

## ASE Technology Holding

## Fast growing advanced packaging and better demand; Lift PO

Reiterate Rating: BUY | PO: 170.00 TWD | Price: 153.00 TWD

## Lift PO on rising advanced packaging presence

Eyeing on the recovering semi industry and the outperforming leading-edge nodes, we expect ASE to benefit. In addition, we expect its advanced packaging business to ramp to fuel in 2024-26. The yield of 4-6% is attractive. We raise our PO to NT\$170 on higher 1.7x 2025E P/B vs 1.5x average 2024/25E P/B earlier, justified by rising content ASP, better position in advanced packaging, and increasing AI exposure. We expect ASE to enlarge its presence in advanced packaging and the rising contribution should drive re-rating. Reiterate Buy.

## AI and advanced packaging the long-term drivers

We expect the growing adoption of advanced packaging to fuel ASE's growth, with its increasing efforts in R&D and capacity expansions. We expect continuous strength in 2025/26E, after reaching the US\$250mn+ level in 2024, supported by increasing adoptions across AI, HPC, and CE (e.g. M4 chips of MacBook) and customers' need to diversify the supply chain. In the long run, we see ASE's commitment to advanced packaging increasing, likely attributed to customers' support. It can be reflected by the machinery capex hike of 40-50% YoY to US\$1.3bn+ in 2024, with a majority for advanced packaging.

## Bottoming out and should accelerate from 2H24

We now expect higher growth for 2024 as we expect the ATM ASP to be resilient, supported by its strong industry position and better product mix. ASE's increasing emphasis in testing bodes well for its GPMs. The ATM business should grow 23% HoH in 2H24, with the normalizing inventory. Our 2024/25E EPS of NT\$10.6/NT\$13.6 are 13%/7% higher than consensus.

Estimates (Dec) (NT\$)	2022A	2023A	2024E	2025E	2026E
Net Income (Adjusted - mn)	66,840	36,476	50,857	63,917	73,715
EPS	15.15	7.40	10.60	13.60	15.85
EPS Change (YoY)	1.3%	-51.1%	43.1%	28.3%	16.6%
Dividend / Share	8.81	4.50	6.50	8.40	9.80
Free Cash Flow / Share	9.19	14.00	9.10	10.25	14.94
ADR EPS (US\$)	1.02	0.475	0.673	0.864	1.01
ADR Dividend / Share (US\$)	0.591	0.289	0.413	0.534	0.622
Valuation (Dec)					
P/E	10.10x	20.66x	14.44x	11.25x	9.65x
Dividend Yield	5.76%	2.94%	4.25%	5.49%	6.41%
EV / EBITDA*	5.79x	7.98x	6.47x	5.59x	5.11x
Free Cash Flow Yield*	5.72%	8.98%	5.93%	6.68%	9.74%

\* For full definitions of *IQmethod*<sup>SM</sup> measures, see page 9.

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**Refer to important disclosures on page 10 to 13. Analyst Certification on page 7. Price Objective Basis/Risk on page 7.**

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## Equity

## Key Changes

(NT\$)	Previous	Current
Price Obj.	137.00	170.00
2024E EPS	10.48	10.60
2025E EPS	13.36	13.60
2026E EPS	NA	15.85
2024E EBITDA (m)	120,577.0	121,377.6
2025E EBITDA (m)	139,118.8	140,423.0
2026E EBITDA (m)	NA	153,590.8

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## Stock Data

Price (Common / ADR)	153.00 TWD / 1091 USD
Price Objective	170.00 TWD / 120.00 USD
Date Established	18-Mar-2024 / 18-Mar-2024
Investment Opinion	B-1-7 / B-1-7
52-Week Range	99.20 TWD / 177.00 TWD
Market Value (mn)	21,304 USD
Market Value (mn)	670,815 TWD
Shares Outstanding (mn)	4,384.4 / 2,192.2
Average Daily Value (mn)	72.88 USD
Free Float	83.4%
BofA Ticker / Exchange	XSRIFF / TAI
BofA Ticker / Exchange	ASX / NYS
Bloomberg / Reuters	3711 TT / 3711.TW
ROE (2024E)	15.4%
Net Dbt to Eqty (Dec-2023A)	31.3%

## Exhibit 1: Acronyms

Acronyms and the corresponding full names

Acronym	Full name
AI	Artificial Intelligence
ATM	Assembly, Testing, Material
CE	Consumer Electronics
GPM	Gross Profit Margin
HPC	High Performance Computing

Source: BofA Global Research

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# iQprofile<sup>SM</sup> ASE Technology Holding

Key Income Statement Data (Dec)	2022A	2023A	2024E	2025E	2026E
(NT\$ Millions)					
Sales	670,873	581,914	635,967	718,705	791,066
Gross Profit	134,930	91,757	114,156	138,173	154,501
Sell General & Admin Expense	(30,385)	(25,930)	(26,351)	(29,280)	(31,313)
Operating Profit	80,176	40,328	60,821	79,049	91,351
Net Interest & Other Income	1,450	2,273	849	211	1,035
Associates	NA	NA	NA	NA	NA
Pretax Income	81,626	42,600	61,671	79,260	92,386
Tax (expense) / Benefit	(16,399)	(9,043)	(12,848)	(16,607)	(19,360)
Net Income (Adjusted)	66,840	36,476	50,857	63,917	73,715
Average Fully Diluted Shares Outstanding	4,219	4,351	4,351	4,351	4,351

## Key Cash Flow Statement Data

Net Income	62,090	31,725	46,106	59,166	68,964
Depreciation & Amortization	55,452	58,102	60,556	61,374	62,240
Change in Working Capital	(24,162)	34,181	(9,085)	(12,610)	(3,346)
Deferred Taxation Charge	NA	NA	NA	NA	NA
Other Adjustments, Net	17,621	(9,586)	0	0	0
Cash Flow from Operations	111,001	114,422	97,577	107,929	127,858
Capital Expenditure	(72,640)	(54,158)	(57,821)	(63,134)	(62,536)
(Acquisition) / Disposal of Investments	(90)	69	(1,667)	102	3
Other Cash Inflow / (Outflow)	(1,222)	(1,032)	0	0	0
Cash Flow from Investing	(73,952)	(55,122)	(59,487)	(63,033)	(62,533)
Shares Issue / (Repurchase)	864	1,175	0	0	0
Cost of Dividends Paid	(29,991)	(37,841)	(19,670)	(28,586)	(36,683)
Cash Flow from Financing	(62,459)	(49,101)	(36,551)	(37,869)	(48,346)
Free Cash Flow	38,361	60,264	39,756	44,795	65,321
Net Debt	117,501	99,626	79,539	63,329	34,691
Change in Net Debt	(9,617)	(17,488)	(18,420)	(16,311)	(28,641)

## Key Balance Sheet Data

Property, Plant & Equipment	268,235	264,812	286,051	312,057	336,886
Other Non-Current Assets	138,467	140,416	153,958	171,237	192,145
Trade Receivables	114,647	99,529	106,715	118,177	128,371
Cash & Equivalents	64,866	71,369	74,575	81,501	98,476
Other Current Assets	120,855	90,449	102,113	107,701	108,988
Total Assets	707,068	666,575	723,412	790,673	864,867
Long-Term Debt	137,799	101,854	87,085	82,731	78,594
Other Non-Current Liabilities	27,083	24,263	21,680	21,680	21,680
Short-Term Debt	44,567	69,141	67,029	62,100	54,573
Other Current Liabilities	177,694	153,208	163,514	158,553	164,960
Total Liabilities	387,143	348,466	339,307	325,063	319,808
Total Equity	319,925	318,110	384,104	465,610	545,060
Total Equity & Liabilities	707,068	666,575	723,412	790,673	864,867

## iQmethod<sup>SM</sup> - Bus Performance\*

Return On Capital Employed	12.4%	6.3%	9.2%	10.7%	11.0%
Return On Equity	23.8%	12.2%	15.4%	15.8%	15.2%
Operating Margin	12.0%	6.9%	9.6%	11.0%	11.5%
EBITDA Margin	20.2%	16.9%	19.1%	19.5%	19.4%

## iQmethod<sup>SM</sup> - Quality of Earnings\*

Cash Realization Ratio	1.7x	3.1x	1.9x	1.7x	1.7x
Asset Replacement Ratio	1.4x	1.0x	1.1x	1.1x	1.1x
Tax Rate (Reported)	20.1%	21.2%	20.8%	21.0%	21.0%
Net Debt-to-Equity Ratio	36.7%	31.3%	20.7%	13.6%	6.4%
Interest Cover	20.0x	6.4x	9.0x	13.1x	16.5x

## Key Metrics

\* For full definitions of iQmethod<sup>SM</sup> measures, see page 9.

## Company Sector

Semiconductors

## Company Description

Established in 1984 and headquartered in Taiwan, ASE Technology Holding is the no.1 outsourced assembly and testing (OSAT) firm globally, in terms of market share by revenue. ASE acquired Siliconware Precision (SPIL) in 2018, and had acquired USI in 2010, which became its EMS business segment providing synergies in system-level packaging. 2 shares = 1 ADR.

## Investment Rationale

We rate ASE Buy, considering its better operational efficiency after merging with SPIL, and improving pricing power on the back of industry consolidation. We think ASE could maintain its leading position in the Outsourced Semiconductor Assembly and Test (OSAT) universe, owing to its well-established footprints and widespread service offerings.

## Stock Data

Shares / ADR	2.00
Price to Book Value	1.8x

## Key Changes

(US\$)	Previous	Current
Price Obj.	9.30	12.00
2025E EPS	0.85	0.86
2026E EPS	NA	1.01

**Exhibit 2: Earnings estimate changes, 2024-25E**

We tweak up 2024/25E EPS estimates slightly to reflect better outlook

NT\$bn	2024E			2025E		
	New	Old	Diff	New	Old	Diff
Revenue	636	630	0.9%	719	714	0.6%
Gross profit	114	113	0.9%	138	137	0.8%
Gross margin	17.9%	18.0%	0.0ppt	19.2%	19.2%	0.0ppt
Operating income	61	60	0.9%	79	78	0.9%
Operating margin	9.6%	9.6%	0.0ppt	11.0%	11.0%	0.0ppt
Pretax income	62	61	1.1%	79	78	1.8%
Pretax margin	9.7%	9.7%	0.0ppt	11.0%	10.9%	0.1ppt
Net income	46	46	1.1%	59	58	1.8%
Net margin	7.2%	7.2%	0.0ppt	8.2%	8.1%	0.1ppt
EPS (NT\$)	10.6	10.5	1.1%	13.6	13.4	1.8%

Source: BofA Global Research estimates

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**Exhibit 3: BofAe versus consensus, 2024-25E**

Our 2024/25E earnings are 13%/7% above consensus

NT\$bn	2024E			2025E		
	BofA	Consensus	Diff	BofA	Consensus	Diff
Revenue	636	630	0.9%	719	717	0.2%
Gross profit	114	108	5.8%	138	134	3.1%
Gross margin	17.9%	17.1%	0.8ppt	19.2%	18.7%	0.5ppt
Opt income	61	55	10.7%	79	73	7.9%
Opt margin	9.6%	8.7%	0.9ppt	11.0%	10.2%	0.8ppt
Pretax income	62	55	12.3%	79	72	10.3%
Pretax margin	9.7%	8.7%	1.0ppt	11.0%	10.0%	1.0ppt
Net income	46	41	12.5%	59	55	7.4%
Net margin	7.2%	6.5%	0.7ppt	8.2%	7.7%	0.6ppt
EPS (NT\$)	10.6	9.4	12.5%	13.6	12.7	7.4%

Source: BofA Global Research estimates, Bloomberg

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**Exhibit 4: Profit & loss, 2023-26E**

Expect ASE's revenue to increase by 9%/13% YoY in 2024/25, and introduce 2026E earnings estimates

NT\$m; %	1Q24E	2Q24E	3Q24E	4Q24E	1Q25E	2Q25E	3Q25E	4Q25E	2023	2024E	2025E	2026E
Revenue	134,788	139,374	174,206	187,599	155,059	164,336	196,375	202,935	581,914	635,967	718,705	791,066
Cost of Sales	-114,707	-115,061	-141,320	-150,724	-129,009	-132,540	-155,750	-163,234	-490,157	-521,811	-580,532	-636,565
Gross profit	20,082	24,313	32,886	36,875	26,050	31,796	40,625	39,701	91,757	114,156	138,173	154,501
Operating expense	-11,240	-12,276	-14,515	-15,303	-12,950	-14,396	-15,588	-16,189	-51,429	-53,334	-59,123	-63,150
Operating income	8,841	12,038	18,370	21,572	13,100	17,400	25,037	23,513	40,328	60,821	79,049	91,351
Non-operating Inc/Exp	-168	1,090	993	-1,066	-513	1,018	1,088	-1,382	2,273	849	211	1,035
Pretax income	8,673	13,128	19,363	20,506	12,587	18,417	26,126	22,130	42,600	61,671	79,260	92,386
Income tax	-1,735	-2,660	-4,353	-4,101	-2,517	-3,646	-6,018	-4,426	-9,043	-12,848	-16,607	-19,360
Net income	6,939	10,468	15,010	16,405	10,069	14,772	20,107	17,704	33,557	48,822	62,653	73,026
Noncontrolling interest	-379	-589	-846	-902	-560	-824	-1,120	-983	-1,832	-2,716	-3,487	-4,063
Net income (A)	6,560	9,879	14,164	15,503	9,509	13,948	18,988	16,721	31,725	46,106	59,166	68,964
Diluted EPS (NT\$)	1.51	2.27	3.26	3.56	2.19	3.21	4.36	3.84	7.40	10.60	13.60	15.85
Diluted earnings per ADR (US\$)	0.24	0.36	0.52	0.57	0.35	0.51	0.70	0.61	1.23	1.76	2.26	2.63
% of revenue												
Gross margin	15%	17%	19%	20%	17%	19%	21%	20%	16%	18%	19%	20%
Operating margin	7%	9%	11%	11%	8%	11%	13%	12%	7%	10%	11%	12%
Pretax margin	6%	9%	11%	11%	8%	11%	13%	11%	7%	10%	11%	12%
Net margin	5%	7%	8%	8%	6%	8%	10%	8%	5%	7%	8%	9%
QoQ growth %												
Revenue	-16%	3%	25%	8%	-17%	6%	19%	3%				
Gross profit	-22%	21%	35%	12%	-29%	22%	28%	-2%				
Operating income	-25%	36%	53%	17%	-39%	33%	44%	-6%				
Net income (A)	-30%	51%	43%	9%	-39%	47%	36%	-12%				
YoY growth %												
Revenue	3%	2%	13%	17%	15%	18%	13%	8%	-13%	9%	13%	10%
Gross profit	4%	12%	32%	43%	30%	31%	24%	8%	-32%	24%	21%	12%
Operating income	15%	28%	61%	83%	48%	45%	36%	9%	-50%	51%	30%	16%
Net income (A)	13%	28%	61%	65%	45%	41%	34%	8%	-49%	45%	28%	17%
EPS									-51%	43%	28%	17%

**Exhibit 4: Profit & loss, 2023-26E**

Expect ASE's revenue to increase by 9%/13% YoY in 2024/25, and introduce 2026E earnings estimates

NT\$mnn; %	1Q24E	2Q24E	3Q24E	4Q24E	1Q25E	2Q25E	3Q25E	4Q25E	2023	2024E	2025E	2026E
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Source: BofA Global Research estimates, company data

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**Exhibit 5: ASE group's revenue by application, 2023-26E**

Expect all segments to grow in 2024-26 off a lower 2023 base, driven by overall semis recovery and new opportunities in advanced packaging

NT\$mnn; %	1Q24E	2Q24E	3Q24E	4Q24E	1Q25E	2Q25E	3Q25E	4Q25E	2023	2024E	2025E	2026E
<b>Group revenue by application</b>												
Communication	58,725	61,455	78,145	85,980	68,241	72,948	87,905	89,685	256,750	284,305	318,780	345,776
Computer	20,742	22,170	23,907	24,105	21,772	23,418	26,019	26,209	79,592	90,924	97,418	101,763
Automotive, Consumer & Others	55,341	55,769	72,181	77,544	65,068	67,993	82,479	87,075	245,845	260,835	302,616	343,647
Total	134,808	139,394	174,233	187,629	155,082	164,359	196,404	202,968	582,187	636,064	718,814	791,187
<b>Revenue %</b>												
Communication	44%	44%	45%	46%	44%	44%	45%	44%	44%	45%	44%	44%
Computer	15%	16%	14%	13%	14%	14%	13%	13%	14%	14%	14%	13%
Automotive, Consumer & Others	41%	40%	41%	41%	42%	41%	42%	43%	42%	41%	42%	43%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Sequential growth %</b>												
Communication	-22%	5%	27%	10%	-21%	7%	21%	2%	-16%	11%	12%	8%
Computer	-8%	7%	8%	1%	-10%	8%	11%	1%	-11%	14%	7%	4%
Automotive, Consumer & Others	-12%	1%	29%	7%	-16%	4%	21%	6%	-10%	6%	16%	14%
Total	-16%	3%	25%	8%	-17%	6%	19%	3%	-13%	9%	13%	10%

Source: BofA Global Research estimates, company data

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**Exhibit 6: ASE IC ATM earnings model, 2023-26E**

We model for 10%/14% YoY growth in ATM's revenue in 2024/25

NT\$mnn; %	1Q24E	2Q24E	3Q24E	4Q24E	1Q25E	2Q25E	3Q25E	4Q25E	2023	2024E	2025E	2026E
Revenue	75,758	80,080	94,144	97,897	86,958	94,912	108,844	106,612	315,115	347,879	397,326	434,681
Cost of Sales	-60,315	-61,309	-68,735	-69,218	-66,794	-69,449	-76,907	-75,997	-246,397	-259,577	-289,146	-314,017
Gross profit	15,443	18,771	25,408	28,679	20,164	25,463	31,938	30,614	68,718	88,301	108,179	120,664
Operating expense	-7,970	-9,189	-10,621	-11,191	-9,271	-10,642	-11,470	-11,749	-36,872	-38,971	-43,131	-45,465
Operating income	7,473	9,581	14,787	17,488	10,893	14,821	20,468	18,866	31,846	49,330	65,048	75,199
Net income	7,375	9,092	13,331	15,531	10,160	13,359	17,957	16,653	31,092	45,330	58,129	66,395
Non-controlling interest	23	29	42	49	32	42	57	53	98	143	183	210
Net income (A)	7,399	9,121	13,373	15,580	10,193	13,401	18,014	16,705	31,190	45,473	58,313	66,604
<b>% of revenue</b>												
Gross profit	20%	23%	27%	29%	23%	27%	29%	29%	22%	25%	27%	28%
Operating income	10%	12%	16%	18%	13%	16%	19%	18%	10%	14%	16%	17%
Net income	10%	11%	14%	16%	12%	14%	17%	16%	10%	13%	15%	15%
<b>QoQ growth %</b>												
Revenue	-8%	6%	18%	4%	-11%	9%	15%	-2%				
Gross profit	-20%	22%	35%	13%	-30%	26%	25%	-4%				
Operating income	-19%	28%	54%	18%	-38%	36%	38%	-8%				
Net income (A)	-16%	23%	47%	16%	-35%	31%	34%	-7%				
<b>YoY growth %</b>												
Revenue	3%	5%	12%	19%	15%	19%	16%	9%	-15%	10%	14%	9%
Gross profit	5%	16%	37%	49%	31%	36%	26%	7%	-35%	28%	23%	12%
Operating income	17%	29%	68%	90%	46%	55%	38%	8%	-52%	55%	32%	16%
Net income (A)	13%	24%	57%	77%	38%	47%	35%	7%	-48%	46%	28%	14%

Source: BofA Global Research estimates, company data

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**Exhibit 7: ASE EMS earnings model, 2023-26E**

Expect EMS revenue to see 8%/12% YoY growth in 2024/25

NT\$mn; %	1Q24E	2Q24E	3Q24E	4Q24E	1Q25E	2Q25E	3Q25E	4Q25E	2023	2024E	2025E	2026E
Revenue	59,387	59,683	80,573	90,241	68,583	69,955	88,143	96,958	268,309	289,884	323,640	359,037
Cost of Sales	-54,695	-54,073	-72,999	-81,939	-62,617	-63,519	-79,329	-87,747	-244,947	-263,706	-293,212	-324,682
Gross profit	4,692	5,610	7,574	8,302	5,967	6,436	8,814	9,211	23,362	26,178	30,428	34,355
Operating expense	-3,351	-3,374	-4,021	-4,261	-3,805	-3,724	-4,235	-4,555	-14,382	-15,007	-16,319	-17,573
Operating income	1,341	2,237	3,553	4,041	2,162	2,712	4,579	4,656	8,980	11,171	14,109	16,783
Net income	1,215	1,958	3,051	3,455	1,896	2,353	3,902	3,966	7,861	9,679	12,117	14,335
Non-controlling interest	-293	-473	-737	-834	-458	-568	-942	-957	-1,898	-2,337	-2,925	-3,461
Net income (A)	922	1,486	2,314	2,621	1,439	1,785	2,960	3,008	5,963	7,342	9,191	10,874
<b>% of revenue</b>												
Gross profit	8%	9%	9%	9%	9%	9%	10%	10%	9%	9%	9%	10%
Operating income	2%	4%	4%	4%	3%	4%	5%	5%	3%	4%	4%	5%
Net income (A)	2%	2%	3%	3%	2%	3%	3%	3%	2%	3%	3%	3%
<b>QoQ growth %</b>												
Revenue	-25%	0%	35%	12%	-24%	2%	26%	10%				
Gross profit	-30%	20%	35%	10%	-28%	8%	37%	5%				
Operating income	-52%	67%	59%	14%	-46%	25%	69%	2%				
Net income (A)	-50%	61%	56%	13%	-45%	24%	66%	2%				
<b>YoY growth %</b>												
Revenue	3%	-1%	14%	14%	15%	17%	9%	7%	-11%	8%	12%	11%
Gross profit	3%	-1%	17%	24%	27%	15%	16%	11%	-20%	12%	16%	13%
Operating income	1%	7%	28%	44%	61%	21%	29%	15%	-36%	24%	26%	19%
Net income (A)	1%	7%	27%	42%	56%	20%	28%	15%	-34%	23%	25%	18%

Source: BofA Global Research estimates, company data

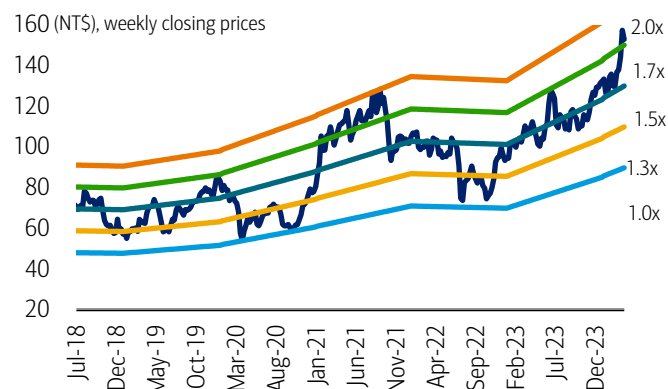
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**Earnings estimates change and PO discussion**

We lift our 2024/25E EPS by 1%/2% to NT\$10.6/13.6, to reflect better demand driven by healthier inventory level. Our earnings estimates are 13%/7% higher than consensus. We reiterate our Buy rating on ASE, and lift our PO to NT\$170 from NT\$137 previously, by rolling forward target multiple to 1.7x 2025E P/B (from previous 1.5x 2024/25 average P/B), at mid-to-high end of its 5 year historical, to factor in the faster progress in advanced packaging thanks to stronger client diversification demand and higher AI demand. The current valuation of 1.5x 2025E P/B is attractive, vs historical 1.0-2.0x. We think it's fair when the stock gradually returns to upcycle – the stock used to trade at 1.5-2.0x in the last upcycle. And the increasing contribution from advanced packaging, as a new business stream, should help drive re-rating.

**Exhibit 8: 12-month forward P/B - ASE**

The stock trades at ~1.8x 2024E P/B

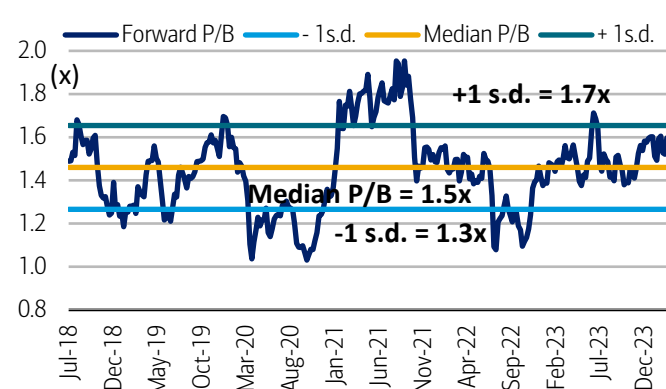


Source: BofA Global Research estimates, Bloomberg

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**Exhibit 9: 12-month forward P/B with standard deviation - ASE**

Current P/B (1.8x 2024E) is 1SD+ above the historical level since 2018



Source: BofA Global Research estimates, Bloomberg

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**Exhibit 10: Valuation comparison**

ASE's 2024E P/B is slightly lower than global OSAT peers, while its ROE figure is higher

Ticker	Company	Share	Rating	Mkt cap	EPS (LC)		PER (X)		PBR (X)		Div. yield (%)		ROE (%)		EV/EBITDA		
		price (LC)		(US\$mn)	2024E	2025E	2024E	2025E	2024E	2025E	2024E	2025E	2024E	2025E	2024E	2025E	
China OSAT																	
600584 CH	JCET	28.0	BUY	6,952	1.24	1.80	22.6	15.5	1.8	1.6	0.7	0.7	8.1	10.8	9.0	7.2	
002156 CH	TFME	25.5	NC	5,366	0.57	0.88	44.8	29.0	2.6	2.4	0.3	0.6	5.7	8.2	10.0	8.4	
002185 CH	TSHT	8.2	NC	3,642	0.15	0.26	54.9	31.5	1.6	1.5	0.2	0.3	2.9	4.9	10.0	8.4	
603005 CH	WLCSP	18.9	NC	1,718	0.50	0.67	38.3	28.3	2.8	2.6	0.5	n.a.	6.8	8.9	18.0	n.a.	
China OSAT average								40.1	26.1	2.2	2.0	0.4	0.6	5.9	8.2	11.7	8.0
Global OSAT																	
3711 TT	ASE	153.0	BUY	21,208	10.66	13.75	14.4	11.1	1.8	1.5	4.3	5.5	15.4	15.9	6.5	5.6	
2449 TT	KYEC	107.5	BUY	4,156	6.38	8.04	16.9	13.4	3.2	2.9	4.2	5.5	19.6	22.5	6.7	5.8	
6239 TT	Powertech	190.0	Neutral	4,560	10.26	11.64	18.5	16.3	2.4	2.2	3.7	3.9	13.2	13.8	6.0	5.7	
6147 TT	Chipbond	76.5	NC	1,801	5.25	6.67	14.6	11.5	1.3	1.3	3.9	4.2	8.6	10.5	7.2	6.4	
3264 TT	Ardentec	76.8	NC	1,190	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
6257 TT	Sigurd	68.8	NC	993	4.63	5.89	14.9	11.7	n.a.	n.a.	n.a.	n.a.	10.1	12.0	n.a.	n.a.	
8150 TT	ChipMOS	47.7	NC	1,096	3.56	4.96	13.4	9.6	1.3	1.2	3.9	5.2	11.1	13.1	5.4	4.7	
AMKR US	Amkor	31.5	NC	7,736	1.62	2.24	19.4	14.1	1.8	1.6	1.1	1.3	10.1	12.9	6.3	5.0	
Global OSAT average								16.0	12.5	2.0	1.8	3.5	4.3	12.6	14.4	6.4	5.5

Source: BofA Global Research estimates, company data, Bloomberg, NC = not covered

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## Price objective basis & risk

### ASE Technology Holding (XSRIF / ASX)

We value ASE Technology Holding at NT\$170 per share (US\$12 for ADR), based on 1.7x 2025E P/B (at mid-to-high end of its 5-year historical range), in view of solidified industry position in AI era. We use P/B ratio to value ASE as we believe asset based valuation can more accurately reflect ASE's improvement in its operation, profitability and return following a major acquisition.

Downside risks to our PO are 1) share loss and/or ASP erosion owing to Chinese players' cannibalization and/or ASE's worsening execution, 2) weakening end demand due to uncontrollable matters, such as macro halt and/or geopolitical tensions, 3) regulatory issues that could hinder ASE from generating synergies and benefit its competitors.

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Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
<b>BUY</b>				
	Alchip	ALCPF	3661 TT	Mike Yang
	ASE Technology Holding	XSRIF	3711 TT	Brad Lin
	ASE Technology Holding -ADR	ASX	ASX US	Brad Lin
	ASMP	ASMVF	522 HK	Simon Woo, CFA
	Aspeed	XLKMF	5274 TT	Mike Yang
	Crystal Clear	XPPTF	300655 CH	Dai Shen
	eMemory	XYLWF	3529 TT	Mike Yang
	Faraday	FDYTF	3035 TT	Mike Yang
	Global Unichip Corp.	GBUHF	3443 TT	Mike Yang





**APR - Semiconductor Coverage Cluster**

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	GlobalWafers	XWLFF	6488 TT	Brad Lin
	Hwatsing Technology	XSNIF	688120 CH	Dai Shen
	JCET Group Co Ltd	XJIEF	600584 CH	Mike Yang
	King Yuan Electronics Corp.	KYUFF	2449 TT	Angela Huang
	Kingsemi	XKSQF	688037 CH	Dai Shen
	LX Semicon	XLXSF	108320 KS	Simon Woo, CFA
	Maxscend	XMMSF	300782 CH	Daley Li, CFA
	MediaTek	MDTKF	2454 TT	Brad Lin
	Montage Technology	XRDFE	688008 CH	Daley Li, CFA
	Nanya Technology	NNYAF	2408 TT	Simon Woo, CFA
	Novatek	NVKMF	3034 TT	Brad Lin
	Parade	PRDWF	4966 TT	Mike Yang
	Realtek	RLTKF	2379 TT	Brad Lin
	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
	Silicon Motion	SIMO	SIMO US	Simon Woo, CFA
	SK Hynix	HXSCF	000660 KS	Simon Woo, CFA
	Taiwan Semiconductor Manufacturing Co.	TSM	TSM US	Brad Lin
	Taiwan Semiconductor Manufacturing Co.	TSMWF	2330 TT	Brad Lin
	United Microelectronics Corp.	XUMIF	2303 TT	Brad Lin
	United Microelectronics Corp.	UMC	UMC US	Brad Lin
	Will Semiconductor	XXHQF	603501 CH	Dai Shen
	Winbond Electronics	WBEKF	2344 TT	Dai Shen
	Wonik IPS	XRHQF	240810 KS	Simon Woo, CFA

**NEUTRAL**

	ASMedia Technology Inc.	XZSFF	5269 TT	Mike Yang
	Macronix International	MXICF	2337 TT	Dai Shen
	Powertech Technology	XPPZF	6239 TT	Simon Woo, CFA
	Soulbrain	XSBOF	357780 KS	Simon Woo, CFA
	Vanguard International Semiconductor Co	VGILF	5347 TT	Mike Yang

**UNDERPERFORM**

	GigaDevice	XGXIF	603986 CH	Daley Li, CFA
	Hangzhou Silan Microelectronics	XDFRF	600460 CH	Mike Yang
	Hua Hong Semi	HHUSF	1347 HK	Mike Yang
	Ingenic	XISCF	300223 CH	Dai Shen
	Lion Electronics	XDHFF	605358 CH	Dai Shen
	Phison Electronics	PISNF	8299 TT	Simon Woo, CFA
	Powerchip Semiconductor Manufacturing Co	XCHPF	6770 TT	Mike Yang
	Shenzhen Goodix	XQPLF	603160 CH	Mike Yang
	Silegy Corp.	SLEGF	6415 TT	Brad Lin
	VeriSilicon	XMLZF	688521 CH	Mike Yang
	Win Semiconductors	XWIIF	3105 TT	Brad Lin



## iQmethod<sup>SM</sup> Measures Definitions

### Business Performance

Return On Capital Employed

Return On Equity

Operating Margin

Earnings Growth

Free Cash Flow

### Numerator

NOPAT = (EBIT + Interest Income) × (1 – Tax Rate) + Goodwill Amortization

Net Income

Operating Profit

Expected 5 Year CAGR From Latest Actual

Cash Flow From Operations – Total Capex

### Denominator

Total Assets – Current Liabilities + ST Debt + Accumulated Goodwill

Amortization

Shareholders' Equity

Sales

N/A

N/A

### Quality of Earnings

Cash Realization Ratio

Asset Replacement Ratio

Tax Rate

Net Debt-To-Equity Ratio

Interest Cover

### Numerator

Cash Flow From Operations

Capex

Tax Charge

Net Debt = Total Debt – Cash &amp; Equivalents

EBIT

### Denominator

Net Income

Depreciation

Pre-Tax Income

Total Equity

Interest Expense

### Valuation Toolkit

Price / Earnings Ratio

Price / Book Value

Dividend Yield

Free Cash Flow Yield

Enterprise Value / Sales

### Numerator

Current Share Price

Current Share Price

Annualised Declared Cash Dividend

Cash Flow From Operations – Total Capex

EV = Current Share Price × Current Shares + Minority Equity + Net Debt +

Other LT Liabilities

Enterprise Value

### Denominator

Diluted Earnings Per Share (Basis As Specified)

Shareholders' Equity / Current Basic Shares

Current Share Price

Market Cap = Current Share Price × Current Basic Shares

Sales

Basic EBIT + Depreciation + Amortization

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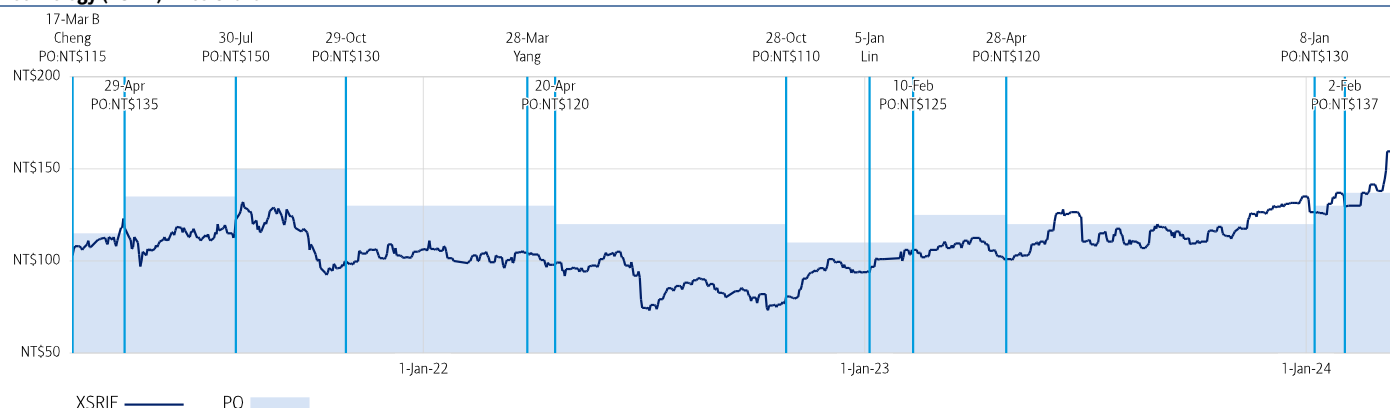
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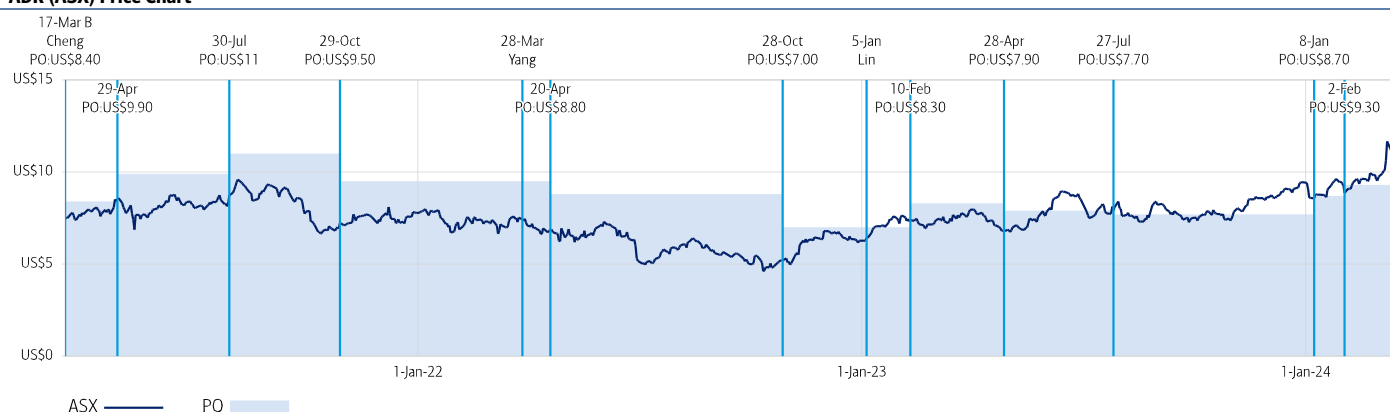
### ASE Technology (XSRIF) Price Chart



B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

### ASE -ADR (ASX) Price Chart



B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

### Equity Investment Rating Distribution: Technology Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships <sup>R1</sup>	Count	Percent
Buy	215	53.09%	Buy	111	51.63%
Hold	97	23.95%	Hold	45	46.39%
Sell	93	22.96%	Sell	24	25.81%

### Equity Investment Rating Distribution: Global Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships <sup>R1</sup>	Count	Percent
Buy	1895	53.62%	Buy	1083	57.15%
Hold	832	23.54%	Hold	454	54.57%
Sell	807	22.84%	Sell	383	47.46%

<sup>R1</sup> 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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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster <sup>R2</sup>
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

<sup>R2</sup>Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

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