

## **September Chip Growth Very Strong Thanks to AI 4Q Outlook to Drive Annual Growth Above Forecast, But Shares Underperform**

Semiconductor industry revenue statistics for September were released last week and the sequential growth rate was very strong at +4.1%, well above average and even a little better than I expected—thanks to AI. And 4Q guidance across my Universe is also pretty impressive, indicating that the forthcoming November update to expected annual industry sales growth will top +20% from the current +16% from earlier in the year. However, most companies are missing 3Q earnings expectations and sector share prices have flipped to under-performance on a year-to-date basis.

Recall that AI is single-handedly accounting for chip industry revenue growth expected at (over) +16% this year driven by memory products at +77% (update pending) as well as NVDA driving chip sector share price performance, while the rest of the ‘Magnificent Seven’ throw billions of dollars at AI infrastructure—to NVDA.

The problem is that underneath AI there isn’t a whole lot going on in the rest of the semiconductor end markets. And most companies are *not* enjoying AI enthusiasm with 60% in my Universe having missed at least part of 3Q earnings and 4Q guidance expectations and just over half experiencing share price declines so far this year. Recall that former industry leaders Intel and Samsung are missing the boat on AI.

I continue to hope that AI cap ex euphoria ahead of revenue streams and profits lasts long enough for PCs, smartphones, automotive and the rest of the end-markets to return to growth. In the meantime, the SOX index remains over-extended versus the S&P500 and most fundamental valuations across the sector are not attractive. I would still be very careful and extremely selective approaching potential chip sector opportunities at this time.

**Geopolitical Gymnastics Review:** No notable geopolitical events last month, although the bar for ‘notable’ is pretty high given all the changes over the last couple years. Recall the new normal chaos is every semiconductor company preserving its supply chain and sales in a variety of ad hoc fashions by skipping around ever-evolving US, Chinese and European technology sanctions, embargoes and tariffs. ‘De-Sinicization’ describes Chinese and Taiwanese companies expanding operations to more politically neutral countries like Singapore, while ‘Geopolitically Dependable Capacity’ describes TI’s strategy to support various customer supply requirements. ‘Indigenization’ includes government grants and loans incentivizing domestic semiconductor operations that includes multiple billions of dollars from the US, China, Japan, India, South Korea, Malaysia, Taiwan and Spain. The Chinese grow-your-own category is referred to as ‘Huawei-ization’ due to that company’s political isolation from the US.

**Memories Matter:** 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 *should* under-perform expected industry growth in 2024 due to under-representation of more robust expected memory growth at +77% (subject to change) thanks to AI. But recall that it has actually been outperforming industry statistics so far this year likely due to double-dipping on Nvidia’s and Hynix’s strength by including their foundry TSMC as well as Samsung’s lack of participation in AI.

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. I also don’t segregate non-semiconductor corporate revenue.

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.

**September Growth Above Average:** Worldwide chip industry revenues for September grew by an above average +4.1% sequentially on a three-month rolling average basis, according to statistics released by the Semiconductor Industry Association (SIA) last week. The magnitude of growth was on the high side of what I had expected. September has averaged growth of +2.7% with a high of +8.2%, a low of -2.5%, and four declines in the last 38 years, including only one in the last 22 according to industry statistics. Japan led with growth of +5.3% followed by last month’s laggard Asia-Pacific at +4.5%, continued growth from The Americas at +4.1% and Europe at +4.0%. China brought up the rear with growth of +3.6%.

December's release of October statistics should also be well above average given my strong 4Q Universe outlook amid the AI/memory turbocharge. October has averaged growth of +2.3% with a high of +6.8%, a low of -2.0%, and four declines in the last 38 years, including only one in the last 12 according to industry statistics.

**3Q Strength:** Sequential industry growth for 3Q clocked in at a very solid +10.7% with the release of September stats. The Americas led with +16.7% followed by Japan at +11.5%, Asia-Pacific at +10.3%, China at +6.3% and Europe at +5.9%. The +10.7% is above the high end of the range of guidance based on my Universe from 2Q earnings and above the +8.9% delivered after the third week of 3Q earnings announcements. Nevertheless, it is consistent with being just below the +12.0% from Week 1 of my Universe's earnings announcements that are bookended by an AI turbocharge with MU at the front-end and NVDA at the back-end. The specific weighted average guidance for sequential 3Q revenue growth across my Universe called for a sequential gain of +7.0% this quarter, ranging from +4.3% to +9.7%. The 3Q is seasonally the strongest of the year with an average sequential revenue increase of +5.9%, a high of +19.9%, a low of -11.3%, and only four declines in the last 38 years—including only one in the last 22, per industry statistics.

**4Q Outlook Well Above Average:** The 4Q revenue outlook based on management guidance from 3Q earnings announcements across my Universe continues to reflect the current AI turbocharge and its 'bookending' effect on the earnings season announcements. Week 1 called for 4Q growth of +9.7% which implies a final metric approximating +8.5%. The specific weighted average guidance for revenue after Week 3 calls for a sequential gain of +6.2% this quarter, ranging from +3.2% to +9.1%. The 4Q is seasonally the second weakest of the year with an average revenue increase of +1.6%, a high of +16.0%, a low of -24.2%, and 15 declines in the last 38 years—including eight of the last 14, per industry statistics.

**Banking Deals:** Wolfspeed collected the most money last month by gathering \$750M in CHIPS grants and \$1B in tax refunds along with another \$750M from Apollo and three other investors. Infinera came in second with \$93M in CHIPS grants and over \$100M in tax credits (amid its pending takeover by Nokia), while Netlist completed a registered direct offering for \$15M and after many years prevailed in \$303M worth of legal action against Samsung. Pending deals include Kioxia's now delayed IPO in Tokyo, Nokia's three-pronged offer for Infinera now expected to close 1H25, Western Digital's plan to split its hard-drive and flash operations into separate companies around year-end, and Silicon Motion suing MaxLinear for backing out of its takeover.

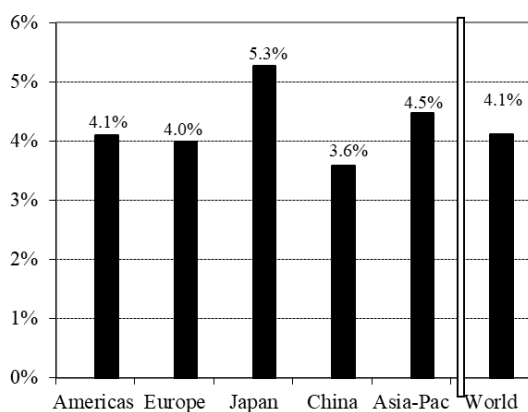
**Semiconductor Equities Decline and Underperform:** Semiconductor sector share prices declined more than broader equity markets last month and are now underperforming on a year-to-date basis. During October the Philadelphia Semiconductor Index Option (SOX) fell by -4.4% while 43 out of 56 stocks in my Universe retreated by an average of -3.2%. Year-to-date the SOX has now flipped to underperforming broader equity markets with a gain of +18.5% while only 26 out of 56 stocks in my Universe have advanced by a miniscule average of +1.9%. Broader equity market gains include the NASDAQ, S&P500 and DOW up by +20.5%, +19.6%, and +10.8%, respectively.

October				YTD				Indices		
Winners (13/56)		Losers		Winners (26/53)		Losers			Oct	YTD
WOLF	37.2%	QRVO	-31.0%	NVDA	168.1%	WOLF	-69.4%	SOX	-4.4%	18.5%
ALAB	33.9%	SQNS	-19.3%	PI	111.0%	MBLY	-68.6%	SMH	-1.5%	38.2%
RMBS	13.3%	UMC	-18.8%	SMTC	101.7%	SQNS	-66.1%	NASDAQ	-0.5%	20.5%
MRVL	11.1%	MPWR	-17.9%	ALAB	94.9%	INTC	-57.2%	S&P500	-1.0%	19.6%
TSM	9.7%	PI	-12.3%	ARM	88.0%	PXLW	-47.0%	DOW	-1.3%	10.8%
average stock -3.2%		SOX -4.4%		average stock +1.9%		SOX +18.5%				

**Chip Stocks Still Scary:** While AI is a huge growth opportunity, the rest of the semiconductor industry's markets are experiencing malaise and/or transitions. In the meantime, the SOX index remains way over-extended versus the S&P500 (note the relative premium in the chart on Page 4), and most fundamental valuations across the sector are not attractive. I would remain extremely selective approaching potential chip sector opportunities at this time.

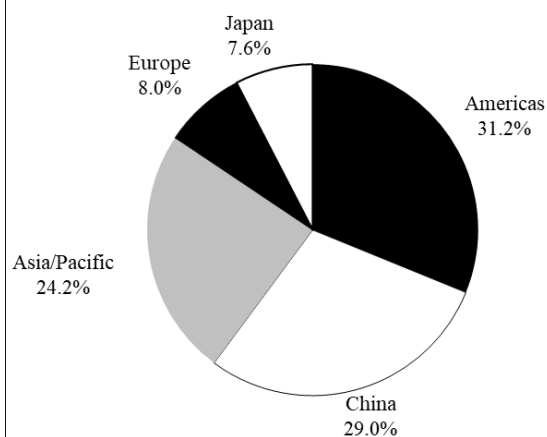
—Dan K. Scovel  
Semiconductor Analyst

**September 2024 Semiconductor Growth by Region**  
(compared with prior month)



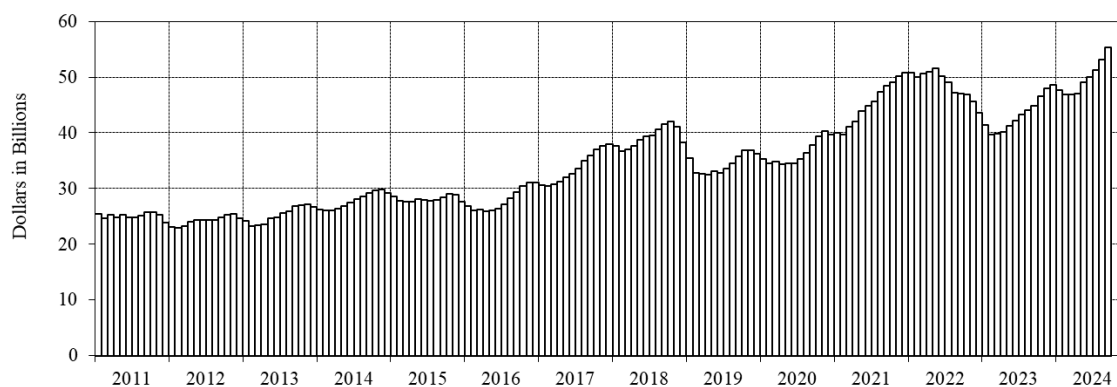
Source: WSTS and Tokeneke Research LLC

**September 2024 Semiconductor Revenue by Region**



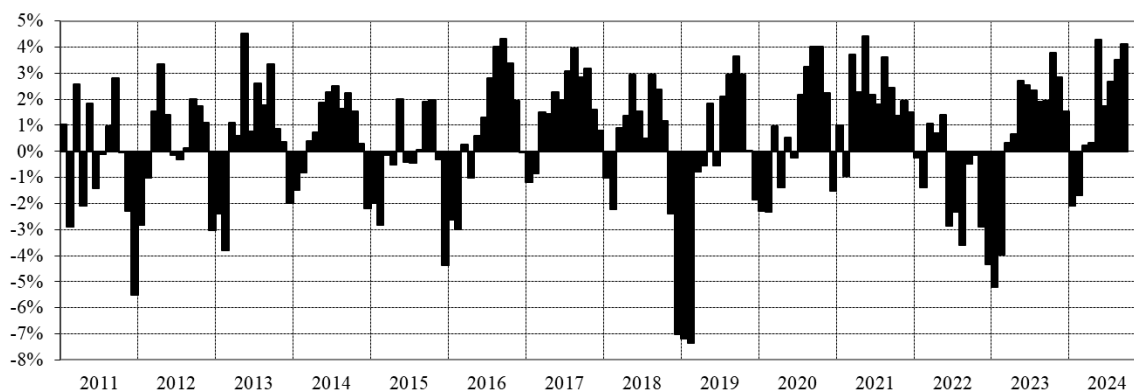
Source: WSTS and Tokeneke Research LLC

**Worldwide Semiconductor Revenues**  
3-month Rolling Average



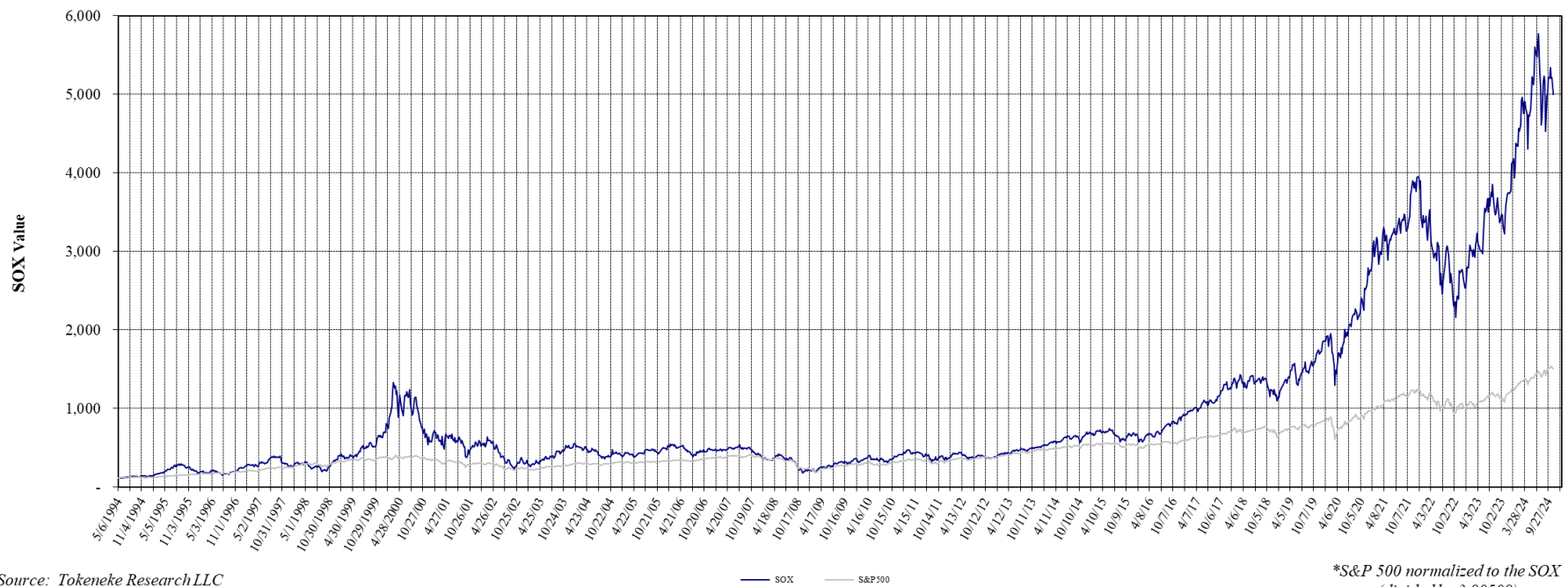
Source: WSTS and Tokeneke Research LLC

**Worldwide Semiconductor Revenue Growth**  
Sequential 3-month Rolling Average



Source: WSTS and Tokeneke Research LLC

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



### The Tokeneke Universe:

55 companies/tickers as of 6/12/24, but I added ALGM Allegro Microdevices for a total of 56 in September 2024.

Company	Ticker	Company	Ticker	Company	Ticker
Adeia	ADEA	Microchip Technology	MCHP	Rambus	RMBS
Analog Devices	ADI	Monolithic Power Systems (MPS)	MPWR	Silicon Motion	SIMO
Astera Labs	ALAB	Everspin Technologies	MRAM	SiTime	SITM
Ambarella	AMBA	Marvell	MRVL	SkyWater Technology	SKYT
Advanced Micro Devices (AMD)	AMD	M/A-COM Technology	MTSI	Silicon Laboratories	SLAB
Alpha Omega Semiconductor	AOSL	Micron Technology	MU	Semtech	SMTC
Arm Holdings	ARM	MagnaChip	MX	Sequans Communications	SQNS
Broadcom	AVGO	MaxLinear	MXL	STMicroelectronics	STM
CEVA	CEVA	Netlist	NLST	Skyworks Solutions	SWKS
Cirrus Logic	CRUS	NVIDIA	NVDA	Synaptics	SYNA
Diodes	DIOD	NXP Semiconductors	NXPI	Tower Semiconductor (TowerJazz)	TSEM
GlobalFoundries	GFS	ON Semiconductor	ON	Taiwan Semiconductor Mfg. Corp. (TSMC)	TSM
GSI Technology	GSIT	Impinj	PI	Texas Instruments (TI)	TXN
Himax Technologies	HIMX	Power Integrations	POWI	United Microelectronics Corp. (UMC)	UMC
InterDigital	IDCC	Pixelworks	PXLW	Vishay Intertechnology	VSH
Infinera	INFN	QUALCOMM	QCOM	Western Digital	WDC
Intel	INTC	Qorvo	QROV	WolfSpeed	WOLF
Lattice Semiconductor	LSCC	QuickLogic	QUIK	Xperi	XPER
Mobileye Global	MBLY				

### 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.

### My Background

I have an electrical engineering degree, nearly 12 years of semiconductor industry experience, and was on Wall Street for nearly eight years where I was selected as Best On The Street semiconductor analyst by The Wall Street Journal in 2002.

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

**—Dan K. Scovel**  
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