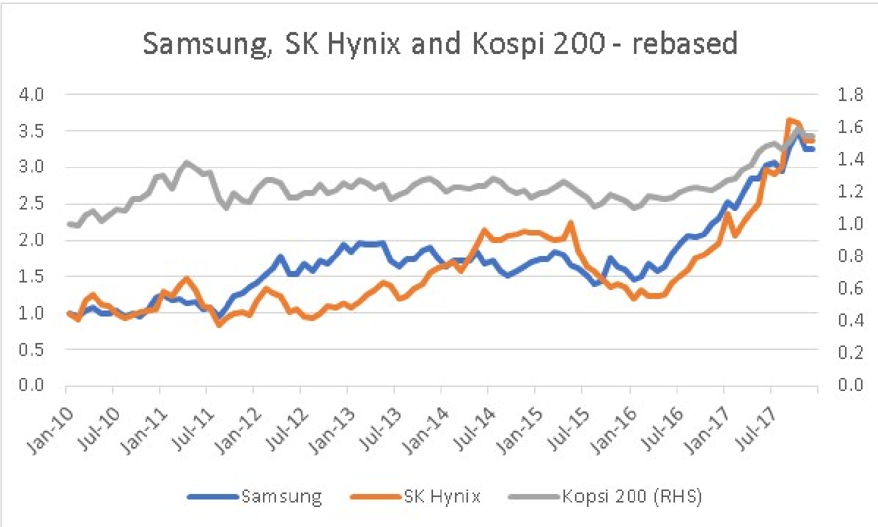
RUSSELL CLARK
INVESTMENT MANAGEMENT

KOREA, SEMICONDUCTORS AND A VOLATILITY SHOCK

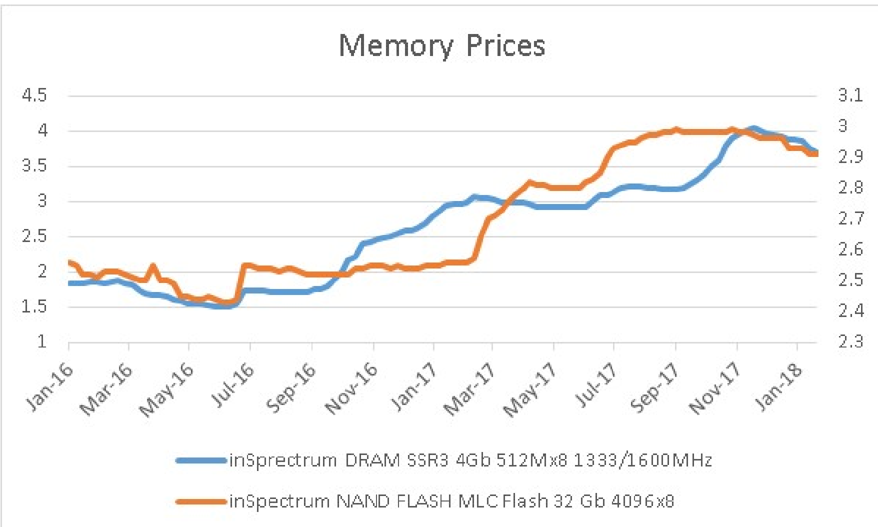
Russell Clark's
Market Views

"Volatility shocks are very dangerous for markets, as rising volatility tends to lead to deleveraging, which then leads to more volatility in a negative spiral. Investors worried about market positions in short volatility products should keep an eye on cryptocurrencies, memory prices and Kospi VIX."

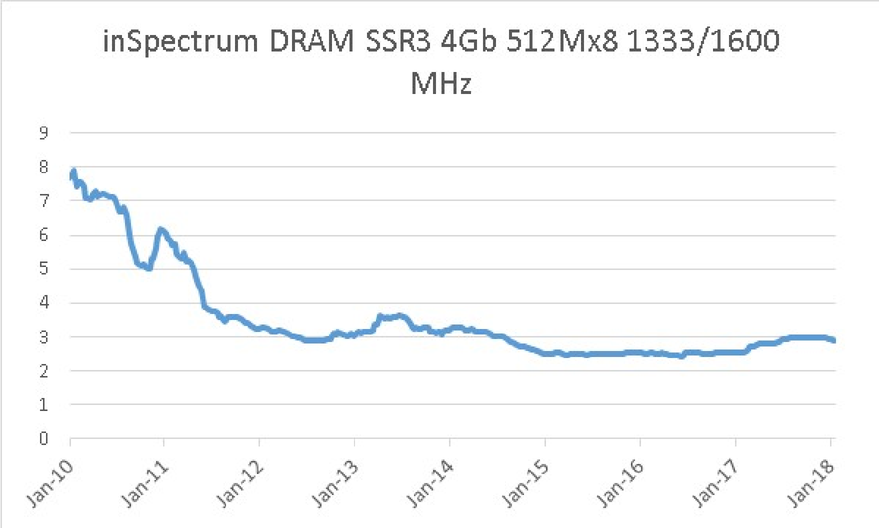
The Korean stock markets (KOSPI 200) have done well over recent years. The Kospi is a very concentrated stock market. Samsung Electronics makes up 26%, while the second largest stock is SK Hynix at 4.5% weight. Both Samsung and SK Hynix generate the majority of their earnings from semiconductors and particularly memory chips.



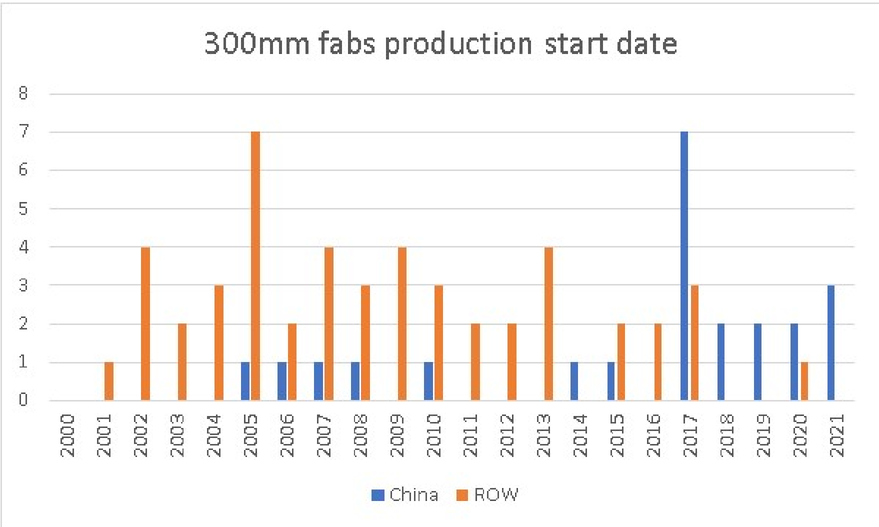
The strong performance of Samsung and Sk Hynix have been partly driven by strong demand for NAND and DRAM, and the rising prices of these chips.



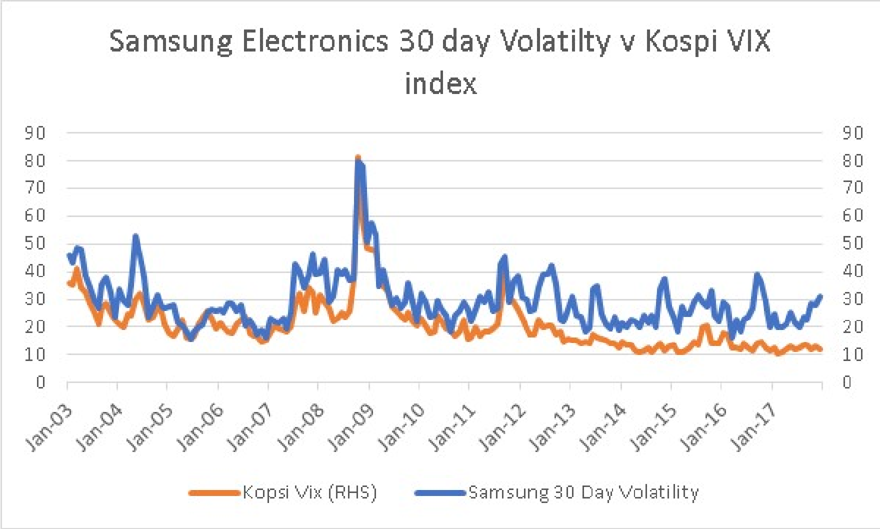
Memory prices are historically very volatile, but generally trend lower as improving productivity tends to mean existing semiconductor fabrication plants (fabs) can increase production with little additional capital expenditure. A graph of NAND prices since 2010 shows the more usual price trend of memory prices.



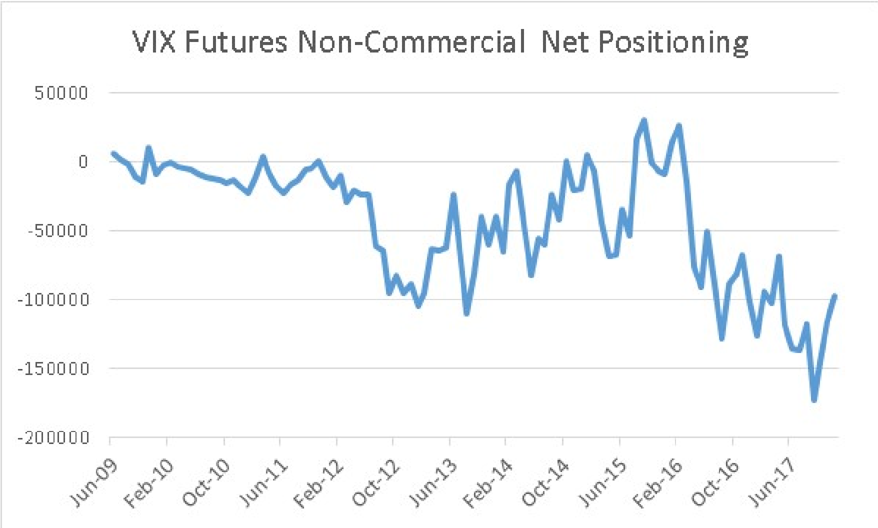
Given the recent softening in DRAM and NAND prices, some weakness in Samsung and SK Hynix could be expected. However, the longer-term outlook for the price of semiconductors looks troubled for two reasons. Firstly, the recent drop in value of cryptocurrencies could lead to reduced demand for memory. The second, and likely more problematic reason is the emergence of China as a player in the semiconductor market. According to PwC, China currently buys 50% of global semiconductor production and has stated repeatedly that it wishes to become a major producer. In recent years, the semiconductor industry has been in transition to production processes built around wafers that are 300mm in size, with plans to move to 450mm in the next few years. It costs up to USD10bn to build a fab based on 300mm technology. Using data from Wikipedia, we have collated the number new 300mm fabs that have started production and are forecast to begin production through to 2021, shown in the chart below. Using our projections China dominates new 300mm fab starts in 2017 and could continue to do so going forward.



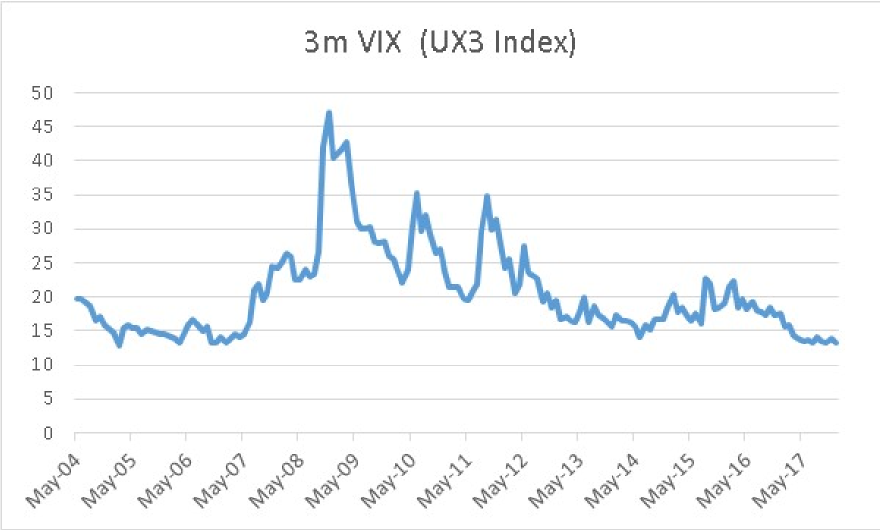
Obviously, the volatility of Samsung Electronics and Kospi volatility are closely related. It is noticeable that Korean VIX has fallen substantially below Samsung volatility.



As pointed out in a note in 2016, Korea has been global centre for structured products that sell volatility; the Korean financial sector creates yield products by selling options on the market. The higher the volatility, the higher the yield of the structured product (also known as an 'autocallable'). Lately, as Korean VIX has stayed at low levels, Koreans have been increasing buying "worst of autocallables." A "worst of autocallable" is where a higher yield is created by also selling volatility on overseas markets. If volatility spikes in one market, then a "worst of autocallable" will need to buy back volatility in all the markets that have been included in the structured product (more details are here: https://www.bloomberg.com/news/articles/2016-01-21/again-won-t-somebody-please-think-of-the-asian-structured-products-). Hence sudden weakness in memory prices could cause the volatility of Samsung and Hynix to increase, which would force up Korean volatility. If Korean volatility spiked enough, then Korean autocallables would be triggered, and Koreans would be forced to buy volatility globally. This could cause problems as the US market has record short positioning in VIX, which could trigger leveraged insiders there to cover their open option positions.



Record short positioning in VIX also coincided with record low 3 month VIX levels (UX3 Index). UX3 is a generic 3 month VIX future. VIX ETF's buy 3 month VIX futures when they see inflows.



Volatility shocks are very dangerous for markets, as rising volatility tends to lead to deleveraging which then leads to more volatility in a negative spiral. Given the connection of autocallables from Korea to global markets. a volatility spike in Korea could lead to global volatility spike and forced deleveraging. Investors worried about market positions in short volatility products should keep an eye on cryptocurrencies, memory prices and Kospi VIX.

INFORMATION

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