

Global Technology

Analyst call on Intel-TSMC-Samsung issue: discussion points

Industry Overview

Call background: Intel issue, TSMC upside, Samsung status

Investors often ask how serious Intel's problems are and about the possible opportunities for TSMC and Samsung Electronics. We tentatively conclude TSMC would see the most opportunity from Intel's foundry. Samsung may target non-Intel customers who may be affected by TSMC's capacity constraints. We will host [an analyst call on 19 August at 8:00 AM HKT](#) to discuss these issues.

Our view on Intel: Too big to go completely fabless

Intel stated on 23 July there will be more than a six-month shift in the timing of the 7nm-based CPU product release (to late 2022 or early 2023). However, we do not believe Intel will outsource everything to a third-party foundry. Intel may want to only outsource part of its 7nm node (eg, GPU), but prefer to retain next-gen 5nm capabilities internally, which may create a lack of trust with a foundry partner re capacity planning/tech leakage. Intel's 10nm (quad-patterning; not yet EUV) pipeline and data center/PC incumbency could provide a cushion at least through 2021. Intel also announced 10nm SuperFin technology (equivalent to 10nm+), which will be a critical factor in limiting impact from 7nm delay. 10SF has the largest intra-node performance improvement ever and offers higher clock speeds at any voltage. The next roadmap will be for 10nm Enhanced SuperFin (10ESF).

How TSMC benefits: Leveraging GPU experience

Through leveraging its experience in working with NVIDIA and AMD, we believe there will be around US\$2bn incremental revenue for TSMC in this business opportunity, translating to 3-4% of the company's total revenue in 2021. By our understanding, currently Intel uses TSMC's foundry to fabricate FPGA (Altera), image processors (Mobileye), and legacy iPhone 4G modems, which could soon end their life-cycle, and all of these contribute to 2-3% of TSMC's revenue. Adding up the contribution from GPU outsourcing, for which Intel likely has booked 160k+ wafer units, TSMC's revenue contribution from Intel could reach 5%+ in 2021, by our estimate. The Intel opportunity could also help to mitigate the shortfall from the void left by Huawei.

Why Samsung is inactive: Too risky for billions of dollars

We do not expect any meaningful capex at Samsung for the Intel CPU fabrication. Intel will continue to ramp up 10nm for 2021-22 CPU production, while it will use more TSMC (initially GPU then potentially CPU). Samsung is expected to continue its low-end foundry for Intel's chipset, a combination of Samsung's in-house PMIC (and others such as graphic) and Intel's CPU. Samsung's new fab construction (or any billion-dollar investment) could be a sunk cost if Intel becomes successful in 7nm CPU (PC/server from 2022/23). We also think Intel is committed to a 5nm ramp-up even after the delayed 7nm.

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Related research

Intel: Too Big to Fabless; roadmap uncertainty offset incumbency, lower est./PO to \$55

TSMC: Intel opportunity confirms extending competitive moat; PO to NT\$500

Samsung: Foundry opportunity with IBM apart from Qualcomm

Glossary

CPU: central processor unit

GPU: graphics processing unit

PMIC: power management integrated circuits

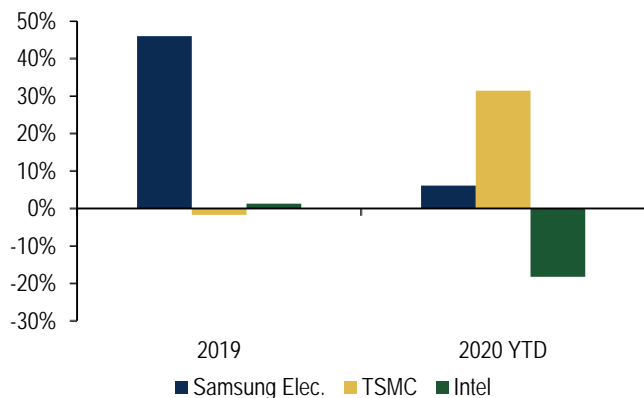
EUV: extreme ultraviolet lithography

FPGA: field-programmable gate array

AMD: Advanced Micro Devices

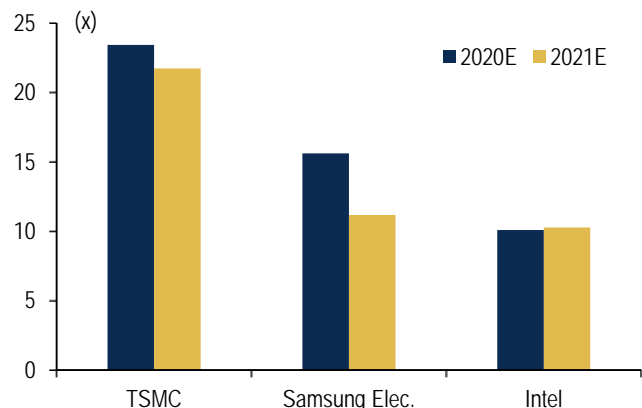
Key charts

Chart 1: TSMC outperformed Samsung and Intel YTD, but Samsung strong in 2019 on memory upturn expectations



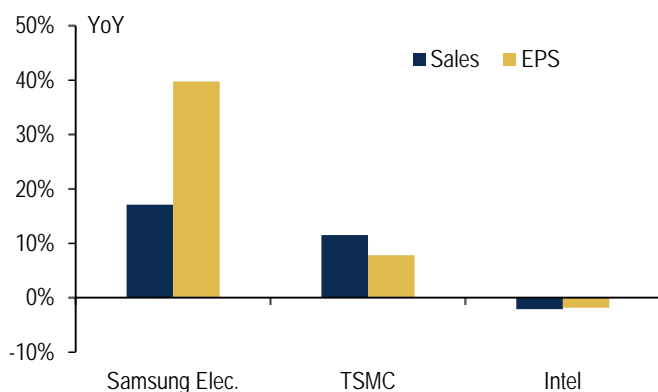
Source: BofA Global Research

Chart 2: TSMC P/E (2020-21E) much higher vs Samsung and Intel



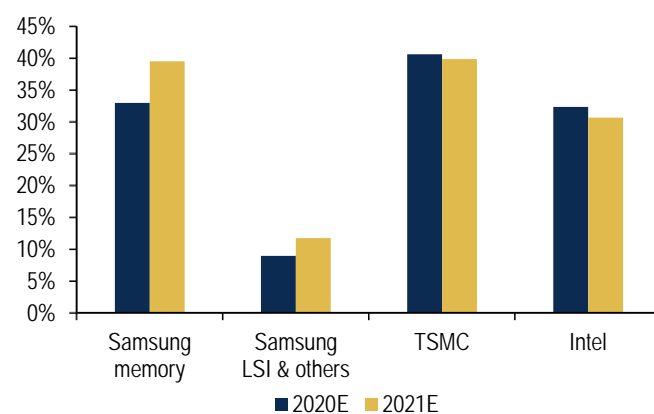
Source: Companies, BofA Global Research estimates

Chart 3: 2021 sales/OPS YoY – TSMC above trend vs Intel; Samsung's growth also likely outstanding with memory cycle turnaround



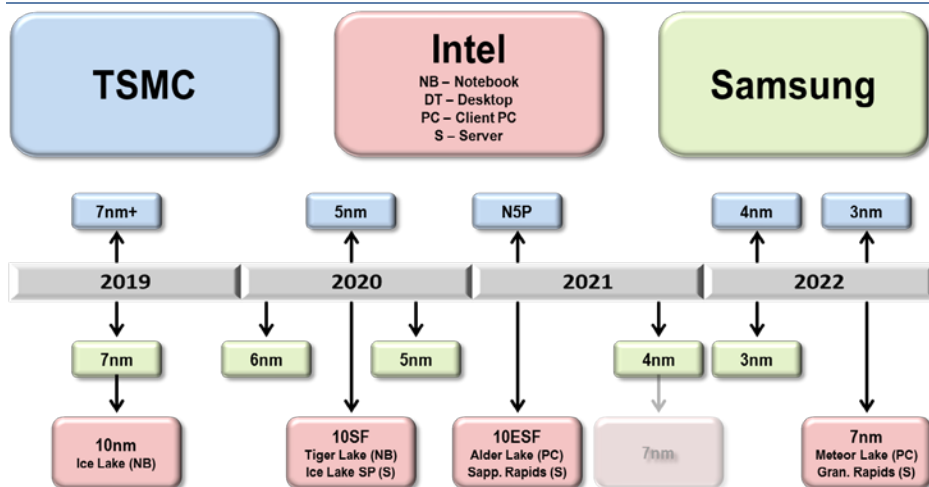
Source: Companies, BofA Global Research estimates

Chart 4: TSMC (foundry) and Intel (logic) retain high-margin profile; but Samsung's non-memory OPM still low (vs memory 30-40% OPM)



Source: Companies, BofA Global Research estimates

Exhibit 1: Who does what for EUV node – TSMC and Samsung already 5nm vs Intel currently 10nm and then 7nm in 2022-23



Source: BofA Global Research estimates, The Linley Group



Price objective basis & risk

Samsung Electronics (SSNLF / SSNHZ; A-1-7 / B-1-7; W58,000 / US\$1,235)

We use 1.8x fair P/B to derive our PO of W75,000 (common shares, US\$1,570 ADR) due to upcycle-level earnings momentum for 2H and 2021-22 vs 2019 bottom. Our sum-of-the-parts (SOTP) valuation (combined DRAM+NAND US\$158bn vs smartphone US\$90bn, net cash over US\$80bn) and DCF (WACC 10%, annual FCF W30tn or higher) also present W75k fair value.

Upside risk is mostly related to memory price hike (immediate margin improvement).

Downside risk could be any unexpected decline in chip demand which can cause earnings miss (memory margin squeeze). US-China tension or trade war is also a key risk factor.

GDR PO of US\$1,570 is automatically calculated at current FX rate (near W1.2k).

Samsung Electronics Preferred (SSNNF; B-1-7; W50,600)

Our PO for preferred (W65,000) is based on a 12% fair discount to common shares (vs historical average 20-30%). This is consistent with the guidance for more share buybacks vs the common. Preferred shares offer a higher yield than the common, given almost same level of cash dividend but at a lower share price.

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Taiwan Semiconductor Manufacturing Co. (TSMWF / TSM; B-1-7 / B-1-7; NT\$435.50 / US\$80.19)

We value TSMC at NT\$500 per share (US\$88 per ADR), based on a 25x 2021E P/E, slightly above its past 10-year trading range (10x-22x), but on par with the upcycle of SOX Index. We expect the valuation to be underpinned its stronger industry position especially in leading edge technology, improved earnings quality and subsequently FCF/dividend upside.

Downside risks are: 1) slowing global smartphone demand, and 2) execution risks in advanced nodes.

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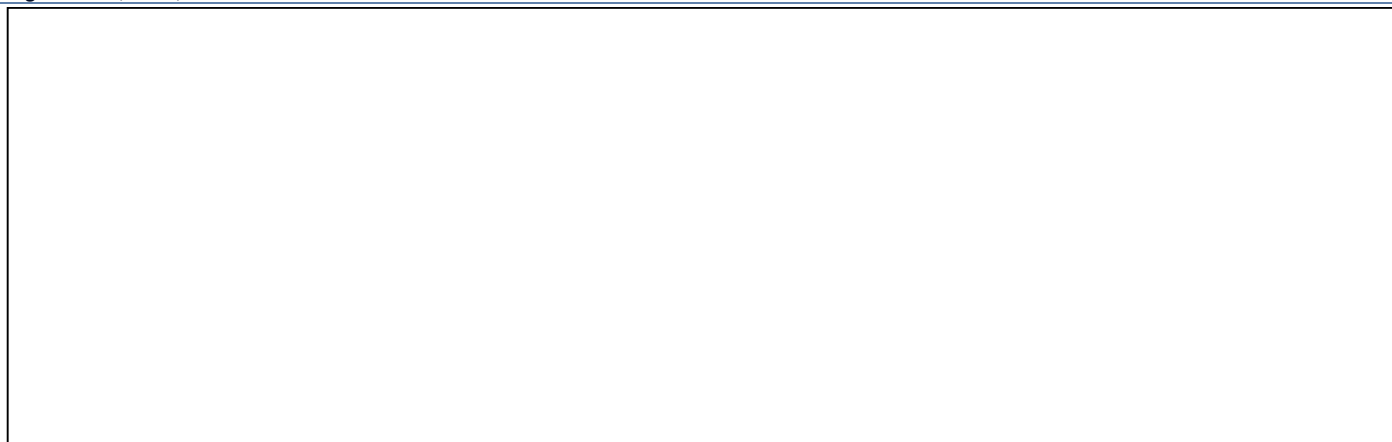
APR - Semiconductor Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	ASE Technology Holding	XSRI	3711 TT	Robin Cheng
	ASE Technology Holding -ADR	ASX	ASX US	Robin Cheng
	ASM Pacific Technology	ASMVF	522 HK	Simon Woo, CFA
	Genius Electronic Optical	GNSEF	3406 TT	Robin Cheng
	JCET Group Co Ltd	XJIEF	600584 CH	Robin Cheng
	MediaTek	MDTKF	2454 TT	Robin Cheng
	Micron Technology, Inc	MU	MU US	Simon Woo, CFA
	Montage Technology	XRDF	688008 CH	Mike Yang
	Nanya Technology	NNYAF	2408 TT	Simon Woo, CFA
	Novatek	NVKMF	3034 TT	Robin Cheng
	Parade	PRDWF	4966 TT	Mike Yang
	Phison Electronics	PISNF	8299 TT	Simon Woo, CFA
	Samsung Elec -G	SSNHZ	SMSN LI	Simon Woo, CFA
	Samsung Electronics	SSNLF	005930 KS	Simon Woo, CFA
	Samsung Electronics Preferred	SSNNF	005935 KS	Simon Woo, CFA
	Shenzhen Goodix	XQPLF	603160 CH	Mike Yang
	Silicon Motion	SIMO	SIMO US	Simon Woo, CFA
	SK Hynix	HXSCF	000660 KS	Simon Woo, CFA
	Taiwan Semiconductor Manufacturing Co.	TSM	TSM US	Robin Cheng
	Taiwan Semiconductor Manufacturing Co.	TSMWF	2330 TT	Robin Cheng
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NEUTRAL				
	GlobalWafers	XWLFF	6488 TT	Robin Cheng
	Powertech Technology	XPPZF	6239 TT	Simon Woo, CFA
UNDERPERFORM				
	Aspeed	XLKMF	5274 TT	Mike Yang
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	Silergy	SLRGF	6415 TT	Robin Cheng

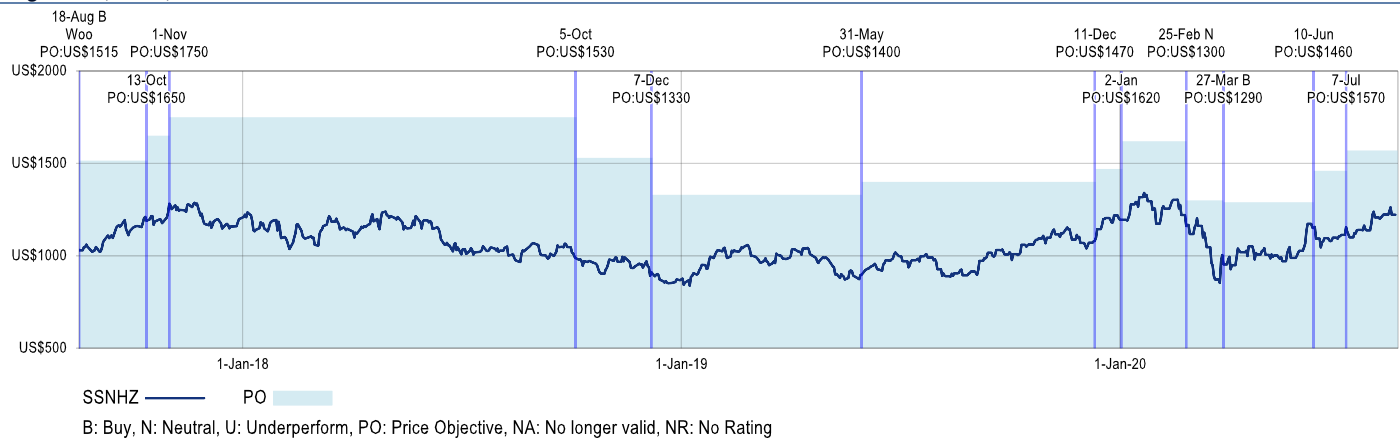
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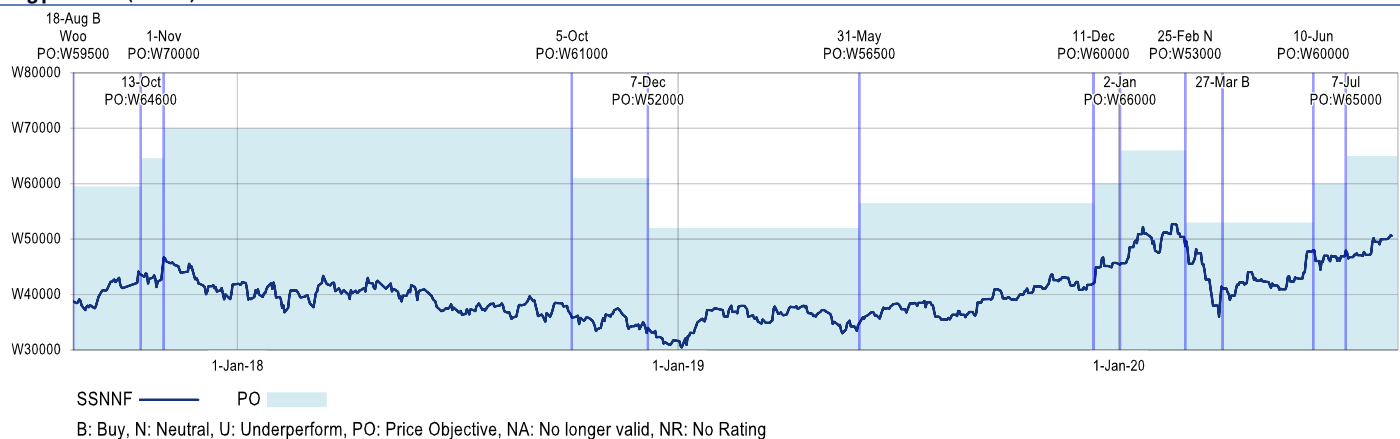
Samsung common (SSNLF) Price Chart



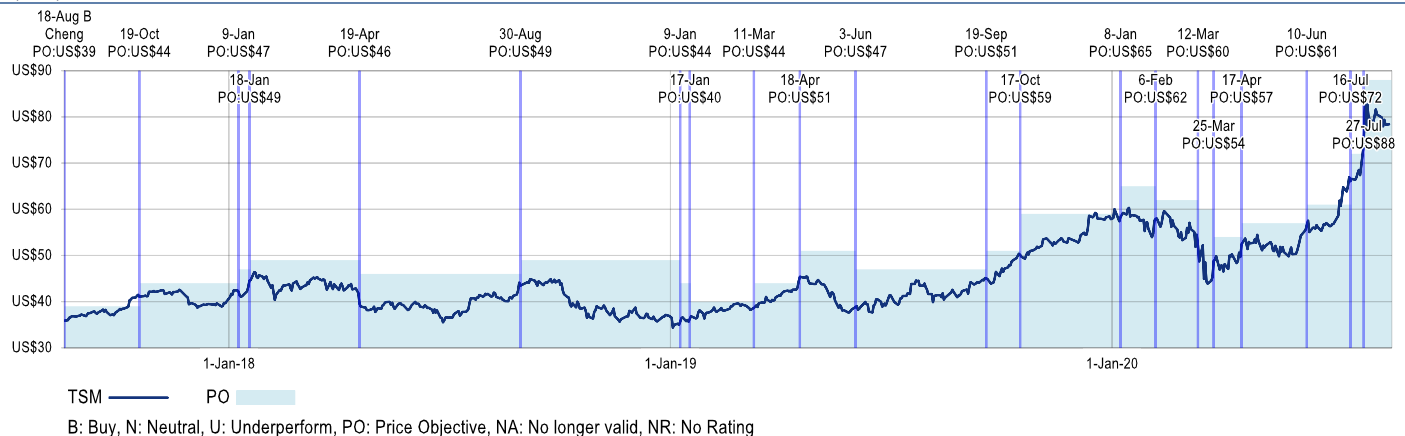
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Samsung Elec -G (SSNHZ) Price Chart

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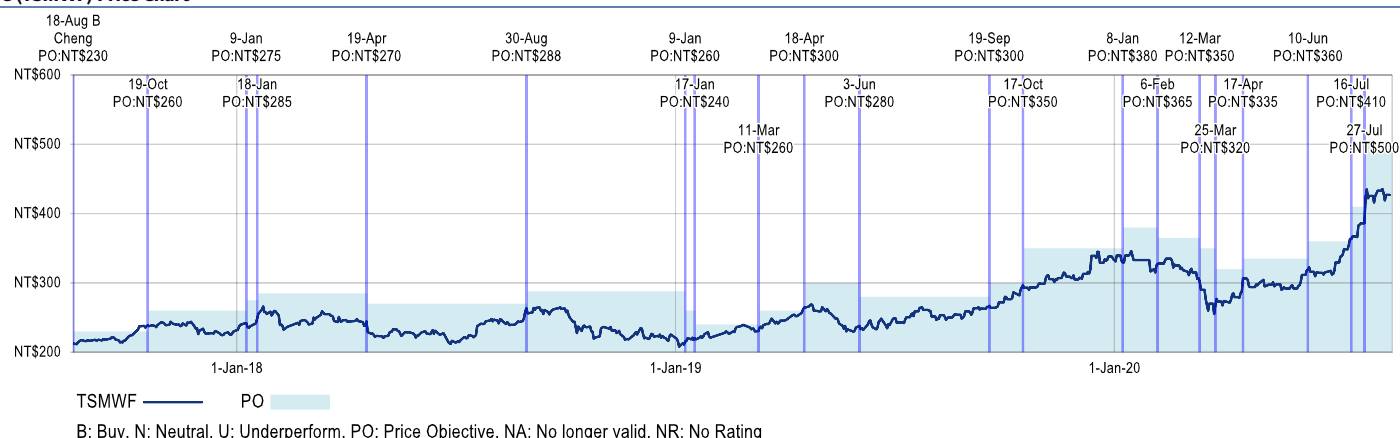
Samsung preferred (SSNPF) Price Chart

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TSMC (TSM) Price Chart

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TSMC (TSMWF) Price Chart

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Coverage Universe	Count	Percent	Inv. Banking Relationships*	Count	Percent
Buy	16	66.67%	Buy	11	68.75%
Hold	3	12.50%	Hold	2	66.67%
Sell	5	20.83%	Sell	1	20.00%

Equity Investment Rating Distribution: Technology Group (as of 30 Jun 2020)

Coverage Universe	Count	Percent	Inv. Banking Relationships*	Count	Percent
Buy	176	64.00%	Buy	107	60.80%
Hold	43	15.64%	Hold	28	65.12%
Sell	56	20.36%	Sell	28	50.00%

Equity Investment Rating Distribution: Global Group (as of 30 Jun 2020)

Coverage Universe	Count	Percent	Inv. Banking Relationships*	Count	Percent
Buy	1632	52.21%	Buy	1031	63.17%
Hold	711	22.74%	Hold	444	62.45%
Sell	783	25.05%	Sell	407	51.98%

* Issuers that were investment banking clients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only stocks. A stock rated Neutral is included as a Hold, and a stock rated Underperform is included as a Sell.

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Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

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