the art of boring™

EP 225 | Memory, Part 3: Cyclicality, Leveraged ETFs, and Pricing Uncertainty

[00:00] [Rob Campbell] [RC] This week on the Art of Boring, part 3, the final installment of our series on memory with equity analyst Shan Rui Yeo. Parts 1 and 2 traced the history of the memory industry, what has led to massive bottlenecks in supply and demand, and some of the bigger potential disrupters to the outlook. Today, Shan puts it all together as an equity analyst: what he's watching most carefully, the scenarios he's thinking the hardest about, how leveraged ETFs are amplifying stock price movements, and how we're thinking about position sizing. Enjoy.

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[00:49] [Rob Campbell] [RC] Shan, what do you do with all this? It just strikes me that, number one, the numbers are huge, the deltas are huge in terms of the change. Because of the cyclicality, we're talking in some cases about: is it '27, is it '28, is it 2030?

When you think about individual investment cases—you can share an example from something that we own—what are the key variables when it comes to us valuing these businesses? And how are we thinking about the probabilities associated with just how they could evolve?

[01:21] [Shan Rui Yeo] [SY] This is definitely one of the more difficult business projects. Businesses as uncertain as memory with all these demand changes that we could not project, and also the risks from China, technological changes, or oversupply. No one truly knows what DRAM prices will be this year, next year, and definitely not in 2029 or 2030.

Fortunately for us, we have this Monte Carlo simulation framework, where it allows us to take into account the probabilities. And we have to, in this case, because we cannot discount any of these probabilities away. I think you could argue that there is a more bullish scenario where memory prices continue to stay high through the decade. And there could also be a more bearish scenario where price decline starts in 2028 and it just accelerates downwards, just because of how much capacity these guys have invested.

So, rather than pretending that we know everything, or that we think that it will be a bull case, a bear case, we build a discounted cash flow where all these key uncertain variables are a range of numbers, and then we run the model through thousands of scenarios. So that instead of giving us a single point, it gives us a distribution of outcomes. And these are treated stochastically. It's a range and a distribution.

So, just to walk through SK Hynix as an example: I think ultimately the most important variable here is the path of DRAM prices. In our more bullish scenario, I think memory prices rise further in 2027 and just hold at a level until

2030 and beyond before they start to decline, because we do believe that DRAM is still a cyclical commodity. So this is a scenario where AI demand continues to grow, HBM consumes a huge part of DRAM supplies, and customers stay to the LTAs.

In a more realistic scenario maybe price starts to decline in 2028 as normal historical patterns, the supply response arrives on schedule, demand and supply become more balanced, and we get the usual cycles. And the memory suppliers have to show some of the capital discipline that they have estimated in the previous cycles. And of course, in a more bearish scenario, the decline accelerates through 2028, with over-investments, Chinese supply, and the demand air pockets that land altogether. These are all possible scenarios that we cannot discount.

And for us, the output we focus on is the investment rate of return distribution: what annual returns do we actually earn at today's price under different scenarios? So for SK Hynix, the distribution runs from about 9.5% of variables, to about 15% of the best case and centered around 12%. So in the pessimistic two assumptions of the 10% out, I think we still get paid a reasonable IRR. So the question is not about which scenario is right or what will happen, but in this case, that we have been paid adequately across the whole distribution, with a positive skew on the upside.

So despite the rundown in the share price, I think the market is still pricing in a fairly harsh memory cycle. Beyond this, every new data point—which is important given how rapidly the industry changes—whether it's the progress of more LTAs signed or more capacity expansion, becomes a signal for us to update our distributions. And position sizing follows from the shape of the distribution. So as the share price has gone up, what we have done is, across the portfolio, we have taken the position down over time, based on just the risk report that will get them from it.

[05:53] [RC] Of course, that's taken a lot of work. Just given how much the share price has gone up, can I ask: we've seen such day-to-day volatility in those share prices, which I assume there's some fundamental basis for. You mentioned earlier just the risks on the terminal value, or just the timing of when these contracts might change—presumably those do have that kind of an impact, even in our Monte Carlo, on the value of the stock.

But I would also think—and we've seen this just through retail participation and some of these single-stock ETFs that are leveraged, that really play on how well this particular stock is going to do—do you think at all about more of the technical side of things, in terms of flows and just the day-to-day nature of how these stocks are trading? How does that factor into your longer-term analysis?

[06:44] [SY] I think the flow and technical aspects have become a lot more visible since June onwards. So I think what really changed was the presence of multiple leveraged ETFs that came in May. These leveraged ETFs allow retail participants to ride on the rapid price appreciation. So I think the volatility has gone up significantly since June as a result of these leveraged ETFs.

And I think there's some technical aspect here in how these leveraged ETFs amplify the volatility. A lot of these are two-time single-stock ETFs, like the two-time SK Hynix ETF listed in the Hong Kong exchange. It has about 25 billion AUM at the peak. So leveraged up, it has about 50 billion of gross exposure to SK Hynix.

So what happens is that when the SK Hynix share price goes up, at the end of the day, the leveraged ETF has to come in to buy to rebalance it. Because say the NAV is $100 and the gross value is $200: the underlying share price went up by 10%, the NAV went from 100 to 110, and the gross value went from 200 to 220. But in order to maintain the two-times leverage, they must leverage it up from 220 to 240. So when the share price goes up, they are coming at the end of the market to buy even more.

So that's what we've seen in the early part of June, where you see SK Hynix go up and down by 15%, then to 15%, every single day as this leveraged ETF gains AUM. And what we've seen in the last two weeks is that when the share price starts to fall, this leveraged ETF becomes a forced seller. Now usually, with buy low, sell high—I think what this ETF does is they buy high and sell low. So it really amplifies the volatility both ways.

So I think for long-term investors like us, it is actually a gift, because it actually widens the gap of price and value. So for us, if the risk-reward from our distribution starts to go down, I think we will trim our position. And when the risk-reward starts to look better, maybe it's time for us to explore whether we should take advantage of the volatility. So that is definitely the aspect of the leveraged ETFs.

And of course, there is the leverage on the retail side in Korea, where the retail participation rate has gone up significantly. The Korean government is exploring steps to try to control this leverage-taking. We have also seen the Korean brokers proactively try to increase the maintenance ratio to reduce the margin rates for the retail investors. It's definitely a very interesting time where we see all this volatility, where 10 to 15% daily price movement is the norm these days.

[10:06] [RC] I want to end with: throughout all this discussion, what is something out of what we have mentioned,or maybe that we haven't, that you think is really underappreciated by most people out there about this particular market?

[10:20] [SY] I would say memory is definitely still a cyclical commodity, but I think DRAM is a wealth-creating industry, and you can be all three at the same time. You can be an industry with structural growth, with a lot of cyclicality, but you can still have all these companies that create returns on capital, that is more than the cost of capital over the cycles.

[10:47] [RC] And I guess that's the key in industries like this: making sure—there are going to be moments in the cycle that are more or less wealth-creating, but it's really about over the cycle, for it to meet our investment criteria and for us to participate.

Well, Shan, we had Wen on the podcast a couple of weeks ago, and he described you as a walking LLM in terms of your own ability to source memory—certainly a lot of high-bandwidth memory in my experience chatting with you. Love the detail that you've brought to the conversation. Thanks so much for spending the time, I guess early in the morning in Singapore, to speak to us and our listeners. Thanks so much.

[11:23] [SY] Thank you so much Rob for the time too hope that you have a good rest.

[11:30] [RC] Hi everyone, Rob here again. To subscribe to the Art of Boring podcast go to Mawer.com, or wherever you download your podcasts, if you enjoyed this episode, please leave a review on iTunes, which will

help more people discover the Be Boring, Make Money philosophy.

Thanks for listening.

Companies Mentioned: SK Hynix