

U.S. Semiconductors

PC Pulse: June 2022 – June Miss but Weaker 2H the Bigger Story

Substantial 2H cut as the pandemic boost wears off. Moderating estimates and PTs for INTC and AMD.

June NB results missed but the much weaker 2H outlook is the bigger story. To be clear, only a few ODMs issued official Q3 guidance but those that did (Wistron/Inventec) see a flattish Q3 vs our prior estimate of +18% Q/Q and you would think Quanta and Compal are worse given the higher Consumer/Education exposure. ODMs are still talking of a flattish to down year but in reality, the year is likely down double digits. We cut NB production to down 17% Y/Y (from -12%) and that seems biased lower (Q3 still modeled +10% Q/Q), while our MBs are now down 16% Y/Y (some chatter of down 20-30%). **Implications:** Marks yet another negative data point for **INTC** and **AMD**. INTC specifically signaled risk to its June guidance about a month ago, pointing to match set issues (bottleneck for customers), inventory reductions and China lockdowns across both client and servers. AMD did re-iterate FY guidance at the time, but the company is not immune with corrections needed in several end markets (PC, Gaming, Semi-Custom, XLNX) and the server market likely softer in 2023. We are taking down estimates for both companies, but they may have to come down even further as these cuts are just starting. For both, we just see no reason to own these names until the size of the correction is better understood. When we downgraded AMD, we pointed to 2024 as the real make or break year for INTC as that is when they will have first products on Intel 4/3. It does appear that Intel's roadmaps continue to slip to the right with Granite Rapids (Intel 3) and Meteor Lake (Intel 4) due out at the end of 2023. Even with the slip, we would be hesitant to buy AMD into a correction, while the roadmap challenges keep us UW on INTC for a while longer.

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Summary of our Ratings, Price Targets and Earnings Changes in this Report (all changes are shown in bold)

	Rating		Price	Price Target			EPS FY1 (E)			EPS FY2 (E)		
Company	Old	New	7-Jul-22	Old	New	%Chg	Old	New	%Chg	Old	New	%Chg
U.S. Semiconductors	Neu	Neu										
Advanced Micro Devices (AMD)	EW	EW	79.30	115.00	85.00	-26	4.40	4.36	-1	4.62	4.38	-5
Intel Corp. (INTC)	UW	UW	38.14	45.00	40.00	-11	3.50	3.32	-5	3.35	3.18	-5

Source: Barclays Research. Share prices and target prices are shown in the primary listing currency and EPS estimates are shown in the reporting currency. FY1(E): Current fiscal year estimates by Barclays Research. FY2(E): Next fiscal year estimates by Barclays Research. Stock Rating: OW: Overweight; EW: Equal Weight; UW: Underweight; RS: Rating Suspended Industry View: Pos: Positive; Neu: Neutral; Neg: Negative

Valuation Methodology and Risks

U.S. Semiconductors

Advanced Micro Devices (AMD / AMD)

Valuation Methodology: Our price target of \$85 is based upon 19x our CY23 EPS of \$4.38.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Risks to our thesis include continued PC growth at above historical rates, share gains in servers and PCs well above our expectations, better margins, and stronger than forecasted semi-custom results.

Intel Corp. (INTC / INTC)

Valuation Methodology: Our price target of \$40 is based upon 13x our CY23 PF EPS of \$3.18.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Risks to our thesis include continued PC growth at above historical rates, better share in PC and Server markets, technology transitions accelerating, and poor execution by AMD.

Source: Barclays Research

June Below and Cutting 2H: June NBs of 15.1M (+31% M/M) missed our estimate of 15.8M (+37% M/M) due primarily to lower results at Quanta as Consumer cracks continue. We are reducing our Q3 NB forecast to 39.5M (+10% Q/Q) from our prior 43.2M. 2022 guidance from ODMs is flattish to down, but we still see this ultimately being worse. We are taking down our 2022 NB forecast to -17% Y/Y (from -12%). Moving to MBs, we estimate June came in below at 2.57M (+9% M/M) vs. our estimate of 2.7M (+15%). We are reducing our Q3 MB estimate to 7.9M (+6% Q/Q) from our prior 9.0M and our 2022 forecast to -16% Y/Y (from -9%). Despite receiving no MB guidance from ODMs, the chatter is already that MBs could be down 20-30% Y/Y.

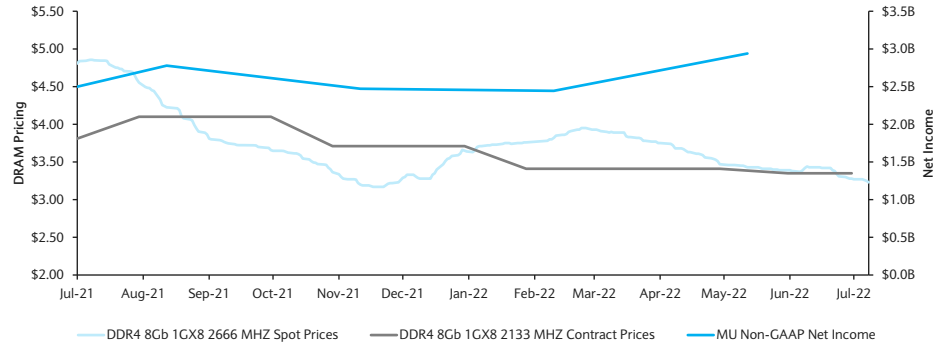
FIGURE 1. Monthly Results & Changes to Estimates Summary (units in 000s)

June Monthly Results & Updated July and Quarterly Estimates							
Taiwanese ODMs	June Actual	Barclays Prior Est.	July Forecast	2Q22 Actual	Barclays Prior Est.	3Q22 Forecast	Barclays Prior Est.
Top 5 NB ODM	15,060	15,800	12,725	35,985	36,725	39,475	43,158
MoM; QoQ	+31%	+37%	-16%	-14%	-12%	+10%	+18%
Top 4 MB ODM	2,569	2,700	2,425	7,421	7,552	7,875	8,970
MoM; QoQ	+9%	+15%	-6%	-10%	-9%	+6%	+19%
Combined	17,629	18,500	15,150	43,406	44,277	47,350	52,127
MoM; QoQ/YoY	+27%	+33%	-14%	-13% / -20%	-11% / -19%	+9% / -16%	+18% / -8%

Source: Company Reports and Barclays Research

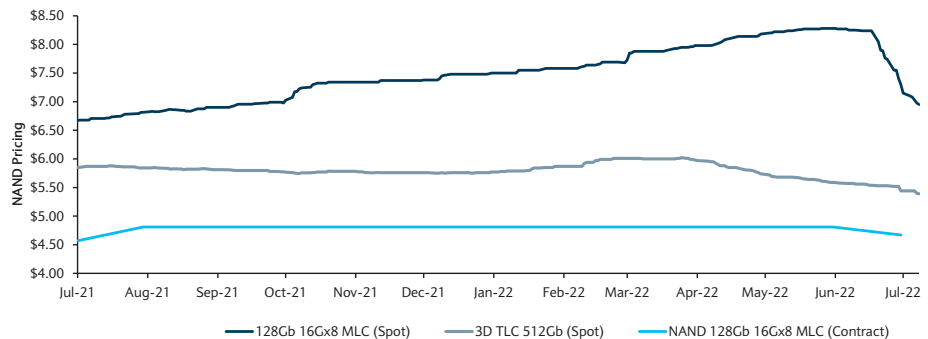
Memory Pricing Down: DRAM spot is down 6% M/M (-12% over the last 3 months), with contract flat M/M as suppliers/OEMs opted not to pursue further negotiations (-2% over the last 3 months). For NAND, 128GB MLC spot is down 16% M/M (-13% over last 3 months), with contract down 3% M/M (also -3% over the last 3 months). 3D TLC 512GB NAND spot is down 3% M/M (-9% over the last 3 months).

FIGURE 2. DRAM Spot vs. Contract Pricing



Source: Company Reports, DRAMeXchange, and Barclays Research

FIGURE 3. NAND Spot vs. Contract Pricing



Source: Company Reports, DRAMeXchange, and Barclays Research

Changes to INTC Estimates & PT

Our CY22 revenue/EPS move to \$74.06B/\$3.32 (prior \$75.70B/\$3.50), and CY23 moves to \$74.31B/\$3.18 (prior \$73.63B/\$3.35). We also cut CY22 capex to \$26B (from \$27B) and CY23 to \$26B (from \$31B) given the softer PC market and also some good theater through earnings as the company makes a last ditch plea to get a government handout.

Our price target of \$40 is based upon 13x our CY23 PF EPS of \$3.18. Our prior price target of \$45 was based upon 13x our CY23 PF EPS of \$3.35.

FIGURE 4. INTC Barclays vs. Consensus

Changes to Revenue and PF EPS Estimates - New vs. Old vs. Consensus					
		Jun Q	Sep Q	CY22	CY23
NEW	Revenues	\$17,580M	\$18,528M	\$74,057M	\$74,312M
	EPS	\$0.68	\$0.81	\$3.32	\$3.18
OLD	Revenues	\$18,012M	\$19,224M	\$75,700M	\$73,633M
	EPS	\$0.70	\$0.92	\$3.50	\$3.35
CONSENSUS	Revenues	\$17,969M	\$18,995M	\$75,076M	\$79,202M
	EPS	\$0.69	\$0.87	\$3.40	\$3.55

Source: Company Reports, Barclays Research Estimates and Bloomberg

Changes to AMD Estimates & PT – Rolling Out New Segment Model

Our CY22 revenue/EPS move to \$26.10B/\$4.36 (prior \$26.32B/\$4.40), and CY23 moves to \$28.87B/\$4.38 (prior \$29.68B/\$4.62).

We were hesitant to cut more from June/Sept as AMD likely feels it can catch up on the channel but we are below for CY23. Additionally, we changed our model to reflect the new reporting segment, which the company provided some color on at the AD and plans to move to this earnings. The net takeaway is that Gaming was up over 100% Y/Y in 2021, while NB units were likely down (-15% Y/Y) signaling share loss vs INTC since Q420. Now clearly INTC over shipped the market, while AMD had to navigate supply constraints, but it is interesting how much ASPs played into the growth.

Our price target of \$85 is based upon 19x our CY23 EPS of \$4.38. Our prior price target of \$115 was based upon 25x our CY23 EPS of \$4.62.

FIGURE 5. AMD Barclays vs. Consensus

Changes to Revenue and EPS Estimates - New vs. Old vs. Consensus					
		Jun Q	Sep Q	CY22	CY23
NEW	Revenues	\$6,513M	\$6,779M	\$26,098M	\$28,873M
	EPS	\$1.03	\$1.09	\$4.36	\$4.38
OLD	Revenues	\$6,516M	\$6,801M	\$26,323M	\$29,679M
	EPS	\$1.03	\$1.09	\$4.40	\$4.62
CONSENSUS	Revenues	\$6,525M	\$6,833M	\$26,248M	\$29,991M
	EPS	\$1.04	\$1.10	\$4.40	\$4.93

Source: Company Reports, Barclays Research Estimates and Bloomberg

Implications for Hardware - HPQ, DELL, AAPL: June ODMs missed our estimates again driven by NBs which we think reflects a deteriorating demand profile as Pegatron specifically called out demand weakness. June NBs of 15.06M (up 31% M/M and down 9% Y/Y) missed our previous estimate of 15.8M. Quanta once again underperformed as it is levered to Consumer/Education which is cracking. MBs also missed by LSD. **We remain in the camp that there is more of a correction coming, but it likely needs to start showing up in weaker ASPs. We think the correction could be more broad, spreading to the commercial segment, not just consumer alone, though elevated commercial backlog could soften some of the initial blows.** For 2022, ODMs still project flat to slightly down outlooks for builds which we view as too optimistic. We expect a material reversion to start at some point along with tougher compares as we doubt this elevated rate of PCs is sustainable. We don't think enterprise resilience is enough to offset consumer/education weakness (60% of PC mkt). We still believe the PC market is above trend in the long run while current supply constraints could be masking underlying demand weakness. We are interested to see how builds trend over the next few months as lockdown/supply eases. However, Chromebook growth has slowed meaningfully. Chromebooks had a huge bounce on learn from home, but that seems to be over. Just like in Smartphones, the low end is the first to correct. We are expecting units to get back to 300M in 2023 as the replacement rate for both consumer and commercial normalizes. At some point mid/high tier should be affected. We still believe when component availability comes back, and macro pressures persist, there will be a reversion in ASPs. Both HPQ and DELL have been enjoying the higher prices for a year now. We expect AAPL to have flat growth in Macs for 2022 as compares get more difficult and it laps Covid tailwinds. PC growth should also decelerate as we model 5.7% growth Y/Y for the Jul-Q for HPQ, vs. 9.3% growth for Apr-Q. For Jul-Q for Dell, we are modeling a 4% Q/Q decline and 5% growth Y/Y, also a deceleration from prior quarters. We project Dell PC revenue growth to be up 2.9% Y/Y for FY23 and flattish for FY24. We expect 6.1% Y/Y growth for HPQ for FY22 before reverting lower to 2.5% decline for FY23. Dell has roughly 77% exposure to commercial/enterprise, which has tailwinds, above 50/50 commercial/consumer split for the industry, and above 65% commercial mix for HPQ. Dell gained shares recently, at the expense of HPQ.

FIGURE 6. Q/Q Unit Shipments - NB/MB vs. MPU vs. PC

Quarterly unit in '000	1Q21	2Q21	3Q21	4Q21	1Q22	2Q22E	3Q22E	4Q22E	1Q23E	2Q23E	3Q23E	4Q23E	2020	2021	2022E	2023E
Taiwanese NB and Motherboard shipments																
Top 5 NB ODM	44,550	45,500	47,850	52,100	41,635	35,985	39,475	41,238	36,576	38,171	40,602	38,572	158,020	190,000	158,333	153,922
Top 4 MB ODM	9,930	8,913	8,658	9,732	8,291	7,421	7,875	7,646	6,882	7,226	7,948	7,551	38,425	37,233	31,233	29,606
Total NB and Motherboard	54,480	54,413	56,508	61,832	49,926	43,406	47,350	48,884	43,457	45,397	48,551	46,123	196,445	227,233	189,566	183,528
Q/Q	-9%	0%	4%	9%	-19%	-13%	9%	3%	-11%	4%	7%	-5%				
Historical Seasonality	-17%	9%	7%	0%	-15%	9%	6%	0%	-15%	6%	6%	2%				
Y/Y	72%	8%	4%	3%	-8%	-20%	-16%	-21%	-13%	5%	3%	-6%	21%	16%	-17%	-3%
MPU Shipments																
NB MPU*	77,623	72,150	54,465	56,400	52,010	46,910	50,378	54,108	48,349	47,426	51,658	49,469	249,581	260,638	203,406	196,902
MB MPU	21,313	19,800	21,600	23,900	18,450	17,588	17,588	18,380	16,838	17,017	17,546	17,444	82,236	86,613	72,005	68,844
ARM	4,150	4,601	5,632	6,200	5,950	5,556	6,833	8,350	6,105	6,436	7,974	8,416	5,194	20,583	26,689	28,930
Total NB+DT MPU	103,085	96,551	81,697	86,500	76,410	70,053	74,798	80,838	71,292	70,878	77,177	75,328	337,010	367,833	302,099	294,676
Q/Q	-4%	-6%	-15%	6%	-12%	-8%	7%	8%	-12%	-1%	9%	-2%				
Historical Seasonality	-8%	3%	11%	0%	-7%	3%	10%	2%	-8%	3%	7%	5%				
Y/Y	41%	34%	-4%	-19%	-26%	-27%	-8%	-7%	-7%	1%	3%	-7%	23%	9%	-18%	-2%
PC Sales																
WW NB PC	63,279	61,923	63,819	67,731	58,609	59,344	59,031	57,104	52,354	50,832	54,835	61,599	219,917	256,752	234,088	219,620
WW DT PC	19,881	20,643	21,335	23,246	20,176	19,420	20,709	21,243	19,767	19,830	20,950	19,573	78,599	85,104	81,549	80,120
Total PC Shipments	83,160	82,566	85,153	90,976	78,785	78,764	79,740	78,348	72,120	70,662	75,785	81,172	298,516	341,856	315,637	299,740
Q/Q	-8%	-1%	3%	7%	-13%	0%	1%	-2%	-8%	-2%	7%	7%				
Historical Seasonality	-15%	3%	10%	3%	-14%	3%	10%	4%	-14%	1%	10%	3%				
Y/Y	56%	13%	4%	1%	-5%	-5%	-6%	-14%	-8%	-10%	-5%	4%	14%	15%	-8%	-5%

*Includes x86 Tablet MPU Shipments

Source: Company Reports and Barclays Research

FIGURE 7. Top Four Taiwanese MB ODM Monthly Shipments (Ks of Units)

Top Four Taiwanese Motherboard ODM Monthly Shipments (Ks of Units)														E	E	E
	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22
Pegatron																
Shipment	625	610	575	575	610	710	725	675	500	725	550	425	540	500	550	600
MoM/QoQ %	1%	(2%)	(6%)	0%	6%	16%	2%	(7%)	(26%)	45%	(24%)	(23%)	27%	(7%)	10%	9%
Historical Seasonality	7%	2%	(5%)	8%	1%	(4%)	(6%)	10%	(2%)	17%	(4%)	(10%)	4%	(0%)	(3%)	4%
YoY %	19%	22%	15%	0%	2%	(2%)	7%	17%	5%	10%	(12%)	(31%)	(14%)	(18%)	(4%)	4%
Gigabyte																
Shipment	860	800	905	1,055	950	1,100	925	1,100	750	900	675	650	675	650	700	750
MoM/QoQ %	(5%)	(7%)	13%	17%	(10%)	16%	(16%)	19%	(32%)	20%	(25%)	(4%)	4%	(4%)	8%	7%
Historical Seasonality	7%	2%	6%	(3%)	(19%)	31%	(26%)	41%	(16%)	24%	(8%)	(4%)	10%	(1%)	3%	(2%)
YoY %	(22%)	(30%)	(35%)	(25%)	(24%)	(10%)	(3%)	(15%)	(18%)	(25%)	(42%)	(29%)	(22%)	(19%)	(23%)	(29%)
Elitegroup																
Shipment	450	331	456	501	434	402	626	385	278	428	519	533	554	500	525	550
MoM/QoQ %	0%	(26%)	38%	10%	(13%)	(7%)	56%	(38%)	(28%)	54%	21%	3%	4%	(10%)	5%	5%
Historical Seasonality	31%	(5%)	(7%)	6%	(9%)	(4%)	(10%)	59%	(32%)	53%	24%	(13%)	15%	(5%)	3%	3%
YoY %	(31%)	(40%)	(30%)	(9%)	(4%)	(27%)	(4%)	(30%)	(38%)	(22%)	(6%)	18%	23%	51%	15%	10%
Microstar																
Shipment	850	750	950	1,150	1,050	1,150	1,050	950	650	950	750	750	800	775	825	950
MoM/QoQ %	0%	(12%)	27%	21%	(9%)	10%	(9%)	(10%)	(32%)	46%	(21%)	0%	7%	(3%)	6%	15%
Historical Seasonality	12%	4%	(8%)	2%	(8%)	8%	(17%)	33%	(19%)	19%	(7%)	0%	11%	4%	(0%)	1%
YoY %	(26%)	(38%)	(14%)	10%	0%	10%	11%	(24%)	(24%)	(17%)	(21%)	(12%)	(6%)	3%	(13%)	(17%)
Top 4																
Shipment	2,785	2,491	2,886	3,281	3,044	3,362	3,326	3,110	2,178	3,003	2,494	2,358	2,569	2,425	2,600	2,850
MoM/QoQ %	(2%)	(11%)	16%	14%	(7%)	10%	(1%)	(6%)	(30%)	38%	(17%)	(5%)	9%	(6%)	7%	10%
Historical Seasonality	12%	1%	(4%)	3%	(9%)	4%	(16%)	31%	(17%)	22%	(4%)	(6%)	9%	(0%)	(0%)	1%
YoY %	(19%)	(27%)	(21%)	(8%)	(9%)	(5%)	3%	(15%)	(19%)	(16%)	(24%)	(17%)	(8%)	(3%)	(10%)	(13%)

Source: Company Reports and Barclays Estimates

FIGURE 8. Top Four Taiwanese MB ODM Quarterly Shipments (Ks of Units)

Top Four Taiwanese Motherboard ODM Quarterly Shipments (Ks of Units)															
	1Q21	2Q21	3Q21	4Q21	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	2021	2022	2023
Pegatron															
Shipment	1,710	1,870	1,760	2,045	1,900	1,515	1,650	1,733	1,559	1,637	1,801	1,711	7,385	6,798	6,708
MoM/QoQ %	(15%)	9%	(6%)	16%	(7%)	(20%)	9%	5%	(10%)	5%	10%	(5%)			
Historical Seasonality	(15%)	7%	(2%)	2%	(14%)	7%	(2%)	4%	(12%)	7%	(0%)	5%			
YoY %	(17%)	12%	12%	2%	11%	(19%)	(6%)	(15%)	(18%)	8%	9%	(1%)	1%	(8%)	(1%)
Gigabyte															
Shipment	3,420	2,943	2,760	2,975	2,750	2,000	2,100	1,995	1,796	1,885	2,074	1,970	12,098	8,845	7,725
MoM/QoQ %	(0%)	(14%)	(6%)	8%	(8%)	(27%)	5%	(5%)	(10%)	5%	10%	(5%)			
Historical Seasonality	2%	(2%)	11%	(14%)	2%	(2%)	4%	(14%)	2%	(3%)	4%	(14%)			
YoY %	24%	(2%)	(30%)	(13%)	(20%)	(32%)	(24%)	(33%)	(35%)	(6%)	(1%)	(1%)	(8%)	(27%)	(13%)
Elitegroup															
Shipment	1,550	1,450	1,288	1,462	1,091	1,606	1,575	1,496	1,347	1,414	1,555	1,478	5,750	5,768	5,794
MoM/QoQ %	(6%)	(6%)	(11%)	14%	(25%)	47%	(2%)	(5%)	(10%)	5%	10%	(5%)			
Historical Seasonality	(21%)	6%	1%	(3%)	(21%)	3%	1%	(3%)	(21%)	6%	(2%)	(5%)			
YoY %	107%	(26%)	(26%)	(11%)	(30%)	11%	22%	2%	23%	(12%)	(1%)	(1%)	(6%)	0%	0%
Microstar															
Shipment	3,250	2,650	2,850	3,250	2,550	2,300	2,550	2,423	2,180	2,289	2,518	2,392	12,000	9,823	9,380
MoM/QoQ %	7%	(18%)	8%	14%	(22%)	(10%)	11%	(5%)	(10%)	5%	10%	(5%)			
Historical Seasonality	(4%)	0%	13%	(8%)	(4%)	0%	12%	(8%)	(4%)	0%	12%	(8%)			
YoY %	27%	(10%)	(15%)	7%	(22%)	(13%)	(11%)	(25%)	(15%)	(0%)	(1%)	(1%)	1%	(18%)	(5%)
Top 4															
Shipment	9,930	8,913	8,658	9,732	8,291	7,421	7,875	7,646	6,882	7,226	7,948	7,551	37,233	31,233	29,606
MoM/QoQ %	(2%)	(10%)	(3%)	12%	(15%)	(10%)	6%	(3%)	(10%)	5%	10%	(5%)			
Historical Seasonality	(8%)	4%	7%	(5%)	(7%)	4%	5%	(5%)	(8%)	1%	6%	(4%)			
YoY %	23%	(7%)	(19%)	(4%)	(17%)	(17%)	(9%)	(21%)	(17%)	(3%)	1%	(1%)	(3%)	(16%)	(5%)

Source: Company Reports and Barclays Estimates

FIGURE 9. Top Five Taiwanese NB ODM Monthly Shipments (Ks of Units)

Top Five Taiwanese NB ODM Monthly Shipments (Ks of Units)														E	E	E
	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22
Quanta																
Shipment	6,700	5,900	5,500	6,000	6,100	7,000	6,800	6,000	4,800	6,100	3,200	4,000	5,200	4,400	4,500	4,750
MoM/QoQ %	8%	(12%)	(7%)	9%	2%	15%	(3%)	(12%)	(20%)	27%	(48%)	25%	30%	(15%)	2%	6%
Historical Seasonality	9%	(7%)	11%	7%	(8%)	4%	3%	(23%)	(26%)	113%	(4%)	11%	9%	(7%)	4%	9%
YoY %	29%	5%	(13%)	(6%)	2%	6%	(4%)	(6%)	(20%)	(8%)	(48%)	(35%)	(22%)	(25%)	(18%)	(21%)
Compal																
Shipment	4,800	4,900	4,700	5,700	5,100	5,300	5,600	3,600	3,600	4,600	2,200	3,300	4,900	4,000	4,150	4,300
MoM/QoQ %	26%	2%	(4%)	21%	(11%)	4%	6%	(36%)	0%	28%	(52%)	50%	48%	(18%)	4%	4%
Historical Seasonality	11%	(14%)	(5%)	17%	0%	(4%)	10%	(26%)	(23%)	91%	(4%)	(4%)	12%	(6%)	(6%)	18%
YoY %	20%	23%	34%	39%	(7%)	15%	(2%)	(16%)	9%	(16%)	(50%)	(13%)	2%	(18%)	(12%)	(25%)
Wistron																
Shipment	2,300	2,000	2,100	2,500	2,300	2,500	2,700	1,700	1,600	2,300	1,600	1,900	2,300	1,950	2,000	2,050
MoM/QoQ %	28%	(13%)	5%	19%	(8%)	9%	8%	(37%)	(6%)	44%	(30%)	19%	21%	(15%)	3%	2%
Historical Seasonality	24%	(16%)	(0%)	20%	(2%)	(0%)	1%	(28%)	(14%)	62%	(10%)	3%	24%	(15%)	2%	22%
YoY %	28%	18%	31%	32%	15%	19%	17%	0%	7%	5%	(20%)	6%	0%	(3%)	(5%)	(18%)
Inventec																
Shipment	1,800	1,900	2,000	2,000	1,800	2,000	1,800	1,500	1,500	2,000	1,800	1,700	1,900	1,700	1,750	1,825
MoM/QoQ %	13%	6%	5%	0%	(10%)	11%	(10%)	(17%)	0%	33%	(10%)	(6%)	12%	(11%)	3%	4%
Historical Seasonality	10%	(13%)	10%	2%	(9%)	0%	4%	(16%)	(33%)	133%	(0%)	(0%)	16%	(5%)	2%	2%
YoY %	(10%)	0%	5%	5%	6%	18%	0%	(6%)	0%	18%	13%	6%	6%	(11%)	(13%)	(9%)
Pegatron																
Shipment	875	750	900	1,000	1,000	1,100	1,000	775	560	1,000	625	600	760	675	700	725
MoM/QoQ %	13%	(14%)	20%	11%	0%	10%	(9%)	(23%)	(28%)	79%	(38%)	(4%)	27%	(11%)	4%	4%
Historical Seasonality	(2%)	(0%)	10%	9%	9%	(6%)	(5%)	(19%)	(33%)	58%	16%	12%	5%	(7%)	11%	3%
YoY %	(13%)	(25%)	(14%)	0%	14%	26%	18%	15%	(3%)	0%	(17%)	(23%)	(13%)	(10%)	(22%)	(28%)
Top 5																
Shipment	16,475	15,450	15,200	17,200	16,300	17,900	17,900	13,575	12,060	16,000	9,425	11,500	15,060	12,725	13,100	13,650
MoM/QoQ %	16%	(6%)	(2%)	13%	(5%)	10%	0%	(24%)	(11%)	33%	(41%)	22%	31%	(16%)	3%	4%
Historical Seasonality	11%	(11%)	4%	11%	(4%)	(1%)	4%	(23%)	(25%)	88%	(3%)	3%	12%	(8%)	1%	12%
YoY %	18%	9%	6%	12%	2%	13%	1%	(7%)	(6%)	(6%)	(37%)	(19%)	(9%)	(18%)	(14%)	(21%)

Source: Company Reports and Barclays Estimates

FIGURE 10. Top Five Taiwanese NB ODM Quarterly Shipments (Ks of Units)

Top Five Taiwanese NB ODM Quarterly Shipments (Ks of Units)															
	1Q21	2Q21	3Q21	4Q21	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	2021	2022	2023
Quanta															
Shipment	19,000	19,000	17,400	19,900	16,900	12,400	13,650	14,333	12,899	13,415	14,220	13,509	75,300	57,283	54,044
MoM/QoQ %	(4%)	0%	(8%)	14%	(15%)	(27%)	10%	5%	(10%)	4%	6%	(5%)			
Historical Seasonality	(23%)	12%	8%	(3%)	(21%)	12%	8%	(3%)	(21%)	12%	8%	1%			
YoY %	160%	31%	(5%)	1%	(11%)	(35%)	(22%)	(28%)	(24%)	8%	4%	(6%)	26%	(24%)	(6%)
Compal															
Shipment	13,100	13,000	15,300	16,000	11,800	10,400	12,450	13,073	11,504	11,964	12,682	12,048	57,400	47,723	48,197
MoM/QoQ %	(17%)	(1%)	18%	5%	(26%)	(12%)	20%	5%	(12%)	4%	6%	(5%)			
Historical Seasonality	(16%)	12%	5%	(1%)	(18%)	12%	8%	(1%)	(19%)	4%	8%	3%			
YoY %	68%	4%	32%	1%	(10%)	(20%)	(19%)	(18%)	(3%)	15%	2%	(8%)	20%	(17%)	1%
Wistron															
Shipment	5,400	6,100	6,600	7,500	5,600	5,800	6,000	6,300	5,544	5,766	6,112	5,806	25,600	23,700	23,228
MoM/QoQ %	(16%)	13%	8%	14%	(25%)	4%	3%	5%	(12%)	4%	6%	(5%)			
Historical Seasonality	(20%)	10%	9%	(2%)	(20%)	12%	9%	2%	(20%)	11%	8%	4%			
YoY %	52%	17%	27%	17%	4%	(5%)	(9%)	(16%)	(1%)	(1%)	2%	(8%)	26%	(7%)	(2%)
Inventec															
Shipment	4,800	5,000	5,900	5,600	5,000	5,400	5,275	5,328	4,688	4,970	5,367	5,099	21,300	21,003	20,124
MoM/QoQ %	(8%)	4%	18%	(5%)	(11%)	8%	(2%)	1%	(12%)	6%	8%	(5%)			
Historical Seasonality	(18%)	14%	4%	0%	(18%)	9%	4%	(2%)	(14%)	11%	4%	0%			
YoY %	41%	(12%)	4%	8%	4%	8%	(11%)	(5%)	(6%)	(8%)	2%	(4%)	6%	(1%)	(4%)
Pegatron															
Shipment	2,250	2,400	2,650	3,100	2,335	1,985	2,100	2,205	1,940	2,057	2,221	2,110	10,400	8,625	8,329
MoM/QoQ %	(13%)	7%	10%	17%	(25%)	(15%)	6%	5%	(12%)	6%	8%	(5%)			
Historical Seasonality	(24%)	(1%)	6%	24%	(24%)	(1%)	9%	24%	(24%)	(5%)	9%	20%			
YoY %	48%	(21%)	(13%)	19%	4%	(17%)	(21%)	(29%)	(17%)	4%	6%	(4%)	2%	(17%)	(3%)
Top 5															
Shipment	44,550	45,500	47,850	52,100	41,635	35,985	39,475	41,238	36,576	38,171	40,602	38,572	190,000	158,333	153,922
MoM/QoQ %	(10%)	2%	5%	9%	(20%)	(14%)	10%	4%	(11%)	4%	6%	(5%)			
Historical Seasonality	(18%)	9%	7%	1%	(18%)	9%	7%	1%	(19%)	8%	7%	3%			
YoY %	89%	11%	9%	5%	(7%)	(21%)	(18%)	(21%)	(12%)	6%	3%	(6%)	20%	(17%)	(3%)

Source: Company Reports and Barclays Estimates

FIGURE 11. INTC Income Statement

Intel Corporation																				
Fiscal Year-End: December	Mar-20	Jun-20	Sep-20	Dec-20	Mar-21	Jun-21	Sep-21	Dec-21	Mar-22	Jun-22	Sep-22	Dec-22	Mar-23	Jun-23	Sep-23	Dec-23	2020	2021	2022	2023
\$ in millions	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	CY	CY	CYE	CYE
Revenues	\$19,828	\$19,728	\$18,333	\$19,978	\$18,566	\$18,533	\$18,087	\$19,532	\$18,353	\$17,580	\$18,528	\$19,595	\$18,272	\$18,155	\$18,826	\$19,059	\$77,867	\$74,718	\$74,057	\$74,312
QoQ	(1.9%)	(0.5%)	(7.1%)	9.0%	(7.1%)	(0.2%)	(2.4%)	8.0%	(6.0%)	(4.2%)	5.4%	5.8%	(6.8%)	(0.6%)	3.7%	1.2%				
YoY	23.5%	19.5%	(4.5%)	(1.1%)	(6.4%)	(6.1%)	(1.3%)	(2.2%)	(1.1%)	(5.1%)	2.4%	0.3%	(0.4%)	3.3%	1.6%	(2.7%)	8.2%	(4.0%)	(0.9%)	0.3%
Cost of Goods	7,523	8,919	8,282	8,320	7,667	7,482	7,560	8,631	8,608	8,578	8,990	9,420	8,924	8,762	9,014	9,165	33,044	31,340	35,595	35,865
Gross Profit	\$12,305	\$10,809	\$10,051	\$11,658	\$10,899	\$11,051	\$10,527	\$10,901	\$9,745	\$9,003	\$9,538	\$10,175	\$9,349	\$9,393	\$9,812	\$9,893	\$44,823	\$43,378	\$38,461	\$38,447
R&D	3,275	3,354	3,272	3,655	3,274	3,251	3,372	3,681	3,953	3,925	3,850	3,800	4,190	4,190	4,140	4,155	13,556	13,578	15,528	16,677
SG&A	1,491	1,397	1,383	1,705	1,104	1,319	1,408	1,709	1,551	1,800	1,775	1,755	1,613	1,583	1,588	1,623	5,976	5,540	6,881	6,406
Total Operating Expense	4,766	4,751	4,655	5,360	4,378	4,570	4,780	5,390	5,504	5,725	5,625	5,555	5,803	5,773	5,728	5,778	19,532	19,118	22,409	23,083
Operating Income	\$7,539	\$6,058	\$5,396	\$6,298	\$6,521	\$6,481	\$5,747	\$5,511	\$4,241	\$3,278	\$3,913	\$4,620	\$3,545	\$3,620	\$4,084	\$4,115	\$25,291	\$24,260	\$16,052	\$15,364
Gains (losses) on Investments	(111)	267	56	1,692	0	0	0	0	0	0	0	0	0	0	0	0	1,904	0	0	0
Interest Income (expense)	(210)	(194)	66	(40)	(156)	(96)	(76)	(154)	(124)	(120)	(120)	(120)	(120)	(120)	(120)	(120)	(378)	(482)	(484)	(480)
Profit Before Taxes	7,218	6,131	5,518	7,950	6,365	6,385	5,671	5,357	4,117	3,158	3,793	4,500	3,425	3,500	3,964	3,995	26,817	23,778	15,568	14,884
Taxes	986	853	843	1,706	889	834	(251)	656	531	379	455	540	411	420	476	479	4,388	2,128	1,905	1,786
Net Income	\$6,232	\$5,278	\$4,675	\$6,244	\$5,476	\$5,551	\$5,922	\$4,701	\$3,586	\$2,779	\$3,338	\$3,960	\$3,014	\$3,080	\$3,488	\$3,516	\$22,429	\$21,650	\$13,663	\$13,098
EPS - Pro Forma	\$1.45	\$1.23	\$1.11	\$1.52	\$1.34	\$1.36	\$1.45	\$1.15	\$0.87	\$0.68	\$0.81	\$0.96	\$0.73	\$0.75	\$0.85	\$0.85	\$5.31	\$5.30	\$3.32	\$3.18
EPS - GAAP	\$1.31	\$1.19	\$1.02	\$1.42	\$0.82	\$1.24	\$1.67	\$1.13	\$1.98	\$0.48	\$0.65	\$0.80	\$0.60	\$0.64	\$0.74	\$0.77	\$4.94	\$4.86	\$3.91	\$2.75
Dividends per share	\$0.33	\$0.33	\$0.33	\$0.33	\$0.35	\$0.35	\$0.35	\$0.35	\$0.37	\$0.37	\$0.37	\$0.37	\$0.38	\$0.38	\$0.38	\$0.38	\$1.32	\$1.39	\$1.46	\$1.53
Fully Diluted Shares	4,312	4,284	4,211	4,119	4,096	4,084	4,086	4,095	4,107	4,100	4,105	4,110	4,115	4,120	4,125	4,130	4,224	4,085	4,115	4,119
Percent of Sales																				
Gross Margin	62.1%	54.8%	54.8%	58.4%	58.7%	59.6%	58.2%	55.8%	53.1%	51.2%	51.5%	51.9%	51.2%	51.7%	52.1%	51.9%	57.6%	58.1%	51.9%	51.7%
R&D	16.5%	17.0%	17.8%	18.3%	17.6%	17.5%	18.6%	18.8%	21.5%	22.3%	20.8%	19.4%	22.9%	23.1%	22.0%	21.8%	17.4%	18.2%	21.0%	22.4%
SG&A	7.5%	7.1%	7.5%	8.5%	5.9%	7.1%	7.8%	8.7%	8.4%	10.2%	9.6%	9.0%	8.8%	8.7%	8.4%	8.5%	7.7%	7.4%	9.3%	8.6%
Operating Income	38.0%	30.7%	29.4%	31.5%	35.1%	35.0%	31.8%	28.2%	23.1%	18.6%	21.1%	23.6%	19.4%	19.9%	21.7%	21.6%	32.5%	32.5%	21.7%	20.7%
Tax Rate	13.7%	13.9%	15.3%	21.5%	14.0%	13.1%	(4.4%)	12.2%	12.9%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	16.4%	8.9%	12.2%	12.0%
Net Income	31.4%	26.8%	25.5%	31.3%	29.5%	30.0%	32.7%	24.1%	19.5%	15.8%	18.0%	20.2%	16.5%	17.0%	18.5%	18.4%	28.8%	29.0%	18.4%	17.6%
Sequential Change																				
R&D	(3.2%)	2.4%	(2.4%)	11.7%	(10.4%)	(0.7%)	3.7%	9.2%	7.4%	(0.7%)	(1.9%)	(1.3%)	10.3%	0.0%	(1.2%)	0.4%	1.5%	0.2%	14.4%	7.4%
SG&A	(3.3%)	(6.3%)	(1.0%)	23.3%	(35.2%)	19.4%	6.8%	21.3%	(9.3%)	16.1%	(1.4%)	(1.1%)	(8.1%)	(1.9%)	0.3%	2.2%	(2.8%)	(7.3%)	24.2%	(6.9%)

Source: Company Reports, Barclays Research Estimates

Reconciliation of Pro Forma to GAAP

Restructuring and other	(162)	(9)	25	(52)	(2,209)	(346)	(42)	(29)	2,332	(50)	(600)	(600)					(198)	(2,626)	1,082	0
SBC - COGS					(50)	(75)	(75)	(75)	(148)	(175)	(175)	(175)	(100)	(100)	(100)	(100)	0	(275)	(673)	(400)
SBC - OPEX					(375)	(550)	(470)	(385)	(559)	(700)	(700)	(700)	(650)	(550)	(550)	(450)	0	(1,780)	(2,659)	(2,200)
NAND - COGS					317	544	616	518									0	1,995	0	0
NAND - OPEX					(146)	(142)	(174)	(164)									0	(626)	0	0
Acq-related - COGS	(289)	(302)	(310)	(310)	(312)	(314)	(322)	(335)	(353)	(325)	(300)	(300)	(300)	(300)	(300)	(300)	(1,211)	(1,283)	(1,278)	(1,200)
Acq-related - Other	(50)	(50)	(52)	(52)	(52)	(52)	(53)	(52)	(51)	(51)	(50)	(50)	(50)	(50)	(50)	(50)	(204)	(209)	(202)	(200)
Gain(Loss) on Equity Investments	(103)	165	(140)	(48)	368	295	1,707	359	4,323	250	615	615	350	350	350	350	(126)	2,729	5,803	1,400
Tax Impact	33	23	78	75	344	150	(286)	85	(1,017)	225	525	525	200	200	200	200	209	293	258	800
Net Income - GAAP	\$5,661	\$5,105	\$4,276	\$5,857	\$3,361	\$5,061	\$6,823	\$4,623	\$8,113	\$1,953	\$2,653	\$3,275	\$2,464	\$2,630	\$3,038	\$3,166	\$20,899	\$19,868	\$15,994	\$11,298
Pro Forma Shares	4,312	4,284	4,211	4,119	4,096	4,084	4,086	4,095	4,107	4,100	4,105	4,110	4,115	4,120	4,125	4,130	4,232	4,090	4,106	4,123
EPS - GAAP	\$1.31	\$1.19	\$1.02	\$1.42	\$0.82	\$1.24	\$1.67	\$1.13	\$1.98	\$0.48	\$0.65	\$0.80	\$0.60	\$0.64	\$0.74	\$0.77	\$4.94	\$4.86	\$3.91	\$2.75

Source: Company Reports and Barclays Research

FIGURE 12. AMD Income Statement

Advanced Micro Devices																				
Fiscal Year-End: December																				
\$ in millions	Mar-20	Jun-20	Sep-20	Dec-20	Mar-21	Jun-21	Sep-21	Dec-21	Mar-22	Jun-22	Sep-22	Dec-22	Mar-23	Jun-23	Sep-23	Dec-23	2020	2021	2022	2023
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2QE	3QE	4QE	1QE	2QE	3QE	4QE	CY	CY	CYE	CYE
Revenues	\$1,786	\$1,932	\$2,801	\$3,244	\$3,445	\$3,850	\$4,313	\$4,826	\$5,887	\$6,513	\$6,779	\$6,919	\$6,639	\$7,133	\$7,612	\$7,488	\$9,763	\$16,434	\$26,098	\$28,873
QoQ	(16.0%)	8.2%	45.0%	15.8%	6.2%	11.8%	12.0%	11.9%	22.0%	10.6%	4.1%	2.1%	(4.0%)	7.4%	6.7%	(1.6%)				
YoY	40.4%	26.2%	55.5%	52.5%	92.9%	99.3%	54.0%	48.8%	70.9%	69.2%	57.2%	43.4%	12.8%	9.5%	12.3%	8.2%	45.0%	68.3%	58.8%	10.6%
Cost of Goods	966	1,082	1,570	1,792	1,857	2,018	2,226	2,399	2,787	2,993	3,087	3,111	2,958	3,211	3,421	3,322	5,410	8,500	11,977	12,911
Gross Profit	\$820	\$850	\$1,231	\$1,452	\$1,588	\$1,832	\$2,087	\$2,427	\$3,100	\$3,521	\$3,692	\$3,808	\$3,681	\$3,923	\$4,192	\$4,166	\$4,353	\$7,934	\$14,121	\$15,962
R&D	405	423	460	522	555	606	701	737	947	1,110	1,170	1,220	1,281	1,331	1,381	1,431	1,810	2,599	4,447	5,424
SG&A	179	194	246	267	275	303	334	366	399	450	460	470	490	505	515	525	886	1,278	1,779	2,033
Licensing Gain & Other	0	0	0	0	(4)	(1)	(3)	(4)	(83)	0	0	0	0	0	0	0	0	(12)	(83)	0
Operating Expenses	584	617	706	789	826	908	1,032	1,099	1,263	1,560	1,630	1,690	1,771	1,836	1,896	1,956	2,696	3,865	6,143	7,457
Operating Income	\$236	\$233	\$525	\$663	\$762	\$924	\$1,055	\$1,328	\$1,837	\$1,961	\$2,062	\$2,118	\$1,911	\$2,087	\$2,296	\$2,211	\$1,657	\$4,069	\$7,978	\$8,505
Interest Income (Exp) & Other	(7)	(11)	(7)	(5)	(8)	(9)	(5)	(8)	(11)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(30)	(30)	(56)	(60)
Profit Before Taxes	229	222	518	658	754	915	1,050	1,320	1,826	1,946	2,047	2,103	1,896	2,072	2,281	2,196	1,627	4,039	7,922	8,445
Taxes	7	6	17	22	112	137	157	198	237	253	266	273	284	311	342	329	52	604	1,029	1,267
Net Income - Pro Forma	\$222	\$216	\$501	\$636	\$642	\$778	\$893	\$1,122	\$1,589	\$1,693	\$1,781	\$1,829	\$1,611	\$1,761	\$1,939	\$1,866	\$1,575	\$3,435	\$6,892	\$7,178
EPS - Pro Forma (ex ESO)	\$0.18	\$0.18	\$0.41	\$0.52	\$0.52	\$0.63	\$0.73	\$0.92	\$1.13	\$1.03	\$1.09	\$1.12	\$0.98	\$1.07	\$1.18	\$1.14	\$1.28	\$2.79	\$4.36	\$4.38
EPS - Pro Forma (incl ESO)	\$0.13	\$0.13	\$0.35	\$0.45	\$0.45	\$0.56	\$0.65	\$0.83	\$1.00	\$0.93	\$0.98	\$1.01	\$0.87	\$0.97	\$1.07	\$1.03	\$1.06	\$2.49	\$3.92	\$3.94
EPS - GAAP	\$0.14	\$0.13	\$0.32	\$1.46	\$0.45	\$0.58	\$0.75	\$0.80	\$0.56	\$0.70	\$0.76	\$0.80	\$0.67	\$0.77	\$0.88	\$0.84	\$2.09	\$2.57	\$2.85	\$3.17
Fully Diluted Shares	1,224	1,227	1,230	1,226	1,233	1,232	1,230	1,222	1,410	1,640	1,640	1,640	1,640	1,640	1,640	1,640	1,227	1,229	1,583	1,640
Percent of Sales																				
Gross Margin	45.9%	44.0%	43.9%	44.8%	46.1%	47.6%	48.4%	50.3%	52.7%	54.1%	54.5%	55.0%	55.4%	55.0%	55.1%	55.6%	44.6%	48.3%	54.1%	55.3%
R&D	22.7%	21.9%	16.4%	16.1%	16.1%	15.7%	16.3%	15.3%	16.1%	17.0%	17.3%	17.6%	19.3%	18.7%	18.1%	19.1%	18.5%	15.8%	17.0%	18.8%
SG&A	10.0%	10.0%	8.8%	8.2%	8.0%	7.9%	7.7%	7.6%	6.8%	6.9%	6.8%	6.8%	7.4%	7.1%	6.8%	7.0%	9.1%	7.8%	6.8%	7.0%
Operating Margin	13.2%	12.1%	18.7%	20.4%	22.1%	24.0%	24.5%	27.5%	31.2%	30.1%	30.4%	30.6%	28.8%	29.3%	30.2%	29.5%	17.0%	24.8%	30.6%	29.5%
Taxes	3.1%	2.7%	3.3%	3.3%	14.9%	15.0%	15.0%	15.0%	13.0%	13.0%	13.0%	13.0%	15.0%	15.0%	15.0%	15.0%	3.2%	15.0%	13.0%	15.0%
Net Income	12.4%	11.2%	17.9%	19.6%	18.6%	20.2%	20.7%	23.2%	27.0%	26.0%	26.3%	26.4%	24.3%	24.7%	25.5%	24.9%	16.1%	20.9%	26.4%	24.9%
Sequential Change																				
R&D	13.8%	4.4%	8.7%	13.5%	6.3%	9.2%	15.7%	5.1%	28.5%	17.2%	5.4%	4.3%	5.0%	3.9%	3.8%	3.6%	28.5%	43.6%	71.1%	22.0%
SG&A	(5.3%)	8.4%	26.8%	8.5%	3.0%	10.2%	10.2%	9.6%	9.0%	12.8%	2.2%	2.2%	4.1%	3.1%	2.0%	1.9%	29.3%	44.2%	39.2%	14.3%
Reconciliation of Pro Forma to GAAP																				
Amortization									(479)	(472)	(465)	(458)	(451)	(444)	(437)	(430)		0	(1,874)	(1,762)
Stock based compensation	(59)	(60)	(76)	(79)	(85)	(83)	(99)	(112)	(174)	(175)	(176)	(177)	(178)	(179)	(180)	(181)	(274)	(379)	(701)	(716)
Restructuring & Other 1x items	(2)	(1)	1	(11)	(13)	(8)	(6)	(9)	(230)	(15)	(10)						(13)	(36)	(255)	0
Loss on debt redemption/conversion			(40)	(16)	(14)	(1)	60	4	(44)								(56)	49	(44)	0
Tax Impact	1	2	4	1,251	25	24	75	(31)	124	124	124	124	124	124	124	124	1,258	93	496	496
Net Income - GAAP	\$162	\$157	\$390	\$1,781	\$555	\$710	\$923	\$974	\$786	\$1,155	\$1,255	\$1,319	\$1,107	\$1,263	\$1,446	\$1,380	\$2,490	\$3,162	\$4,515	\$5,196
GAAP Shares	1,170	1,174	1,215	1,216	1,231	1,232	1,230	1,222	1,410	1,640	1,640	1,640	1,640	1,640	1,640	1,640	1,194	1,229	1,583	1,640
EPS - GAAP	\$0.14	\$0.13	\$0.32	\$1.46	\$0.45	\$0.58	\$0.75	\$0.80	\$0.56	\$0.70	\$0.76	\$0.80	\$0.67	\$0.77	\$0.88	\$0.84	\$2.09	\$2.57	\$2.85	\$3.17

Source: Company Reports and Barclays Research

U.S. Semiconductors

NEUTRAL

Advanced Micro Devices (AMD)

EQUAL WEIGHT

Income statement (\$mn)	2021A	2022E	2023E	2024E	CAGR
Revenue	16,434	26,098	28,873	N/A	N/A
EBITDA (adj)	3,654	5,246	6,185	N/A	N/A
EBIT (adj)	4,069	7,978	8,505	N/A	N/A
Pre-tax income (adj)	4,039	7,922	8,445	N/A	N/A
Net income (adj)	3,435	6,892	7,178	N/A	N/A
EPS (adj) (\$)	2.79	4.36	4.38	N/A	N/A
Diluted shares (mn)	1,229	1,583	1,640	N/A	N/A
DPS (\$)	0.00	0.00	0.00	N/A	N/A
Margin and return data	2021A	2022E	2023E	2024E	Average
EBITDA (adj) margin (%)	22.2	20.1	21.4	N/A	21.3
EBIT (adj) margin (%)	24.8	30.6	29.5	N/A	28.3
Pre-tax (adj) margin (%)	24.6	30.4	29.2	N/A	28.1
Net (adj) margin (%)	20.9	26.4	24.9	N/A	24.1
ROA (%)	38.3	55.5	10.5	N/A	34.8
ROE (%)	58.8	91.9	12.8	N/A	54.5
Balance sheet and cash flow (\$mn)	2021A	2022E	2023E	2024E	CAGR
Tangible fixed assets	702	1,449	1,505	N/A	N/A
Intangible fixed assets	289	23,083	23,083	N/A	N/A
Cash and equivalents	2,535	7,775	11,331	N/A	N/A
Total assets	12,419	68,449	70,241	N/A	N/A
Short and long-term debt	313	1,787	1,787	N/A	N/A
Other long-term liabilities	333	4,156	4,156	N/A	N/A
Total liabilities	4,922	12,182	12,583	N/A	N/A
Net debt/(funds)	-2,222	-5,988	-9,544	N/A	N/A
Shareholders' equity	7,497	56,267	57,658	N/A	N/A
Change in working capital	617	6,436	4,134	N/A	N/A
Cash flow from operations	3,521	7,249	7,840	N/A	N/A
Capital expenditure	-301	-284	-284	N/A	N/A
Free cash flow	3,220	6,965	7,556	N/A	N/A
Valuation and leverage metrics	2021A	2022E	2023E	2024E	Average
P/E (adj) (x)	28.4	18.2	18.1	N/A	21.6
EV/sales (x)	6.7	4.1	3.5	N/A	4.8
EV/EBITDA (adj) (x)	30.0	20.2	16.5	N/A	22.2
Equity FCF yield (%)	N/A	N/A	N/A	N/A	N/A
P/Sales (x)	6.8	4.3	3.9	N/A	5.0
P/BV (x)	13.0	2.2	2.3	N/A	5.8
Dividend yield (%)	0.0	0.0	0.0	N/A	0.0
Net debt/EBITDA (adj) (x)	-0.6	-1.1	-1.5	N/A	-1.1

Note: FY End Dec

Source: Company data, Bloomberg, Barclays Research

Price (07-Jul-2022) **USD 79.30**
 Price Target **USD 85.00**

Why EQUAL WEIGHT?

We see AMD as a share gainer vs. INTC for the next few years, but see corrections across several end markets dampening that growth. We would revisit with better visibility into the depth/timing of the corrections and INTC's progress in closing the process gap.

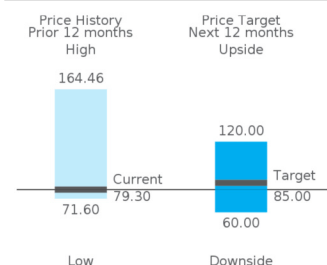
Upside case **USD 120.00**

Our upside case of \$120 is based upon 25x our upside CY23 EPS of \$4.75 which assumes significant share gains in servers and PCs, progress with GPUs in the data center, better margins from richer mix, and additional semi-custom wins.

Downside case **USD 60.00**

Our downside case of \$60 is based upon 15x our downside CY23 EPS of \$3.95 which assumes softer PC and/or Gaming markets, ASP pressure with heightened competition from INTC/NVDA/ARM, or a broader recession.

Upside/Downside scenarios



U.S. Semiconductors

NEUTRAL

Intel Corp. (INTC)

UNDERWEIGHT

Income statement (\$mn)	2021A	2022E	2023E	2024E	CAGR
Revenue	74,718	74,057	74,312	N/A	N/A
EBITDA	36,052	29,975	31,335	N/A	N/A
EBIT	24,260	16,052	15,364	N/A	N/A
Pre-tax income	23,778	15,568	14,884	N/A	N/A
Net income (adj)	21,650	13,663	13,098	N/A	N/A
EPS (adj) (\$)	5.30	3.32	3.18	N/A	N/A
Diluted shares (mn)	4,084.9	4,115.4	4,118.8	N/A	N/A
DPS (\$)	1.39	1.46	1.53	N/A	N/A
Margin and return data	2021A	2022E	2023E	2024E	Average
EBITDA margin (%)	48.3	40.5	42.2	N/A	43.6
EBIT margin (%)	32.5	21.7	20.7	N/A	24.9
Pre-tax margin (%)	31.8	21.0	20.0	N/A	24.3
Net (adj) margin (%)	26.6	21.6	15.2	N/A	21.1
ROA (%)	14.1	8.1	7.1	N/A	9.8
ROE (%)	26.7	14.3	12.6	N/A	17.9
Balance sheet and cash flow (\$mn)	2021A	2022E	2023E	2024E	CAGR
Tangible fixed assets	63,245	79,310	91,228	N/A	N/A
Intangible fixed assets	34,233	33,824	33,824	N/A	N/A
Cash and equivalents	28,413	31,699	30,919	N/A	N/A
Total assets	168,406	184,695	194,102	N/A	N/A
Short and long-term debt	38,101	43,450	51,164	N/A	N/A
Other long-term liabilities	7,738	6,738	6,738	N/A	N/A
Total liabilities	73,015	80,509	88,077	N/A	N/A
Net debt/(funds)	9,688	11,751	20,245	N/A	N/A
Shareholders' equity	95,391	104,186	106,025	N/A	N/A
Change in working capital	7,761	-8,552	-10,079	N/A	N/A
Cash flow from operations	29,991	25,139	31,540	N/A	N/A
Capital expenditure	-18,733	-26,354	-26,000	N/A	N/A
Free cash flow	11,258	-1,215	5,540	N/A	N/A
Valuation and leverage metrics	2021A	2022E	2023E	2024E	Average
P/E (adj) (x)	7.2	11.5	12.0	N/A	10.2
EV/sales (x)	2.2	2.3	2.4	N/A	2.3
EV/EBITDA (x)	4.6	5.6	5.6	N/A	5.3
Equity FCF yield (%)	7.2	-0.8	3.5	N/A	3.3
P/Sales (x)	2.1	2.1	2.1	N/A	2.1
P/BV (x)	1.6	1.5	1.5	N/A	1.5
Dividend yield (%)	3.6	3.8	4.0	N/A	3.8

Note: FY End Dec

Source: Company data, Bloomberg, Barclays Research

Price (07-Jul-2022) **USD 38.14**
 Price Target **USD 40.00**

Why UNDERWEIGHT?

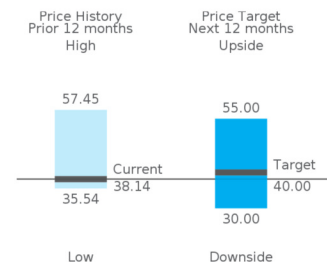
We are UW as the company continues to lose share, has an unproven and aggressive process roadmap, and now has an additional fight in foundry

Upside case **USD 55.00**

Our upside case of \$55 is based upon 15x our upside CY23 PF EPS of \$3.65, which assumes improved yields, greater government money, better growth in Data Center and PC markets.

Downside case **USD 30.00**

Our downside case of \$30 is based upon 11x our downside CY23 PF EPS of \$2.85, which assumes greater share loss to AMD, a slowdown in server spending, a slowing PC market, sustained yield issues, and/or outsourcing of leading edge Compute and DC chips, leading to further share loss.

Upside/Downside scenarios

Analyst(s) Certification(s):

We, Blayne Curtis and Tim Long, hereby certify (1) that the views expressed in this research report accurately reflect our personal views about any or all of the subject securities or issuers referred to in this research report and (2) no part of our compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this research report.

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Primary Stocks (Ticker, Date, Price)

Advanced Micro Devices (AMD, 07-Jul-2022, USD 79.30), Equal Weight/Neutral, A/CD/CE/D/E/J/K/L/M

Intel Corp. (INTC, 07-Jul-2022, USD 38.14), Underweight/Neutral, A/CD/CE/D/E/J/K/L/M/N

Materially Mentioned Stocks (Ticker, Date, Price)

Apple, Inc. (AAPL, 07-Jul-2022, USD 146.35), Equal Weight/Neutral, A/CD/CE/D/J/K/L/M/N

Other Material Conflicts: One of the Research Analysts on the fundamental equity coverage team (and/or a member of his or her household) has a long position in Vanguard Information Technology Index Fund (NYSEARCA:VGT) which primary holding is in Apple Inc. (NASDAQ: AAPL).

Dell Technologies Inc. (DELL, 07-Jul-2022, USD 42.94), Equal Weight/Neutral, A/D/E/J/K/L/M/N

HP Inc. (HPQ, 07-Jul-2022, USD 31.78), Underweight/Neutral, CD/CE/E/J/K/L/M/N

Micron Technology, Inc. (MU, 07-Jul-2022, USD 58.85), Overweight/Neutral, A/CD/CE/D/J/K/L/M/N

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Overweight - The stock is expected to outperform the unweighted expected total return of the industry coverage universe over a 12-month investment horizon.

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IT Hardware and Communications Equipment

Apple, Inc. (AAPL)	Arista Networks, Inc. (ANET)	Casa Systems (CASA)
Ciena Corporation (CIEN)	Cisco Systems, Inc. (CSCO)	Corning Incorporated (GLW)
Dell Technologies Inc. (DELL)	F5, Inc. (FFIV)	Harmonic, Inc. (HLIT)
Hewlett Packard Enterprise Company (HPE)	HP Inc. (HPQ)	Juniper Networks, Inc. (JNPR)
Keysight Technologies, Inc. (KEYS)	Motorola Solutions, Inc. (MSI)	NetApp, Inc. (NTAP)
Nutanix, Inc (NTNX)	Pure Storage, Inc. (PSTG)	Ubiquiti, Inc. (UI)

U.S. Semiconductors

Advanced Micro Devices (AMD)	Allegro Microsystems (ALGM)	Analog Devices (ADI)
Broadcom Inc. (AVGO)	Cirrus Logic Inc. (CRUS)	II-VI Incorporated (IIVI)
Intel Corp. (INTC)	Lumentum Holdings Inc. (LITE)	MACOM Technology Solutions Holdings, Inc. (MTSI)
Marvell Technology Group, Ltd. (MRVL)	Micron Technology, Inc. (MU)	NVIDIA Corp. (NVDA)
NXP Semiconductors NV (NXPI)	Ouster, Inc (OUST)	Qorvo Inc. (QRVO)
QUALCOMM, Inc. (QCOM)	Seagate Technology plc (STX)	SGH (SGH)
Silicon Laboratories, Inc. (SLAB)	SiTime Corporation (SITM)	Skyworks Solutions, Inc. (SWKS)
Texas Instruments, Inc. (TXN)	Western Digital Corporation (WDC)	

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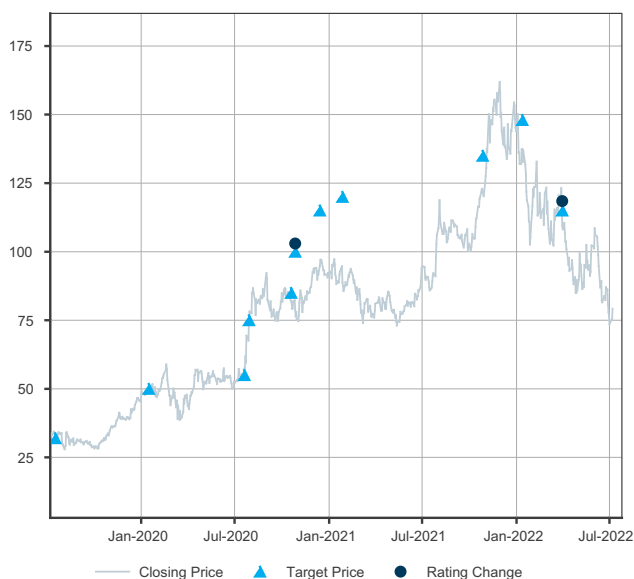
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Advanced Micro Devices (AMD / AMD)Stock Rating: **EQUAL WEIGHT**Industry View: **NEUTRAL****USD 79.30** (07-Jul-2022)**Rating and Price Target Chart - USD (as of 07-Jul-2022)**

Currency=USD



Source: IDC, Barclays Research

[Link to Barclays Live for interactive charting](#)

Publication Date	Closing Price*	Rating	Adjusted Price Target
31-Mar-2022	119.22	Equal Weight	115.00
12-Jan-2022	132.00		148.00
27-Oct-2021	122.93		135.00
27-Jan-2021	88.84		120.00
14-Dec-2020	94.78		115.00
27-Oct-2020	78.88	Overweight	100.00
19-Oct-2020	82.00		85.00
29-Jul-2020	76.09		75.00
20-Jul-2020	57.46		55.00
16-Jan-2020	49.77		50.00
18-Jul-2019	33.00		32.00

On 08-Jul-2019, prior to any intra-day change that may have been published, the rating for this security was Equal Weight, and the adjusted price target was 28.00.

Source: Bloomberg, Barclays Research

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Valuation Methodology: Our price target of \$85 is based upon 19x our CY23 EPS of \$4.38.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Risks to our thesis include continued PC growth at above historical rates, share gains in servers and PCs well above our expectations, better margins, and stronger than forecasted semi-custom results.

Intel Corp. (INTC / INTC)Stock Rating: **UNDERWEIGHT**Industry View: **NEUTRAL****USD 38.14** (07-Jul-2022)**Rating and Price Target Chart - USD (as of 07-Jul-2022)**

Currency=USD



Source: IDC, Barclays Research

[Link to Barclays Live for interactive charting](#)

Publication Date	Closing Price*	Rating	Adjusted Price Target
18-Feb-2022	47.57		45.00
12-Jan-2022	55.21		50.00
22-Oct-2021	56.00		45.00
23-Jul-2021	53.00		50.00
23-Mar-2021	63.48		58.00
22-Jan-2021	56.66		53.00
13-Jan-2021	56.95		50.00
24-Jul-2020	50.59	Underweight	48.00
01-Apr-2020	51.88	Equal Weight	58.00
16-Jan-2020	59.66		52.00
25-Oct-2019	56.46		42.00

On 08-Jul-2019, prior to any intra-day change that may have been published, the rating for this security was Underweight, and the adjusted price target was 40.00.

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Valuation Methodology: Our price target of \$40 is based upon 13x our CY23 PF EPS of \$3.18.

Risks which May Impede the Achievement of the Barclays Research Valuation and Price Target: Risks to our thesis include continued PC growth at above historical rates, better share in PC and Server markets, technology transitions accelerating, and poor execution by AMD.

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