

Q3 2019 Earnings Call

Company Participants

- Dan Durn, Senior Vice President and Chief Financial Officer
- Gary E. Dickerson, President and Chief Executive Officer
- Michael Sullivan, Corporate Vice President, Investor Relations and Marketing Communications

Other Participants

- Atif Malik, Analyst
- C.J. Muse, Analyst
- Harlan Sur, Analyst
- John Pitzer, Analyst
- Krish Sankar, Analyst
- Timothy Arcuri, Analyst
- Toshiya Hari, Analyst
- Vivek Arya, Analyst

Presentation

Operator

Welcome to the Applied Materials Earnings Conference Call. During the presentation, all participants will be in a listen-only mode. Afterwards, you will be invited to participate in a question-and-answer session.

I would now like to turn the conference over to Michael Sullivan, Corporate Vice President. Please go ahead, sir.

Michael Sullivan {BIO 16341622 <GO>}

Good afternoon, and thank you for joining Applied's third quarter of fiscal 2019 earnings call, which is being recorded. Joining me are Gary Dickerson, our President and CEO, and Dan Durn, our Chief Financial Officer.

Before we begin, I'd like to remind you that today's call contains forward-looking statements, which are subject to risks and uncertainties that could cause our actual results to differ. Information concerning the risks and uncertainties is contained in Applied's most recent Form 10-Q and 8-K filings with the SEC. Today's call also includes non-GAAP financial measures. Reconciliations to GAAP measures are found in today's earnings press

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release and in our reconciliation slides, which are available on the IR page of our website at appliedmaterials.com.

And now I'd like to turn the call over to Gary Dickerson.

Gary E. Dickerson {BIO 2135669 <GO>}

Thanks, Mike. Our results for the third fiscal quarter demonstrates strong execution in an environment that remains challenging for the time being. Overall, our view of 2019 is consistent with what we have previously communicated. Within our served markets, foundry logic spending is strong, while investments by memory and display customers are significantly lower than last year. We also remain mindful of the broader macroeconomic risks.

During this industry down cycle, my primary focus is ensuring the organization is executing on the initiatives that will put Applied Materials in the best position for the future. I believe the opportunities for Applied are compelling as powerful new demand drivers emerge in the form of IoT, Big Data and Artificial Intelligence. So, even though we are prudently managing discretionary spending in the near term, we are fully funding R&D to accelerate customers' roadmaps and building new products and capabilities that will underpin the Company's growth in the years ahead.

In today's call, I'll begin with a brief update on the near-term market dynamics, I'll then talk about emerging technology trends and Applied's strategy to address them. Then I'll finish by highlighting some of our recent accomplishments.

Starting with the current environment. Our views of the semiconductor and display markets are largely unchanged. In memory, spending has softened slightly since our May call. On the supply side, we still see customers making disciplined investments, while adjusting factory output to reduce inventory levels.

On the demand side, we believe the price elasticity of NAND is starting to take effect in the form of increases in the average bits per box for both smartphones and PCs. Based on our current visibility, we remain optimistic about 2020 with an expectation that NAND investments will recover ahead of DRAM.

In foundry logic demand has strengthened as the year has progressed, as we see customers accelerating the ramps of their leading-edge nodes. Demand for specialty nodes that serve the IoT, communications, automotive, power and image sensor markets is also driving robust investments in capacity and new technology .

Taking these factors into account, our view of overall wafer fab equipment spending for 2019 remains the same, down mid-to-high teens on a percentage basis relative to last year. We see 2020 as a more positive set up for the industry and Applied with the start of a recovery and memory investment and sustained strength in foundry logic spending.

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In display, there are no significant changes to the outlook we provided last quarter, and we still anticipate our 2019 revenue being down by about a third relative to 2018. Just as in semi, we are excited about the inflections taking place in display and the opportunities these create. We're getting ready for the future by ensuring we have the right portfolio of products to help our customers accelerate the introduction of next-generation technologies, including rigid and flexible OLED and larger substrates for manufacturing.

A few weeks ago, Applied hosted our second AI Design Forum with more than 700 attendees, representing leading companies from across the ecosystem. My main takeaway from this conference is strong alignment around four key themes. First, AI and Big Data are driving new approaches to computing that require new system architectures built from new types of semiconductor devices. Second, at a time when improvements in power, performance, area and cost are paramount, classic Moore's Law scaling is running out of gas.

Third, to address this, new approaches for semiconductor design and manufacturing are needed. In our view, the new industry playbook has five elements; new architectures, new devices in 3D structures, new materials, new ways to shrink feature geometries, and new ways to connect chips together.

Fourth, to accelerate implementation of the new playbook, companies need to connect and work together differently, by breaking down traditional silos. At Applied, we're aligning our strategy and investments around this vision of the future. For example, new types of memory including MRAM, PCRAM and ReRam are high potential technologies that can enable new architectures and provide significant PPAC benefits at the edge and in the cloud. But these 3D devices are also incredibly challenging to make at high volume and yield.

In the case of MRAM, the device is based on a film stack of more than 30 thin layers, some of which are only eight atoms high. Missing atoms or imperfections in materials have a significant impact on the performance and endurance of the device. To help drive adoption of these advanced memories, we recently introduced one of the most sophisticated products we've ever created, combining many of our leadership technologies in one integrated system. This new system has nine different wafer processing locations and each process chamber can deposit up to five different materials. The entire process flow takes place under ultra-high vacuum to keep impurities out and we use cryogenics and heat to vary process temperatures by hundreds of degrees. All of this is critical to optimize material structures and interfaces.

The system also includes unique onboard metrology that allows us to measure key properties of the materials to one-hundredth of a nanometer, as they are being created and modified. This next-generation of equipment that we call integrated material solutions is one of the ways, Applied is bringing to bear our broad technologies and capabilities to address our customers' most complex challenges. Another area where Applied has unique technology and breadth is advanced packaging. Applied has the most comprehensive portfolio of solutions to support customers' advanced packaging roadmaps and new heterogeneous integration approaches.

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In the past quarter, we won important process tool of record positions at leading customers, securing over 80% of the applications we competed for, including CVD, PVD, CMP and etch, where we have highly differentiated new products. Our inflection-focused innovation strategy is also yielding results with our unit process tools that enable new 3D structures, the introduction of new materials and new ways to shrink. For example, we've been building on our strength in conductor etch, for a memory by winning new steps in both DRAM and NAND, as well as new positions for critical etch applications in foundry logic.

We're also finding new ways to deliver more value to customers through our service business. One example of this is using advanced metrology sensors, data science and simulation to speed up the transfer of new technologies from Applied's labs to customers' factories, and then reduce the time it takes to optimize yield, output and cost. While growth in Applied Global Services is slightly below our prior expectations, we still anticipate our combined spares and service revenues being up this year, even as customers pull back on their capital spending and operating expenses.

Before I turn the call over to Dan, I'll quickly summarize. Our view of 2019 is relatively unchanged. Thanks to the hard work of our employees across the Company, we are delivering solid performance, even with the current weakness in memory and display demand. During this industry down cycle, we are focused on driving R&D programs and building new capabilities that will move the needle for customers and Applied in the AI era, and we remain excited about our long-term opportunities, as these powerful secular demand drivers start to take shape.

Now, Dan will provide his perspective on our results and outlook.

Dan Durn {BIO 17483115 <GO>}

Thanks, Gary. In Q3, Applied delivered solid financial results with revenue, margins and earnings above the midpoint of our guidance. Our semi-related business continues to feel stable, and while I'm still not ready to call the bottom of the cycle, I see positive leading indicators of future growth.

In memory, our customers reported significant output reductions during the quarter. They discussed inventory reductions in their end markets and demand elasticity across smart phones, PCs and servers. In foundry logic, demand is strong, both in the leading nodes and in trailing geometries driven by IoT, communications, automotive, power and sensor applications.

We believe our markets will become significantly larger, as powerful new demand drivers kick in. And we are positioning Applied to generate strong shareholder value by focusing on our four financial priorities. One, we are tightly managing our overall spending; while two, fully funding and expanding our product roadmap and customer technology engagements to fuel growth. Three, increasing the recurring revenue we earn by helping our customers maximize their returns from the installed base. And four, delivering attractive cash returns to shareholders. For example, this quarter, we held overall

spending flat, but increased the R&D portion of non-GAAP OpEx to 69%. This outcome demonstrates how we are controlling our discretionary spending, while fueling innovation and future growth.

We announced plans to acquire Kokusai Electric to expand our presence in the batch technology and accelerate innovation for our customers. This will also strengthen our services and customer support capabilities in the memory markets and throughout Asia. And we delivered on our commitment to return cash to shareholders, including while the Kokusai transaction is being reviewed.

During the quarter, we paid \$0.21 per share in dividends, including the 5% increase our Board approved in March and we used \$528 million to repurchase over 12 million shares at an average price of around \$42 per share. Over the past year, we have repurchased 68 million shares at an average price below \$39 and we have \$2.4 billion remaining on our buyback authorization. In short, we are excited about our opportunities and we are focused on taking actions that will generate significant shareholder value in the years ahead.

Now I'll summarize our Q3 results. We delivered Company revenue of \$3.56 billion and non-GAAP gross margin of 44% both above the midpoint of our outlook. We held non-GAAP OpEx to \$746 million and generated non-GAAP earnings of \$0.74, which was near the top-end of our guidance range.

Turning to the segments. Semiconductor Systems revenue was \$2.27 billion, which was above the midpoint of our outlook and non-GAAP operating margin increased to 27.5%. Global Services revenue was \$931 million, which was below the midpoint of our outlook and non-GAAP operating margin declined to 27.8%.

I'll take a moment to explain what we're seeing in AGS. Last quarter, I explained that we have two kinds of service business, long-term agreements that give us subscription like revenue and transactional parts and services. In Q3 and in our outlook for Q4, long-term service agreement revenue is growing right in line with our forecasts, but our transactional business is being impacted by the output reductions in memory. We still expect a record year for AGS, but we're lowering our growth target to low single digits. Revenue from our overall semi-installed base business, which includes parts and services, along with upgrades and refurbishes will grow even faster and set a new record.

Moving to display. Q3 revenue and operating margin both declined slightly as we expected. Next, I'll provide our Q4 guidance. We expect company revenue to be approximately \$3.685 billion plus or minus \$150 million and we expect non-GAAP earnings to be in the range of \$0.72 to \$0.80 per share. Within this outlook, we expect Semiconductor Systems revenue to be approximately \$2.25 billion. Services revenue should be about \$955 million and Display revenue should be around \$455 million, which would be up 34% sequentially. We expect non-GAAP gross margin to be about 43.5% and non-GAAP OpEx should be about \$755 million.

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Looking ahead to 2020. We continue to expect growth across our markets and a gradual U-shaped recovery. While we only guide one quarter at a time, I'll offer you some planning assumptions for the early part of fiscal 2020 to help with your models. On a quarterly basis, we view \$2.2 billion as a good baseline for semiconductor systems revenue, until we see evidence of recovery. We expect AGS revenue to be flat with our Q4 guidance, which is a bit better than seasonal and we expect Display to be about flat with our Q4 guidance, which demonstrates our expectation that we've passed to the bottom of the display cycle.

Gross margin should remain approximately flat versus Q4 on the mix we foresee and OpEx should increase to around \$800 million as we layer in annual merit increases, along with R&D for new products and the new technology initiatives, Gary described.

In short, we see structural growth in the years ahead, positive leading indicators for 2020 and the opportunity to drive strong shareholder value by investing in breakthrough innovations that Applied Materials is uniquely positioned to deliver.

Now, Mike, let's begin the Q&A.

Michael Sullivan {BIO 16341622 <GO>}

Thanks, Dan. Now to help us reach as many of you as we can, please ask just one question and not more than one brief follow-up. Operator, let's please begin.

Questions And Answers

Operator

Thank you. (Operator Instruction) And our first question comes from C.J. Muse with Evercore. Your line is open.

Q - C.J. Muse

Yes, thank you. Thanks for taking the question. I guess first question, in your prepared remarks you talked about expectations for NAND to recover sooner than DRAM. And so, I guess, on that front, how are you thinking about that coming back in terms of both timing and magnitude as well as we move from single stack to multi-stack, and there is clearly clean room availability? How are you thinking about conversions versus new capacity as that comes online into 2020 and beyond?

A - Dan Durn

 {BIO 17483115 <GO>}

Thanks, C.J. Maybe I'll start and see if Gary wants to offer anything from a technology standpoint, towards the end. So, when we think about the memory market, and you called out NAND specifically, but let me broaden the comments just a little bit more to encompass the entire memory market. We don't expect to see a recovery in 2019. We see it as a 2020 event. And as you pointed out, we expect to see NAND first, then followed by DRAM.

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If we think about where we sit today from an overall WFE standpoint, the memory markets are clearly down in 2019 versus, where we were in 2020. So, this is clearly a correction year, but we are seeing early signs of improvement. Output across the industry has come down. We are under shipping true end market demand from a supply standpoint as we exit the year. This is bringing our customers' inventories down, it's bringing our customers' customers' inventories down and we do see the early signs of demand elasticity beginning to kick in and signs of price stability. When we net all of this together, we definitely see 2020 as a recovery year in the memory market, and again we see it as a NAND-led event followed by DRAM.

In terms of magnitude, I think it's premature to be point specific on any individual market right now into 2020, but we like the set up of what we see.

When we take a step back, and we think about the long-term in these markets beyond 2020, we do see that there is a data explosion as the data economy kicks in, and the value of that data is increasingly going up, as companies learn how to monetize it. We see capital intensity going up. We see new forms of memories, which really plays to our strengths in materials. We see our customer base being rational and disciplined. We net all of that together, we think there is a real opportunity to go structurally larger, as a memory market off of the levels we're currently seeing in the current environment. So, we feel good about the long run.

A - Gary E. Dickerson {BIO 2135669 <GO>}

Yes, maybe I can add something relative to our position in memory and also in NAND. I think many of you know that we have a much more balanced overall share across memory and foundry logic. In memory, we increased our share of total spending from less than 15% in 2013 to around 20% today, and we're confident we're going to continue to drive gains into the future.

Another thing that's really positive for Applied is, memory is very much driven by materials enabled scaling. And I think everyone's aware capital intensity has been increasing. We are also engaged with all the major memory companies with integrated material solutions. Again, it's all about new structures, new materials, how far especially in NAND, you can scale vertically. So, we have very strong pull from customers for new materials, new products to enable their cost and performance roadmaps.

In NAND specifically, we're winning new etch applications in NAND and to get more layers in NAND, one of the most important things is new materials, especially high selectivity hard masks, where we have very strong capability. I talked last quarter about hard mass that increase etch selectivity by 50% and we're seeing strong adoption of those new capabilities across multiple customers with new steps that give us significant TAM growth. So, again we've been increasing our share in NAND, we have new materials and new products that make us very optimistic, we're going to continue to drive strong momentum into the future.

A - Michael Sullivan {BIO 16341622 <GO>}

Thanks, C.J.

Q - C.J. Muse

Thank you.

Operator

Thank you. And our next question comes from Toshiya Hari with Goldman Sachs. Your line is open.

Q - Toshiya Hari {BIO 6770302 <GO>}

Hi guys. Thanks for taking the question and congrats on the solid execution. Gary, I was hoping you could talk a little bit about, what you're seeing in China from a technology progression perspective, both on the DRAM side as well as NAND side? It continues to be a pretty big part of your business as well as your peers' businesses in the near term as well. So, if you can talk about the rate of progress on the technology front, as well as your expectations in terms of WFE for 2019, and preliminary thoughts on 2020 that would be helpful. Then I've got a follow-up.

A - Gary E. Dickerson {BIO 2135669 <GO>}

Okay, great. Yeah, thanks for the question. So, our view on China is similar to what we communicated before. We don't see any major inflection in spending. 2019 we see relatively flat versus 2018. If you look at domestic China, our view is a little stronger over the past few months with some increases in memory. For the year as a whole, we see slightly higher spending on foundry logic versus memory, with foundry logic focused on IoT, communications, sensors, those types of devices.

In our Display business in China, we believe that's going to be down roughly in line with our global display forecast. Overall in China, we have a great position; semi-service, we've been in China for 35 years. The Display is a great team for us, very, very strong customer relationships and engagements. Relative to the technology progression, I don't really think again anything has changed from what we communicated before. As I said, we believe the foundry logic on the trailing nodes is where we will see over half of the domestic investment this year. We think that market is going to continue to grow. If you look at image sensors, that's going to be a very strong market. We see the investment there, as being rational and in line with the increase in demand for those types of products.

Memory is a -- those are very difficult technologies and it's a long road to be able to produce those technologies at a competitive level for performance and cost. As we've communicated before, we don't see any big hockey sticks, I really don't see much different than what we saw before. We think it's going to be a long journey and incremental spending going forward.

Q - Toshiya Hari {BIO 6770302 <GO>}

Great, thank you. And then as my follow-up, I wanted to ask about market share. If we take your October quarter guide for the Semiconductor Systems business, and the guide from Dan, into the January quarter. I guess we get a calendar '19 segment revenue number that's slightly better than what you described for overall WFE. Is the slight market share gain implied in your guidance a function of your SAM acting a little bit better than prior years? Or, are you actually picking up share within the markets that you serve? Thank you.

A - Gary E. Dickerson {BIO 2135669 <GO>}

Yeah. Thanks, Toshiya. So, there is no question, 2019 is a more favorable setup for Applied. And I have really very strong confidence that we're in a great position to keep the momentum going into the future. If you look at the third-party data for overall spending, you'll see that we've been on a trend of higher or flat share all the way back to 2012, except last year, where the mix was very heavy in places like batch, processing, dielectric etch, litho where we don't participate.

So, absolutely the mix is more favorable for us this year. So, I'm not going to make any specific predictions, but the setup for sure is much better for us this year. We're winning many head to heads, and especially in new applications. We have a very strong pipeline of new products, including products that expand our positions in the markets that we don't currently serve. Some of those products are already gaining traction with major customers.

I spend a lot of my time with customer and R&D leaders. That's what I love to do more than anything else. And in discussions with them, it's clear that they're struggling to deliver improvements in power performance and cost. And I think it's also clear and this was evident at the AI Design Forum last month that the future is not going to look like the past, the classic 2D scaling isn't it working. In all my interactions with R&D leaders, they talk about new materials, 3D structures, new ways to connect chips together, new ways to drive cost.

And I really deeply believe Applied is in the best position we've ever been in to enable this new playbook with the breadth of products we have to create, shape, modify and analyze new structures. Our combined capability is unique, enables us to deliver integrated material solutions. We talked last year about 1000x improvement in leakage current. We talked this year about this amazing MRAM capability. And those are new ways to drive performance in power performance area and cost. And also we are currently engaged with all major customers in memory and foundry logic with these new integrated material solutions.

So, that combination of new IMS solutions, our capability to enable the new playbook, new products put us in a great position to accelerate roadmaps for customers and drive future growth for Applied. So again, I'd like to set up for 2019 and also into the future.

A - Michael Sullivan {BIO 16341622 <GO>}

Thanks Toshiya.

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Q - Toshiya Hari {BIO 6770302 <GO>}

Thank you.

Operator

Thank you. Our next question comes from Atif Malik with Citi. Your line is open.

Q - Atif Malik {BIO 15866921 <GO>}

Hi. Thanks for taking my questions and good job on execution. Gary, a couple of memory makers have talked about the CapEx being down for next year. You sound optimistic on NAND and your peers have said the same. How do we reconcile these two? And what is your view based on, is it based on recovery in memory pricing, or shell availability?

A - Dan Durn {BIO 17483115 <GO>}

Hi, Atif, this is Dan. I think I'll jump in and take this. So, all we can bake into our forecast and the expectations we set into the market are the things we see, the conversations we have with our customers about expectations out into the future, as well as the bottom modeling we do from an industry and end market device standpoint and the consumption of bits, in those boxes, as well as top-down economic modeling and forecasting.

And as you can imagine, our forecast comes together, it's a triangulation of those events. But we spend a lot of time talking to customers and based on all of the information that we have to date, our best view out into the future is for 2020 to be a recovery year in the memory market and for WFE to be up year-over-year.

That said in this environment we are setting an expectation, and we think it's prudent to do this, setting an expectation for a gradual U-shaped recovery. If the industry does better than we are currently contemplating, then we as a Company, we will benefit in a very material way and we like that setup. But when we netted all out to us, it's a matter of when, not if, and in our view, it's a 2020 event for memory.

Q - Atif Malik {BIO 15866921 <GO>}

Thank you Dan.

Operator

Thank you. Our next question comes from John Pitzer with Credit Suisse. Your line is open.

Q - John Pitzer {BIO 1541792 <GO>}

Yes, good afternoon guys. Congratulations on the solid results, given all the uncertainty in the macro. Gary, I'm wondering if you could spend a little bit more time, talking about the market opportunity for sort of the n minus 1 at the foundry being driven by industrial, auto, IoT? How big do you think that is?

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And I guess importantly with trailing edge nodes staying stronger longer, what does that do for reuse at the foundries at leading edge? And is that actually driving a bigger end spend because reuse is slowing down?

A - Gary E. Dickerson {BIO 2135669 <GO>}

Yeah, thanks for the question. Yeah, I think, for sure, we see that this specialty market growth is going to continue to increase for the future. If you think about people talk about a trillion connected devices and generating significant amounts of data, that's right smack-dab in the middle of that type of market. And this is a really a great growth opportunity for Applied. We have a great portfolio of products across 200 and 300 millimeter technology.

If you look at foundry logic, again maybe some people don't understand the dynamics, about 50% is growing in areas like IoT, communications, auto, power devices and sensors and innovation there is really driven by materials innovations. So again, those are areas, where Applied has a significant strength. We've increased focus on these markets and we have a great team of leaders across the company to work with customers to enable their roadmaps.

I mean I personally have visited a lot of these key customers over the last two or three months, tremendous pull for the technologies that we're developing. I'll give you one example of a situation that happened this last quarter. We won two-thirds of the revenue opportunities that a major customer in this specialty market, where the selections are very sticky over many, many years. Once you're qualified, you're in for a long period of time.

So again, that was the case, where in terms of the spending, where we're winning a huge percentage of those opportunities. And this is again all about materials, innovations and structures. And we have a lot of technologies currently that are unique for these particular markets and we have an increased focus there in developing new technologies.

Our culture is really focused on being a preferred strategic partner for all of our different customers, enabling their technology roadmaps, enabling their future for those different markets. Going forward, this is a great opportunity for us to partner with these customers. The breadth of technologies combined with integrated material solutions, I think really puts us in a really good position.

A - Dan Durn {BIO 17483115 <GO>}

And John, just to follow up and add a little bit to what Gary said, which talks about reuse and the implications that has for spend on the leading edge. I do think we're seeing a different pattern evolve in the industry. When I walked in the front door a couple years ago, I think we had a point of view on what the total capacity footprint in 28 nanometers was for the industry and that has gone up significantly in the last couple of years.

We're looking at mature nodes, and the way the industry used to work, as you know, you'd introduce a new node, you'd have a big investment cycle to put the capacity statement in place, and then you'd see the investment level fall off on that node. And then

our customers would opportunistically look to reuse equipment as they build out the next node.

I think what we're seeing is, investment profiles, many years after the introduction of the node being much larger than we've seen historically. And I do think that that's going to impact the rate of reuse, as these more mature nodes continue to grow in size relative to our original expectations. So, we really like the way the industry is broadening and diversifying and the implications that has long terms on the attractiveness of this market for us.

Q - John Pitzer {BIO 1541792 <GO>}

That's helpful Dan. And quickly as my follow-up. I know you guys only guide one quarter out, but you gave us some sort of sign posts for entering fiscal '20, which would suggest that revenue and gross margin kind of flattish at these levels, but OpEx going up. I'm just kind of curious, are you clearly signaling to us that op margins start off a little bit weaker in the fiscal year 2020 or are these more rounding errors? And if it's the former, when do you start to reestablish kind of operating leverage in the model?

A - Dan Durn {BIO 17483115 <GO>}

Thanks, John. So, just a little perspective on how we view OpEx and operating margin and maybe the commentary gets at the point that you're asking. So, this is a company, we're very focused on increasing operating margin percentage over time. I think what you saw in the most recent quarter is a very disciplined approach to the OpEx. We're compressing discretionary spend and we're channeling more of our OpEx towards the R&D engine and the things that are going to fuel growth at the company over time. And so 69% is a record high for the company and we feel good about that discipline.

What you see profiling into Q1, is the annual merit increase that we get every year, but it's also a statement around the opportunities we see. Moore's Law is hitting a wall. Gary has talked about a new playbook that is going to increasingly define the power performance roadmap of this industry. That creates an enormous set of opportunities for us. We're going to invest in R&D. We're going to drive growth and drive leadership into this industry over the next decade, as it fundamentally influx and drives the power performance roadmap in a very different way than we've seen historically.

The way from where we sit today, we expect our semi business to be up year-over-year. We expect our services business to be up off of these levels year-over-year. And we expect our Display business to also grow into next year. And as the industry recovers, and we take our company structurally larger, I think, you're going to see the operating margins expand as we grow the company and the investments that we're making today to drive that future leadership should allow us to outperform as that industry recovers.

A - Michael Sullivan {BIO 16341622 <GO>}

Thanks, John.

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Operator

Thank you. Our next question comes from Harlan Sur with JPMorgan. Your line is open.

Q - Harlan Sur {BIO 6539622 <GO>}

Good afternoon and nice job on the quarterly execution. On the strong sequential growth outlook in Display in Q4 and the sustained levels into early next fiscal year, can you guys just help us understand the mix large screen versus mobile OLED, and how do you see that mix as you look into next fiscal year?

A - Gary E. Dickerson {BIO 2135669 <GO>}

Sure, absolutely. All right. Yes, thanks for the question. So, let me give color on the Display business and this gets out your question. As we said in the prepared remarks, we still see display down about one-third versus 2019. We don't guide display fab equipment, but this is basically what customers are telling us about next year. We see 2020 for Applied being higher than 2019. We also expect TV investment to be roughly flat next year. Many of these are Gen 10.5, there long lead-times. And so we have pretty good visibility into that part of the market and we do expect mobile OLED to increase as a percentage of the overall market next year. So, we do see the overall display business being up next year.

Longer term, we believe the market still going to be cyclical, but we continue to be optimistic about the market based on trends, including TV size and build out of GEN 10.5 that's going to take many years, the mobile OLED conversion and eventually innovations like RGB OLED TV, foldable smartphones, all of those different areas. For Applied, the adoption of OLED, I think, many of you know, is also more capital intensive. So, as those technologies are adopted in more types of devices, that's good for us from a capital intensity standpoint.

We're also investing to drive new products to expand into very large TAM growth areas. We're not going to give any more color today about those specific products. But again the pull from customers is still very strong and we're making progress in those areas. Together -- take all this together, we see good opportunities to drive growth in our Display business into 2020 and beyond.

Q - Harlan Sur {BIO 6539622 <GO>}

Great. Thanks for the insights there. And then maybe as a follow-up to one of the prior questions. On your new MRAM and storage class memory PVD platforms, just given the increasing content in microcontrollers, in IoT industrial and automotive applications and a growing need for higher embedded memory density per MCU, it seems like there is just as much opportunity on legacy semi MCU processes, as there is for high performance storage class memory architectures. Has the team tried to size the SAM opportunity here for your two new platforms sort of looking out over the next two to three years?

A - Gary E. Dickerson {BIO 2135669 <GO>}

Yes, thanks for the question. So, we think this market is going to start small, it's around \$100 million for us so far. But as you mentioned it's very strategic in future customer applications. We see this type of device moving from NOR flash replacement to bigger applications, like L3 cache replacement, specialty DRAM replacement. Again, it's not something that's going to ramp overnight, but we do see incremental growth in the market.

And then I think for us, when I was at SEMICON in AIDF this was one of the things for me personally, I was most excited to talk about, because when you think about these new devices, I think, many of you know it takes many, many, many years to go from a single structure that you publish a paper with certain kinds of performance to making billions of those devices at the right cost, high yield, speed, power, endurance, all of those things.

And so, talking about the system that we had at SEMICON, you have all of this amazing technology into one integrated material solutions in ultra-high vacuum. You have a structure it's like an atomic layer 3D printer almost, where you have a structure with more than 30 layers, some only 8 atoms high, 10 different materials, temperatures on the wafer that range about 500 degree C, and a ability to measure the key properties of the materials as they are being created to 1/100th of a nanometer.

And all of this, all of this is really critical to optimize the material structures and interfaces. So again, it's certainly the better you can drive the performance yield reliability, the more applications you can win and the faster the market ramps. And so, what we're excited about and certainly the companies that we're working with, they're very excited about, is being able to scale a technology like this into high volume, high yield and right cost and right performance. So again, we see this market small today, but certainly relative to future computer architectures, it is very, very, very important.

Q - Harlan Sur {BIO 6539622 <GO>}

Thanks, Gary.

A - Michael Sullivan {BIO 16341622 <GO>}

Thanks, Harlan.

Operator

Thank you. Our next question comes from Timothy Arcuri with UBS. Your line is open.

Q - Timothy Arcuri {BIO 3824613 <GO>}

Thanks a lot. I have a question on service, I don't know if Gary, you want to take it, or if Dan, you want to take it. But if I look at July service, it was like \$60 million light in July and then October you have been saying kind of like high-single digit for the year. So, that would imply that the October number is like coming in about \$150 million light of what you thought it would be.

So, that's like a \$200 million number, over a six-month period. So, that's like 10% of the entire AGS segment revenue. But I think you had also said previously that the spares and service portion of AGS is like half of the revenue. So, really it's like 20% of the spares and service portion, so. So, I get the memory production cuts, but that's a huge number for a business that I think people consider to be quite stable. And I think your peers are sort of seeing a little bit better trends there. So, I'm wondering if you can talk about. Thanks.

A - Dan Durn {BIO 17483115 <GO>}

Thanks Tim. Let me share with you a little bit of my views about the business and hopefully that gives some color and perspective. If we take a look at our services business, this is a business the team has really tuned the strategy. We have got a great strategy, strong execution over the last, call it four years. It's a business we've grown at a compound rate of about 15%. Last year we grew at over 20%. This year our expectation coming into the year was high single-digit. As we look at the underlying components of the business, there is an element of the business that's long-term service agreements, that's more subscription like and its revenue. As we look at performance of that business in Q3 and Q4, it's profiling exactly like we thought. And so a mid-teens grower into Q3 and Q4.

When we look at the other part of the business, the other half of the business being more transactional spares and service related that has a connection to industry utilization and factory outputs, clearly we saw a fall-off in Q3 and Q4, as the memory industry has structurally brought down its factory output to work through the inventory correction.

We initially thought this was going to be a flattish business for the year. It now looks like it's down low-double digits for the year. The combination of a mid-teens grower and down low-double digits, gets you a low single-digit grower as an overall business. If we were to classify our business similar to others in the industry, in addition to growing low single-digit added our 300 millimeter refurb and upgrades to the business. This is an all-time record year for us and it's something that it's growing quite a bit stronger than the segment reported services business.

So, I don't -- I wouldn't necessarily look at our absolute performance or relative performance and think that there is something deficient in the way the businesses is profiling. We think we've got a great business. The team's executing well and as industry utilization recovers into next year, should provide a nice leg of growth to the business going forward.

A - Gary E. Dickerson {BIO 2135669 <GO>}

Yes, maybe just let me add a little bit of color on the service business. As Dan talked about certainly there has been a reduction in wafer starts and you also mentioned this in the question with memory customers. So, that's impacting the spare parts business, but one thing that's been a major change in our strategy, starting in 2013, was to drive more subscription type revenue with customers and that's been very successful. If you go back to '13, we had net zero adds in term of certain service contract. Since then, that part of the business has been growing very, very fast.

Dan talked about even in this year, with WFE down a fair amount that part of our business is still growing at a very high rate and that subscription revenue from longer term agreements is now larger than our transactional spares and service business. And that's really because we continue to see strong pull from customers accelerating R&D, accelerating fab ramps, optimizing yield output and cost and high volume manufacturing.

We also have a very strong strategy in data analytics. We have over thousands of tools connected in customers' fabs that's creating value for customers today and that creates a great opportunity for us to continue to drive that data-enabled strategy to create value for customers and also to drive growth for Applied.

Just one more data point. If you look at our spares and service business and again this is separating out upgrades, refurbishments and other things that are accounted by some people, if you look at just our subscription revenue and our spare parts business, transactional business, that business has grown 27% over the last two years, with wafer fab equipment being flat. So, that shows that even in a case where wafer fab equipment is not growing, that service business is growing. So, we're very optimistic that we're going to drive this business at a high rate going forward at Applied and also create more value for our customers.

Q - Timothy Arcuri {BIO 3824613 <GO>}

Awesome, Gary. Thanks for that. Just as a follow-up. There was a major memory maker in China running around Flash Memory Summit. They were talking about spending \$10 billion on WFE between 2019 and '20, very, very big numbers that I don't think anybody's modeling. Can you talk just more generally about China memory efforts and whether next year could be a pretty big year from the indigenous China guys? Thanks.

A - Gary E. Dickerson {BIO 2135669 <GO>}

Yes, we're not really giving any color on 2020 right now. I think what I had said earlier on the call relative to '19. As we see '19 relatively flat with '18. And I honestly don't see a big hockey stick, I've said this in the past over the last few years also. I haven't seen a big hockey stick, I think that the spending certainly in foundry logic is rational around IoT, sensors, communications, all of those kinds of devices. That's a little over half of the domestic spending this year. And certainly we believe that there will be some incremental spending, but we're not going to give any color on the call today relative to forecasting 2020 for China.

Q - Timothy Arcuri {BIO 3824613 <GO>}

Okay, Gary. Thanks so much.

Operator

Thank you. Our next question comes from Krish Sankar with Cowen & Company. Your line is open.

Q - Krish Sankar {BIO 16151788 <GO>}

Yes, hi. Thanks for taking my question. I have two of them. Dan, given that your semi business is stabilizing at these revenue levels, but the mix is shifting more towards foundry logic versus memory. I would have thought your gross margin profile would have been better. Can you just eliminate some of that and what's going on the gross margin side?

And then as a follow-up, I'll ask it right away. You guys gave some color on FY20 Display revenues relative to 2019. Given that you have almost nine months lead-time visibility, how should we think of FY20 Display revenues relative to FY18, where you did about \$2.5 billion? Thank you.

A - Dan Durn {BIO 17483115 <GO>}

Thanks, Krish. Let's take them in order. First, on the gross margin in the foundry logic showing signs of strength. Let me start by saying this is a Company that's laser focused on driving gross margins up over time. And if we were talking about a business mix from maybe a few years ago, I think maybe we will be seeing incrementally higher gross margins. But let me help you a little bit with some of the mixed factors that we see going into gross margin, given who we are today.

So, as we take a look at our services in Display business and growing it as a part of our portfolio, we know that those two businesses and we've done a great job growing them those two businesses have a gross margin that's lower than the corporate average. But we expect each of those businesses -- and we expect each of those businesses to be up as we look into 2020.

And then within our semi portfolio our leadership businesses are doing really, really well. But the profile of our semi business is changing as we grow and there's a couple of things I would point to. First, our etch footprint. These are gross margins -- products with gross margins that are not as high as maybe other parts of the portfolio, but we're doing a great job driving that business, we are expanding that business into new opportunities and beyond memory into foundry logic and that's certainly changes the profile of our business as we grow forward.

Second thing I'd point to and we talked about it on this call is foundry logic spend diversifying. There was a time a decade ago, when it was 90% on the leading edge. And then it evolved to 80:20, 60:40 and now for the last three years '17, '18 and '19, it's fully split 50:50 between leading-edge technologies and trailing node geometries. And where we compete in the trailing node geometries with differentiated equipment and our key enablers of some of the technologies and products that are being brought to market, that's super attractive business for us. But there is also opportunities in that market, where we compete with 300 millimeter refurbs, 200 millimeter systems. And while those products offer really attractive operating margins and cash flow, the gross margins might be lower -- a little bit lower than we see in some of the other businesses we pursue.

So, we're going to continue to stay focused. We're going to continue to drive gross margin over time, particularly as we see the industry recover, we drive revenue higher.

From this point going forward, we do think we're going to be able to grow the semi business in the next year, grow the AGS business in the next year and the display business. So, we're going to stay focused on execution. And we feel good about how the business is profiling.

And then the second part of your question was on Display. Could you repeat the question, I apologize I lost--

A - Gary E. Dickerson {BIO 2135669 <GO>}

Yes, I can do it. I mean basically on Display relative to 2020, what we said earlier as we think 2020 is going to be a little higher than 2019. I don't think we're going to give anything more specific at this point in time.

Q - Krish Sankar {BIO 16151788 <GO>}

Thanks, folks.

A - Michael Sullivan {BIO 16341622 <GO>}

Thanks Krish.

Operator

Thank you. Our next question comes from Vivek Arya with Bank of America-Merrill Lynch. Your line is open.

Q - Vivek Arya {BIO 6781604 <GO>}

Thanks for taking my question. I think when you started the call, you mentioned that you're still not comfortable calling the bottom. And I'm curious what in the environment is preventing you from doing that? Is it order visibility? Is it the macro environment? And what do you see, where do you think your memory customers will start to add incremental capacity?

A - Dan Durn {BIO 17483115 <GO>}

Yes, thanks, Vivek. I think I'll come back to the comments we made a little earlier that, in an environment defined by what we see today, we do think it's an elevated risk profile around some macro environment, -- around the macro environment as well as geopolitical. I just think it's prudent in an environment that's characterized like the one we're in, to set expectations in a modest way. We have conversations with customers. If I would give a direct read through on those conversations, I think you would see expectations set at a different level.

But again and come back to an environment like this, I just don't think that's a prudent place to be. So, we want to set expectations in a more modest way. We're setting expectations for gradual and U-shaped off these levels. Certainly if the industry recovers faster than, where we're setting the expectations, given our broad portfolio and how we're positioned in all of the markets, this is a company that's going to benefit in a very

material way, if that happens. So, we feel good about the position, we feel good about finding stability in the business and we do think it's just a matter of when, not if, and we'll be ready to take advantage of those opportunities when they materialize.

Q - Vivek Arya {BIO 6781604 <GO>}

Okay. And as a quick follow-up. On the market share side, I know last year you guys were down 2 points, but you're starting to recover that in recent quarters. Heading into 2020, which areas do you think AMAT is best positioned to gain share and what will be the impact of the EUV in that share progression and how your time is impacted? Thank you.

A - Gary E. Dickerson {BIO 2135669 <GO>}

Yes, thanks for the question. So, if you look at EUV, we still see Applied growing and patterning and we also see a growth in overall WFE, even as EUV finds areas of adoption. As we've communicated before, last year EUV was a headwind. As you look forward, you have to look at different segments. EUV has a very small impact on memory. When memory recovers, that's going to be very positive for Applied relative to the TAM opportunity.

Memory is really about materials-enabled scaling and we have gainshare in memory, very deep engagements with our customers and good opportunities to continue to drive share gains. In NAND, we have a great opportunity to enable 3D scaling, I talked about new hard masks. Our etch position continues to grow. In DRAM, they're adding metal gate in the periphery and this is where we have high share as those processes are adopted.

I talked earlier about the IoT, communication, sensors, that's an area, where I talked about we won two-thirds of the TAM opportunity here recently with the customer and that's about 50% of the foundry logic spending. So, we have momentum in all of these different areas.

And then the other thing I would say is that, we've talked about this new playbook, new architectures, new materials, new structures, new ways to connect things together and new ways to shrink. We really have new technologies and new products in many of those different areas. And so I've given color today on the call about many of those different opportunities and that's also, why we're investing more going forward .

We have a very strong point of view. The market driven by AI, Big Data is going to be strong in the future. We believe that the new playbook with new structure, new materials, new ways to connect devices, all of those areas are areas, where Applied has unique technologies, unique capabilities. We have products that some of which are already seeing adoption with customers, where we have traction. We're going to invest in those areas and my main focus, as CEO, is to make sure, we're in the right position, when those markets grow in the future.

Q - Vivek Arya {BIO 6781604 <GO>}

Thank you.

A - Michael Sullivan {BIO 16341622 <GO>}

Thanks Vivek . And we're getting close to the end of our scheduled time. So, Dan, would you like to help us close the call?

A - Dan Durn {BIO 17483115 <GO>}

Thanks, Mike. Sure. Let me just share a couple of quick comments to end the call. First, I'm encouraged. I'm encouraged by the stability we are seeing in our business and encouraged by the positive leading indicators that we're seeing in memory. But I'm still not ready to call the bottom, especially given the macro risks that we need to keep an eye on. At the same time, we've been in this industry a very long time and long enough to know that something new and big is happening in computing. And it's happening just as Moore's Law is slowing down. So, we see growth coming and we believe Applied is in a special position to help this industry.

So, we're going to invest, we're going to create value and grow this company and outperform the market. And finally, we're going to stay close to investors. Gary and I, we're going to be hosting some meetings here in Santa Clara throughout the quarter. And I personally look forward to seeing many of you in the beginning of September in New York at the Citi Conference.

So, Mike, let's go ahead and close the call.

A - Michael Sullivan {BIO 16341622 <GO>}

Great. Thanks, Dan. And we'd like to thank everybody for joining us today. A replay of this call will be available on our website by 5 o'clock Pacific Time. And we would like to thank you for your continued interest in Applied Materials.

Operator

Ladies and gentlemen, thank you for participating in today's conference. This concludes the program. You may all disconnect. Everyone have a great day.

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