

## **Memories Drive another Industry Growth Upgrade June and 3Q Business Strength, But Weaker Equities Begin to Correct**

The big semiconductor industry news is that memory product strength is now expected to be even stronger than the rest of the industry after a forecast upgrade last week: DRAM and NAND memories are expected to grow by over +40%, dragging overall industry growth up to +16%. In other good news: June business was healthy and chip sector share prices continue to outperform as 2Q earnings announcements—including the outlook for 3Q seasonal strength—largely exceed expectations. However, share price volatility reflected by the SOX index over the last couple of months, and a more recent divergence of the performance of individual equities from the broader chip sector, appear to have triggered a subtle correction. In fact, I recently upgraded a handful of equities across my Tokeneke Universe (albeit from ‘sell’ to ‘hold’). While legitimate momentum equity plays will sustain themselves (and a certain portion of the overall sector), I think share prices will continue to correct as individual equities increasingly fail to satisfy investor expectations for growth. And this is likely to accelerate as business seasonality turns unfavorable as the year draws to a close, thereby opening up a number of opportunities with attractive fundamental valuations.

**Another Memory Forecast Upgrade:** Continuing memory product strength has triggered another increase in forecast growth for the semiconductor industry. Market researcher IC Insights raised its 2017 revenue growth forecast early last week for the overall chip industry to +16% from +11% primarily driven by memory products, with DRAM revenue expected to grow by +55% up from +39%, and NAND revenue growth up to +35% from +25%—both virtually all due to market price increases rather than bit shipment increases. The rest of the semiconductor industry products *excluding* these two product outliers is now expected to grow by +6% from +4%. Note that +16% overall industry growth is a statistical no-man’s land between winners and losers.

**Structural Differences:** Recall 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 +6% this year rather than +16%. 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, Tessaera, 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. 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.

**June Strength:** Worldwide semiconductor industry revenue growth for June was an even-stronger-than-expected gain of +2.0% sequentially on a three-month rolling average basis, according to statistics released by the Semiconductor Industry Association (SIA) last week. This now reflects a run of 13 consecutive above-average months, excluding a hiccup in March. June’s performance compares to its average gain of +0.5% with a high of +5.3%, a low of -9.2%, and 12 declines in the last 27 years—including three in the last nine years. The Americas led with at very strong +5.1% while the rest of the world grew at below-average rates with Europe at +1.9%, China at +1.5%, Japan at +1.0%, and Asia-Pacific trailing once again at +0.8%.

Next month’s release of July data typically reflects even stronger sequential growth. July has averaged a gain of +1.3% with a high of +5.4%, a low of -6.3%, and only six declines in the last 27 years—although three of those occurred in the last six years. I expect it to be above-average once again as persistent memory market price strength is boosted by a delayed smartphone seasonal recovery following a channel inventory burn earlier this year.

**A Tale of Two 2Qs:** The difference between official industry statistics (with memories) and my Universe (without) is pronounced, with the SIA reporting a 2Q sequential gain of +5.8% compared to my Universe currently at +1.5%.

Industry statistics for 2Q came in with strong sequential quarterly revenue growth of +5.8% that compares very favorably with average growth of +3.7% with a high of +20.0% and a low of -19.9%, and declines only five times in the last 27 years—including two of the last 10.

However, 2Q for my Tokeneke Universe is a very different story with over two-thirds of my 64 companies having reported through the end of last week. The weighted average sales currently reflects a sequential quarterly gain of +1.5% which is better than company guidance of +0.4% ranging from -2.5% to +3.4% after a short handful of a mix of preannouncements. When I exclude Micron’s memory strength the weighted average falls to a *decline* of -0.3%. The good news is that slightly over half of companies reporting have met and/or exceeded expectations for 2Q results and 3Q guidance.

**3Q Strength:** The 3Q revenue outlook based on management guidance across the Tokeneke Universe during the 2Q earnings season so far reflects well-above-average seasonal strength. The specific weighted average guidance for revenue is +7.8% ranging from +4.7% to +10.9%—and Micron’s memories are having limited impact. If I exclude Micron from the mix the center actually increases slightly to +8.0% ranging from +5.0% to +11.1%. The chip industry has averaged a 3Q sequential revenue gain of +6.4% with a high of +19.9% and a low of -11.7%, and has declined only twice in the last 27 years—including none of the last 15 years, according to industry statistics.

**Chip Sector Share Price Recovery:** Semiconductor sector share prices advanced and outperformed broader market indices during July, after correcting during June. The Philadelphia Semiconductor Index Option (SOX) grew by +4.9% with 46 out of 64 stocks in my Universe advancing by an average of +3.3% compared to a gains in the NASDAQ, S&P500 and DOW at +3.4%, +1.9% and +2.5%, respectively. The chip sector continues to outperform broader equity markets on a year-to-date basis—despite under-performing during 2Q—as noted in the tables below.

July				YTD				Indices		
Winners (46/64)		Losers		Winners (47/64)		Losers			Jul	YTD
NLST	17.6%	MOSY	-30.4%	IOTS	163.8%	MOSY	-48.3%	SOX	4.9%	19.7%
STM	16.3%	SIMO	-14.8%	MRAM	134.5%	XPER	-33.8%	SMH	5.5%	20.5%
MX	15.8%	GSIT	-7.6%	SQNS	93.0%	ACIA	-29.1%	NASDAQ	3.4%	17.9%
RMBS	12.8%	UMC	-6.1%	MX	83.1%	SMI	-28.2%	S&P500	1.9%	10.3%
NVDA	12.5%	MU	-6.0%	MBLY	66.1%	NPTN	-25.3%	DOW	2.5%	10.8%
average stock +3.3%				average stock +19.6%				SOX +4.9%		
SOX +4.9%				SOX +19.7%						

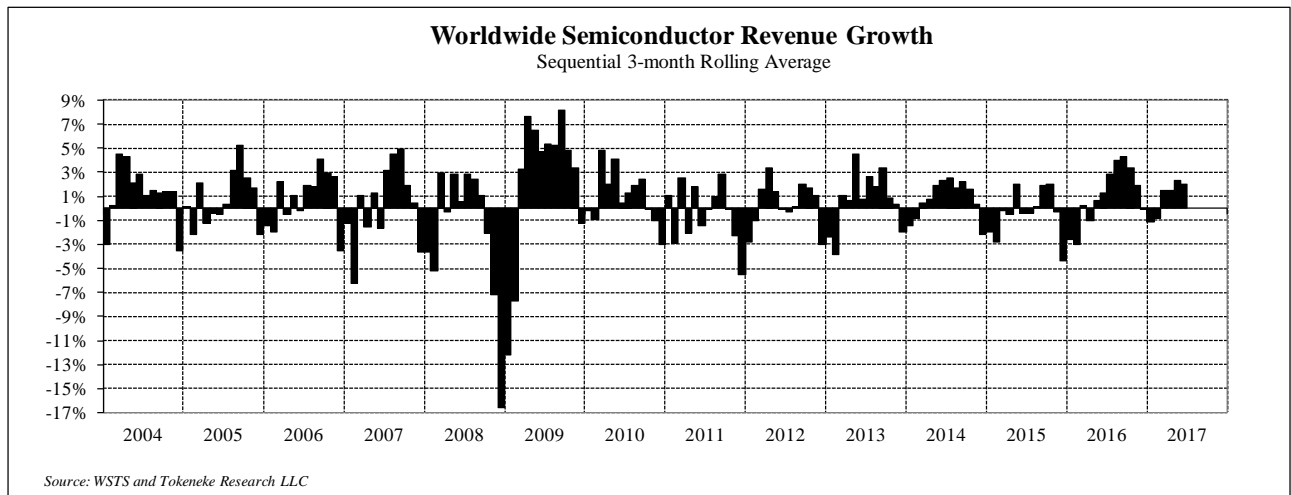
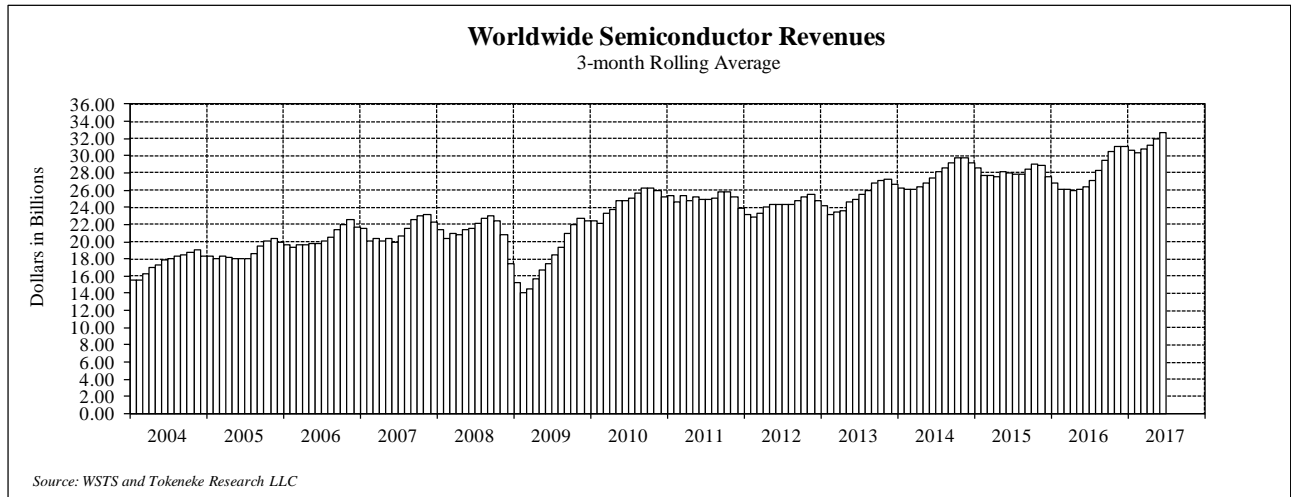
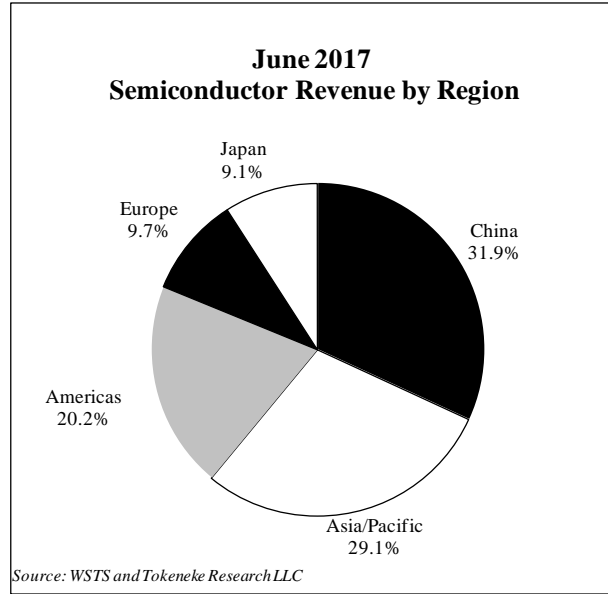
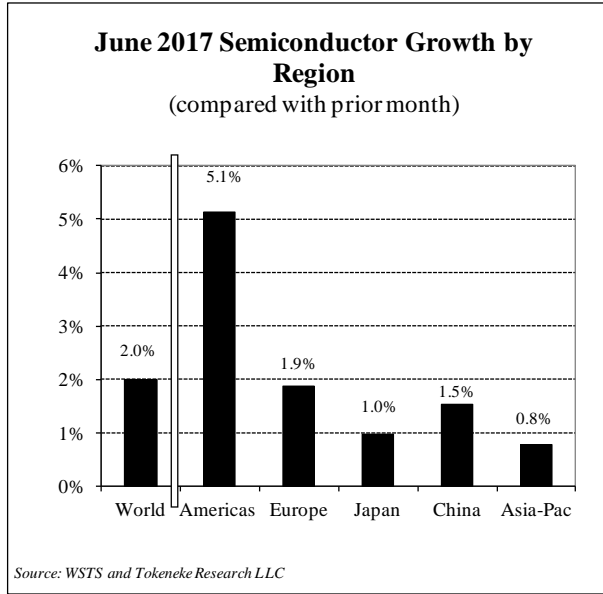
**M&A Hiatus:** Mergers and acquisitions that had been running at fever pitch due to the lack of broader sector and macroeconomic growth have stalled. Recent losses to my Universe include: INVN going to TDK in Japan, EXAR going to MXL, GIG going to IDTI, ACTS going private in China, AMCC sold to MTSI, ISIL going to Renesas in Japan, and LLTC going to ADI. Pending takeovers include: LSCC going private (Chinese money), MBLV going to INTC, and NXPI going to QCOM. In addition, MOSY and now SIGM are pursuing ‘strategic alternatives.’

**Sector Risk, Volatility—and Divergence:** The SOX index rallied by over +4% in early-June and then declined by -9% to finish June at a net loss of -5%. July began with a -1% correction, followed by a +9% rally mid-month, and then a partially-offsetting -3% decline to finish the period at +5%. So far during August the SOX is outperforming with a gain of +1.2%, although 36 out of 64 stocks in my Tokeneke Universe have *declined* by an average of -2.5%. It feels like a correction even though investors continue to tumble into momentum names on dips. The relative outperformance of the semiconductor sector compared to broader equity markets increasingly worries me as noted by the spread between the SOX and S&P500 in the graph on Page 4—as well as the above-described volatility.

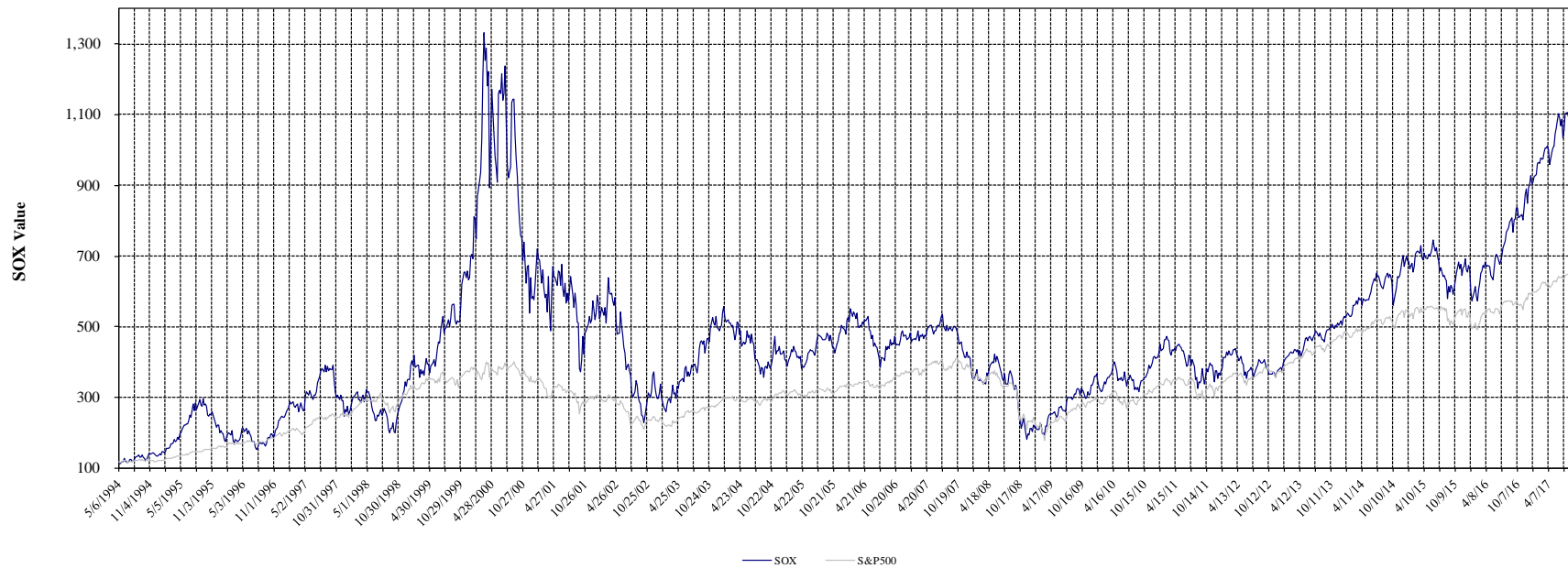
**Bottom Coming Soon:** Opportunities are still out there (MU memories, for example), but my take on the semiconductor sector remains one of caution. The volatility and divergence noted above triggered a handful of individual equity upgrades in my Semiconductor Investment Ideas publication a couple days ago, although I admit that upgrading from ‘sell’ and ‘downside risk’ to ‘hold’ is far from inspiring. But, hey—it’s a start.

I think a subtle correction has already begun. While legitimate momentum equity plays will sustain themselves (and a certain portion of the overall sector), I think share prices will continue to correct as individual equities increasingly fail to satisfy investor expectations for growth. And this is likely to accelerate as business seasonality turns unfavorable as the year draws to a close. I think this will occur on a bottoms-up basis rather than top-down, given the headline of +16% industry growth and the popularity of momentum names. Solid -15% to -20% (or more) price corrections will take the pressure off fundamental valuations and open up a number of attractive entry points—not unlike what has already begun to occur.

**—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.

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