March Sales Decline—Which is Very Unusual

Shares Retreat Amid 1H24 Weakness, Downward Forecast Revisions Expected

The big picture this year remains that AI is hot, but the rest of the chip sector is struggling. Yes, memory products are growing nicely, but that strength is just an artifact of HBM DRAMs for AI servers sucking capacity out of the supply chain and jacking up prices for these very high-performance memories.

April's bad news was topped-off by very weak March industry statistics earlier this week: an unusual March sequential monthly decline in industry revenues resulted in 1Q metrics even worse than feared by dismal company guidance going into the period; early 1Q earnings reports are coming in at the low-end of those nasty expectations; 2Q guidance is very anemic for what is traditionally a recovery period of growth; and chip sector equities underperformed broader market declines last month.

This was supposed to be a +13% growth year for overall chip revenues including memories at +45%, but during last month's earnings call TSMC lowered its forecast for non-memory product growth to +10% from over +10% as automotive slid to expected losses from previously expected gains. My guess is upcoming forecast revisions will reflect a flat-ish year while preserving memory outperformance based on eye-balling annual consensus revenue estimates. As I noted in last week's Earnings Summary publication, the only good news I can conjure up is the hope that AI cap ex euphoria ahead of revenue streams and profits lasts long enough for PCs, smartphones, automotive, servers, communications, industrial and IoT to correct themselves and return to growth.

In the meantime, the SOX index remains over-extended versus the S&P500 and most fundamental valuations across the sector are less than attractive—and in fact, fully valued in many cases. Net-net, I would be very careful and extremely selective approaching potential chip sector opportunities at this time.

Indigenization Updates: My new favorite phrase is 'Geopolitically Dependable Capacity' used by Texas Instruments management to describe automotive customer supply requirements during its 1Q earnings conference call last month. Nevertheless, I'm sticking with the regional supply chain development term 'Indigenization' to describe the 'new normal' chaos with every semiconductor company preserving its supply chain and sales in a variety of ad hoc fashions amid US technology sanctions against China—while China implements its own sanctions and grows its own supply chains and technologies ('Huawei-ization') with some $150B in incentives at the dark-gray end of the spectrum of segregation.

Last year China hoarded equipment but this year its home-grown equipment suppliers are now squeezing off-shore competitors. China also announced a phase-out of foreign chip suppliers to their telecom networks by 2027, which is expected to hit Intel and AMD processors. In the US companies that have now received CHIPS program grants and tax credits for on-shore manufacturing operations including TSMC, Samsung, Micron, Hynix, Intel, Microchip and GlobalFoundries, while India continues to dangle a variety of government subsidies for mostly back-end assembly operations—and actually appears to be making progress developing at least some semiconductor supply chain components. And finally, a Russian fabless firm is using a Chinese wafer foundry and open-sourced RISC-V designs to navigate around Ukraine sanctions.

Memory Matters: Recall that my US-equity-based Tokeneke Universe does *not* include some three-quarters of industry memory business from Samsung, SK Hynix and Kioxia. While my Universe does include Micron and Western Digital, it will probably under-perform expected industry growth in 2024 due to under-representation of more robust expected memory growth around +40%. My Tokeneke Universe also does *not* include very large international players (aforementioned memory guys plus MediaTek, Infineon, Renesas, Rohm, Winbond, Macronix, Nanya, Novatek, Realtek) although it does include wafer foundries (TSMC, UMC, GlobalFoundries, Skywater Tech, Tower Semi) and IP companies (Rambus, Xperi, Ceva, InterDigital, Arm, Adeia) that count as costs associated with manufacturing rather than industry sales. I also normalize fiscal quarters to the best fitting two out of three months. Unreported acquisition stub-periods and mergers exiting the sector can also make a difference.

While these differences are significant, most US-based investors experience the sector from the Tokeneke Universe perspective. The Philadelphia Semiconductor Index Option (SOX) is similarly under-represented in memories, although this is mitigated by the inclusion of equipment firms supplying to memory firms *(or maybe not)*.

Unusual March Decline: Worldwide chip industry revenues for March declined by -0.6% sequentially on a three-month rolling average basis, according to statistics released by the Semiconductor Industry Association (SIA) earlier this week. A decline in March is highly unusual, although weakness for March and 1Q was not unexpected given the pronounced decline for 1Q company guidance during the 4Q earnings season. March has averaged growth of

+2.2% with a high of +7.0%, a low of -6.9%, and only five declines in the last 37 years, including two of the last 20. All regions dropped except China which was flat. Japan was the worst at -2.0% followed by Asia-Pacific at -1.2%, Europe at -0.9%, and then The Americas at -0.1%. See the Charts on Page 3 of this report.

Next month's release of April statistics is likely to be weaker than normal, in my opinion, based on anemic 2Q company guidance so far during 1Q earnings season that is well underway. April has averaged growth of +1.5% with a high of +8.3%, a low of -4.7%, and 12 declines in the last 38 years, including five of the last 15.

Really Bad 1Q and 2Q Outlook: 1Q revenue declined sequentially by a very weak -5.7% according to industry statistics, which was not completely unexpected given abysmal company 1Q guidance during the 4Q earnings season announcements and 1Q reports so far. The specific weighted average revenue guidance for 1Q across my Tokeneke Universe called for a sequential decline of -4.6% ranging from -7.0% to -2.2% after only one preannouncement (from SIMO that happened to be positive). At the end of last week the weighted average reported results came in at a decline of -6.9%, although NVDA and AVGO won't boost the aggregate metrics with their AI gains until the end of the earnings season in the next 2-4 weeks. The 1Q is seasonally the weakest quarter of the year with an average sequential revenue decline of -2.1%, a high of +9.2%, a low of -19.4%, and 25 declines in the last 37 years—including 11 of the last 12, according to industry statistics.

The 2Q outlook is also pretty anemic. The specific weighted average guidance for revenue at the end of last week calls for a sequential gain of +2.7% this quarter, ranging from -0.7% to +6.0%. The 2Q is seasonally a recovery quarter with an average sequential revenue increase of +4.2%, a high of +20.0%, a low of -19.9%, and eight declines in the last 38 years—including only two of the last 13, according to industry statistics.

US Government Banking Deals: Last month TSMC scored $6.6B in US CHIPS grants for three new wafer fabs in Arizona over the next six years; Samsung garnered $6.4B in similar grants for operations in Texas; Micron Technology collected $6.1B in CHIPS grants and 25% in investment tax credits for two wafer fabs in New York and a new expansion in Idaho; and SK Hynix gathered over $500M in a variety of government grants and other incentives to build DRAM operations in Indiana. Open and/or pending deals include: Western Digital's plan to split its hard-drive and flash operations into two separate companies 2H24; Silicon Motion suing MaxLinear for backing out of its takeover last year; and Infinera rumored to be shopping itself since last March before it stumbled into a revenue recognition review triggered by EY late-3Q23.

Chips Underperform April Equity Market Declines: Semiconductor sector share prices underperformed broader equity market declines last month, although the SOX continues to outperform year-to-date gains. During April the Philadelphia Semiconductor Index Option (SOX) lost -4.7% and underperformed broader market indices, while 38 out of 55 stocks in my Universe contracted by a slightly better -3.4%. Year-to-date the SOX is significantly outperforming broader equity markets with a gain of +11.9%, although only 27 out of 55 stocks in my Universe have advanced by an underperforming average of +2.7%. Broader equity markets have gained with the NASDAQ, S&P500 and DOW up by +4.3%, +5.6%, and +0.3%, respectively.

April

Winners *(17/55)*		**Losers**	
SMTC	36.8%	INTC	-31.0%
SQNS	27.3%	PXLW	-30.6%
PI	24.1%	INFN	-20.1%
GSIT	15.6%	ARM	-19.0%
ALAB	14.2%	NLST	-16.0%
average stock -3.4%		*SOX -4.7%*	

YTD

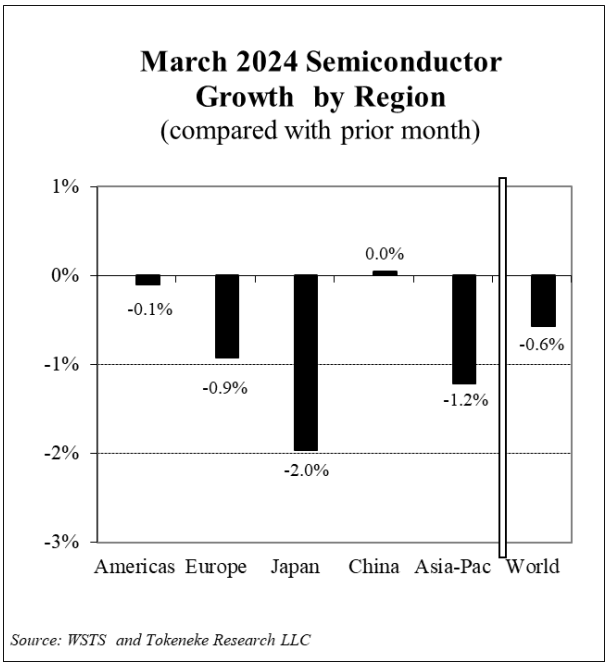
Winners *(27/55)*		**Losers**	
ALAB	135.4%	SQNS	-82.7%
PI	77.0%	INTC	-39.4%
NVDA	74.5%	WOLF	-37.9%
SMTC	71.7%	MBLY	-36.4%
GSIT	48.9%	MX	-33.1%
average stock +2.7%		*SOX +11.9%*	

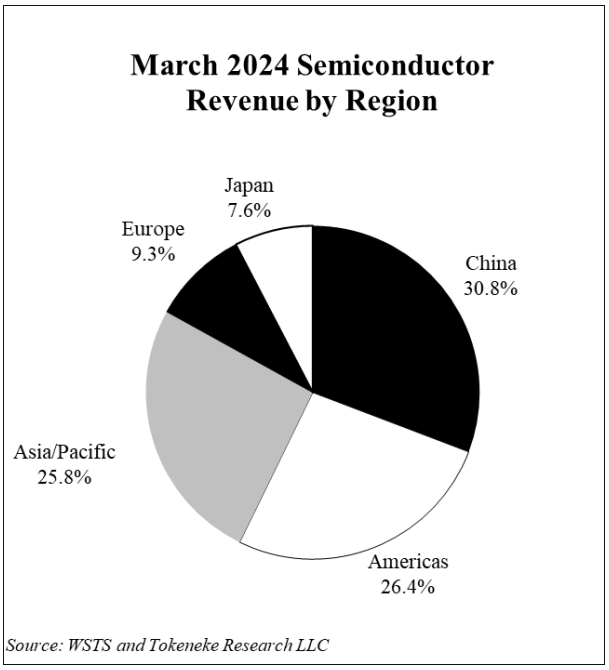
Indices

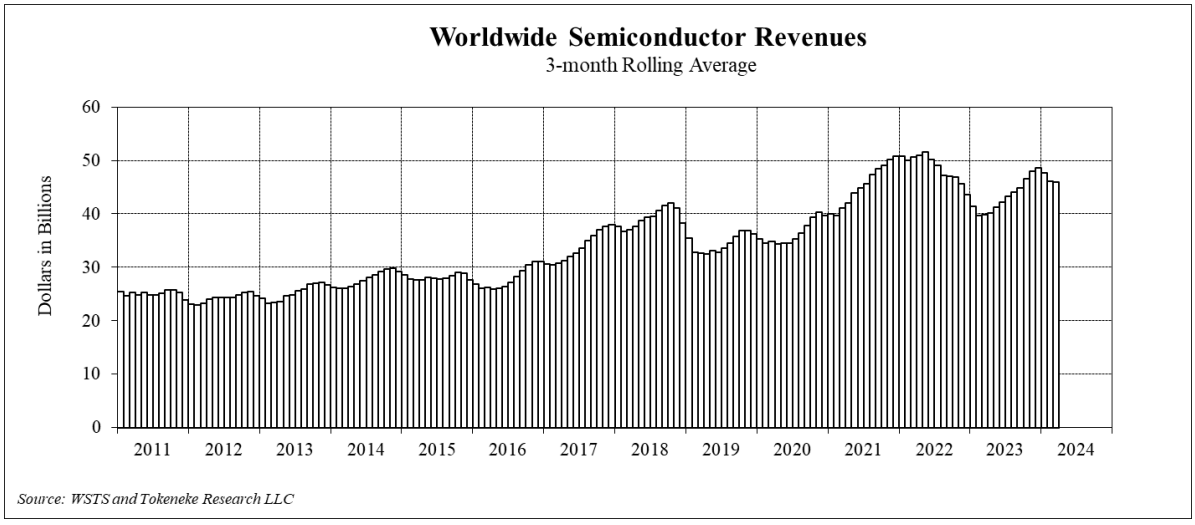
	Apr	***YTD***
SOX	-4.7%	11.9%
SMH	-4.8%	22.4%
NASDAQ	-4.4%	4.3%
S&P500	-4.2%	5.6%
DOW	-5.0%	0.3%

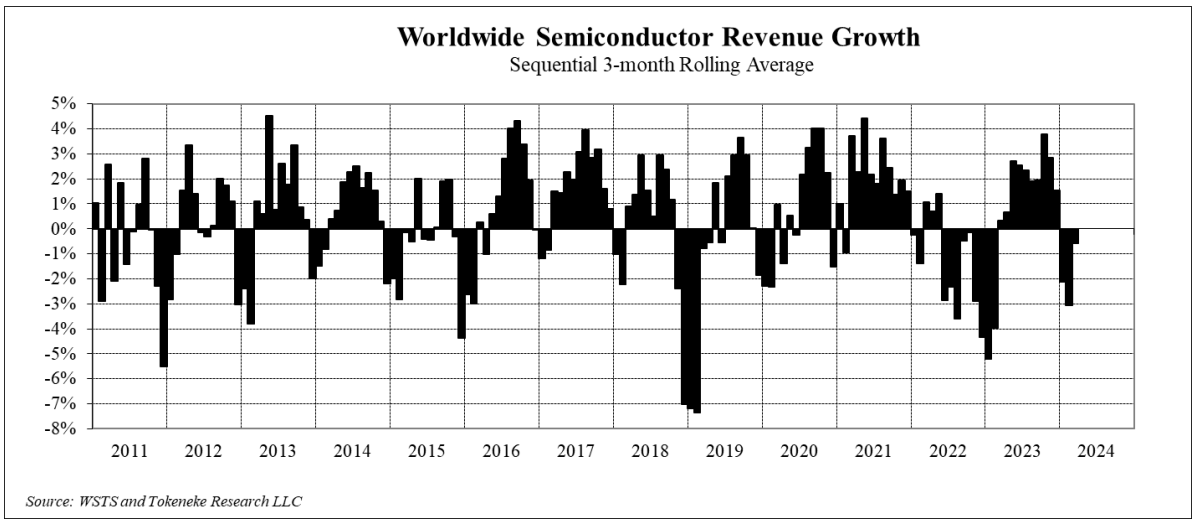
Stocks Still Scary: While AI is a legitimately large growth opportunity, the rest of the semiconductor industry's markets are experiencing malaise or transitions—or both—and chip industry forecasts are highly likely to be significantly lowered over the next couple of months. In the meantime, the SOX index is way over-extended versus the S&P500 (note the relative premium of the SOX in the chart on Page 4 of this report), and most fundamental valuations across the sector are less than attractive—and in fact, fully valued in many cases. Net-net, I would be very careful and extremely selective approaching potential chip sector opportunities at this time.

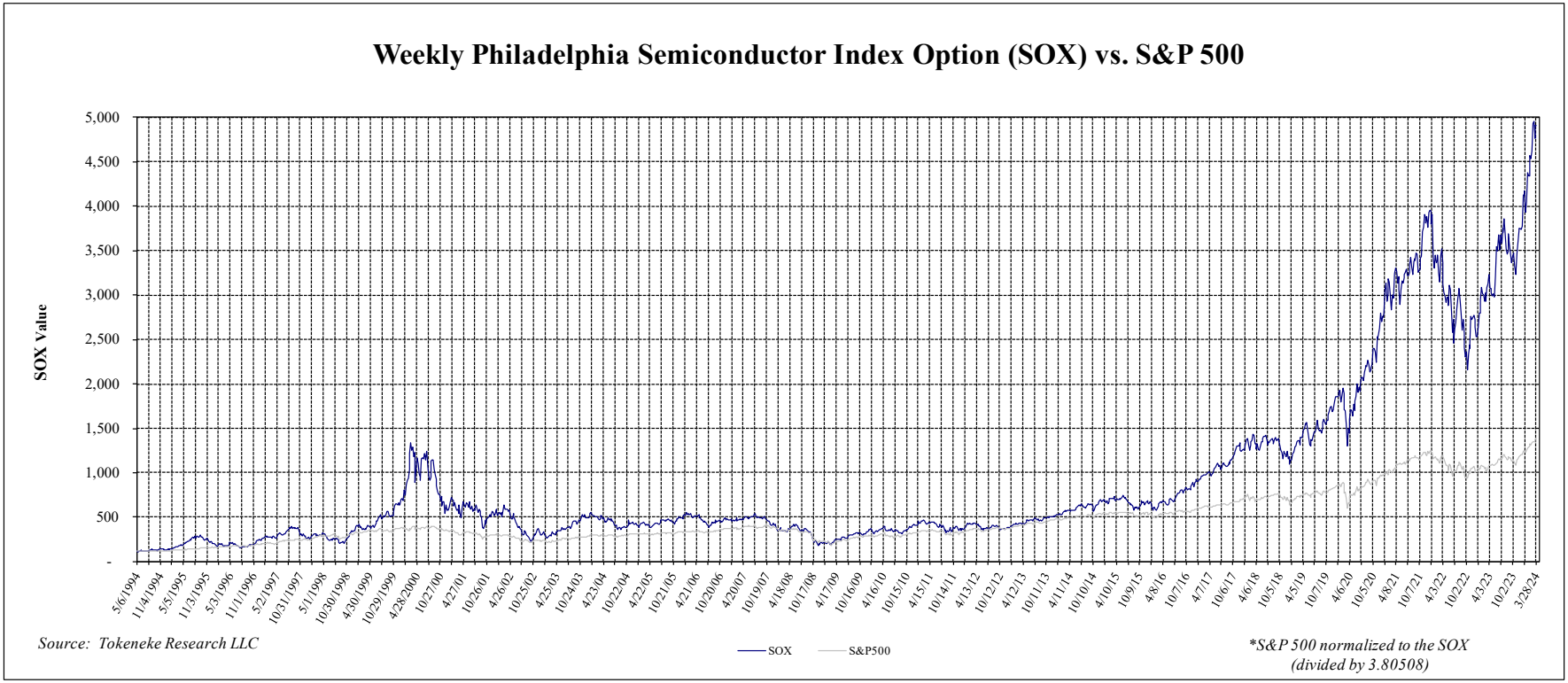
—Dan K. Scovel
Semiconductor Analyst











Tokeneke Research LLC

Semiconductor Industry Analysis and Insight

Company Overview

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

- *Monthly Newsletter:* A summarized review of noteworthy industry business developments, sales statistics, and sector equity market performance, as well as a near-term and annual outlook for sector business fundamentals and share prices. This report typically includes two pages of text and a handful of recurring charts and tables. It is intended for relatively broad-based distribution.
- *Industry Reports:* Publications offering insight and perspective to industry-wide, multi-year forecast updates; periodic sub-sector product type and end-market reviews; fundamental and valuation perspectives on sector equity relationships; and industry introductory overview. These are more detailed reports with varying shelf-lives and are intended for narrow distribution to interested clients.
- *Company Reports:* Fundamental equity research including earnings estimates and customized valuation analysis.
- *Consulting:* Special projects of limited or extended duration, as well as periodic access of varying frequency.

Publications are distributed via email in .pdf format, unless otherwise requested. Client confidentiality and customized research exclusivity accommodated. Rates vary with the nature, duration, and terms of offerings.

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.

—Dan K. Scovel
Semiconductor Analyst

Tokeneke Research LLC
Rowayton, CT 06853
dscovel@tokenekeresearch.com
www.tokenekeresearch.com
203-554-4621