Earnings preview June 26, 2024

MU: Near-term wrinkle in the AI narrative offsets strength in lpDDR

KC Rajkumar, CFA, PhD
(408) 425-5680
KC@LynxEq.com

*Street expectations going into the earnings event today are perhaps the highest we have ever seen. Three months ago, with muted investor expectations and with the stock in the mid-90s, we set our PT at $150. The stock hit our PT a week ago. We expect a strong beat and raise, but some of that is perhaps already priced in. During the quarter, annual estimates moved up steadily. On the eve of the earnings call, the consensus Fy25 revenue estimate is right where we were modeling three months ago- $37.9bn, up ~50% y/y (link). We are leaving our **estimate unchanged**.*

*Three months ago, rather than merely highlight the HBM opportunity as many on the Street did, we spoke of incremental strength in NAND demand from AI data centers. We spoke of flash storage demand inflecting sharply upwards during the Feb quarter. Management commentary was inline with our thesis. Going into the May quarter earnings today, we expect management to put a spotlight on yet another aspect of MU's portfolio. We expect **lpDDR5** demand at Micron to inflect upwards, but not because of the traditional smartphone end market. We believe MU's sharp beat and raise vs. expectations could be in part due to demand pull-thru from AI/ARM PCs. lpDDR5 strength is NOT in Street models, we believe.*

*Now, under normal circumstances, the surprise upside to overall revenue growth from a new vector, i.e. lpDDR5, would have encouraged us to raise our PT. Over the next 12 months we anticipate upside to our current PT. However, going into this earnings call, we'd rather sit on the sidelines. Not just because of super high Street expectations, but due to our worries about **a near-term wrinkle in the HBM narrative**. Details below.*

*Net/Net, in the immediate aftermath of the print and guide, we expect the stock to move towards the upper end of the recent range, i.e. to our $150 PT. However further gains could be attenuated by potential worries around the pace of HBM3e shipment, despite strong demand pull from NVDA's H200 systems. Despite our view on the incrementally positive lpDDR5 opportunity, going into this earnings event **we will not be raising our $150 PT**.*

*On a sector basis, we think AI semis could run into **near-term resistance** due to an airgap in catalysts. While we think MU is best situated among AI semis, and while we think AI semis have further to run, into near-term concerns though, we prefer to stay on the sidelines into the event today. Brave souls could look to play near-term downside to the stock if investor worries percolate up.*

--xx--

HBM and SSD – already in Street models: On the HBM front, the Street is already on board the idea that capacity has already been allocated through 2025 and perhaps even into 2026. We don't see a whole lot of leeway for expectations to creep any higher. We were modeling DRAM revenue up 60% in Fy24 and 50% in Fy25 (link). Street estimates have moved up to our model. We expect management to sound meaningfully more enthusiastic about NAND demand from data centers. But this too is perhaps largely dialed in. We were modeling NAND revenue in FY24/Fy25 at up 60%/70%. Street models are now largely inline with our estimates from 3 months ago.

The lpDDR5X opportunity provides a clear positive: The Street has **not woken up** to meaningful upside opportunity from MU's module-based lpDDR5x. Here is our thesis: Historically speaking, PC memory is based on commodity DDR-type modules. **It is our view** that going forward many PC vendors will start replacing DDR-type modules with the specialized and more expensive (and margin accretive to MU) lpDDR5X modules. At the previous earnings call, Micron management had hinted at its interest in using the lpDDR flavor, traditionally used in smartphones, in PCs and even in servers. We note that in the lpDDR market, Hynix is not a player, a positive for MU.

We believe Samsung and Micron have been **locking up contracts** for lpDDR5X from major PC vendors. We think it is possible that the lpDDR opportunity **may not have been fully dialed** into MU's May quarter guidance.

Net/net: Towards the end of this CY, we expect lpDDR5 capacity to get into **supply-constrained territory**. We note that, up until now, due to poor demand growth in smartphones, lpDDR4/5 capacity has been in surplus. This surplus goes away as AI/ARM PCs ramp up in the next 12 months. This could drive a decent-sized revenue/eps beat/raise for the May/Aug quarters and **drive upside to Fy25 DRAM estimates**.

The downside- Is there a near-term wrinkle in the HBM narrative? MU has been transparent regarding the loss of bits associated with stacking DRAM dies into 8-high HBM. Six months ago, management said it had to allocate **2x** the memory bits of traditional mono DRAM dies to get to target HBM memory bits. Three months ago, management increased the estimate to **3x** the bits. The allocation for DRAM wafers 3x more than the HBM bits was implied by management to be a positive as it sops up under-utilized capacity and drives upward pricing pressure on overall DRAM pricing. In a conventional sense, loss of bits during processing is not great. But in this case, MU said the company more than made up the loss in higher ASP and higher margin.

Our work shows that even at NVDA, there may be considerable loss of raw GPU dies at the CoWoS packaging step and before final output as shippable AI servers. By our estimate, the **excess GPU dies on wafers could be ~3x the final GPU server output**. We think the excess GPU wafers vs final output could be in the **same ballpark as the excess DRAM wafers** that MU management spoke of. If true, that relationship provides valuable insight.

Loss of bits: We do not think the bulk of the loss of DRAM bits occurs at HBM processing. Rather, we think the bulk of the loss of bits occurs 1) at the CoWoS packaging step, and 2) during post-package electrical testing. As is typical with silicon processing, large loss of raw dies usually points to **underlying systemic problems**, which manifest themselves when the device is powered up and tested at full throttle on test boards.

Our view: We think there could be something to the recent chatter out of Asia hinting at yield issues at HBM3e. We are picking up similar signals. Where we crucially differ is that **we do not think the issue necessarily lies with MU's HBM stack**. Rather, we think the issue, if indeed there is one, likely is related to the NVDA design of the GPU/HBM module – 1) the quantity of HBM memory designed into NVDA systems, 2) the via/metal design of the interposer silicon on which is placed the GPU die and the HBM stacks and 3) at a system architectural level, the tolerance limits designed into memory latency. Proper cooling solutions and thermal-resistant material selection need to be done to maintain system structural integrity during operation. Else, heat-related failures could occur, not unlike the issue with Samsung's 12-high HBM stack.

Questions may linger: As such, we do not expect MU to comment on the chatter due to customer confidentiality. And for the same reason, MU is unlikely to comment if there is any wiggle to the timeline of H200 shipment. Recall that at its earnings call a month ago, NVDA made the statement that H200 is on track for shipment in its July quarter. Given the recent hints of yield worries, Investors may be **left to wonder about the pace of revenue ramp** of Micron's HBM solution into the H200 cycle.

Net/net and stock call: We expect MU management to report a strong beat/raise and push the needle on Fy25 estimates by introducing a new revenue opportunity – lpDDR5X modules into PCs. All else being equal we would have been motivated to raise our current $150PT. However, near-term concerns on potential yield issues surrounding the H200 opportunity leaves us on the sidelines. Even if management forcefully sticks to NVDA's schedule for H200 shipment, investors may be left to wonder if there are any landmines. We'd rather let the Street work through potential concerns before revisiting our PT.

In the immediate aftermath of print/guide at the event today, we expect the stock to drift up to the upper end of its recent range, i.e. return to our $150PT. Further gains could be attenuated by investor worries. Despite our positive view of secular trend in lpDDR5, we prefer to stay on the sidelines and revisit later. Brave souls could look to play near-term downside to the stock if investor worries percolate up.

Disclosures and Disclaimers

Lynx Equity Strategies, LLC is an independent equity research provider. The Company is not a registered broker dealer or investment adviser. No employee or member of the Company, or immediate family member thereof, exercises investment discretion over securities of any issuer analyzed in this report two days prior and/or two days after this report is issued. It participates in "Alpha Capture Systems" that seeks investment or trading ideas from the sell-side and may pay for the participation based on relative performance.

Limitations of Information

This report has been prepared for distribution to only qualified institutional or professional clients of Lynx Equity Strategies, LLC (the "Company"). The contents of this report represent the views, opinions, and analyses of its authors. The information contained herein does not constitute financial, legal, tax or any other advice. All third-party data presented herein were obtained from publicly available sources which are believed to be reliable; however, the Company makes no warranty, express or implied, concerning the accuracy or completeness of such information. In no event shall the Company be responsible or liable for the correctness of, or update to, any such material or for any damage or lost opportunities resulting from use of this data. Nothing contained in this report or any distribution by the Company should be construed as any offer to sell, or any solicitation of an offer to buy, any security or investment. Any material received should not be construed as individualized investment advice. Investment decisions should be made as part of an overall portfolio strategy and you should consult with a professional financial advisor, legal and tax advisor prior to making any investment decision. Lynx Equity Strategies, LLC shall not be liable for any direct or indirect, incidental or consequential loss or damage (including loss of profits, revenue or goodwill) arising from any investment decisions based on information obtained from Lynx Equity Strategies, LLC. Reproduction and Distribution Strictly Prohibited. No user of this report may reproduce, copy, distribute, sell, resell, transmit, transfer, license, assign or publish the report itself or any information contained therein. This report is not intended to be available or distributed for any purpose that would be deemed unlawful or otherwise prohibited by any local, state, national or international laws or regulations or would otherwise subject the Company to registration or regulation of any kind within such jurisdiction.

Copyright, Trademarks, Intellectual Property