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China Technology

OUTPERFORM (Maintain)

Semi field trip takeaways: darkness before dawn; fabless better positioned than SPE/materials

We hosted an investor field trip to visit 5 fabless, 2 SPE and 1 semi material companies in Shanghai last week. Based on our trip, we reaffirmed our view on a 2H23 recovery for major Chinese fabless names, and an uncertain 2023 for Chinese SPE/materials companies. Our check also suggested that foundry capex/production cuts have started and inventory level is improving gradually. Overall, despite ongoing macro uncertainties and inventory correction, we recommend to focus on 2H23 recovery plays in fabless names, such as SG Micro, 3Peak and Sino Wealth, and semi localization remains the structural growth driver in the long run, benefiting SPE leaders (NAURA, AMEC).

- **IC Design: inventory correction before recovery in 2H23.** Most fabless companies we visited stated that the worst is over in terms of demand and inventory, but margins may see more downside in 1H23E given LTA contracts and further pricing pressure on commodity semi products. Looking ahead, most companies expected improving inventory in 1H23E and demand recovery in 2H23E. In the long term, Chinese fabless are positive on growth drivers from overseas markets, accelerated localization and industrial/auto expansion. While we think fundamentals may remain weak in the near term, especially for consumer electronics, which may lead to earnings downward revision, we recommend to focus on 2H23 recovery plays including analog and MCU segments.

- **SPE/Materials: CAPEX cut and US-China tensions.** While 1Q23 semi demand downcycle and foundry capex slowdown continue to weigh on SPE & silicon wafer manufacturers, China semi localization trajectory remains solid in the long term. In particular, SPE order visibility remains low in near term given conservative foundry capex, bidding delay impact and US export restrictions since Oct 2022, and we expect SPE recovery in 2H23E driven by bidding commencement, capex recovery and accelerated localization.

- **Fabless names are better positioned than SPE/materials.** Given foundry capex/production cuts and ongoing export restrictions by the US, we expect SPE/materials segments to remain under pressure in 2023. For fabless, we believe demand/inventory will improve sequentially into 2Q23E and US-China tensions will boost localization of Chinese fabless segments. Overall, we recommend to focus on domestic semi leaders benefiting from these trends, such as fabless (SG Micro, 3Peak, Sino Wealth), IDM/foundry (SMIC, Huahong Semi), and equipment players (NAURA, AMEC).

Valuation Table

Name	Ticker	Mkt Cap	Price	P/E (x)		P/B (x)	ROE
		(US$ mn)	(LC)	FY22E	FY23E	FY22E	FY22E
SMIC	981 HK	23,971	41.63	29.0	48.9	2.6	9.7
Hua Hong Semi	1347 HK	5,015	30.10	12.9	12.8	1.6	12.8
SG Micro	300661 CH	8,237	160.6	59.1	48.8	16.4	31.3
3Peak	688536 CH	4,387	253.5	77.0	45.4	7.6	10.1
Sino Wealth	300327 CH	1,952	39.63	33.6	30.9	8.6	25.8
NAURA	002371 CH	17,570	230.8	56.5	43.0	6.4	11.7
AMEC	688012 CH	9,257	104.3	58.7	47.0	4.3	7.4

Source: Company data, Bloomberg, CMBIGM estimates

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IC Design: inventory correction before recovery in 2H23

Most Chinese fabless companies we visited stated that the worst is over in terms of demand and inventory, but margins may see more downside in 1H23E given LTA contracts and further pricing pressure on commodity semi products. Looking ahead, most companies are positive on improving inventory in 1H23E and demand recovery in 2H23E. Overall, we think fundamentals may remain weak in the near term, especially for consumer electronics, which may lead to earnings downward revision. As such, we recommend to focus on 2H23 recovery plays including analog leaders, **SG Micro (300661 CH) and 3Peak (688536 CH),** as well as MCU leaders, **Sino Wealth (300327 CH)**.

End-demand remains weak for consumer electronics. We visited fabless names with product exposure to memory, MCU and WIFI chips. Most of them commented that demand from consumer electronic remained weak in 1Q23 with limited order visibility in near term, and they expected demand rebound will be driven by traditional peak season in 3Q/4Q23E. In addition, industrial and automotive downstream demand were resilient, but it can only partly offset weakness from consumer electronics due to limited exposure to industrial/ automotive segments. Breakthroughs in high-end industrial and automotive applications will take up to 2 years during full product cycle from product design, verifications and design in with customers.

Inventory level is mixed but improving overall. Inventory level varies for IC design companies we visited. Given overall demand weakness and slower channel restocking, most companies expected high inventory level may last for another quarter in 1Q23E, and those LTA with foundries are more conservative. For companies with more flexible foundry scheme, their inventory level has already started to improve since 4Q22/1Q23E.

Foundry costs expected to ease in 1Q23E. As foundry utilization started to fall since 3Q22, most companies expected foundry cost to ease gradually entering into 2023. However, cost benefit will be gradually reflected in company's financials in 2H23E, and LTA contracts will remain a drag to foundry cost in 1H23.

Product pricing and margins to improve in 2H23E. Memory products (NAND, NOR and DRAM) price dropped significantly since 3Q22 in terms of YoY and QoQ. Most memory companies stated that product pricing started to stabilise recently, but MCU companies expected further pricing downside in 1H23E after price hikes for past two years. Therefore, for Chinese fabless names, we believe margin pressure would continue into 1H23E, given weaker product price and limited cost improvement.

Growth drivers from overseas markets, localization and industrial/auto segments. Looking ahead, most fabless names are expanding into new markets and new segments. 1) Overseas expansion becomes the major growth strategy for most fabless companies amid local market weakness, especially for products with cost advantage and compatible product performance vs global peers. 2) Domestic substitution will accelerate with easing foundry capacity and ongoing geopolitical tensions, in our view. In particular, for supply chain in selected downstream areas such as surveillance, domestic supply chain players are likely to benefit from a new wave of substitution demand. 3) New product launches for automotive/industrial applications will continue to expand product offerings and enhance overall profitability.

Upstream SPE/Materials: CAPEX correction and US-China tensions

While 1Q23 semi demand downcycle and foundry capex slowdown continue to weigh on SPE & silicon wafer manufacturers, China semi localization trajectory remains solid in the long term. In SPE, order visibility remains low given China foundries' conservative FY23E capex guidance and bidding delay impact, while we expect SPE recovery will resume in 2H23E driven by bidding commencement, cyclical recovery and accelerated localization. We suggest investors to focus on front-end SPE leaders including **Naura (002371 CH), AMEC (688012 CH), Piotech (688072 CH), Kingsemi (688037 CH), Pnc Process Systems (603690 CH), Acm Research (688082 CH), Hwatsing Technology (688120 CH) and Wanye Enterprises (600641 CH)**. In silicon wafer market, despite 8-inch silicon demand declined due to consumer electronics weakness, 12-inch demand remains steady and high-end 12-inch silicon wafer capacity expansion is well on track, mainly driven by localization. We suggest investors to pay attention to **National Silicon Industry (688126 CH) and Lion Microelectronics (605358 CH)**.

SPE Sector

Foundries' bidding delay remains the major overhang. We believe that the SMIC/Hua Hong Semi's guided FY23E capex of flat/-42% YoY imply less aggressive capacity expansion in 2023 given ongoing inventory correction in 1H23 and demand recovery uncertainty in 2H23E. In addition, capacity expansion of YMTC and CXMT's phase II were impacted due to US restrictions in Oct 2022. Therefore, we remain cautious on demand for domestic SPE in the short term and current foundries' bidding delay will weigh on new order wins. However, we remain positive on China localization trend to drive long-term growth given Chinese SPE's low share allocation in domestic foundries.

SPE component localization to accelerate. While SPE component supply is highly dependent on overseas suppliers due to high barriers and development cost, we expect localization to accelerate given geopolitical risk and supply chain safety concern. Domestic supply chain is actively lowering US components' contribution, and machine-processing parts are easier to replace in China than IC instruments/meters due to foreign standards.

Domestic SPE penetration in 28nm and below processes to speed up. Despite notable localization progress in etching and cleaning equipment, lithography, metrology and inspection's substitution remain challenging. In addition, thin-film deposition, etching, measurement, ion implanter and track equipment's localization rate in 28nm and below process lines remain low. Looking forward, we expect rising domestic SPE penetration in more critical processes (28nm & below) driven by US export controls and localization.

Silicon Wafer Sector

8-inch demand weakened; 12-inch demand remains steady. Our checks suggested consumer electronics' weakness will start to impact silicon materials in 2H22E, where 8-inch silicon wafer demand declined. However, 12-inch demand remains steady driven by rising silicon content in high-end smartphones, data center and intelligent vehicles.

12-inch silicon wafer expansion to continue; LTA to ensure ASP stability. Shin-Etsu, SUMCO, GlobalWafers, Siltronic and SKSiltron dominate the global silicon wafer market, with over 90% market share. SUMCO expects 12-inch silicon wafer demand to recover and global suppliers' capacity expansion to continue in FY24-25E. Chinese largest silicon wafer supplier, National Silicon Industry's (12% of market share in 2020) high-end 12-inch capacity expansion is on track to reach 60kwpm driven by localization and LTA with downstream foundries will ensure ASP stability.

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