Tempered January Decline Extends Resiliency
Seeking a Sector Share-Price Bottom in March/April as Seasonality Recovers

The good news is the semiconductor industry revenue decline for January of -1.2% is only half its seasonal norm, which could easily lead to a more normal seasonal 1Q decline approximating -2.3% rather than guidance calling for -5%. But the bad news is that chip sector share price gains underperformed broader equity markets during February after outperforming them for several months, resulting in relatively stretched chip sector share price valuations in a slow-growth environment. Opportunities are still out there, but my take on the semiconductor sector remains one of caution at this time. I am looking for a near-term sector share price bottoming in the March/April timeframe as a potential entry point for investors, coincident with a seasonal 2Q recovery in business conditions.

Better-than-Average January Decline: Worldwide semiconductor industry revenue for January was a better-than-average decline of -1.2% sequentially on a three-month rolling average basis according to statistics released by the Semiconductor Industry Association (SIA) early last week. This is the eighth consecutive above-average month and the eighth best January in 26 years. January's performance compares to its average loss of -2.4% with a high of +1.0%, a low of -12.2%, and 23 declines in the last 26 years—including 14 of the last 16 years. Previous laggard Europe lead with the only gain of +1.2% followed by declines from China at -0.2% and both Japan and Asia-Pacific at -1.6%. The Americas trailed with a decline of -3.1%. I am surprised by January's relative strength given company guidance for a pronounced sequential seasonal decline for 1Q—despite several months of relative strength.

Next month's release of February data typically reflects a sequential decline, although not as bad as December or January. February has averaged a loss of -2.3% with a high of +1.9%, a low of -7.7%, and 22 declines in the last 27 years—including 14 of the last 16 years and all of the last 12. A weaker-than-average February may occur this year due to anemic 1Q guidance and the calendar-ization of Chinese New Year that occurred on Saturday, January 28. The holiday usually creates a 'hole' in the statistics for the month in which it falls, although this year is a bit of a Wild Card given it stripped almost as many work days out of each month and February has three fewer days and two fewer work days than January.

Surprising 4Q Strength: The 4Q came in with an unexpectedly strong sequential gain of +5.4% which was much better than its typical nominal +1% gain as well as expectations for a flat-ish period (based on company guidance) and the +2.2% growth reflected by my Tokeneke Universe (with over 90% of 68 companies reporting as of this writing). The reported gain was the second highest 4Q growth over the last 12 years and the eighth fasted in the last 26 years. And it looks like the number will stand without revision, since it occurred at the end of the reporting year. The semiconductor industry has averaged a 4Q sequential revenue gain of +1.3% with a high of +16.0% and a low of -24.2%, but has declined 12 times in the last 26 years—including eight of the last nine years.

Part of the spread between my Universe and industry statistics is structural. My US-equities exclude a number of very large international players (Samsung, Hynix, Toshiba, MediaTek, Infineon), but also include wafer foundries (TSMC, UMC, SMIC, TowerJazz) and IP companies (Rambus, Tessera, Ceva, InterDigital and a big 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 factor these days. The 4Q was certainly much better than expected, but my gut is somewhat skeptical that it was as good as +5.4%.

Pronounced 1Q Weakness?: Seasonality is now unfavorable across the chip sector amid the 1Q trough, and management guidance indicates weakness will be pronounced this year. The semiconductor industry has averaged a 1Q sequential revenue decline of -2.3% with a high of +8.8% and a low of -19.4%, and has declined 18 times in the last 26 years—including 10 of the last 12, according to industry statistics. Management guidance during the 4Q earnings season for 1Q across the Tokeneke Universe is calling for an unusually weak quarter this year, with the weighted average industry revenue decline as of this writing centered at -5.2%, ranging from -7.7% to -2.6%.

The high-end of the range of guidance is consistent with seasonal norms, and may well be a better proxy for expectations than the centered statistical mean for a variety of reasons. First, my Universe clearly understated industry statistics last quarter, much of which may be structural. Second, 4Q guidance across my Universe called for a decline of -0.1% ranging from -2.8% to +2.6%, and my Universe delivered a gain 400 basis points below the high-end of that range. Why? I think managements are sand-bagging guidance to increase the odds that investor expectations are exceeded when actual numbers are reported so that subsequent share price action is favorable.

Notice the grading system in my Quarterly Earnings Summary reports and the Skew to Expectations Histogram that has been leaning some two-thirds favorable. Third, January has already been an above-average month amid expectations for a below-average quarter. And fourth, much of the qualitative information shared during 4Q earnings conference calls has been quite positive regarding current and expected business conditions for this year despite weak guidance for 1Q.

Several years ago semiconductor industry seasonality largely tracked PC market supply characteristics, with a weaker first half of the year including a trough during 2Q, followed by a stronger second half with a 4Q peak. But the world changed after the financial crises in 2008: anemic worldwide macroeconomic conditions have accentuated the relative impact of seasonal business fluctuations; and the rise of the cell phone—and triumph over the PC in terms of total chip sales—has shifted industry seasonality to be more consistent with the traditional consumer market pattern of a 1Q trough, 2Q recovery, 3Q peak and then 4Q decline. This pattern has largely played out across the semiconductor industry over the last few years, and I don't expect much of a change—at least until some meaningful, cyclical growth resumes.

Chip Stock Gains Underperform: Semiconductor sector stocks continued to rally but underperformed broader equity markets during February—for the first time in four months—as 4Q earnings reports continued to exceed expectations. Last month the Philadelphia Semiconductor Index Option (SOX) advanced by +2.7% while the average stock in the Tokeneke Universe gained +2.6% with 39 out of 68 issues advancing, compared to gains from the NASDAQ, S&P500 and DOW of +3.8%, +3.7% and +4.8%, respectively. See the table below.

February				YTD				Indices		
Winners *(39/68)*		**Losers**		**Winners** *(42/68)*		**Losers**			***Feb***	***YTD***
AMD	39.4%	XPER	-20.7%	IOTS	110.8%	DSPG	-19.9%	SOX	2.7%	6.9%
PXLW	35.6%	PI	-19.5%	SQNS	44.9%	PI	-19.8%	SMH	2.6%	6.6%
HIMX	31.1%	MX	-14.5%	PXLW	41.4%	XPER	-18.9%	NASDAQ	3.8%	8.2%
MRAM	23.7%	MOSY	-11.9%	STM	34.4%	ACIA	-15.9%	S&P500	3.7%	5.6%
INFN	20.4%	POWI	-11.0%	INFN	27.8%	SMI	-13.8%	DOW	4.8%	5.3%
average stock +2.6%		*SOX +2.7%*		*average stock +8.4%*		*SOX +6.9%*				

Modest 2017 Gain: The most recent semiconductor industry sales forecast updates for 2017 have raised annual growth expectations to the mid-single digits from low-single digits primarily due to memory market price strength. IC Insights at +5% and Gartner at +7% are the two most recent revisions—and the highest—compared to the SIA at +3.3% and IBS at +4.6%. Expected outperforming sectors include The Americas region; DRAM, NAND flash, analog, microcontroller and sensor products; and automotive and Internet of Things (IoT) end-markets.

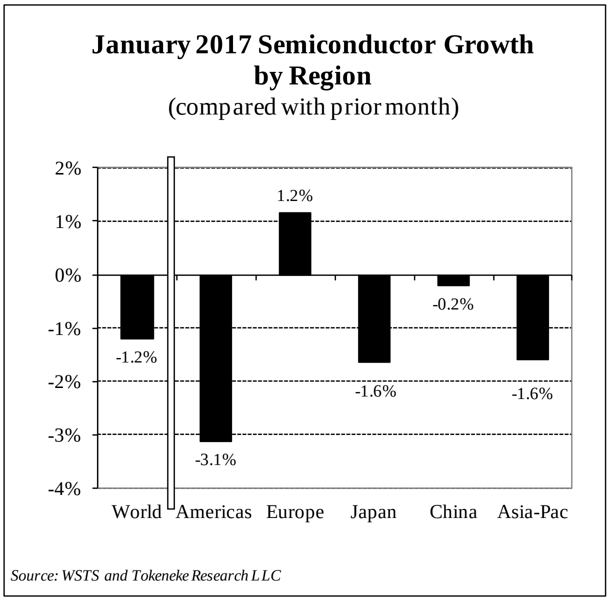
M&A Continues: Mergers and acquisitions have been running at a fever pitch driven primarily by the lack of overall sector and macroeconomic growth, in my opinion. And I think it will continue, although the specifics in terms of buyers, targets, timing and price will be difficult to forecast with any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

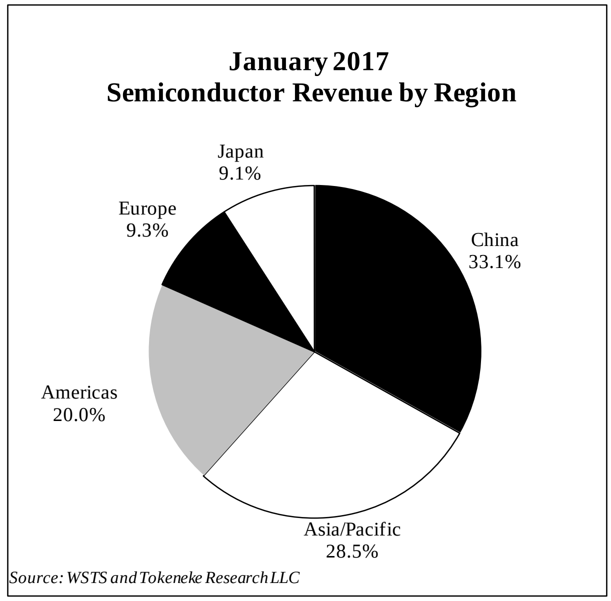
Sector Correction: The relative outperformance of the chip sector compared to broader equity markets continues to worry me. The spread between the SOX and S&P500 remains stretched as noted in the graph on Page 4 and is cause for increasing concern—especially given the recent relative sector underperformance, in my opinion.

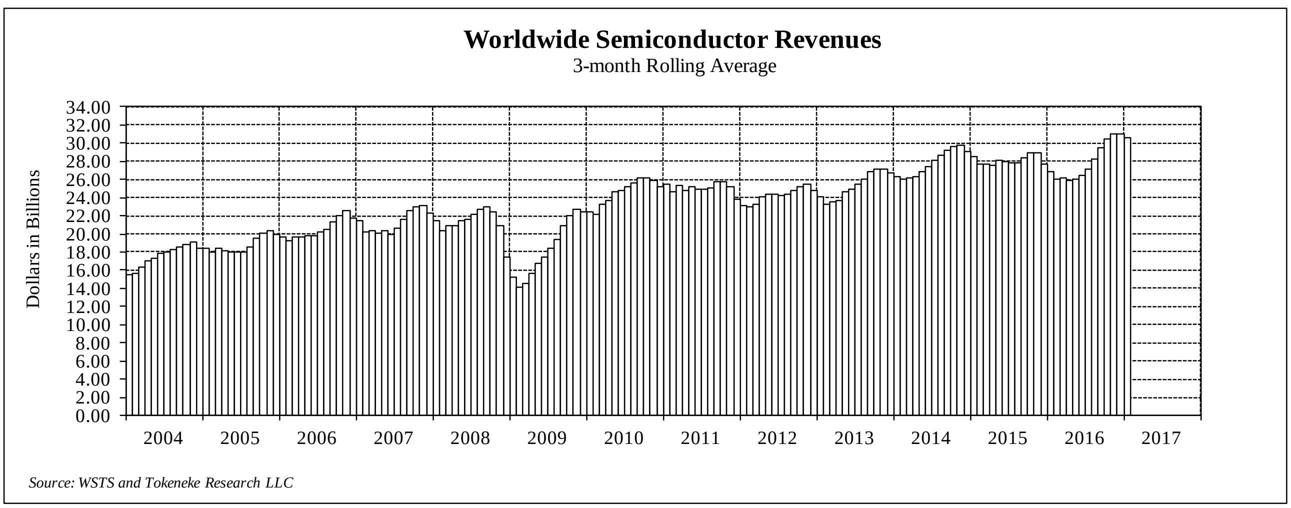
Macro Optimism: The good news is that equity market action since the election seems to indicate investors are more excited about the potential for economic growth associated with regulatory and tax cuts than fears of a slowdown from international trade wars. While I share such macroeconomic optimism, details are sorely lacking. I think 2017 will prove to be a year of staging and real growth is unlikely to occur before 2018.

Springtime for Semiconductors: Opportunities are still out there (MU with its DRAMs, for example), but my take on the semiconductor sector is one of caution amid the seasonal business trough and very recent sector share-price underperformance after a meaningful rally over the last several months. I am looking for a near-term share price bottoming across the chip sector in the March/April timeframe as an entry point coincident with a seasonal 2Q recovery. See my most recent Semiconductor Investment Ideas update for specific potential opportunities.

—Dan K. Scovel
Semiconductor Analyst


January 2017 Semiconductor Growth
by Region
(compared with prior month)
2%
1%
0%
-1%
-2%
-3%
-4%
-1.2%
-3.1%
1.2%
-1.6%
-0.2%
-1.6%
World
Americas
Europe
Japan
China
Asia-Pac
Source: WSTS and Tokeneke Research LLC


January 2017
Semiconductor Revenue by Region
Japan 9.1%
Europe 9.3%
China 33.1%
Americas 20.0%
Asia/Pacific 28.5%
Source: WSTS and Tokeneke Research LLC


Worldwide Semiconductor Revenues
3-month Rolling Average
Dollars in Billions
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
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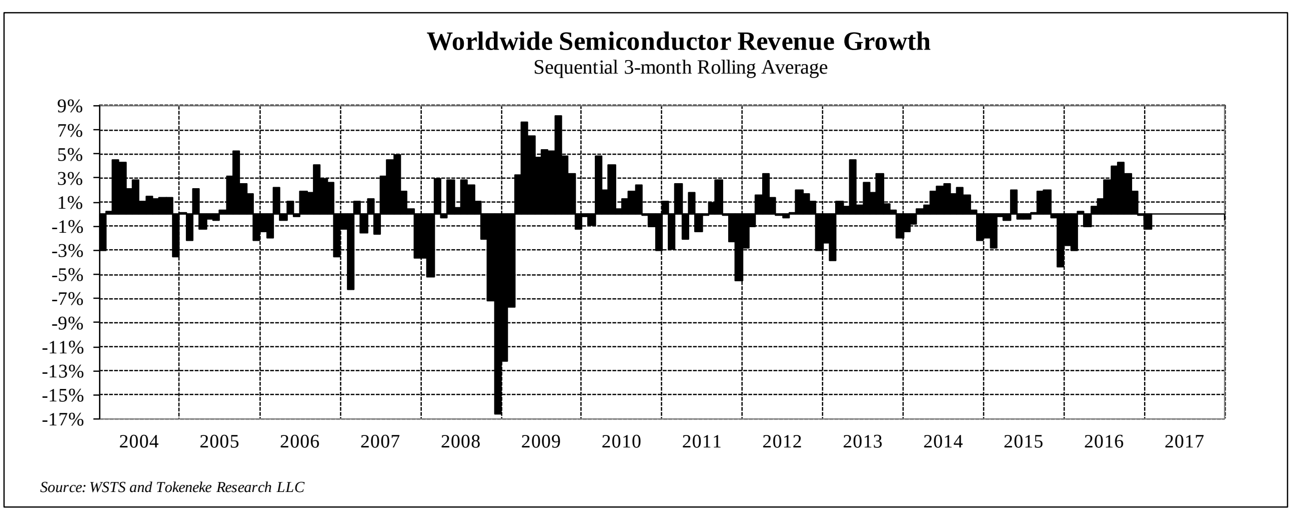
2014
2015
2016
2017
Source: WSTS and Tokeneke Research LLC


Worldwide Semiconductor Revenue Growth
Sequential 3-month Rolling Average
9%
7%
5%
3%
1%
-1%
-3%
-5%
-7%
-9%
-11%
-13%
-15%
-17%
2004
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2006
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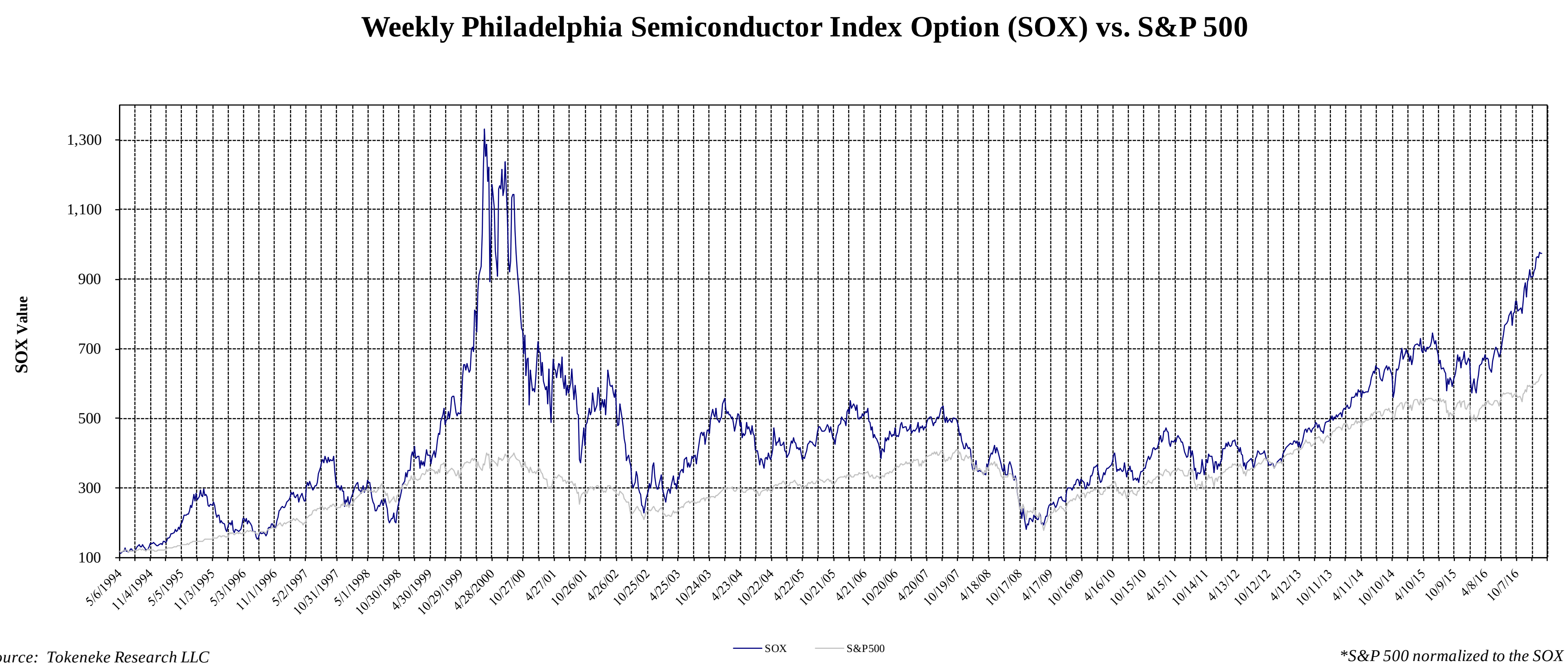
2016
2017
Source: WSTS and Tokeneke Research LLC



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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