

## TSMC (2330.TW): Earnings review: Long-lasting supply tightness; reiterate Buy (on CL) with new TP of NT\$877

### **Slightly lower gross margin due to higher 5nm contribution & unfavorable FX:**

2Q21 Revenue was previously released: NT\$372bn, up 2.7% QoQ/19.8% YoY. TSMC hosted its quarterly investor conference today and reported EPS of NT\$5.18, down 3.8% QoQ/ up 11.2% YoY and came in slightly below Bloomberg consensus estimates of NT\$5.21 and 3.6% below GSe of NT\$5.38. Management cited that the sequential strength in revenue was primarily driven by a stronger demand in HPC and automotive sector. In terms of margin, both GM (50.0%, down 240bps QoQ) and OpM (39.1%; down 240bps QoQ) saw sequential decline as dragged by higher 5nm contribution and unfavorable FX (50bps of impact on GM). Quarterly revenue growth by platform goes as follows: smartphone at -3% QoQ, HPC at +12% QoQ, IoT at -2%, automotive at +12%, and DCE at -12%. By geometry, 5nm contribution reached 18% of the company's quarterly revenue (vs. 14% in 1Q21) while other advanced nodes 7nm/16nm/28nm came in at 31%/14%/11%.

For the coming quarter, management guided for revenue in the range of US\$14.6-14.9bn (+11% QoQ at midpoint), GM in the range of 49.5%-51.5%, and OpM in the range of 38.5%-40.5%. TSMC sees a better backend profitability to support its margin despite an unfavorable FX. We currently model for 3Q21 revenue sequential growth of 10.2% QoQ, GM/OpM of 50.4%/39.7% and EPS of NT\$5.75 (vs NT\$5.69 prior).

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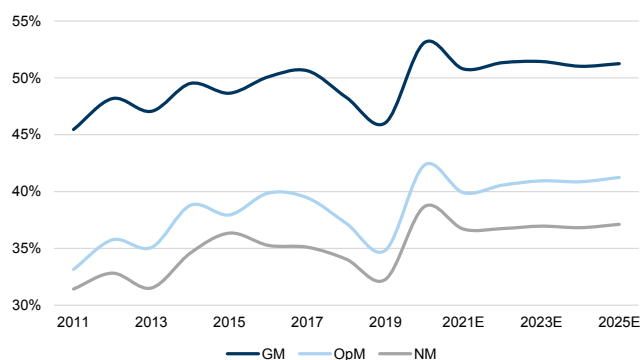
## Exhibit 1: 2021 results summary

	2Q21	1Q21	2Q20	%QoQ	%YoY	GS prev.	%Diff	Consensus	%Diff
<b>(NT\$m)</b>									
Revenue	372,145	362,410	310,698	2.7%	19.8%	376,920	-1.3%	371,450	0.2%
Gross profit	186,197	189,775	164,693	-1.9%	13.1%	195,089	-4.6%	189,517	-1.8%
Op. income	145,614	150,538	131,095	-3.3%	11.1%	155,478	-6.3%	149,539	-2.6%
Net income	134,359	139,690	120,822	-3.8%	11.2%	139,434	-3.6%	135,485	-0.8%
EPS (NT\$)	5.18	5.39	4.66	-3.9%	11.2%	5.38	-3.6%	5.21	-0.6%
GM	50.0%	52.4%	53.0%	-2.3%	-3.0%	51.8%	-1.7%	51.0%	-1.9%
OpM	39.1%	41.5%	42.2%	-2.4%	-3.1%	41.2%	-2.1%	40.3%	-2.8%
NM	36.1%	38.5%	38.9%	-2.4%	-2.8%	37.0%	-0.9%	36.5%	-1.0%

Source: Bloomberg, Company data, Goldman Sachs Global Investment Research

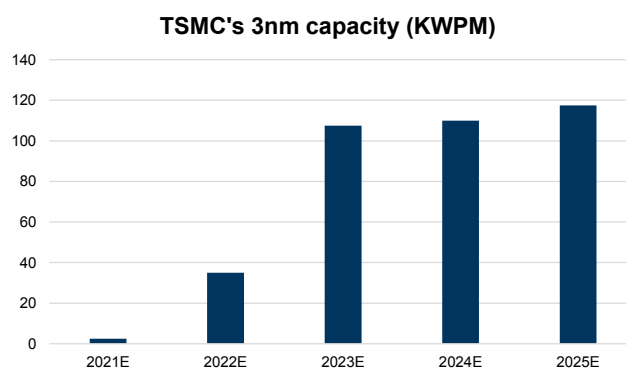
**Long term profitability unchanged with firm-up pricing:** In the meeting, management reiterated its long term GM/OpM target to be achievable at 50%/39%, which reaffirms our view versus the recent market noise on a lower profitability outlook, especially for advanced nodes i.e. 3nm. Company indicated that they have communicated with their customers to firm up pricing in order to mitigate the impact from a higher cost for its new investments in leading technology and rising basic materials prices. As for the demand in 3nm, TSMC continue to see a high level of customer engagement in pursuit of the demand for higher performance, lower power consumption and lower cost.

## Exhibit 2: TSMC's margin trend



Source: Company data, Goldman Sachs Global Investment Research

## Exhibit 3: TSMC's 3nm capacity plan (KWPM)



Source: Goldman Sachs Global Investment Research

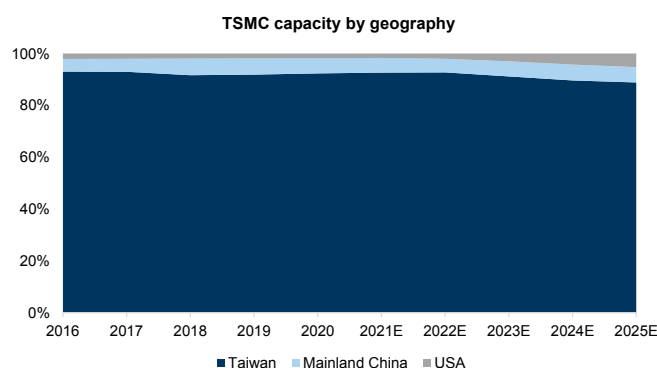
**3nm ramp-up schedule is inline:** TSMC first disclosed their 3nm ramp-up schedule in their analyst meeting on 15 July 2020 (see our report) where management indicated that the mass production schedule will be 2H22, which is unchanged from the timeline provided in the analyst meeting today. Management cited the slower pace of ramp up vs its N7/N5 (which ramp up in the first half during year one of the production) is mainly due to the technology complexity i.e. customer design. We have modeled in our 3nm/5nm contribution to be 3.6%/33.6% in 2022E.

**Long-lasting supply tightness:** One of the key questions in the analyst meeting today is the supply demand outlook in foundry, where management expects to see a continued supply tightness towards 2021 end and further into 2022. In our view, the long-lasting wave of foundry supply tightness is primarily supported by the long-term structural incremental demand in HPC/5G for advanced nodes with automotive demand to be the key growth engine for matured nodes. Overall, TSMC still expects the

inventory level in the supply chain to remain at a higher level vs historical average as going into 2H21.

**Stronger global presence trajectory:** While Taiwan will continue to be the main production site and key R&D center, TSMC is expanding its global presence with the ongoing capacity expansion plans across the US, Japan and China. Timelines of production remains on track, TSMC's first phase of 5nm volume production in Arizona is scheduled in 1Q24 with a 20k WPM capacity. Further expansion in its Nanjing fab, mainly for 28nm, will start volume production in 2H22 and expected to reach 40k WPM by mid 2023, according to management.

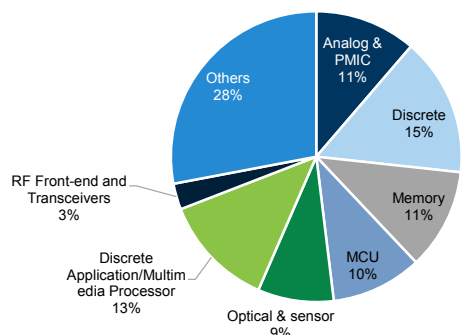
**Exhibit 4: TSMC's capacity by geography**



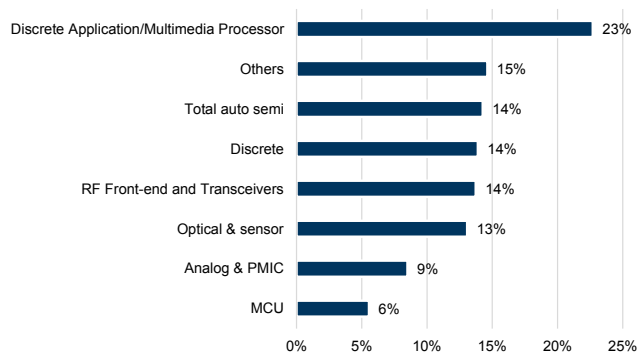
Source: Company data, Goldman Sachs Global Investment Research

**Auto semi a key driver to a long-lasting foundry tightness:** On the back of a severe auto chip supply shortage since early this year, TSMC has been increasing its output especially for auto MCU in 1H21 by 30% YoY vs 1H20, and has guided a 60%/30% YoY increase vs 2020/2018's pre-pandemic level. Despite the gradual capacity ramp up from key auto IDMs, TSMC still expects the supply tightness to last till 2022. This is inline with our view as we discussed in our [report](#), we expect automotive to be the most important driver and will contribute around 40-50% of the incremental market for foundry mature node.

We estimate c.US\$15bn of the incremental foundry addressable market will be coming from auto in 2020-2025, driven by surging semiconductor contents in vehicle, including sensors, microcontrollers (MCUs), and power semi. It is estimated that the average semiconductor content per vehicle will rise to US\$716 in 2025 from US\$489 in 2020, according to Gartner. Within auto semi, we believe the discrete application/multimedia processor, which is expected to experience the fastest revenue growth in the automotive semi (ex-memory) market by 23% in 2020-2025 driven by demand in ADAS and autonomous drive, will mostly adopt the advanced node process from foundry, and we believe TSMC will be the key beneficiary.

**Exhibit 5: Automotive electronic semiconductor revenue breakdown by device (2025E)**

Source: Gartner, Data compiled by Goldman Sachs Global Investment Research

**Exhibit 6: Automotive electronic semiconductor revenue (ex-Memory) CAGR 20-25E by device**

Source: Gartner, Data compiled by Goldman Sachs Global Investment Research

**Reiterate Buy (on CL) with tweaked TP of NT\$877 from NT\$880:** We reiterate our Buy rating (on Conviction List) on TSMC (and Buy on TSM) as we maintain our constructive view on the industry's underlying structural growth areas (such as 5G/AI), TSMC's solid technology leadership and execution, an easing competitive landscape, and sustainable shareholder returns. Post its earnings results, we revise our 2021-23E earnings estimates by -1.3%/-1.0%/-0.2% to factor in a lower than expected actual 2Q21 results and updated company guidance. Our 12m TP is now tweaked to NT\$877 from NT\$880 (but unchanged for the ADR at US\$177), based on an unchanged TP valuation methodology at 26x P/E multiple to TSMC's 2025e EPS of NT\$40.33 and discounting back to 2022e at a COE of 6.4%. Our new TP implies c43% upside to the company's last closing price.

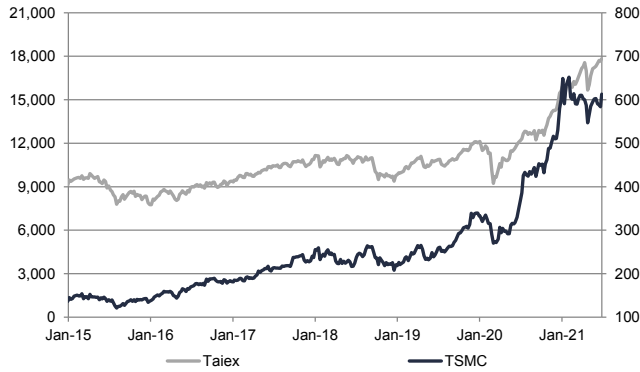
**Key downside risks to our views:** (1) further deterioration in end-demand recovery impacting capacity utilization; (2) slower customer node migrations; (3) further delays in 5G penetration resulting in slower long-term semiconductor content growth; (4) poor yields/execution resulting in worse-than-expected profitability; and (5) stronger competition resulting in ASP/profitability erosion.

**Exhibit 7: Earnings revisions**

(NT\$m)	2021E			2022E			2023E		
	Old	New	Diff (%)	Old	New	Diff (%)	Old	New	Diff (%)
Revenue	1,551,686	1,552,795	0.1%	1,819,278	1,829,094	0.5%	2,214,596	2,240,607	1.2%
Gross profit	793,697	788,611	-0.6%	933,803	939,027	0.6%	1,142,548	1,152,558	0.9%
Op. income	632,025	619,625	-2.0%	748,756	741,895	-0.9%	919,201	917,326	-0.2%
Net income	577,363	569,858	-1.3%	678,519	672,058	-1.0%	829,688	828,024	-0.2%
EPS (NT\$)	22.27	21.98	-1.3%	26.17	25.92	-1.0%	32.00	31.93	-0.2%
GM	51.2%	50.8%	-0.4%	51.3%	51.3%	0.0%	51.6%	51.4%	-0.2%
OpM	40.7%	39.9%	-0.8%	41.2%	40.6%	-0.6%	41.5%	40.9%	-0.6%
NM	37.2%	36.7%	-0.5%	37.3%	36.7%	-0.6%	37.5%	37.0%	-0.5%

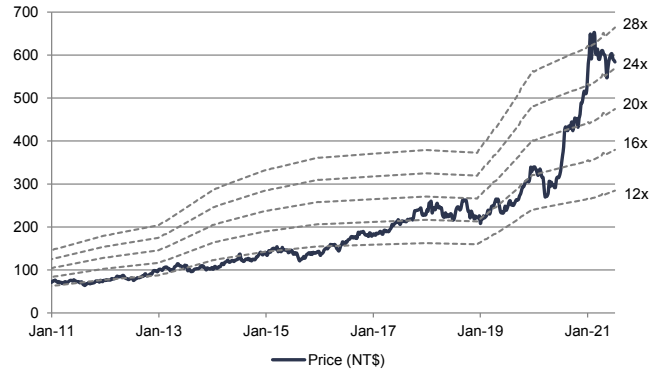
Source: Goldman Sachs Global Investment Research

Exhibit 8: Taiex vs. TSMC



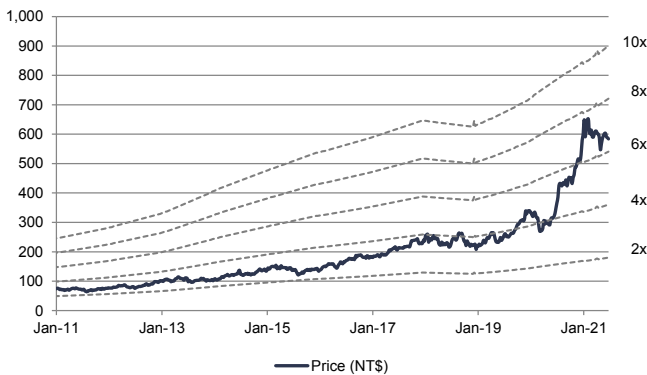
Source: Bloomberg, Data compiled by Goldman Sachs Global Investment Research

Exhibit 9: Forward P/E



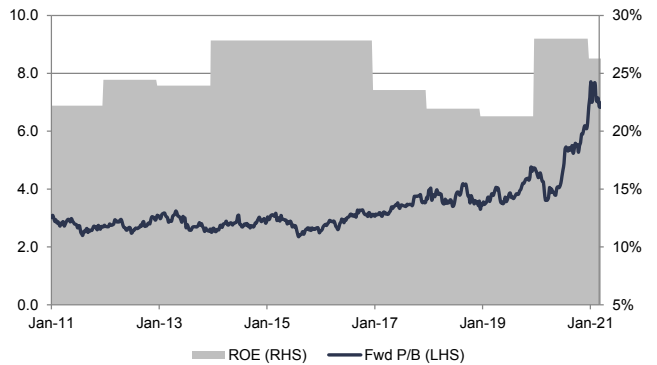
Source: Bloomberg, Data compiled by Goldman Sachs Global Investment Research

Exhibit 10: Forward P/B



Source: Bloomberg, Data compiled by Goldman Sachs Global Investment Research

Exhibit 11: P/B vs. ROE



Source: Bloomberg, Data compiled by Goldman Sachs Global Investment Research

<b>2330.TW</b>	12m Price Target: <b>NT\$877.00</b>	Price: <b>NT\$614.00</b>	Upside: <b>42.8%</b>
<b>TSM</b>	12m Price Target: <b>\$177.00</b>	Price: <b>\$124.39</b>	Upside: <b>42.3%</b>

	GS Forecast			
	12/20	12/21E	12/22E	12/23E
<b>Revenue (NT\$ mn) New</b>	<b>1,339,254.8</b>	<b>1,552,795.1</b>	<b>1,829,094.3</b>	<b>2,240,606.8</b>
Revenue (NT\$ mn) Old	1,339,254.8	1,551,686.2	1,819,278.1	2,214,595.5
EBITDA (NT\$ mn)	898,508.4	1,063,869.9	1,288,597.2	1,625,696.4
<b>EPS (NT\$) New</b>	<b>19.97</b>	<b>21.98</b>	<b>25.92</b>	<b>31.93</b>
EPS (NT\$) Old	19.97	22.27	26.17	32.00
P/E (X)	19.0	27.9	23.7	19.2
P/B (X)	5.3	7.3	6.2	5.2
Dividend yield (%)	2.6	1.8	2.0	2.0
CROCI (%)	20.0	22.1	21.0	22.9
	<b>3/21</b>	<b>6/21E</b>	<b>9/21E</b>	<b>12/21E</b>
EPS (NT\$)	5.39	5.18	5.75	5.66

Source: Company data, Goldman Sachs Research estimates, FactSet. Price as of 15 Jul 2021 close.

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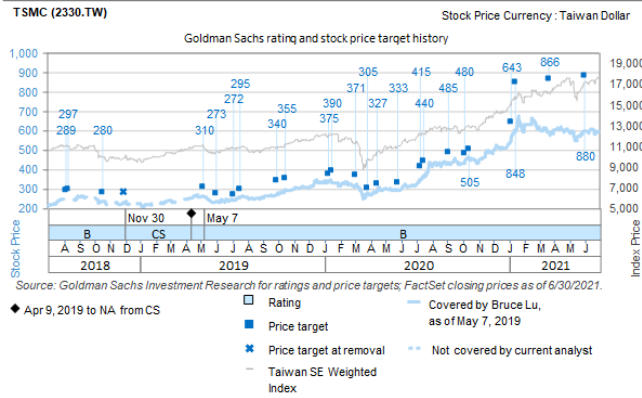
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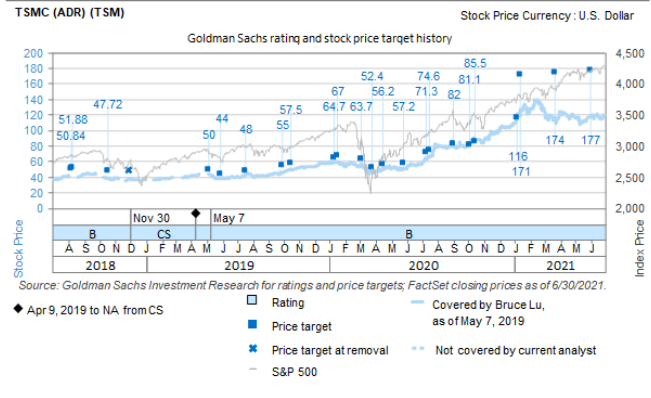
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