

Memories Drive April Slightly-Above-Average Growth Still Seeking a Bottom Ahead of an Anemic 2Q Seasonal Recovery

The big issue in the semiconductor industry right now remains the difference between memories and other product types: DRAM and NAND memories are expected to grow by some +30% this year, while everything else is expected to lump along at +4%. And this is making sector generalizations highly problematic, both in terms of industry business conditions as well as chip sector investing and share price performance. I remain cautious on the sector overall due to recent share price strength amid an apparent lack of a 2Q seasonal recovery, and am still looking for a near-term sector share price bottoming as a potential entry point for investors after the dust (finally) settles on the 1Q earnings season. See my most recent Semiconductor Investment Ideas for specific opportunities.

Memories Drive Growth: Two months ago market researcher IC Insights raised its 2017 semiconductor industry revenue forecast to +11% from +5% primarily due to DRAM and NAND memory market price strength. Last month Gartner raised its chip industry forecast to +12.3% from +7.2% and earlier this month the SIA/WSTS raised its forecast to +11.5% from +3.3%, both for largely the same reasons. Recall IC Insights expects DRAM growth of +39% and NAND growth of +25%, while the rest of the semiconductor industry is expected to grow by only +4%. Note that +11% is a statistical no-man's land between winners and losers.

Structural Differences: Recall also that my US-equity-based Tokeneke Universe does NOT include some three-quarters of industry DRAM and NAND business from Samsung, Hynix and Toshiba (with partner WD/SanDisk). While my Universe does include Micron, it will more closely track growth of +4% this year rather than +11%. Other structural differences in my Universe include the lack of very large international players (Samsung, Hynix, Toshiba, MediaTek, Infineon), although it includes wafer foundries (TSMC, UMC, SMIC, TowerJazz) and IP companies (Rambus, Tessera, Ceva, InterDigital and a chunk of Qualcomm) that, technically anyway, don't count as semiconductor industry revenues but rather costs associated with manufacturing. I also normalize fiscal quarters to the best fitting two out of three months (Marvell, Nvidia and Semtech have January-ending fiscal years, while Micron has an August-ending year). Unreported stub-periods associated with acquisitions are also a difference.

The bigger problem is that most US-based investors in the chip sector experience the industry from the Tokeneke Universe perspective. The Philadelphia Semiconductor Index Option (SOX) is similarly under-represented in memories, although this is somewhat mitigated by the inclusion of equipment companies supplying to memory manufacturers (AMAT sparked a chip sector rally last month after its strength from memory suppliers). And even if domestic investors are adventuresome enough to travel overseas, it is still difficult to isolate and benefit from current memory market strength: Only 31% of Samsung's revenue last quarter came from semiconductors, and Toshiba is currently flirting with bankruptcy due to a series of issues associated with its nuclear energy business—and, in fact, is looking to sell its NAND business in an effort to save itself.

April Gains: Worldwide semiconductor industry revenue growth for April was a slightly-above-average gain of +1.3% sequentially on a three-month rolling average basis, according to statistics released by the Semiconductor Industry Association (SIA) earlier this week—resuming its run after nine consecutive above-average months before last month's hiccup in March. April's performance compares to its average gain of +1.2% with a high of +7.6%, a low of -4.7%, and 10 declines in the last 27 years—including seven in the last 12 years. Asia-Pacific led with +2.0% followed by a nice rebound from The Americas at +1.8% and Japan at +1.4%. China trailed at +0.7% while Europe brought up the rear at +0.5%.

Next month's release of May data typically reflects better sequential growth. May has averaged a gain of +1.5% with a high of +6.5%, a low of -7.5%, and five declines in the last 27 years—including only one in the last 12 years. It will probably remain above-average primarily due to memory market price strength.

A Tale of Two IQs: The difference between official industry statistics (with memories) and my Universe (without memories) is pronounced, with the SIA reporting a 1Q decline of -0.4% compared to my Universe at -4.6%.

Industry statistics for 1Q came in last month with a very modest sequential quarterly revenue decline of -0.4% that compares quite favorably with the average decline of -2.3% with a high of +8.8% and a low of -19.4%, and contractions 18 times in the last 26 years—including 10 of the last 12.

However, 1Q for my Tokeneke Universe was a very different story, with the weighted average sales reflecting a sequential quarterly decline of -4.6% which was better than company guidance of -5.2% ranging from -7.7% to -2.7% after a handful of preannouncements that narrowed their ranges. When I exclude Micron's memory

strength the weighted average decline drops to -6.0%. The good news was that 60% of companies reporting met and/or exceeded expectations for 1Q results and 2Q guidance.

Flat 2Q: The 2Q revenue outlook based on management guidance across the Tokeneke Universe currently reflects an anemic flat-ness compared to a more typical seasonal recovery. The specific weighted average guidance for revenue is a flat +0.4% ranging from -2.6% to +3.4%. If I exclude Micron from the mix the center falls to -0.9% ranging from -3.7% to +2.0%. The semiconductor industry has averaged a 2Q sequential revenue gain of +3.7% with a high of +20.0% and a low of -19.9%, and has declined only five times in the last 27 years—including only two of the last 10 years, according to industry statistics.

Chip Sector Share Price Rally: Semiconductor sector share prices rallied and outperformed broader market indices during May. The Philadelphia Semiconductor Index Option (SOX) gained +8.5% with 47 out of 64 stocks in my Universe averaging increases of +5.1% compared to gains from the NASDAQ, S&P500 and DOW at +2.5%, +1.2%, and +0.3%, respectively. The chip sector is now outperforming on a year-to-date basis, per the tables below.

May				QTD (2Q)				YTD				Indices			
Winners (47/64)		Losers		Winners (41/64)		Losers		Winners (46/64)		Losers		May	QTD	YTD	
MRAM	79.5%	MOSY	-32.0%	MRAM	108.7%	MOSY	-68.4%	IOTS	165.9%	MOSY	-71.3%	SOX	8.5%	7.9%	20.4%
NVDA	38.4%	QUIK	-28.2%	SQNS	62.5%	QUIK	-32.0%	SQNS	139.0%	SMI	-32.2%	SMH	7.9%	7.9%	20.0%
SQNS	31.5%	OIIM	-18.1%	PI	44.2%	HIMX	-24.8%	MRAM	116.5%	XPER	-30.7%	NASDAQ	2.5%	4.9%	15.1%
MTSI	24.8%	SMI	-17.8%	NVDA	32.5%	AMD	-23.2%	PXLW	77.1%	ACIA	-23.8%	S&P500	1.2%	2.1%	7.7%
TSEM	17.8%	AMD	-15.9%	NLST	30.3%	ACIA	-19.8%	MBLY	62.4%	NPTN	-16.7%	DOW	0.3%	1.7%	6.3%
average stock +5.1% SOX +8.5%				average stock +4.4% SOX +7.9%				average stock +19.1% SOX +20.4%							

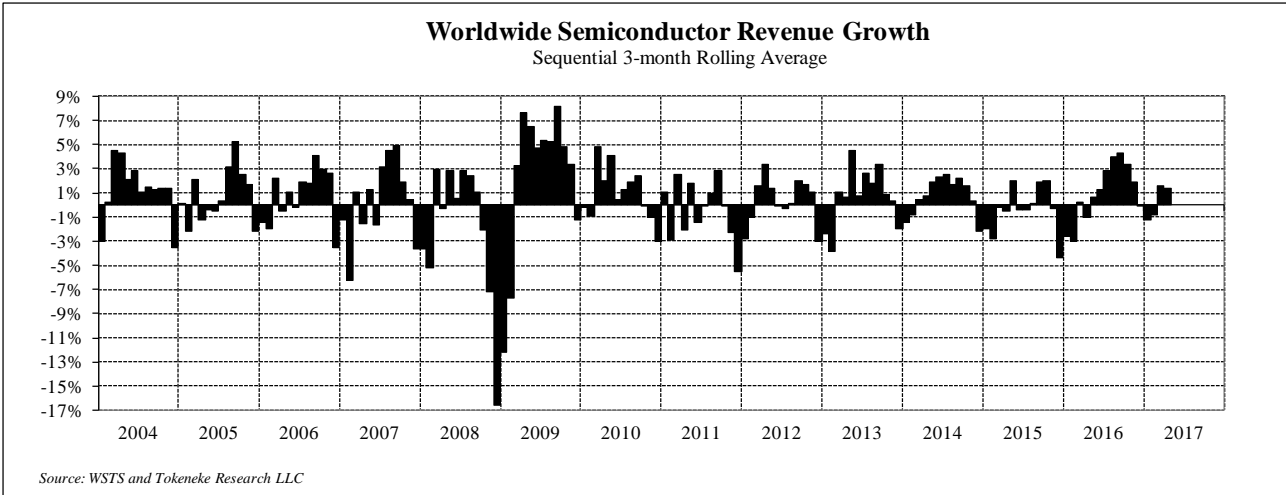
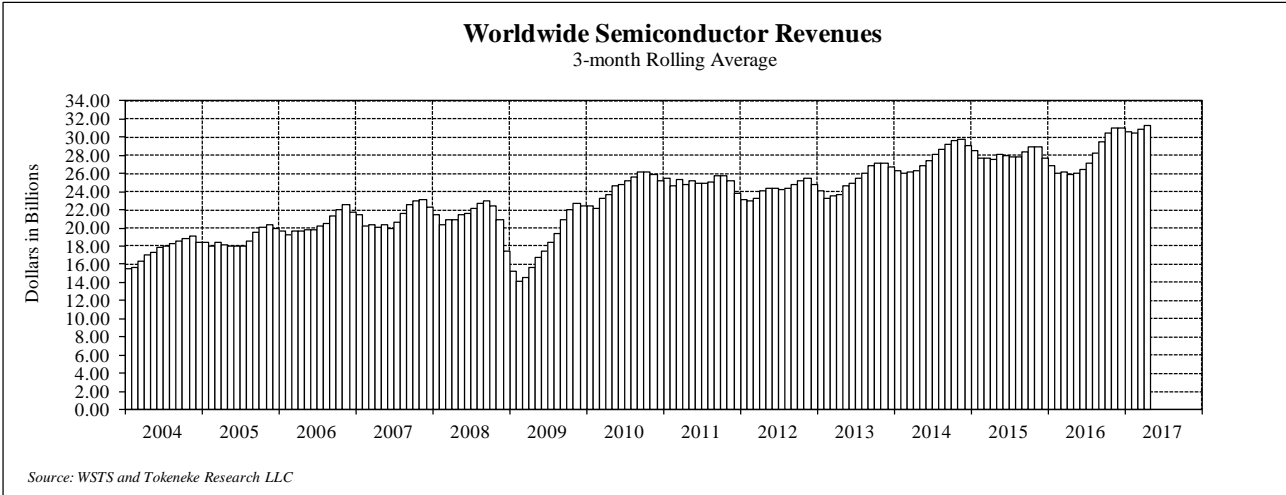
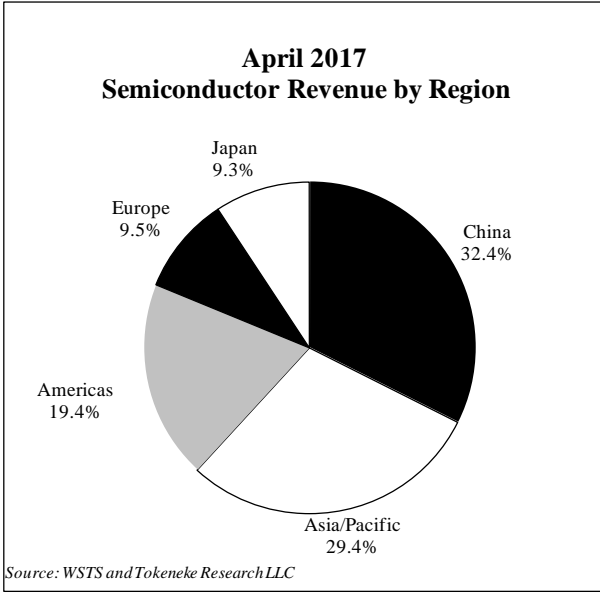
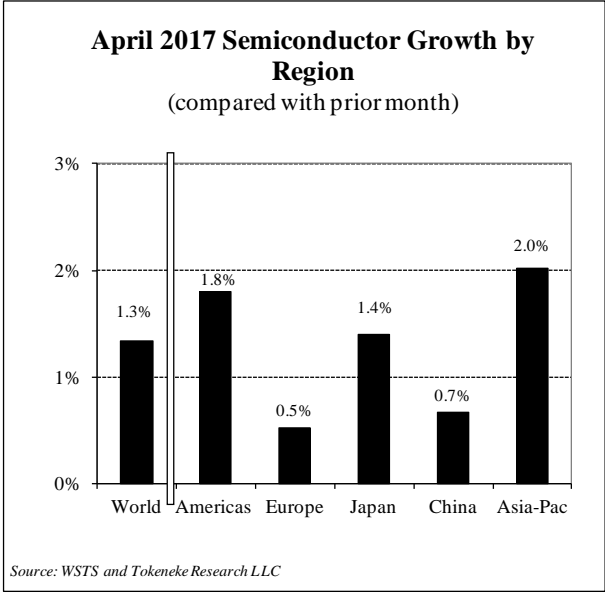
M&A Continues: Mergers and acquisitions have been running at fever pitch driven primarily by the lack of broader sector and macroeconomic growth, in my opinion. And I think it will continue, although the specifics in terms of buyers, targets, timing and price will be difficult to forecast with any precision. Recent losses to my Universe include: INVN going to TDK in Japan, EXAR going to MXL, GIG going to IDTI, ACTS going private in China, AMCC sold to MTSI, ISIL going to Renesas in Japan, and LLTC going to ADI. Pending takeovers include: LSCC going private (Chinese money), MBLY going to INTC, and NXPI going to QCOM. MOSY is also pursuing 'strategic alternatives.'

Sector Risk: The relative outperformance of the semiconductor sector compared to broader equity markets continues to worry me as noted by the spread between the SOX and S&P500 in the graph on Page 4. While there has been a nice rally across the sector as 1Q earnings results largely exceeded (admittedly low) expectations, I am not convinced this situation will persist given anemic guidance obscuring a typical seasonal 2Q recovery.

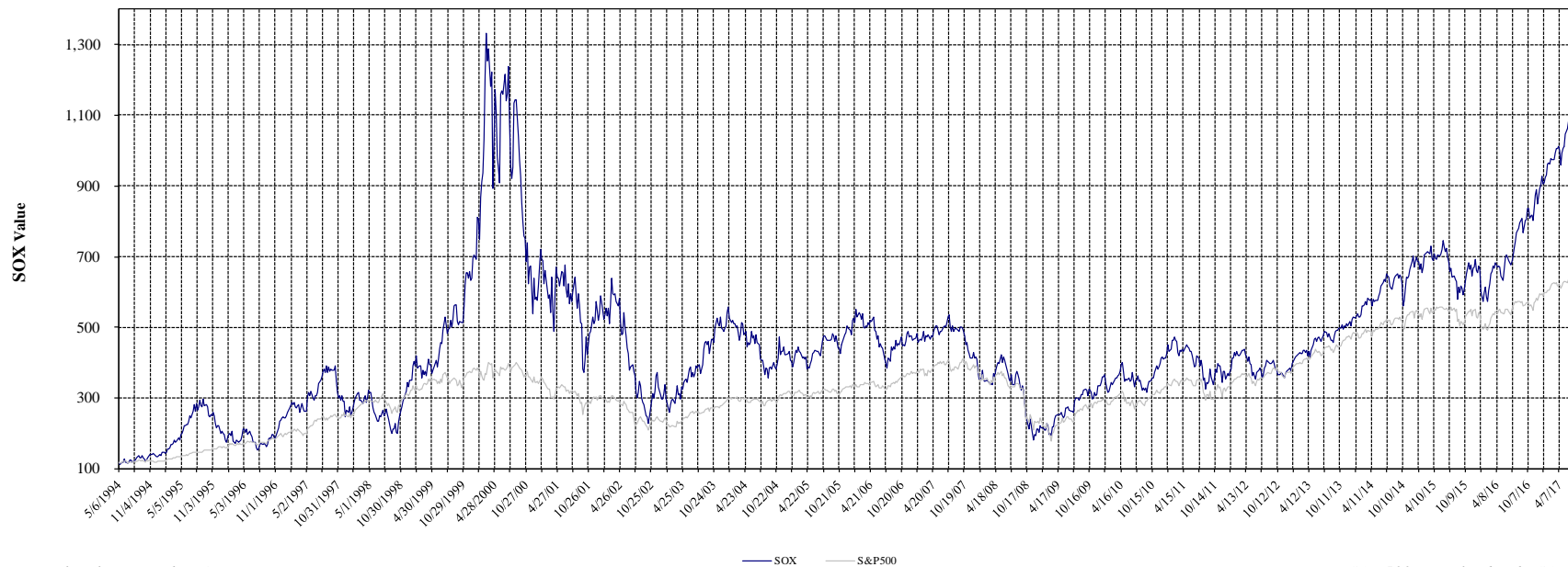
Wait for it . . . : Opportunities are still out there (MU memories, for example), but my take on the semiconductor sector remains one of caution—although my caution has evolved. A few months ago I felt a correction would occur in the March/April timeframe as seasonal 1Q business softness would snap several months of chip sector share price outperformance. Then two months ago things got complicated with the pronounced split between memories and other chips and its affect on both my Universe and the chip sector overall, as noted above. In addition, there was a slow start to the 1Q earnings season that did not get fully underway until the last week of April.

My caution persists now for two reasons: first, the several-month rally in sector share prices has persisted (and not done any favor to valuations); and second, the lack of recovery for 2Q is now troubling. I had hoped the dust would have settled by now after 1Q earning announcements, but AMAT strength sparked renewed interest late during the reporting season. I still think an attractive bottom is coming—albeit somewhat later than I had anticipated.

—Dan K. Scovel
Semiconductor Analyst



Weekly Philadelphia Semiconductor Index Option (SOX) vs. S&P 500



Source: Tokeneke Research LLC

*S&P 500 normalized to the SOX

The Company

Tokeneke Research is an independent research firm specializing in semiconductor industry business issues, providing fundamental research focused on US equities across all market capitalizations within the sector to investors. The company was founded in 2005 and is based in Connecticut.

The Offering

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My Background

I have an electrical engineering background, nearly 12 years of semiconductor industry experience, and was on Wall Street for nearly eight years where I was selected as the Best On The Street semiconductor analyst for 2002 by The Wall Street Journal, and third-rated Best of the Best across all sectors.

I obtained my undergraduate BS degree in electrical engineering from the University of Washington, and my MBA from Santa Clara University. My industry experience consists of nearly 12 years in various technical sales and marketing roles at four different semiconductor firms located in Silicon Valley beginning with Advanced Micro Devices in 1984, followed by two small start-up companies, and ending at Cirrus Logic where I supported the firm's Japanese market development. I joined Fahnstock & Co. as a senior semiconductor analyst in 1996 and was recruited by Needham & Co. in April 2000.

My formal coverage list as a sell-side analyst included the following equities: AMD, ALSC, ALTR, ARTI, ATML, CUBE, CY, ESST, GNSS, INTC, ISSI, LSI, MOSY, MU, OIIM, OVTI, RMTR, SIII, SMSC, STEC, SVTG, TDFX, TSRA, TXN, and ZRAN.

—Dan K. Scovel
Semiconductor Analyst

Tokeneke Research LLC

Rowayton, CT 06853

dscovel@tokenekeresearch.com

www.tokenekeresearch.com

203-554-4621

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