? Do we expect 7-nanometer to remain full for third quarter?

**Wendell Huang *Taiwan Semiconductor Manufacturing Company Limited - VP & CFO***

Charlie, we're not giving out the guidance for the third quarter yet, and it's still early, especially under this uncertain environment. We will have a clearer picture in July and share with you.

**Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR***

Okay. What's your second question, Charlie?

**Charlie Chan *Morgan Stanley, Research Division - Technology Analyst***

Okay. Yes, it's really linked to that. I guess investors, also I want to know your internal scenario analysis about COVID-19 impact. I think in your opening remarks you mentioned, the virus to peak in June, but there seems to be some signs of a second-wave outbreak globally. So in that scenario, what will be the -- TSMC's growth in 2020? And by the way, the second question is very simple, on 3-nanometer. Do you expect the customer number and demand in 3-nanometer plan can compare to you when they will have 5-nanometer. So 2 questions are those.



**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. That's a little more than 2, but okay. Let me just repeat your 2 questions. One, you want to know our internal scenario for COVID-19. We had said and C.C. had said that stabilized by June, what if it's worse, what happens to our forecast. That's number one.

And then number two, for 3-nanometer, what is our customer -- number of customers and the demand profile as compared to 5-

**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

Okay. Let me answer the second question first under the 3-nanometer, all right. 3-nanometer, as I said, we are -- our technology development is on track and we are working with customers to further define the specs and then define the technologies. So -- as which one, I cannot say, but there is -- again, I can share with you is in mobile phone and HPC-related applications.

Now the first one, we are talking about the impact of COVID-19 and we are giving our forecast based on the COVID-19 will be stabilized, the impact or the spread over will be stabilizing in June. What happened if it's longer than that? I don't know. I mean that's -- if it's longer than that, the macro economy will be much worse than we thought and definitely will affect the semiconductor industry, will affect the foundry industry and certainly also will affect the TSMC. But we don't know yet. Let's be hopeful that all the human being will be safe and healthy and everything stabilizing in June.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. Thank you, C.C.

**Operator**

The next question is from Mehdi Hosseini from SIG.

**Mehdi Hosseini Susquehanna Financial Group, LLLP, Research Division - Senior Analyst**

Yes. Want to go back to your comment about gross margin trend in the second half of 2020. You highlighted the fact that the mix would have adverse impact by as much as several point. Want to get your view of your flexibility in case coronavirus impact would be more than just 1 quarter. What can you do to better manage utilization rate and therefore minimize the gross margin impact to only a couple of percentage points? And I have a follow-up.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. Mehdi, let me repeat your question. You're asking about our second half gross margin outlook. When -- our CFO has already highlighted the 2 factors impacting our second half gross margin.

You want to know what if COVID-19 worsens, what measures can we further take to better manage -- or can we do things to better manage our utilization rate to better support or help our gross margin.

**Wendell Huang Taiwan Semiconductor Manufacturing Company Limited - VP & CFO**

Okay. Generally speaking, if the COVID-19 impact prolongs, we will expect a lower utilization. At the same time, what we have done before, and we may be able to do the same, is to prebuild some of the products that our customer said they will be looking for to receive. That's one way of minimizing the impact.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Do you have a second question, Mehdi?

**Mehdi Hosseini Susquehanna Financial Group, LLLP, Research Division - Senior Analyst**

Yes, yes. Just as a follow-up, if you were to prebuild for your customer and customers' own demand that weaken, then perhaps customers' orders beyond second half, looking into the first half of next year, could be adversely impacted. So maybe the adverse impact of a more prolonged coronavirus would have a gross margin downside into next year, into 2021, due to the fact that you're prebuilding for customers?

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. So Mehdi, your question is a follow-up to Wendell. If we prebuild, but the customer demand continues to weaken or worsen, then won't that create more issues for TSMC in 2021.

**Wendell Huang Taiwan Semiconductor Manufacturing Company Limited - VP & CFO**

When we prebuild, we are pretty sure that the customers will take it. Yes, the demand would be there.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Does that answer your question?

**Mehdi Hosseini Susquehanna Financial Group, LLLP, Research Division - Senior Analyst**

Yes.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. Yes. All right. Thank you.

**Operator**

The next question is from Brett Simpson from Arete Research.

**Brett Simpson Arete Research Services LLP - Senior Analyst**

I just had a question on your second half implied outlook. I think it's for down 3% revenue just backing out what you said about Q2 and what you delivered in Q1. Now you mentioned in your prepared remarks that you've seen no major order cuts as yet. But if I just step back and look at your Q1, TSMC just posted smartphone sales growth up 50% year-on-year in smartphones when smartphone end demand is negative. Your China business in Q1 is up almost 80% year-on-year. And the biggest customer in China, Huawei, has posted inventories up 75% in 2019.

So just looking at all this, maybe fabless customers are not building inventory per se, but it's clear that the end customer, the OEMs, seem to be significantly stockpiling and they're not cutting orders yet. So given all this, I'm just wondering how big you think the stockpiling is at present further up the food chain? And why it won't lead to a more material decline in your second half outlook than you're suggesting?

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay, Brett. So your question is basically when -- you're saying that if you look at our first quarter business, there's a large increase year-on-year in our smartphone, in our revenue from China and increased at certain -- Huawei has seen an increase in their inventory year-on-year as well. So your question is, how does -- to reconcile this with TSMC's business outlook. But let me remind you, last year, 2019 first quarter, if you're looking first quarter year-on-year, where -- our business was impacted by photoresist, so it's not an apples-to-apples. But your question.

**Wendell Huang Taiwan Semiconductor Manufacturing Company Limited - VP & CFO**

Right. So basically, the first quarter of this year, we see inventory increase in our fabless customers and we expect that to continue to rise because of this COVID-19 impact. It will start to digest in the second half.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Does that answer your question, Brett?

**Brett Simpson Arete Research Services LLP - Senior Analyst**

Well, just to understand better how you're thinking about this because we haven't seen an inventory buildup like this at the OEM level for some years, and I just wanted to understand how big you think this is at the moment at the end customer?



**Wendell Huang *Taiwan Semiconductor Manufacturing Company Limited - VP & CFO***

We -- this is a very uncertain time. We don't want to quantify the numbers at this moment, but it is building and it's above the last year's year-end level.

**Operator**

The next question is from Frank Lee from HSBC.

**Frank Lee *HSBC, Research Division - Head of Technology Research for Asia***

So I had 2 questions. My first question is more on just a bit of housekeeping related to your previous guidance you gave. I think back in January, you had guided for foundry growth to be up 17% excluding Samsung's captive supply. But you just gave a new guidance for the year. Is that an apple-to-apple? Are you including Samsung or not including Samsung?

**C. C. Wei *Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO***

That including Samsung is apple-to-apples comparison.

**Frank Lee *HSBC, Research Division - Head of Technology Research for Asia***

Okay. So none -- okay. And then the second question I had, you've also talked a bit -- quite a bit on this call about the work from home driving your HPC business, I guess, stronger than -- continue to drive that business. But outside of HPC, have you seen -- well, I guess maybe this is related as well, what about just overall if you extend it to the overall PC market, are you seeing some signs of stronger than expected? And could we see potentially stronger-than-expected PC market for this year as a result of this trend?

**C. C. Wei *Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO***

We saw the demand from tablets has been increasing. That's what we saw. And the PC, probably flattish and the gaming console increased. That's so far today that we observed.

**Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR***

Okay. And also just to -- as C.C. said, both our forecast for foundry in January and today are including Samsung. So it's apples-to-apples, just to make that clear.

**Operator**

Next is from KekYee Teoh.

**KekYee Teoh *Principal Asset Management***

Just like to understand a bit more about your virus assumptions there. You say that you are assuming the virus will stabilize in June, can you translate the wireless assumption stabilized in June into handset demand. How much are you looking at handset demand for 2Q and 3Q?

**Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR***

Okay. So your question is under our assumptions for COVID-19, what is our assumption for the handset demand in 2Q and 3Q.

**C. C. Wei *Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO***

We give you a whole year's assumption, but I cannot be more specific. In 2Q, let's say the seasonality -- every year's seasonality, the smartphone actually decreased, all right, and start to bounce back in third quarter and the fourth quarter. But how many units, I cannot to be so specific to share with you.

**Jeff Su *Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR***

Okay. Does that answer? Do you have a second question?

**KekYee Teoh *Principal Asset Management***

The foundry content increase impact is mainly throughout the year or more towards the second half? That's the last question.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

He's asking the silicon content increase for 5G. Is it throughout the year or is it mainly in the second half of this year?

**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

It's in the 5G for that I can say.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Yes. So throughout the year.

Okay. Let's move on to the next caller. I believe it's a follow-up question from Gokul at JPMorgan, please.

**Gokul Hariharan JP Morgan Chase & Co, Research Division - Head of Taiwan Equity Research and Senior Tech Analyst**

So first of all, could you talk -- I mean, just maybe stepping away from COVID-19, hopefully, it end soon. So in the past downturns, we've seen meaningful IDM outsourcing happen. I think if I think about GFC, we had multiple current customers of TSMC giving up bleeding edge and move to TSMC. How should we think about -- or how is TSMC thinking about the potential for further IDM outsourcing over the next 2 to 3 years as we get through this process, which will potentially put some pressure on some of the sort of the potential IDMs as well?

And a related question is, I think Mark has answered in the past about potential M&A opportunities. Do we consider overseas fab acquisition as a right strategy for TSMC to -- if it comes with a meaningful customer attached to it? I know that TSMC has not really done any meaningful fab acquisitions for a long time, I think probably 2000 was the last big meaningful one. But just wanted to understand how the management team thinks about fab acquisition as a potential strategy? Or any thoughts around that?

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. So Gokul, you have 2 questions. One is on the IDM outsourcing and then do we see the further potential for further IDM outsourcing under this environment in the next few years.

And the second part of your question refers to our potential M&A. And your question is that in terms of an overseas fab acquisition, will we consider an overseas fab acquisition if meaningful customer business were to be attached to it.

**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

Well, let me answer the IDM outsourcing question first. The current downturn might further accelerate the outsourcing for IDMs, but we don't know yet. However, in the long term, IDM outsourcing will continue as the foundry model has proven to be an economic win-win situation for both foundry and its customer. That, as we said, we expect this one continue to happen. This is a long-term strategy.

**Mark Liu Taiwan Semiconductor Manufacturing Company Limited - Chairman of the Board**

Yes. Let me answer the second question about the overseas fab acquisition. We do have continued scouting about the possible fab, but those are mostly only mature fabs, and we don't exclude the possibility, but it all depends on the investment and return. If it economically makes sense, then we go ahead. But it's also -- it's very challenging for the mature fab to be, again, financially viable so far we see. So we still continue evaluating.

But overseas fab acquisition is unlikely to be a leading fab because our leading fab is a technology with very sophisticated complexity. And also, there is none of the fab can perform like a TSMC's fab with -- it's really a service body, technical service body. Instead of the structured facility or equipment, our fab really is a technical service body. That has to be built. And therefore, that challenged us to build -- to acquire a leading-edge fab overseas.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. Does that answer your question?

**Gokul Hariharan JP Morgan Chase & Co, Research Division - Head of Taiwan Equity Research and Senior Tech Analyst**

That's very helpful.

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**Operator**

Next is from Charlie Chan from Morgan Stanley.

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**Charlie Chan Morgan Stanley, Research Division - Technology Analyst**

So these are some questions that I want to get whether management has few thoughts. For example, that any plan to build a fab in the U.S. so that is my first question.

I also want to get clarification because the recent research obtained, China fab like SMIC is gaining share and I can see that makes some sense because China is pursuing localization. So what's the management forecast for your local market share in China and what's your strategy for -- to protect your China market share.

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**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. So you have 2 questions, Charlie. One is what is our plans for a fab in the U.S. -- to build a fab in the U.S.?

And then, secondly, you're asking about China that SMIC is gaining market share. There's increased localization. So what is TSMC's share outlook for China and strategy to protect ourselves.

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**Mark Liu Taiwan Semiconductor Manufacturing Company Limited - Chairman of the Board**

Okay. Let me answer the first question regarding U.S. fab. We are now actively evaluating the U.S. fab plan. And -- but as I told the investor before, there is a cost gap, which is hard to accept at this point. Of course, we have -- we are doing a lot of things to reduce that cost gap. One of the -- there are 2 obstacle currently is -- under actively evaluating is if we do a U.S. fab, it will have to be a leading-edge fab or at least close to leading-edge fab. And the supply chain for the leading-edge fab, at this point, it appears that we need to also establish at the same time. And currently, we are surveying our supply chain partners, whether they will be able to go along so that the quality of the material to support the leading-edge fab can be cost-effective in U.S.

And secondly, of course, as I planning -- said earlier, this fab has to be an engineering service body. It is -- in Taiwan, all the fab are very highly technical people. In the fab, all master degree and above. And we try to duplicate that in the U.S., it takes a lot of planning and organization to be able to enable such a fab. So -- but they are -- as I said, there are opportunities for us in there. We tried -- hopefully, we can better tap the global talent for TSMC for the long term, expanding a new site in U.S.

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**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

All right, Jeff, would you repeat the second question?

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**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Sure. The second question is that how do we view the competition in the market in China? Charlie points out that he believes SMIC is gaining share and there's increasing trend of localization. What is TSMC strategy?

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**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

Okay. I don't think that the SMIC is gaining share, to answer your question first. TSMC has been very competitive. In everywhere, we are -- everybody's foundry. In every location, we offer the best technology, best service. We're working with customers closely. So we are pretty successful in gaining market share rather than just losing the market share, let me say that.

And specifically, for China's foundry, we're also very competitive because of a lot of China customers have been working with TSMC. I know that SMIC has been very aggressive, but so far, we are competing very well. That's all I can say.

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**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. Thank you. Operator, I believe -- thank you, Charlie. Operator, let's move on to the last question from Sebastian at CLSA.

**Sebastian Hou CLSA Limited, Research Division - Research Analyst**

So I have 2 follow-up. First one, I just want to double check that I hear you correctly. I think C.C. already mentioned that we have observed the high numbers of tapeout on N5 versus N7 at the same stage. Is that right?

**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

That's right.

**Sebastian Hou CLSA Limited, Research Division - Research Analyst**

Okay. So if my note is correct, then in the year 1 manufacturing, the year 1 mass production for 7, you have 30-plus tapeouts for 7 and in year 2 you have 80-plus and you're down to like 100-something. So I think this year is year 1 for 5-. So we can say that you have 30-plus for 5-nanometer tapeout at this point.

**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

Well, I'm not willing to release the actual number. But all I can say is now in N5, we have customer from -- smartphone customer from HPC-related area, okay? And the activity, actually we saw more tapeouts as compared with the same period of N7 because the N5 actually is complicated, and I would believe that customer will take more time to work with TSMC as early as possible. That's what they are taking.

**Sebastian Hou CLSA Limited, Research Division - Research Analyst**

Okay. Okay. Do you expect N5 to be potentially bigger than N7 and in terms of capacity?

**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

Yes, certainly, we expect that.

**Sebastian Hou CLSA Limited, Research Division - Research Analyst**

Okay. On capacity-wise, not revenue, capacity.

**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

Oh, on the capacity-wise, we'll say no comment right now.

**Sebastian Hou CLSA Limited, Research Division - Research Analyst**

I'm going to say it's mostly 3 years out?

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

We don't comment on the capacity by nodes, Sebastian. But as C.C. said, N5 would be a very big node. Do you have a second question?

**Sebastian Hou CLSA Limited, Research Division - Research Analyst**

Yes. Second question is I remember most of the time, I think in the past few months as well, when we or the media ask about -- ask TSMC questions if there are like U.S. potential further sanction on Huawei and China, I think the management side -- I think TSMC, however, is -- most of the time, your answer is that there is not official and you don't want to answer any hypothetical questions. But I feel like -- I think this time TSMC, the company is addressing the questions very clearly although there is no official announcement yet and there's no official answer yet. So am I interpreting that right, it seems like the risk or possibility of this potential sanction is higher or it indicate to something else?

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. Sebastian, let me just make sure we understand your question correctly. So your question is on the potential rule changes from the U.S. that reading news reports in the past that TSMC has always said we don't comment on hypothetical, but you see today maybe our comments -- you're asking if our comments today reflect a change in the tone or the view even though nothing -- no official rule change has been announced?

**Mark Liu Taiwan Semiconductor Manufacturing Company Limited - Chairman of the Board**

Well, yes, there's no official rules yet announced. But just let you know, the U.S. semiconductor community societies wrote multiple letters to the White House as well as the Commerce Department urging this rule not to be changed. So we do sense there is an urgency from the industry that having that rule change will hurt the U.S. semiconductor community, and we share the same feeling.

**Jeff Su Taiwan Semiconductor Manufacturing Company Limited - Deputy Director of IR**

Okay. All right. Okay. This concludes our Q&A session. Before we conclude today's conference, please be advised that the replay of the conference will be accessible within 4 hours from now. The transcript will be available in 24 hours from now, both of which will be available through TSMC's website at [www.tsmc.com](http://www.tsmc.com).

So thank you for joining us today. We hope everyone continues to stay healthy and safe, and hope -- we hope you will join us again next quarter. Goodbye, and please have a good day. Thank you.

**C. C. Wei Taiwan Semiconductor Manufacturing Company Limited - Vice Chairman & CEO**

Good bye.

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