

Semiconductor Global Market Outlook (Sep 2022): Global Semiconductor Revenue Growth Slows, SiC Market Remains Strong

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Sep 15th, 2022

Key Takeaways

Sector Performance

- **PHLX Semiconductor Sector index declined 10% in August.** HLX Semiconductor Sector index fell by 9.8% in August, while the S&P 500 index fell by 4.2% and the Nasdaq Composite index fell by 4.6% during the same period. By the end of July, PE(TTM) for PHLX Semiconductor Sector index stands at 24.25x and is at the 31st percentile over the past three years.

Industry Outlook

- **Global semiconductor revenue growth slows to single digit.** Global semiconductor revenue has increased 7.3% monthly to \$49B in July, but the revenue growth has declined by 6% compared to June and has dropped for 7 consecutive months since January. Slowing demand in PC and smartphone market has led to falling prices for consumer chips. Global PC shipments fell by 15% YoY to 70.2 million in Q2, while global smartphone shipments dropped 8.7% YoY to 286 million in Q2.
- **IC Insights cut the full-year forecast for global semiconductor capital expenditure by 3% to \$185.5B.** Major semiconductor foundry companies have increased their capital expenditure in 2020 and 2021, and are expected to further raise their capital spending in 2022, according to previous guidance. However, with slowing demand in the consumer electronics market, we are concerned that semiconductor foundry companies could cut their production capacity and remain cautious on capital spending in the future.
- **Potential Risk**
- The ongoing Coronavirus outbreak could impact the market demand and could also pose supply-chain risks for chip companies. The technical progress could be slower than expected in the chip industry.

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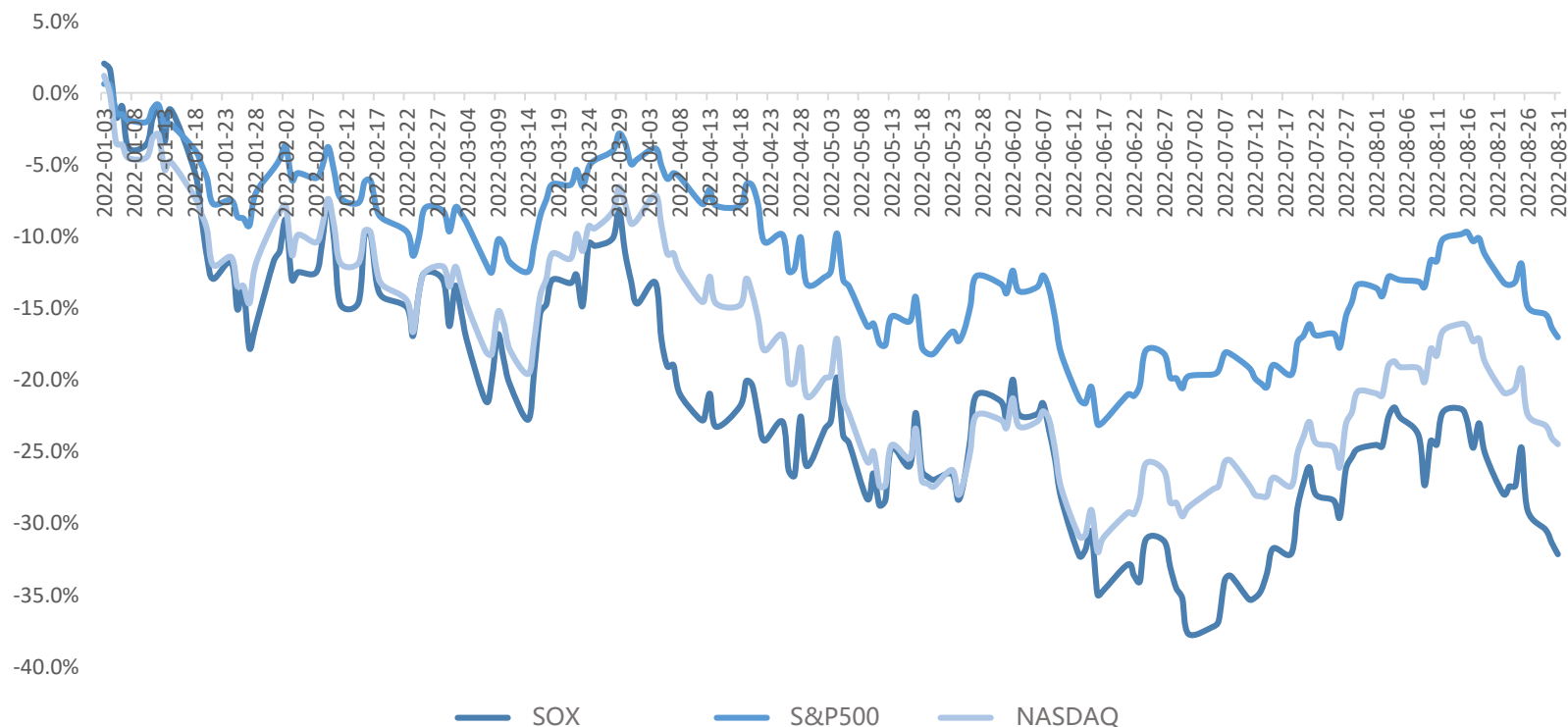
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PHLX Semiconductor Sector index declined 10% in August, SiC company Wolfspeed surged 36% over the month

PHLX Semiconductor Sector index (SOX) fell 9.8% in August 2022, while the S&P 500 index fell by 4.2%, and the Nasdaq Composite index fell by 4.6%. During the first 8 months of 2022, PHLX Semiconductor Sector index fell by 32.2%, while the S&P 500 index fell by 17.0%, and the Nasdaq Composite index fell by 24.5%.

Figure: SOX VS S&P500 VS NASDAQ



PHLX Semiconductor Sector index declined 10% in August, SiC company Wolfspeed surged 36% over the month

All 40 major semiconductor stocks declined in August. SiTime (SITM.O) is the worst performer of the month. It has reported revenue of \$150M (YoY growth of 87%) and net income of \$18.99M for H1 2022, but its 13 major shareholders have sold 57.6 thousand shares in the past three months. SiC giant Wolfspeed (WOLF.N) is the best performer of the month, as it saw another 36% rally in August after a 30% rally in July. Wolfspeed's earnings for FY4Q22 have largely beat the market consensus, and the company has raised its expected revenue for FY2026 to \$2.73B-\$2.94B.

Figure: Market performance of major semiconductor companies in the U.S. stocks in August

Top 10 rising stocks in August			Top 10 declining stocks in August		
CODE	Company	pct_chg	CODE	Company	pct_chg
WOLF.N	WOLFSPEED	36.2%	SITM.O	SITIME	-42.8%
GFS.O	GLOBALFOUNDRIES	16.2%	AZTA.O	AZENTA	-22.8%
ON.O	ONSEMI	3.0%	NVDA.O	Nvidia	-16.9%
CCMP.O	CMC MATERIALS	0.0%	TER.O	Teradyne	-16.0%
IIVI.O	II-VI	0.0%	MRVL.O	Marvell Technology	-15.9%
AMKR.O	Amkor Technology	-0.2%	POWI.O	Power Integrations	-15.7%
ASX.N	ASE Technology	-2.2%	SLAB.O	Silicon Laboratories	-15.0%
MPWR.O	MONOLITHIC POWER SYSTEMS	-2.5%	IPGP.O	IPG Photonics	-15.0%
UMC.N	United Microelectronics	-2.8%	ASML.O	ASML	-14.5%
MCHP.O	Microchip Technology	-4.8%	QRVO.O	QORVO	-13.7%

PHLX Semiconductor Sector index declined 10% in August, SiC company Wolfspeed surged 36% over the month

By the end of July, PE(TTM) for PHLX Semiconductor Sector index stands at 24.25x. Due to intensifying market concern about Fed tightening, PHLX Semiconductor Sector index has fallen by 23% since the start of 2022. Currently, PE(TTM) for SOX is at the 31st percentile over the past three years.

Figure: PE(TTM) for SOX

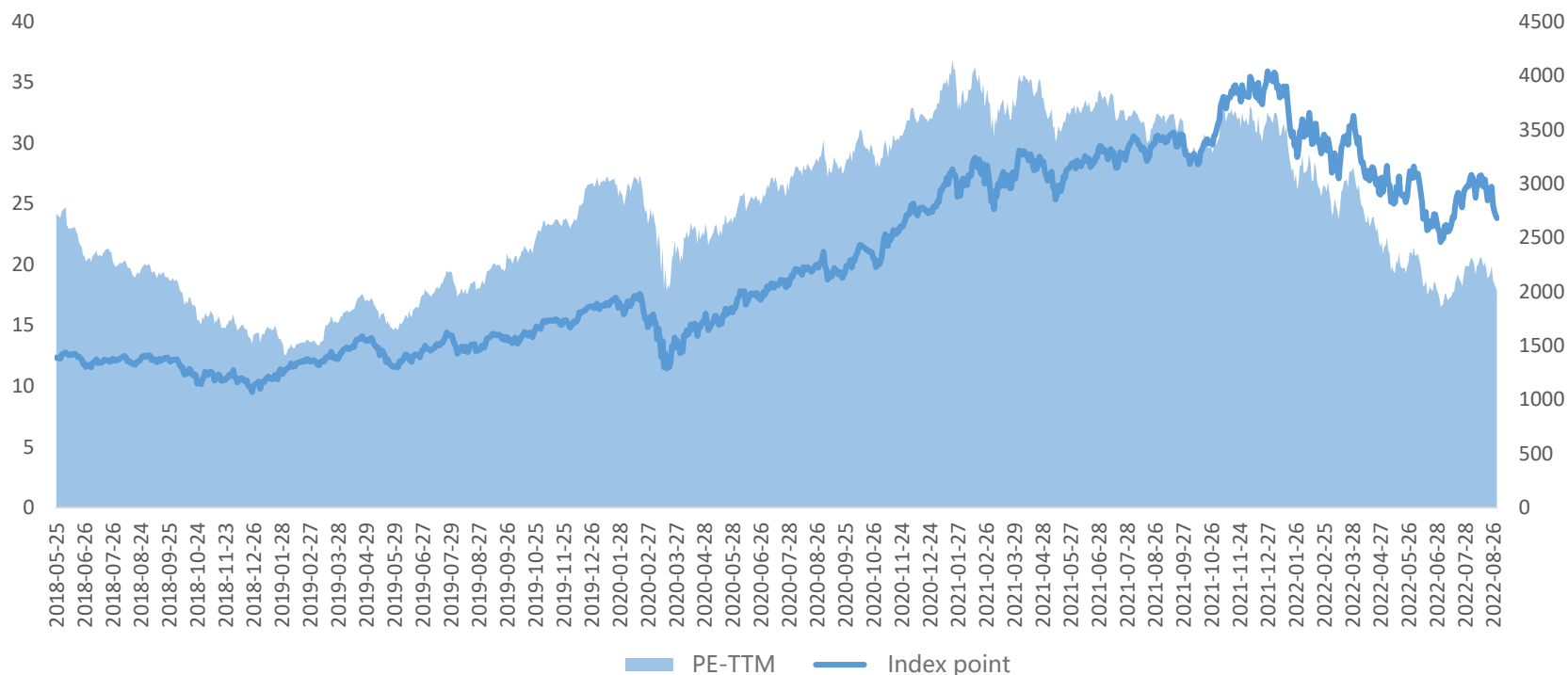


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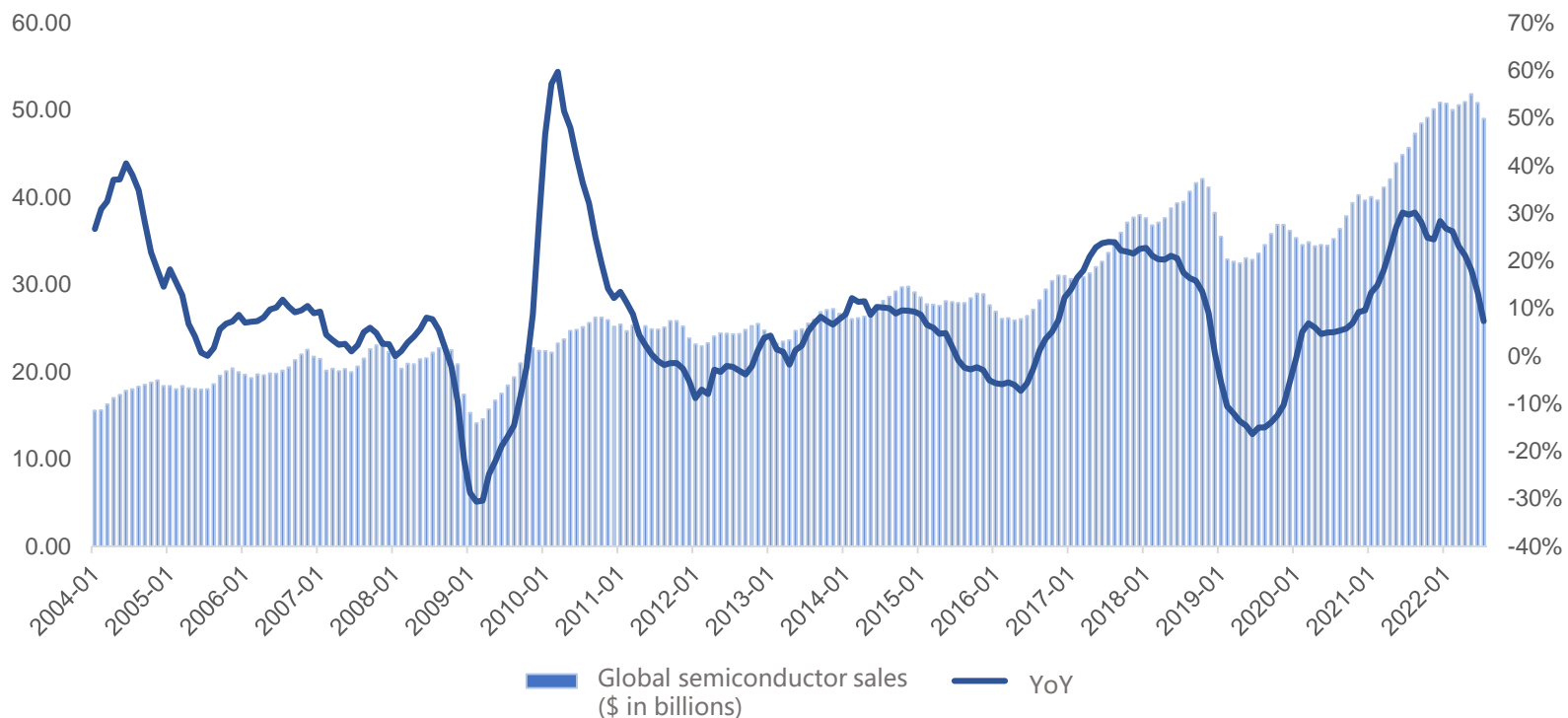
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2.1 Global semiconductor revenue growth slows to single digit

Global semiconductor revenue growth continues to slow. Global semiconductor revenue has increased 7.3% monthly to \$49B in July, but the revenue growth has declined by 6% compared to June and has dropped for 7 consecutive months since January, according to SIA. This is also the first time the revenue growth has fallen to single digit since January 2021.

Figure: Global semiconductor revenue growth declined for the seventh consecutive month (as of the end of July 2022)

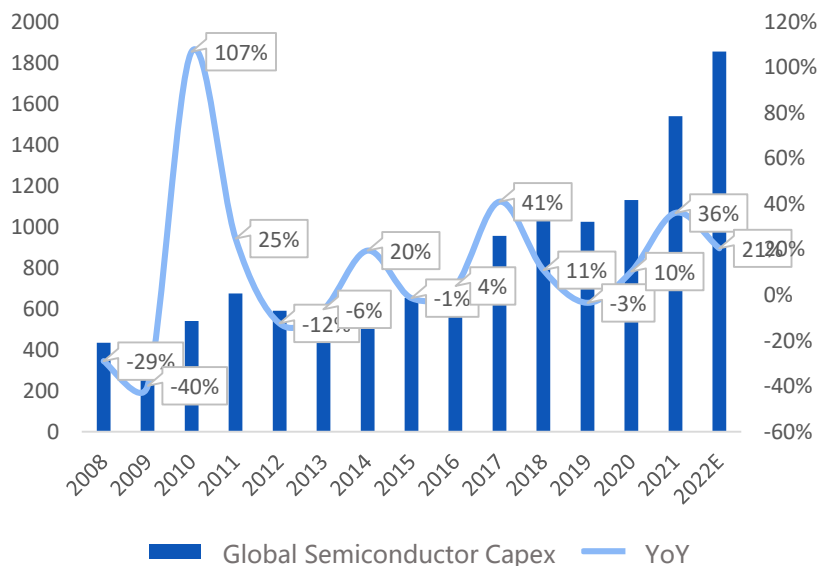


2.2 IC Insights cut the 2022 forecast for global semiconductor capital expenditure to \$185.5B

IC Insights cut the 2022 forecast for global semiconductor capital expenditure from \$190.4B to \$185.5B

If we look at Capex of major semiconductor foundry companies (TSMC, Samsung, Intel, UMC, SMIC), these 5 companies have generally increased their capital expenditure in 2020 and 2021, and are expected to further raise their capital spending in 2022. The YoY growth of their combined Capex for 2018-2022 is -23%/8%/21%/25%/30%, respectively. However, with slowing demand in consumer electronics, we are concerned that semiconductor foundry companies could cut their production capacity and remain cautious about capital spending in the future.

Figure: Global Semiconductor Capex Forecast (\$ in billions)



Source: Wind, FUTU

Figure: Capital expenditure of major FAB ((\$ in billions)

	2017	2018	2019	2020	2021	2022E
TSMC	113	105	157	184	306	420
YoY		-7%	50%	17%	66%	37%
Samsung	440	267	250	327	337	379
YoY		-39%	-6%	31%	3%	12%
Intel	118	152	162	143	187	280
YoY		29%	7%	-12%	31%	50%
UMC	15	6	6	9	18	30
YoY		-60%	0%	50%	100%	67%
SMIC	23	18	19	53	45	50
YoY		-22%	6%	179%	-15%	11%
Total	709	549	593	716	894	1159
YoY		-23%	8%	21%	25%	30%

Source: Official websites, FUTU

2.3 Slowing demand in PC and smartphone market has led to falling prices for consumer chips, but auto chips remain strong

Global PC shipments fell by 15% YoY to 70.2 million in Q2 2022, according to Canalys. Shipments for Desktop CPUs dropped to the lowest point in 30 years, and shipments for x86 CPUs have recorded their largest YoY decline since 1984, according to Mercury Research.

Gartner expected global PC shipments to shrink by 13% this year. NVIDIA, Intel, and AMD also cut their outlook for PC market. Intel has cut its 2022 revenue forecast for PC department by 10%, and AMD has cut its YoY growth forecast for PC revenue from -7%~ -9% to -15%~-17%.

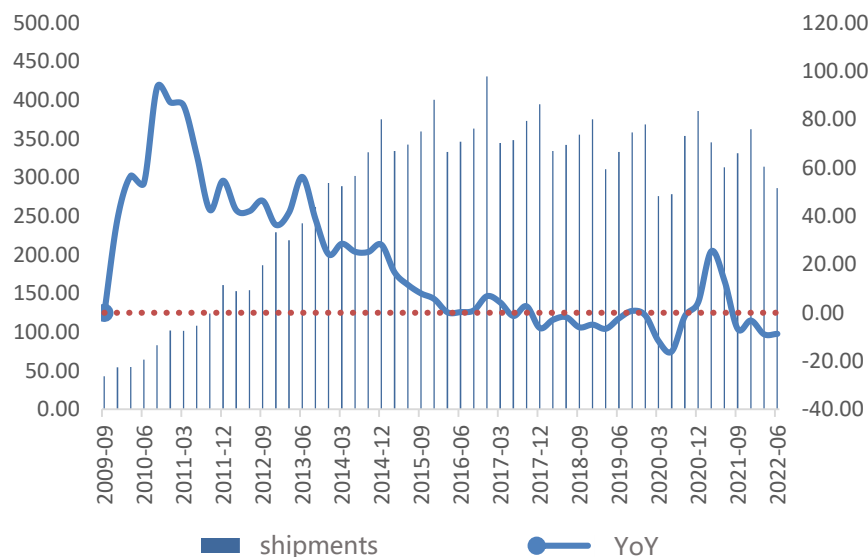
Figure: Global PC shipments of major manufacturers (thousand)

Brand	Shipment			Market share	
	Q2	Q221	YoY	Q2	Q221
Lenovo	17517	20006	-12%	25%	24%
HP	13484	18595	-27%	19%	23%
Dell	13233	13976	-5%	19%	17%
Acer	5094	6249	-18%	7%	8%
Asus	4668	4920	-5%	7%	6%
Others	16167	18801	-14%	23%	23%

2.3 Slowing demand in PC and smartphone market has led to falling prices for consumer chips, but auto chips remain strong

Global smartphone market remained weak due to coronavirus, inflation, and the war in Ukraine. Global smartphone shipments fell 8.7% YoY to 286 million in Q2 2022, and are expected to fall by 6.5% YoY to 1.27 billion for the entire 2022, according to the latest report by IDC. Major chip buyers all cut their orders recently due to slowing consumer demand. Qualcomm has cut the production order for its Snapdragon 8 series by 15%, while MediaTek has cut its 12-month production target for low-end chips by 30-35%. Meanwhile, Apple, AMD, and NVIDIA all cut their orders with TSMC.

Figure: Global smartphone shipments (millions)



Source: Wind, FUTU

Figure: Smartphone shipments of major companies (millions)

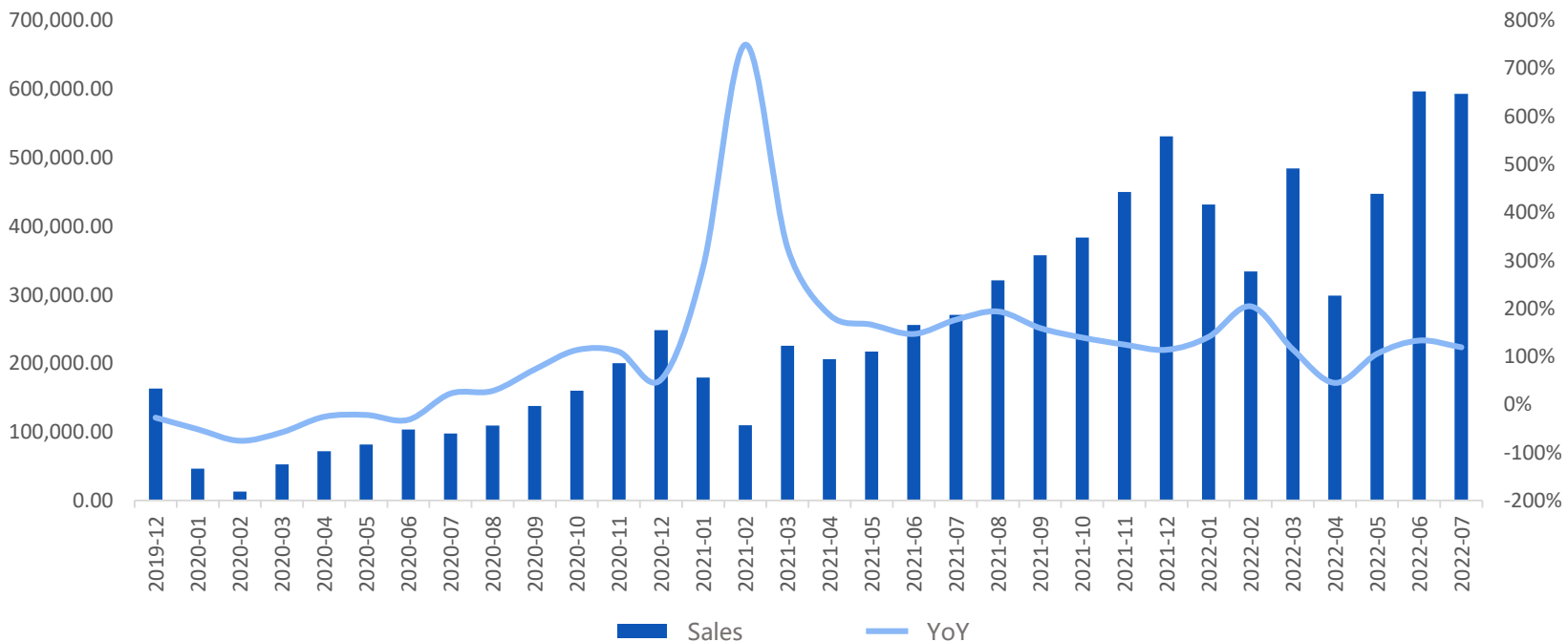
company	2Q22 shipment	2Q22 market share	2Q21 shipment	2Q21 market share	YoY Growth in shipments
Samsung	62.4	21.80%	59.1	18.90%	5.60%
Apple	44.6	15.60%	44.4	14.20%	0.50%
Xiaomi	39.5	13.80%	53.1	16.90%	-25.50%
vivo	24.8	8.70%	31.7	10.10%	-21.80%
OPPO	24.7	8.60%	32.8	10.50%	-24.60%
Others	89.9	31.50%	92.3	29.50%	-2.60%
Total	286	100.00%	313.4	100.00%	-8.70%

Source: Wind, FUTU

2.3 Slowing demand in PC and smartphone market has led to falling prices for consumer chips, but auto chips remain strong

In contrary to the slumping consumer electronics market, auto chips are experiencing shortages and price hikes due to strong demand in the Chinese EV market. Major auto chips including MCUs, power chips, and memory chips, are all facing severe shortages. As a result, the production level for global automobile market has declined by 2.99 million in the first 8 months of 2022, and is expected to decline by 3.83 million for the entire year, according to Auto Forecast Solutions.

Figure: China's new energy vehicle sales (RMB in ten thousand) and YoY growth rate (July)



2.4 Major chip dealers are trying to cut their excessive inventory levels by lowering prices

Inventory levels for major chip dealers remain at historic high. Inventory levels for major chip dealers have dropped from Q3 2018 to Q1 2021, and have bounced back dramatically since Q1 2021, according to financial statements of major chip dealers.

Figure: Inventory level changes of major chip dealers

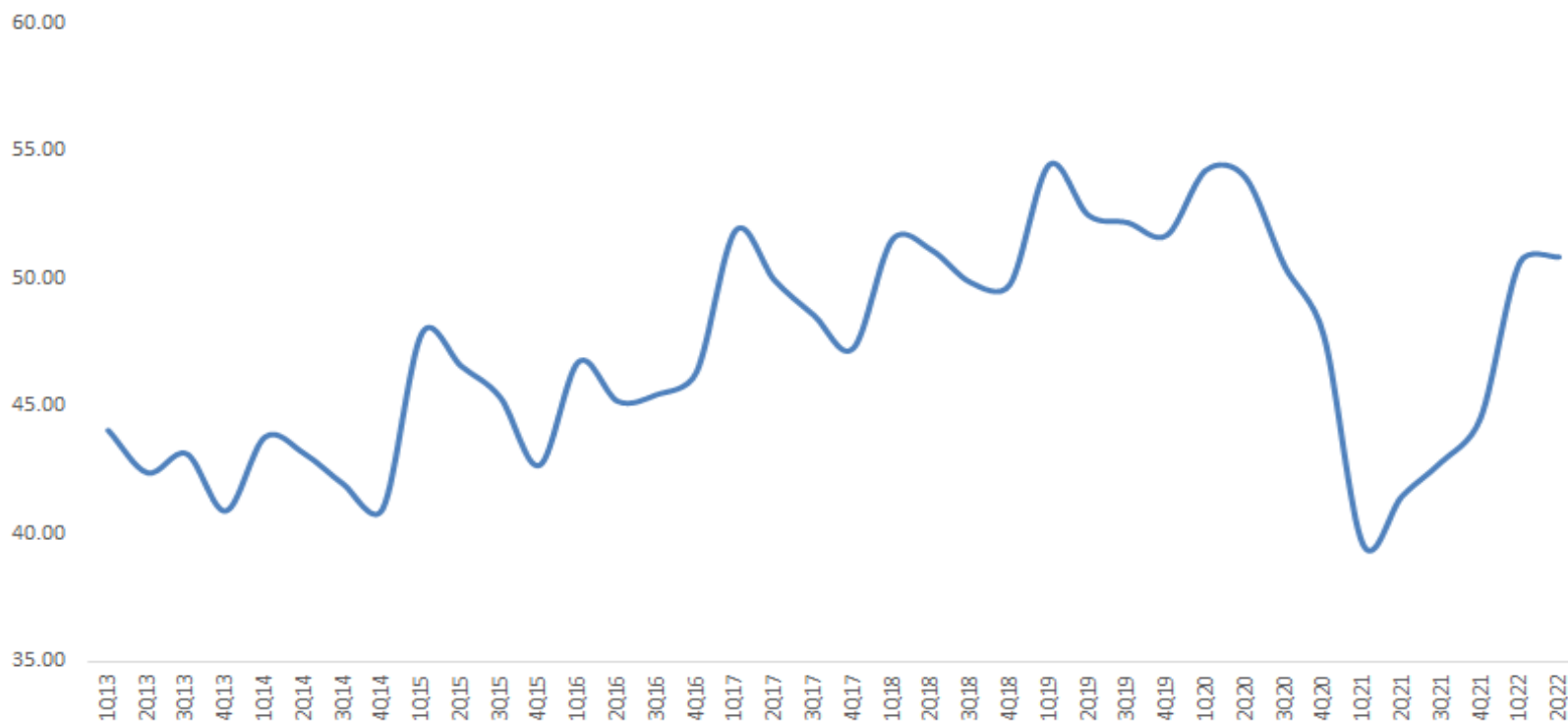


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Potential Risk

- The ongoing Coronavirus outbreak could impact the market demand and could pose supply-chain risks for chip companies
- The technical progress could be slower than expected in the chip industry
- Increased competition could affect the profit margin of chip companies
- Conflicts between U.S. and China could pose negative impacts for chip companies

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