Memories Keep Driving Industry Growth

August and 3Q Business Strong, But Equities Continue to Diverge

Not much has changed across the semiconductor industry since last month: DRAM and NAND market price strength continues to drive industry growth; August business conditions were very healthy; 3Q guidance is calling for above-average seasonal strength; and sector share prices continue to outperform broader market indices. In addition, equity price movements within my Universe remain volatile and continue to diverge from broader SOX index performance. I also continue to think we may be seeing a shift in investor sensitivity away from momentum in terms of revenue growth or share price performance, and more towards value. While this makes for a messy investing environment of volatility and divergences, it certainly provides opportunities. And the best part is—as an analyst who focuses on fundamentals—valuations matter!

Memories Drive Growth: DRAM and NAND memories continue to drive semiconductor industry growth. While market researcher IC Insights expects 2017 revenue growth for the overall industry of +16%, the vast majority of that comes from DRAM growth of +55% and NAND growth of +35%—both due to market price increases. The rest of the semiconductor industry products *excluding* those two products is expected to grow by +6%. Other areas of relative strength include industrial special-purpose logic at +32% and both analog and logic for automotive-specific applications above +16%. Double-digit growers below +16% include two analog and microcontroller sub-segments, as well as special-purpose logic for computers and peripherals. 29 out of 33 sectors are expected to grow.

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 increasingly-alienated 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 does include 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, Analog Devices and Broadcom fiscal years' end in October, while Micron's ends in August). 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 1Q revenue came from semiconductors (including foundry), and Toshiba is currently flirting with bankruptcy thanks to its nuclear energy business—and, in fact, is looking to sell its NAND business in an effort to save itself.

August Acceleration: Worldwide semiconductor industry revenue growth for August was a stronger-than-expected gain of +4.0% sequentially on a three-month rolling average basis, according to statistics released by the Semiconductor Industry Association (SIA) last week. This reflects a run of 15 consecutive above-average months (excluding a hiccup in March) and is the fifth-highest August on record. August averages a gain of +1.8% with a high of +5.2%, a low of -3.5%, and only four declines in the last 27 years—including none in the last 15 years. The Americas led once again with a very strong +8.8% while the rest of the world grew at below-average rates (again) with China at +3.7%, Japan at +2.8%, Asia-Pacific at +2.2%, and Europe trailing (still) at +0.6%.

Next month's release of September data typically reflects even stronger sequential growth. September has averaged a gain of +3.0% with a high of +8.2%, a low of -2.5%, and only one decline in the last 27 years—including none in the last 15 years. I expect it to be above-average once again as persistent memory market price strength is boosted by a smartphone seasonal recovery with the introduction of new marquee platforms into the market.

2Q Twice as Good with Memory: The difference between official industry statistics (with memories) and my Universe (without) was pronounced, with the SIA having reported a 2Q sequential gain of +5.8% compared to my Universe at +2.7%.

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%, a high of +20.0%, 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 was a very different story, with weighted average sales reflecting a sequential quarterly gain of +2.7%. This was better than company guidance of +0.4% ranging from -2.5% to +3.4% after a short handful of mixed preannouncements. When I exclude Micron's memory strength the weighted average fell to a gain of only +1.3%. The good news was that nearly half of companies reporting met and/or exceeded expectations for 2Q results and 3Q guidance.

Above-Average 3Q Seasonal Strength: The 3Q revenue outlook based on management guidance across my Universe during the 2Q earnings season reflected above-average seasonal strength. The specific weighted average guidance for revenue was +7.3% ranging from +4.4% to +10.2%—with Micron's memories having limited impact. If I exclude Micron from the mix the center increases only slightly to +7.4% ranging from +4.6% to +10.3%. 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.

A handful of preannouncements as of this writing have upped expectations incrementally to a weighted average revenue growth of +7.6% ranging from +4.7% to +10.4%. TSMC exceeded its high-end, SIMO narrowed its range to the upper-half, MCHP reiterated its original range, and NPTN and SQNS lowered their expectations.

Another Month, Another Chip Sector Rally: Semiconductor sector share prices advanced and outperformed broader market indices during September, capping a strong 3Q. The Philadelphia Semiconductor Index Option (SOX) grew by +5.2% with 44 out of 63 stocks in my Universe advancing by an average of +3.7% compared to gains in the NASDAQ, S&P500 and DOW at +1.0%, +1.9% and +2.1%, respectively. The chip sector continues to outperform broader equity markets on a year-to-date basis—despite under-performing during 2Q—as noted below.

September			
Winners *(44/63)*		**Losers**	
QUIK	25.4%	AMBA	-9.9%
MU	23.0%	QTNA	-9.5%
IOTS	20.8%	CRUS	-8.0%
SMI	17.8%	LSCC	-7.8%
OIIM	14.2%	XPER	-7.2%
average stock +3.7%		*SOX +5.2%*	

3Q			
Winners *(42/63)*		**Losers**	
IOTS	72.5%	MOSY	-44.0%
IXYS	44.1%	NPTN	-28.0%
STM	34.9%	NLST	-27.9%
HIMX	33.3%	LSCC	-21.8%
MU	31.6%	MTSI	-20.0%
average stock +5.4%		*SOX +13.2%*	

YTD			
Winners *(44/63)*		**Losers**	
IOTS	324.3%	MOSY	-58.4%
MRAM	106.2%	NPTN	-48.6%
IXYS	99.2%	XPER	-42.8%
MX	83.1%	LSCC	-29.2%
HIMX	81.0%	NLST	-27.9%
average stock +22.9%		*SOX +29.3%*	

Indices	***Sept***	***3Q***	***YTD***
SOX	5.2%	13.2%	29.3%
SMH	5.4%	14.0%	30.3%
NASDAQ	1.0%	5.8%	20.7%
S&P500	1.9%	4.0%	12.5%
DOW	2.1%	4.9%	13.4%

M&A Setback: Mergers and acquisitions activity experienced a setback with the US administration disallowing the acquisition of Lattice by Chinese investors—although that same investor group is now pursuing Imagination in the UK. Losses to my Universe this year include: MBLY going to INTC, INVN going to TDK in Japan, EXAR going to MXL, GIG going to IDTI, ACTS going private in China, AMCC going to MTSI, ISIL going to Renesas in Japan, and LLTC going to ADI. Pending takeovers include: IXYS to Littlefuse and NXPI going to QCOM (with drama). In addition, MOSY and SIGM are pursuing 'strategic alternatives.'

Sector Risk 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%. During August the SOX see-sawed and eked a gain in the last couple of days, although 34 out of 64 stocks in my Tokeneke Universe *declined* by an overall average of -1.7%. During September the see-sawing was less pronounced—but still apparent—while average gains across my Universe underperformed to the SOX. The outperformance of the chip sector continues to worry me as noted by the spread between the SOX and S&P500 in the graph on Page 4—as well as the volatility and divergence as noted.

Value Back in Vogue? I have found it increasingly difficult to generalize semiconductor sector characteristics this year given the significant outperformance of DRAM and NAND product revenue growth as well as the divergence in equity performance between the SOX and my Universe, as noted in the paragraph above. While this top-down approach is problematic, the bottoms-up approach reflected in my Investment Ideas offers insight.

During September I downgraded 17 equities and upgraded only one. My working theory remains that this year's momentum style of investing appears to be transitioning toward value. Maybe because the fundamental valuations of those momentum names are becoming stretched so thin? While this makes for a much messier investing environment of volatility and divergences, it certainly provides opportunities. And the best part is that fundamental valuations matter!

—Dan K. Scovel
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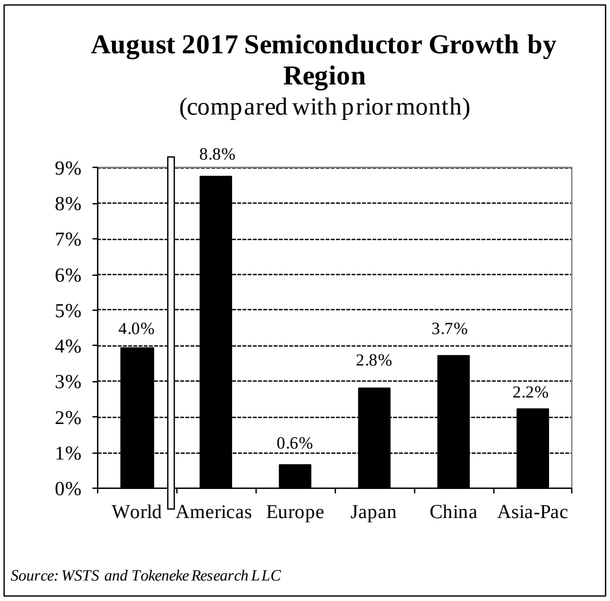
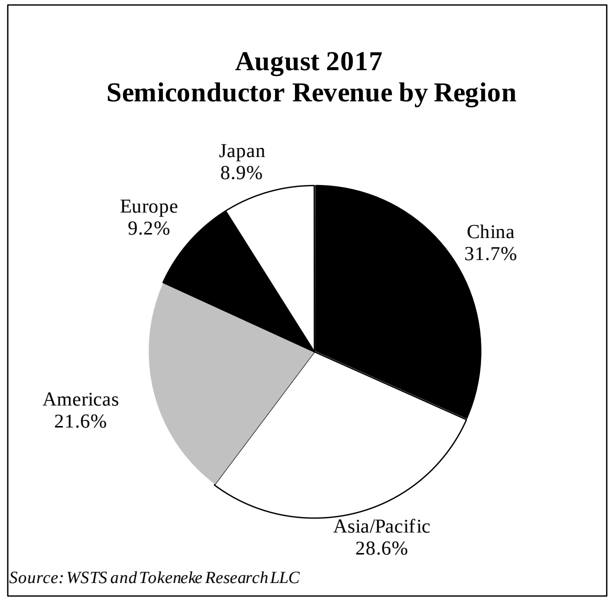
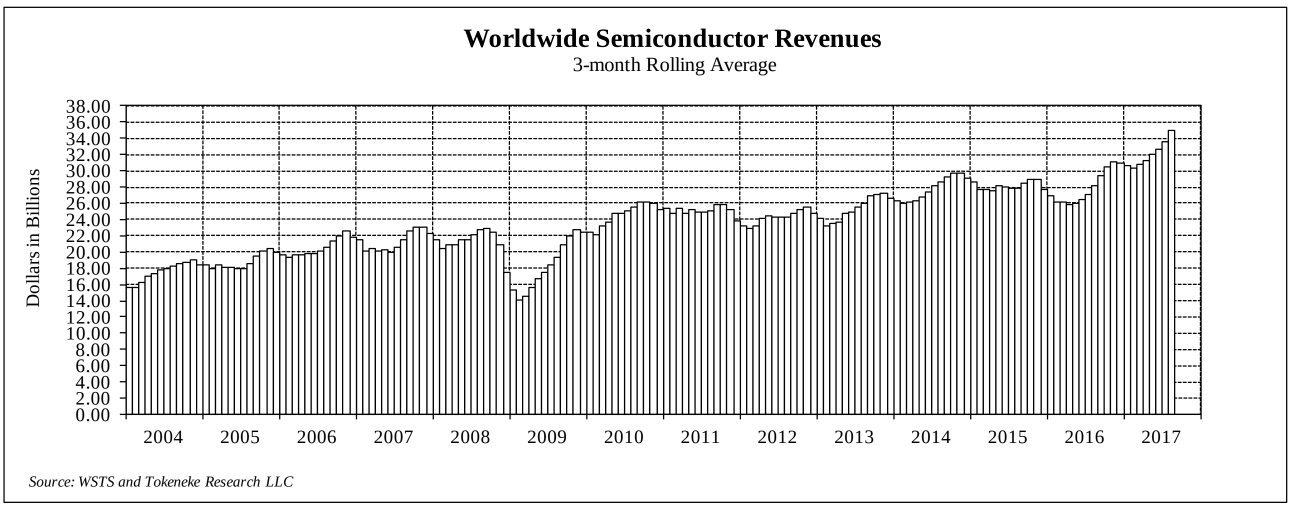
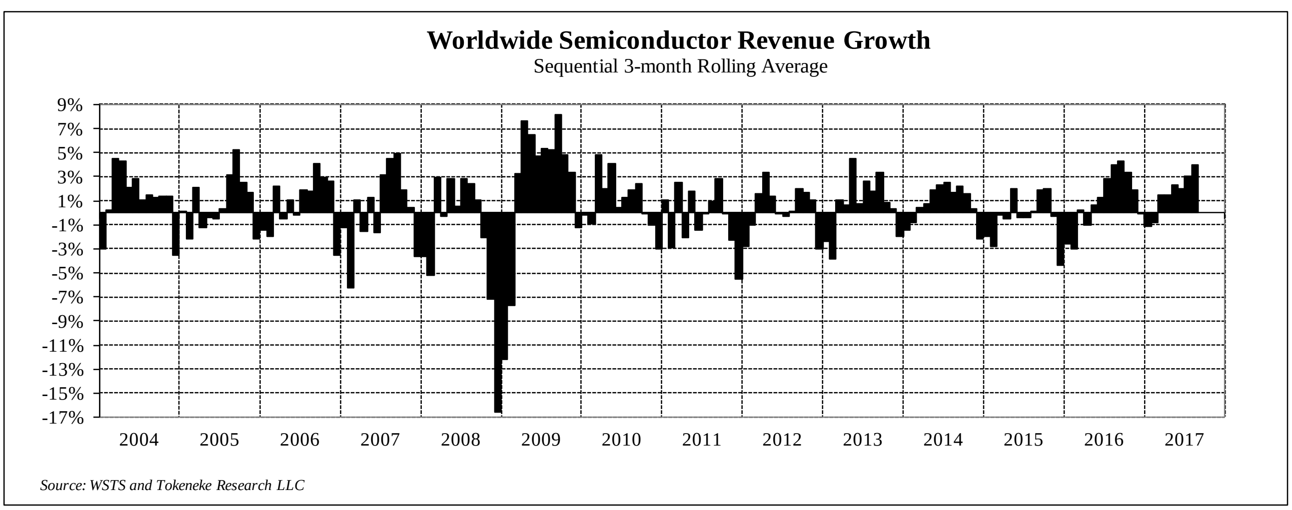

August 2017 Semiconductor Growth by Region
(compared with prior month)
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
4.0%
8.8%
0.6%
2.8%
3.7%
2.2%
World
Americas
Europe
Japan
China
Asia-Pac
Source: WSTS and Tokeneke Research LLC


August 2017
Semiconductor Revenue by Region
Japan
8.9%
Europe
9.2%
China
31.7%
Americas
21.6%
Asia/Pacific
28.6%
Source: WSTS and Tokeneke Research LLC


Worldwide Semiconductor Revenues
3-month Rolling Average
Dollars in Billions
38.00
36.00
34.00
32.00
30.00
28.00
26.00
24.00
22.00
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Source: WSTS and Tokeneke Research LLC


Worldwide Semiconductor Revenue Growth
Sequential 3-month Rolling Average
9%
7%
5%
3%
1%
-1%
-3%
-5%
-7%
-9%
-11%
-13%
-15%
-17%
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Source: WSTS and Tokeneke Research LLC

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

Source: Tokeneke Research LLC

**S&P 500 normalized to the SOX*

The Company

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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 Fahnestock & 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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