

# Data Deposition

## C1Q Semiconductor Earnings – June Y/Y Peak Likely to Impact Stocks but Is a Red Herring

Semiconductor Devices | Comment

**Bottom Line** – We expect the Semi Ecosystem to report upside to C1Q/C2Q albeit capped by well publicized supply constraints. In aggregate the Street is modeling Semi Ex-Memory Rev -4.8%/-0.4% q/q in C1Q/C2Q vs. seasonal of -4.6%/+3.0% – we generally expect 100-300 bps of upside to both C1Q/C2Q Rev and 5-10% upside to C1Q/C2Q EPS. While fundamental upside is uncontroversial, investors are grappling with positioning and “post-print” reactions. While we have always preferred to focus on longer-term fundamentals, relative to tactical views we would highlight the following:

- (1) Semi y/y Rev is likely to peak in Jun – historically y/y peaks have rarely marked either the fundamental or stock peak for Semis but have precipitated 5-15% corrections – which is likely to influence post-print reactions. However, over the last 3Qs, T+1-3 reaction has been down 2-4% with T+30/60 up 5%/15%. Sell-the-news has been the norm, but ultimately buy-the-dips has been more lucrative – which we expect to hold thru C1Q earnings.
- (2) The average Semi upturn is 19 months with the longest over the last 9 cycles, 30 months – as measured relative to unit trend growth. While we are in month 10, the current upturn is likely to be longer than normal. Cycles end when supply catches demand with three levers – increasing utilization, de-bottlenecking back-end, and building new capacity. The current upturn is more dependent on third lever, which should extend the cycle well into CY2022.
- (3) While Auto Semis are already shipping at ~95 mm SAAR against for CY21 sell-thru expectation of ~85 mm SAAR, inventory levels across the Auto Ecosystem remain low, there has been another round of incremental production cuts (GM had incremental shutdowns on 4/9) and recent events at NXPI, IFX and Renesas, suggest that supply tightness will persist AT LEAST thru CY21.
- (4) While supply is growing q/q, a re-opening of the economy will create significant demand tailwinds (Enterprise, Industrial, Service Economy, Auto) which bias 2H risk to supply shortages worsening rather than pockets of inventory. Despite Semi stocks outperforming in CY20 (+51.1% vrs. SPX of +16.3%) the only two end markets that clearly benefitted from WFH/SFH were PCs and Gaming and both continue to look strong at least thru year end.
- (5) Government subsidies for Semiconductors are now well understood. While we see discovery value in specific details still to come, we would also balance that view with the prospect of potentially higher Corporate Tax Rate in CY21 and beyond. Semis disproportionately benefitted from the 2016 Trump Tax Cut; the median decline in tax rate in our Coverage since 2015 was been 642 ppts, or ~30%.
- (6) Trading strategies in C1Q vary – but investors seem to be protecting gains YTD in the more cyclical sectors of semis (MU, SCE, Analog) and rotating into more structural growth (NVDA, MRVL, CDNS, SNPS) – within cyclical, investors seem to be more comfortable owning names with LESS upside due to supply constraints and hedging with companies likely to show MORE upside either thru capacity or pricing – think NXPI/ADI vs. TXN/ON – based on good news becoming bad.

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## Executive Summary

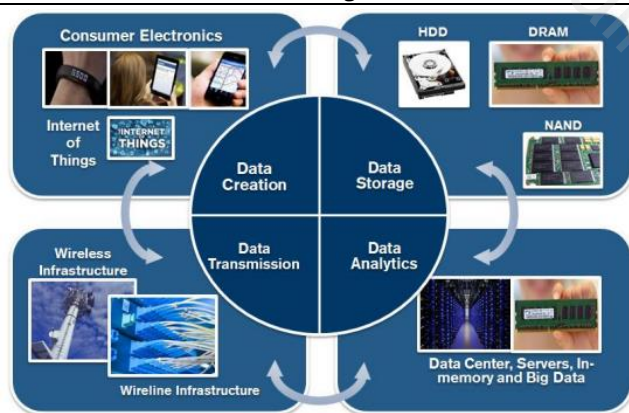
Figure 1: Top Picks

Ticker	Old Rank	Price	Rating	Target	Performance			Commentary	
					2020	2021 YTD	Peak-to-Trough		
MU	1	\$91.43	OP	\$110	39.8%	21.6%	-54.2%	165.2%	Industry CapEx down ~35% P-T. Memory content moving structurally higher. Mu's competitive and liquidity position never better. \$35 or 1.2x BVPS solid floor.
ADI	2	\$153.08	OP	\$200	24.3%	3.6%	-44.3%	86.2%	Best levered to industry 4.0 with exposure to 5G Comms. Long duration, highest B2B exposure in Semis. M&M deal provides credible roadmap to ~100bn mkt cap and ~40% FCFM.
NXP	3	\$202.78	OP	\$250	24.9%	27.5%	-61.2%	214.1%	Discounted valuation with solid B/S and liquidity position outgrowing peers. Auto Exposure NT not ideal, but expect any COVID stimulus to include cash-for-dunkers, EV.
MRVL	11	\$47.96	OP	\$60	79.0%	0.9%	-63.7%	178.0%	LT Rev Growth CAGR ~10-15% from outsized exposure to key inflection points in 5G, datacenter, Cloud, and Accelerated Compute.
NVDA	12	\$531.65	OP	\$700	121.9%	1.8%	-66.3%	170.7%	NVDA Enables AI, AI Lowers Cost, Lower Cost Drives Elasticity; \$90bn Compute TAM CAGR will accelerate to 10-15% w/ NVDA DCG CAGR at least 2x TAM supporting overall NVDA CAGR of 15%+.
AMAT	4	\$118.50	OP	\$175	41.4%	37.3%	-57.7%	211.9%	Compelling valuation, improved profitability, optionality around troubling FPD market with SAM expansion. WFE more growth than cyclical.
LRGX	6	\$547.18	OP	\$750	61.5%	15.9%	-63.3%	191.2%	Well positioned to benefit from recovery in Memory CapEx. Compelling valuation. Bets in class management. WFE more growth than cyclical.
KLAC	5	\$301.95	OP	\$325	45.3%	16.6%	-57.3%	164.8%	Positioned to benefit from increasing CapEx/Rev for Logic/Foundry. Gen 5 product cycle a tailwind. Potential for 20%+ multiple expansion.
INTC	9	\$64.78	OP	\$80	-16.8%	30.0%	-35.6%	46.9%	NT WFE, SFH, On-Line Everything driving strong server demand and a cushion for PCs. LT most mid-priced asset relative to accelerating Compute Tam. 10nm better than feared.
MCHP	8	\$149.90	OP	\$180	31.9%	8.5%	-61.5%	168.8%	Liquidity concerns SIGNIFICANTLY over blown - 2008 FCFM 20% means no liquidity, no maturity issues. Solid management likely to drive OpM targets at least 500 bps higher.
TXN	7	\$177.14	OP	\$200	27.9%	7.9%	-43.9%	89.5%	Under-modeled Rev growth/OpM with best leverage to industry 4.0. Market share leader in Analog generating sustainably strong FCF. Distribution headwinds thru C2Q abating.
AVGO	10	\$478.18	OP	\$580	38.6%	9.2%	-61.7%	184.9%	Under-valued aggregation of at least eight core franchises - five Semis, three Software, especially relative to a FCF/dividend yield of 7.5%/3.6% and their ability to turn EV to mkt cap.
KEYS	14	\$137.48	OP	\$175	28.7%	4.1%	-40.7%	75.6%	Leader in test/measurement and positioned to benefit from 5G; expanding SW portfolio up/down the stack, OpM improving as company optimizes.
SNPS	15	\$234.05	OP	\$265	86.2%	-9.7%	-58.2%	115.8%	Fastest growing and best quality EDA company. Highest barriers to entry with new non-traditional customers and incremental streams of revenue with Software integrity.
ALGM	13	\$26.83	OP	\$36	50.6%	0.6%	-36.8%	51.6%	Most levered Semis to Autos, long duration end markets in Auto/Industrial (~85% of Rev), accelerating content in Auto allowing ALGM to grow Auto Rev at a 10-15% CAGR.
TER	16	\$117.35	N	\$125	75.8%	-2.1%	-63.3%	165.0%	SoC stronger for longer as test-times extend. Post COVID supply chains will become more redundant, sovereign and AUTOMATED - a significant driver for TER.
RIMB	17	\$20.44	N	\$19	26.8%	17.1%	-50.0%	120.7%	Transitioning from an IP licensing company to a diverse product and tech company.
MODM	18	\$90.19	N	\$74	44.1%	1.7%	-52.1%	112.2%	Best in class returns, execution on cost saving measures, fairly valued. As supply chains become more redundant, sovereign and automated, Industrial exposure a big plus.
CDNS	19	\$129.39	N	\$155	96.7%	-5.2%	-60.2%	138.2%	Solid management team and industry fundamentals offset by a fair but full valuation. Very defensive during a turbulent COVID-19 environment.
BRKS	20	\$87.10	N	\$70	61.7%	28.4%	-69.8%	283.9%	Benefitting from growth in WFE and increasing mix of licenses. Valuation more fair than cheap but management team is solid.
ON	21	\$40.66	UP	\$17	34.2%	24.2%	-74.2%	381.2%	Typically outperforms a cyclical bottom and valuation looks cheap on P/E, more expensive on EV/FCF. Buying capacity at peak needs to be rationalized. No liquidity/maturity risk.
XUNX		\$129.18	N/A	N/A	45.0%	-8.9%	-54.7%	87.3%	Restricted.
AMD		\$82.75	N/A	N/A	100.0%	-9.8%	-60.1%	113.8%	Restricted.

Source: Company data, Credit Suisse estimates, FactSet

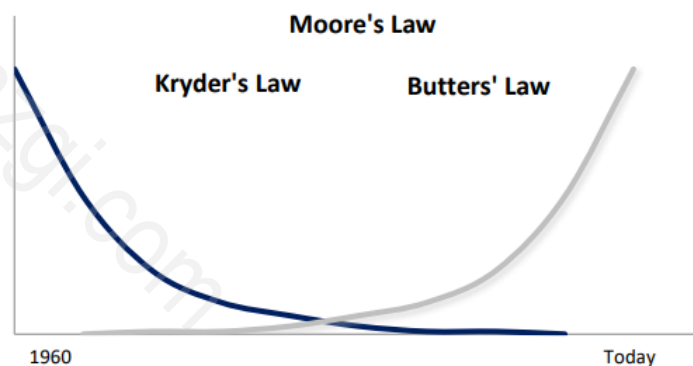
**The Forest Is Still More Important than the Trees.** While following quarterly results and near-term data points are essential to alpha generation, do not lose sight of the bigger picture. Even after the momentum of the current upturn wanes, Semis will still see growing importance to global economy especially with the advent of AI. We have highlighted 3 key secular trends: (1) Semis Re-capture Economic Value, (2) Structural Rise in Cost of Capacity and (3) Accelerating Compute TAM. While all three still represent discovery value the third is perhaps least well embedded in current expectations. Most investors continue to view the Compute TAM as zero-sum with increasing competition – we continue to argue that AI fundamentally lowers the cost of analytics unlocking the greater than 98% of data created that has hitherto sat dark.

Figure 2: Our Data Growth Paradigm



Source: Company data, Credit Suisse estimates

Figure 3: Cost of Creation, Transmission, and Storage Decline



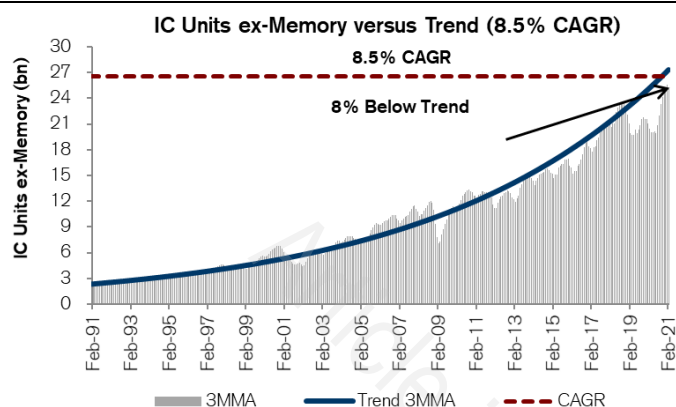
Source: Company data, Credit Suisse estimates

Analytics is much more compute intensive than Data Creation, underpinning a LT Compute CAGR likely to be >15% vs. historical of 3-5%. In addition more analytics will drive more creation, more storage and more networking demand benefitting the entire Semi Ecosystem. The purpose of AI is to drive efficiencies across all aspects of the economy; every 1% value capture of Global COGS, OpEx, CapEx unlocks an additional ~\$450 bn Semi TAM. Despite outperforming over a 3/5/10 year period, Semis still only represent ~3.5% of Global Market Capitalization, Energy is still greater than 5% and peaked in the 1990s at 30%. It is difficult for us to imagine how many of the really large issues facing the planet today are addressed without significantly more silicon, each year fewer and fewer companies can continue support the R&D and CapEx requirements needed to produce chips, the remaining assets should continue to accrue value.

## Key Charts

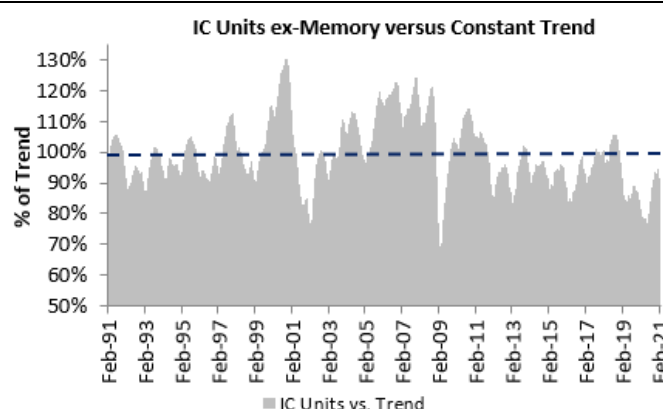
## Cycle Update

Figure 4: IC Units vs. Constant Trend



Source: Company data, Credit Suisse estimates

Figure 5: Unit % of Constant Trend



Source: Company data, Credit Suisse estimates

**Cycle Update:** We have analyzed 9 upturns over 30+ years ([Into Every Upturn a Little Correction Must Fall](#)) defining cycles that begin when IC units Ex-Memory are most below trend growth and end when IC units are most above trend growth (~8.5% CAGR) – and would highlight the following: (1) Median upturn is ~19 months – the shortest being 7 months (1993) the longest 30 months (2016) – current upturn is in month 10, i.e. we are slightly over ~1/2 thru the current cycle, (2) Units troughed in Jun at ~23% below trend well BELOW the average cycle of 14% – current units are 8.2% below trend and usually peak 12% above trend and (3) Peak-to-peak units grow ~30% on average, peak-to-current we are only 6.5% - above last peak – implying we need to get another 22% growth from here to get back to average peak on peak growth, or 45% to reach best peak on peak growth. While believe using y/y growth to define cycles is incorrect, it has historically been used as a 2nd derivative sell-signal – and has historically been wrong. We expect peak y/y growth in the June timeframe, comping against the worse of COVID related auto weakness.

Figure 6: Cycle Analysis of IC Units ex-Memory – based on ABOVE/BELOW Constant 8.5% CAGR

IC Units ex-Memory Peak to Trough (ABOVE/BELOW Trend)										
Cycle	1	2	3	4	5	6	7	8	9	Current
Trough	01/31/93	02/28/94	08/31/96	02/28/99	01/31/02	02/28/05	02/28/09	01/31/12	02/29/16	06/30/20
% BELOW Trend	(12.5%)	(8.6%)	(9.4%)	(9.5%)	(22.9%)	(3.5%)	(30.8%)	(14.2%)	(16.1%)	(23.0%)
Peak	08/31/93	08/31/95	11/30/97	10/31/00	05/31/04	09/30/06	09/30/10	09/30/13	08/31/18	04/18/21
% ABOVE Trend	1.7%	5.0%	12.7%	30.4%	13.3%	22.9%	14.0%	2.1%	5.6%	(8.2%)
Duration (months)	7	18	14	20	28	19	19	19	30	10
% Above - % Below Trend	14.3%	13.6%	22.0%	39.9%	36.3%	26.5%	44.7%	16.4%	21.7%	14.8%
Peak Units	2,947,321	3,580,531	4,616,896	6,780,343	7,891,705	10,355,694	13,305,288	15,227,070	23,525,631	25,581,688
Peak-Peak Growth	--	21.5%	28.9%	46.9%	16.4%	31.2%	28.5%	14.4%	54.5%	8.7%

Avg	Median
-14.2%	-12.5%
12.0%	12.7%
19.3	19.0
26.1%	22.0%

Avg	Median
30.3%	28.7%

Source: Company data, Credit Suisse estimates

Figure 7: Cycle Analysis of IC Units ex-Memory – based on Y/Y growth of 3MMA Trough/Peak Units

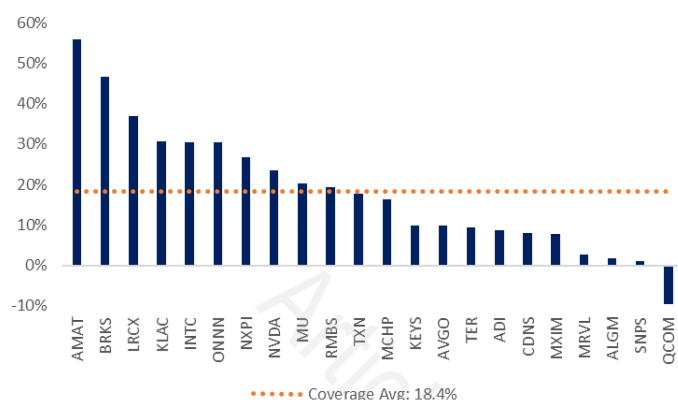
IC Units ex-Memory Y/Y growth based on 3MMA Trough/Peak Units									
Cycle	1	2	3	4	5	6	7	8	Current
Trough	04/30/92	08/31/96	09/30/98	09/30/01	04/30/05	02/28/09	01/31/12	05/31/16	06/30/20
y/y	(6.2%)	(6.3%)	(9.6%)	(30.8%)	(3.3%)	(31.0%)	(11.4%)	1.0%	(0.1%)
Peak	09/30/93	08/31/97	06/30/00	12/31/02	02/28/06	03/31/10	12/31/13	07/31/17	04/18/21
y/y	16.9%	31.0%	36.3%	31.4%	29.5%	61.8%	18.3%	19.5%	22.4%
Duration (months)	17	12	21	15	10	13	23	14	10
Peak y/y - Trough y/y	23.1%	37.4%	45.9%	62.2%	32.9%	92.8%	29.7%	18.5%	22.5%

Avg	Median
-12.2%	-8.0%
30.6%	30.3%
15.6	14.5
42.8%	35.1%

Source: Company data, Credit Suisse estimates

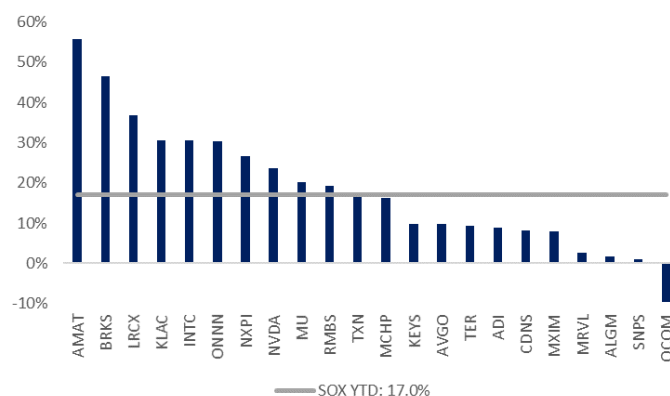
## YTD Performance

Figure 8: Coverage YTD Performance



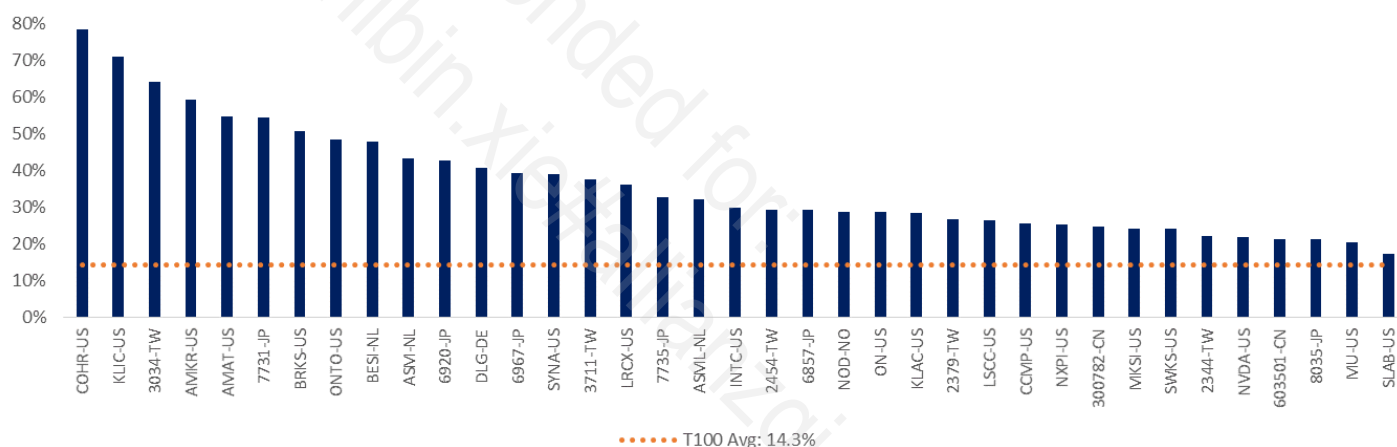
Source: Company data, Credit Suisse estimates, FactSet

Figure 9: Coverage YTD Performance vs. SOX



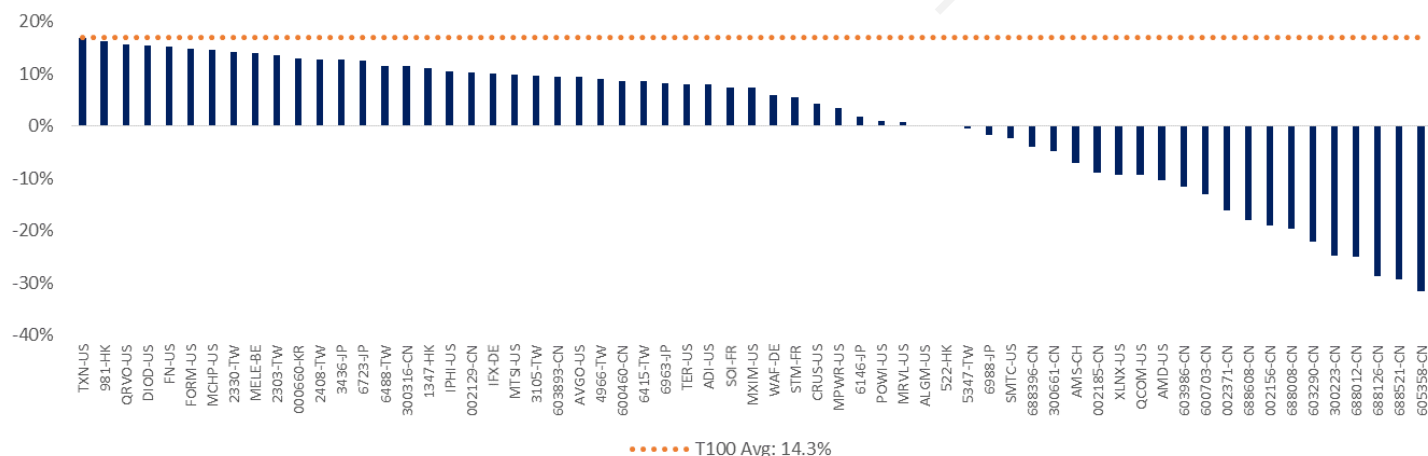
Source: Company data, Credit Suisse estimates, FactSet

Figure 10: YTD Performance - Top 100 Semi Companies ABOVE SOX



Source: Company data, Credit Suisse estimates, FactSet

Figure 11: YTD Performance - Top 100 Semi Companies BELOW SOX



Source: Company data, Credit Suisse estimates, FactSet

## Summary of Expectations

Figure 12: Street vs. Seasonal Revenue

Rev	C1Q21				Rev	C2Q21			
	Street	Street q/q	Seasonal q/q	+/- Seasonal		Street	Street q/q	Seasonal q/q	+/- Seasonal
MU	\$6,236	8.0%	-6.7%	14.8%	MU	\$7,079	13.5%	6.1%	7.4%
NXPI	\$2,556	1.9%	-9.4%	11.3%	ON	\$1,495	2.1%	-2.8%	5.0%
LRCX	\$3,717	7.5%	-3.0%	10.5%	MXIM	\$659	3.1%	2.0%	1.1%
NVDA	\$5,379	7.5%	-0.8%	8.3%	SNPS	\$1,014	2.5%	1.9%	0.6%
KLAC	\$1,744	5.6%	0.5%	5.1%	CDNS	\$723	0.7%	0.6%	0.1%
MCHP	\$1,456	7.7%	3.0%	4.7%	AVGO	\$6,592	1.3%	1.4%	0.0%
ON	\$1,464	1.2%	-2.7%	4.0%	NXPI	\$2,565	0.4%	0.9%	-0.6%
MRVL	\$801	0.4%	-3.3%	3.8%	MRVL	\$840	4.9%	5.6%	-0.7%
ADI	\$1,605	3.0%	1.0%	2.0%	INTC	\$17,545	-1.3%	-0.2%	-1.1%
AVGO	\$6,505	-2.2%	-2.0%	-0.3%	KEYS	\$1,206	0.1%	1.4%	-1.3%
BRKS	\$272	9.1%	10.1%	-0.9%	TXN	\$4,159	4.1%	6.0%	-1.9%
SNPS	\$989	1.9%	3.2%	-1.3%	AMAT	\$5,530	2.4%	5.6%	-3.2%
TXN	\$3,995	-2.0%	-0.6%	-1.4%	KLAC	\$1,766	1.3%	4.8%	-3.5%
KEYS	\$1,205	2.1%	3.7%	-1.6%	TER	\$877	15.3%	19.1%	-3.8%
MXIM	\$639	1.7%	4.2%	-2.5%	MCHP	\$1,505	3.4%	7.7%	-4.3%
INTC	\$17,778	-11.0%	-8.1%	-2.9%	BRKS	\$274	0.6%	7.3%	-6.8%
AMAT	\$5,401	4.7%	8.2%	-3.5%	ADI	\$1,652	2.9%	10.6%	-7.7%
CDNS	\$718	-5.5%	1.7%	-7.2%	LRCX	\$3,713	-0.1%	9.3%	-9.4%
TER	\$760	0.2%	7.6%	-7.4%	NVDA	\$5,440	1.1%	15.1%	-14.0%

Source: Company data, Credit Suisse estimates, FactSet

## Trading Around Earnings

Figure 13: Price movement relative to print close – CY19

C1Q19	T+1	T+3	T+30	T+60
ADI	-1.4%	1.0%	2.8%	1.0%
ALGM	--	--	--	--
AMAT	-4.0%	-3.5%	-5.4%	0.6%
AVGO	8.2%	11.6%	16.3%	1.7%
BRKS	15.9%	17.0%	27.0%	23.9%
CDNS	3.9%	5.1%	-3.9%	17.1%
INTC	-9.0%	-11.4%	-21.7%	-13.3%
KEYS	0.9%	3.5%	8.8%	4.2%
KLAC	-6.1%	-8.4%	-13.4%	12.0%
LRCX	4.9%	5.5%	-6.7%	-1.9%
MCHP	-2.4%	-8.7%	-7.4%	3.1%
MRVL	-2.6%	3.2%	29.6%	15.8%
MU	9.6%	1.0%	4.4%	-17.9%
MXIM	-0.2%	0.9%	-3.3%	6.2%
NVDA	1.8%	1.4%	14.7%	10.1%
NXPI	7.9%	8.9%	-2.6%	0.9%
ONNN	-1.1%	0.7%	-15.1%	-9.9%
QCOM	0.9%	2.2%	-19.4%	-12.2%
RMBS	-3.7%	-2.0%	-6.9%	2.4%
SNPS	-1.5%	-0.1%	14.0%	16.8%
TER	7.6%	9.4%	-0.6%	1.3%
TXN	1.8%	0.7%	-6.2%	2.0%
Average	1.5%	1.8%	0.2%	3.0%
Median	0.9%	1.0%	-3.3%	2.0%

C2Q19	T+1	T+3	T+30	T+60
ADI	-2.7%	-3.0%	11.6%	8.7%
ALGM	--	--	--	--
AMAT	2.5%	-0.9%	7.3%	14.9%
AVGO	-5.6%	-1.3%	6.7%	3.3%
BRKS	-13.5%	-14.8%	3.4%	12.3%
CDNS	2.2%	4.7%	-5.8%	-8.5%
INTC	-1.1%	-0.9%	-3.9%	-0.6%
KEYS	11.3%	3.9%	24.5%	24.8%
KLAC	7.3%	8.6%	19.6%	38.2%
LRCX	-1.4%	-7.2%	12.2%	11.8%
MCHP	4.0%	3.3%	10.2%	11.5%
MRVL	0.5%	5.5%	12.2%	11.8%
MU	13.3%	18.1%	30.4%	55.6%
MXIM	-7.7%	-12.8%	-9.0%	-8.6%
NVDA	-2.3%	-3.2%	1.9%	-1.2%
NXPI	1.5%	-4.1%	3.0%	5.5%
ONNN	-10.7%	-12.1%	0.7%	-4.0%
QCOM	-2.7%	-6.0%	9.2%	5.6%
RMBS	-0.2%	-3.9%	-2.7%	4.3%
SNPS	1.7%	1.4%	17.2%	10.1%
TER	20.5%	17.2%	8.6%	28.3%
TXN	7.4%	6.7%	1.4%	9.7%
Average	1.2%	0.0%	7.5%	11.1%
Median	0.5%	-0.9%	7.3%	9.7%

C3Q19	T+1	T+3	T+30	T+60
ADI	0.0%	-2.4%	0.3%	5.1%
ALGM	--	--	--	--
AMAT	-1.1%	-0.9%	10.6%	18.6%
AVGO	-3.4%	-3.9%	-6.1%	3.5%
BRKS	7.5%	5.2%	-4.6%	-13.9%
CDNS	-5.7%	-2.5%	1.1%	9.9%
INTC	8.1%	7.9%	7.4%	14.2%
KEYS	12.6%	6.8%	6.3%	19.6%
KLAC	-2.3%	0.6%	-3.4%	4.1%
LRCX	13.9%	20.6%	12.7%	27.9%
MCHP	-4.4%	-3.8%	2.4%	4.2%
MRVL	-1.0%	-3.8%	-3.8%	8.0%
MU	-11.1%	-13.0%	-0.4%	12.2%
MXIM	0.4%	3.2%	-3.2%	5.7%
NVDA	7.3%	12.8%	19.2%	40.0%
NXPI	5.3%	4.6%	8.5%	23.2%
ONNN	10.6%	9.4%	15.4%	30.3%
QCOM	6.3%	8.5%	4.0%	4.3%
RMBS	1.3%	0.1%	-4.7%	3.6%
SNPS	5.4%	3.6%	1.1%	5.6%
TER	2.6%	7.6%	4.2%	18.8%
TXN	-7.5%	-6.3%	-8.4%	1.6%
Average	2.1%	2.6%	2.8%	11.8%
Median	1.3%	3.2%	1.1%	8.0%

C4Q19	T+1	T+3	T+30	T+60
ADI	-1.0%	-1.7%	4.1%	3.2%
ALGM	--	--	--	--
AMAT	9.0%	7.0%	7.6%	10.9%
AVGO	-3.8%	-1.2%	-2.5%	-16.4%
BRKS	-3.4%	4.6%	-43.6%	-5.1%
CDNS	2.8%	2.2%	-20.4%	5.0%
INTC	8.1%	6.3%	-10.0%	-4.0%
KEYS	2.2%	1.2%	-4.7%	-7.7%
KLAC	-4.2%	-7.7%	-16.3%	-7.0%
LRCX	4.3%	3.4%	-7.2%	-8.9%
MCHP	6.7%	4.4%	-38.6%	-14.1%
MRVL	-4.9%	-3.9%	9.3%	-10.0%
MU	2.8%	4.4%	4.3%	-17.6%
MXIM	-0.9%	-3.2%	-14.7%	-18.9%
NVDA	-2.7%	-0.9%	14.0%	21.2%
NXPI	3.8%	7.7%	-36.1%	-22.7%
ONNN	-0.4%	5.0%	-40.7%	-22.7%
QCOM	-0.3%	-2.5%	-32.7%	-13.1%
RMBS	3.1%	10.9%	-19.2%	-17.1%
SNPS	-3.0%	-2.8%	8.7%	4.4%
TER	3.6%	-5.6%	-15.1%	-17.0%
TXN	0.7%	-5.3%	-10.7%	-19.0%
Average	1.1%	1.1%	-12.6%	-8.4%
Median	0.7%	1.2%	-10.7%	-10.0%

Source: Company data, Credit Suisse estimates, FactSet



Figure 14: Price movement relative to print close – CY20

C1Q20	T+1	T+3	T+30	T+60
ADI	0.5%	-5.3%	-32.1%	-16.2%
ALGM	--	--	--	--
AMAT	3.1%	2.3%	-31.6%	-22.7%
AVGO	7.1%	-8.8%	18.4%	41.2%
BRKS	-8.6%	-5.3%	1.6%	18.7%
CDNS	-4.2%	2.6%	17.8%	26.2%
INTC	0.4%	-0.5%	6.7%	0.2%
KEYS	3.0%	1.7%	-0.2%	6.6%
KLAC	5.3%	10.2%	24.0%	23.7%
LRCX	-2.9%	-2.7%	5.6%	26.3%
MCHP	4.9%	0.6%	22.0%	19.6%
MRVL	10.4%	-1.6%	11.3%	35.9%
MU	5.4%	4.8%	8.4%	19.9%
MXIM	4.4%	-5.3%	10.3%	25.5%
NVDA	7.0%	9.5%	-5.0%	12.6%
NXPI	1.2%	2.5%	17.5%	27.2%
ONNN	-4.5%	-6.0%	25.1%	35.6%
QCOM	-0.4%	-4.2%	15.2%	17.3%
RMBS	13.9%	17.8%	18.4%	14.9%
SNPS	-6.0%	-11.5%	-23.7%	-5.3%
TER	3.0%	1.8%	14.0%	42.1%
TXN	4.8%	6.6%	14.8%	23.4%
<b>Average</b>	<b>2.3%</b>	<b>0.4%</b>	<b>6.6%</b>	<b>17.7%</b>
<b>Median</b>	<b>3.0%</b>	<b>0.6%</b>	<b>11.3%</b>	<b>19.9%</b>

C2Q20	T+1	T+3	T+30	T+60
ADI	-3.1%	-3.1%	5.1%	4.1%
ALGM	--	--	--	--
AMAT	-4.4%	1.9%	10.2%	16.9%
AVGO	2.7%	2.1%	0.8%	9.8%
BRKS	15.1%	18.4%	-7.9%	4.2%
CDNS	-0.1%	-0.7%	7.0%	11.4%
INTC	-16.2%	-18.5%	-16.6%	-10.8%
KEYS	-1.6%	4.6%	-3.4%	-0.7%
KLAC	-1.3%	-2.0%	-14.2%	-4.2%
LRCX	4.9%	5.7%	-16.6%	1.6%
MCHP	-8.2%	-7.8%	-3.4%	0.6%
MRVL	8.8%	15.5%	27.2%	9.4%
MU	4.8%	1.4%	0.0%	0.0%
MXIM	0.1%	0.2%	-1.9%	18.6%
NVDA	2.9%	-0.7%	9.5%	30.4%
NXPI	-4.2%	-2.5%	5.1%	13.4%
ONNN	5.2%	7.4%	2.8%	20.4%
QCOM	15.2%	17.8%	22.6%	38.2%
RMBS	-1.1%	-1.3%	-7.9%	-7.3%
SNPS	1.8%	3.4%	19.0%	17.4%
TER	-0.3%	-6.9%	-4.9%	-2.3%
TXN	-2.2%	-4.3%	7.0%	14.0%
<b>Average</b>	<b>0.9%</b>	<b>1.5%</b>	<b>1.9%</b>	<b>8.8%</b>
<b>Median</b>	<b>-0.1%</b>	<b>0.2%</b>	<b>0.8%</b>	<b>9.4%</b>

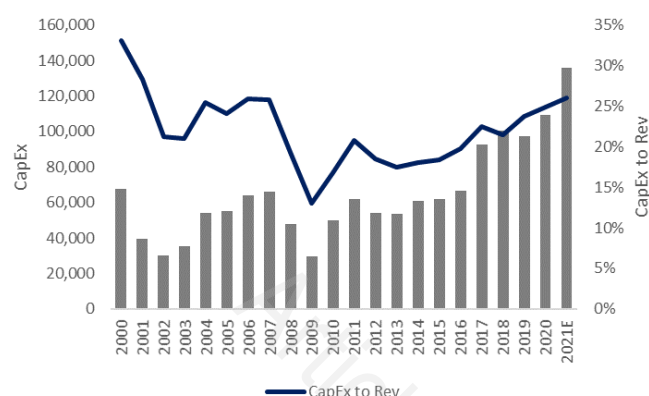
C3Q20	T+1	T+3	T+30	T+60
ADI	-0.6%	-0.8%	-1.2%	16.3%
ALGM	-4.1%	5.3%	17.0%	33.4%
AMAT	3.9%	2.1%	-11.2%	7.5%
AVGO	3.1%	-0.4%	7.9%	11.0%
BRKS	12.1%	15.2%	25.4%	42.3%
CDNS	-0.8%	-3.7%	2.4%	18.6%
INTC	-10.6%	-15.3%	-5.4%	9.9%
KEYS	-6.7%	-5.1%	-5.2%	10.9%
KLAC	6.0%	6.1%	34.6%	59.7%
LRCX	-2.3%	-5.2%	30.7%	43.6%
MCHP	5.8%	3.0%	18.0%	17.1%
MRVL	6.5%	9.1%	19.0%	23.0%
MU	-7.4%	-8.2%	9.3%	38.9%
MXIM	-2.8%	-1.5%	24.0%	37.0%
NVDA	0.0%	4.8%	11.5%	10.5%
NXPI	-1.2%	0.9%	22.4%	27.7%
ONNN	-2.9%	3.2%	22.2%	48.6%
QCOM	12.7%	10.6%	16.1%	19.2%
RMBS	5.0%	12.3%	31.1%	51.3%
SNPS	8.5%	7.8%	8.0%	13.5%
TER	4.7%	4.6%	30.9%	55.9%
TXN	-3.1%	-0.6%	8.4%	14.2%
<b>Average</b>	<b>1.2%</b>	<b>2.0%</b>	<b>14.4%</b>	<b>27.7%</b>
<b>Median</b>	<b>-0.3%</b>	<b>2.5%</b>	<b>16.5%</b>	<b>21.1%</b>

C4Q20	T+1	T+3	T+30	T+60
ADI	-0.7%	0.6%	8.6%	17.2%
ALGM	-9.3%	-5.7%	-16.2%	-16.5%
AMAT	4.3%	6.5%	22.2%	47.9%
AVGO	-1.0%	2.0%	13.8%	8.2%
BRKS	-8.3%	-5.9%	3.0%	21.0%
CDNS	-0.4%	3.6%	9.5%	10.6%
INTC	-9.3%	-11.6%	-6.6%	4.1%
KEYS	2.4%	1.7%	14.0%	28.9%
KLAC	2.8%	5.6%	6.7%	16.3%
LRCX	-1.5%	-2.6%	0.7%	25.0%
MCHP	1.2%	5.8%	1.2%	10.1%
MRVL	-4.7%	-4.0%	12.7%	2.3%
MU	-2.1%	0.4%	11.9%	16.8%
MXIM	-5.7%	-5.9%	-5.4%	2.1%
NVDA	0.1%	-2.2%	-2.1%	9.9%
NXPI	3.3%	5.8%	16.5%	16.2%
ONNN	0.4%	3.8%	7.0%	14.9%
QCOM	-8.8%	-9.2%	-17.5%	-14.8%
RMBS	-0.2%	-1.3%	3.6%	4.5%
SNPS	2.2%	5.1%	9.6%	-5.9%
TER	-7.8%	-9.7%	-16.3%	-0.5%
TXN	-5.0%	-3.4%	-0.6%	11.9%
<b>Average</b>	<b>-2.2%</b>	<b>-0.9%</b>	<b>3.5%</b>	<b>10.5%</b>
<b>Median</b>	<b>-0.9%</b>	<b>-0.4%</b>	<b>5.2%</b>	<b>10.4%</b>

Source: Company data, Credit Suisse estimates

## CapEx

Figure 15: LT Semi CapEx



Source: Company data, Credit Suisse estimates

Figure 16: CS Global Bottom-up CapEx

CS Global Bottoms Up CapEx	2018	2019	2020	2021E
Samsung	21,256	19,550	25,878	32,000
Intel	15,181	16,200	14,259	20,000
TSMC & Affiliates	10,355	14,500	17,200	30,000
Restricted	14,209	9,840	8,950	8,975
Global Foundry (AMD)	2,700	2,600	2,600	2,600
Micron (Incl. Inotera)	7,698	8,951	8,944	9,000
Toshiba+SNDK	6,388	3,224	2,199	2,563
UMC+ Xiamen	650	700	1,000	1,500
Sony	1,298	2,784	2,167	2,166
Other	20,563	20,531	28,241	26,984
<b>Total</b>	<b>100,297</b>	<b>98,881</b>	<b>111,438</b>	<b>135,789</b>

Source: Company data, Credit Suisse estimates

## Tax Rates

Figure 17: Semis Largely Benefitted from Trump admin of Tax cuts – 642 bps

Tax Rate	2015	2020	Change (ppts)
TXN	29.4%	13.4%	-16.1
NVDA	18.8%	6.1%	-12.8
TER	22.9%	15.1%	-7.8
KLAC	20.5%	12.3%	-8.2
CDNS	23.0%	16.0%	-7.0
MXIM	18.5%	12.5%	-6.0
MCHP	11.1%	5.5%	-5.6
AMAT	18.4%	11.4%	-7.1
INTC	19.6%	16.4%	-3.3
KEYS	17.1%	11.8%	-5.3
<b>Average</b>	<b>15.0%</b>	<b>11.8%</b>	<b>-3.2</b>
<b>Median</b>	<b>18.4%</b>	<b>12.0%</b>	<b>-6.4</b>

Tax Rate	2015	2020	Change (ppts)
SNPS	19.7%	16.0%	-3.7
MU	6.6%	4.3%	-2.3
ADI	11.6%	11.0%	-0.6
BRKS	23.0%	21.6%	-1.4
LRCX	11.8%	9.6%	-2.3
AVGO	5.4%	12.0%	6.6
NXPI	2.6%	5.5%	2.9
ON	5.2%	12.9%	7.7
MRVL	-0.7%	10.1%	10.7
<b>Average</b>	<b>15.0%</b>	<b>11.8%</b>	<b>-3.2</b>
<b>Median</b>	<b>18.4%</b>	<b>12.0%</b>	<b>-6.4</b>

Source: Company data, Credit Suisse estimates



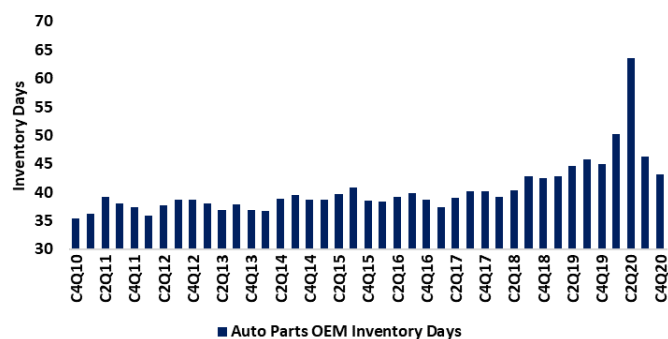
## Auto Supply Chain Inventory Days

Figure 18: Total Auto Supply Chain Inventory Days



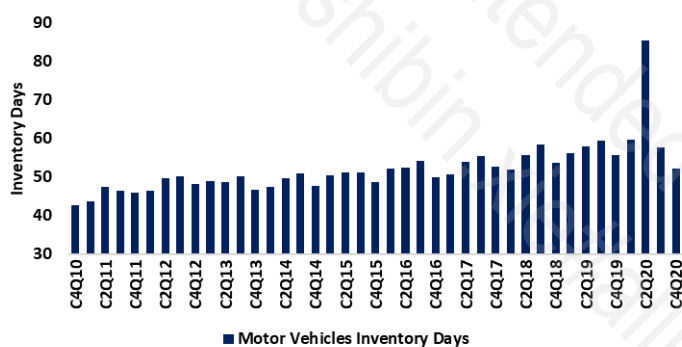
Source: Company data, Credit Suisse estimates

Figure 19: Auto Parts OEM Inventory Days



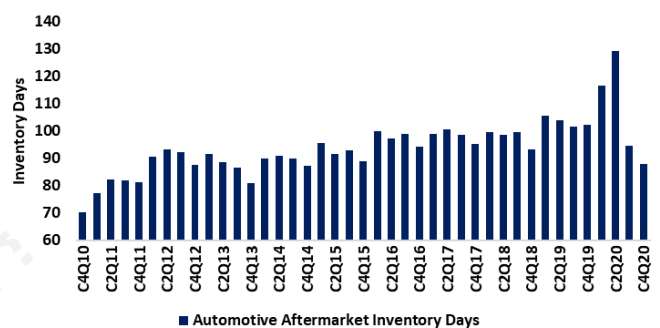
Source: Company data, Credit Suisse estimates

Figure 20: Motor Vehicles Inventory Days



Source: Company data, Credit Suisse estimates

Figure 21: Automotive Aftermarket Inventory Days



Source: Company data, Credit Suisse estimates

## Valuation Methodology and Risks

### Target Price and Rating

#### Valuation Methodology and Risks: (12 months) for Allegro Microsystems, Inc. (ALGM.OQ)

**Method:** Our Outperform rating and \$36 target price for ALGM are based on 45x times CY22 EV/FCF. We rate ALGM Outperform given its leading share position in Auto and incumbency status with industry leading OEMs.

**Risk:** Risks to our \$36 target price and Outperform rating for ALGM are (1) competitive pressures in the auto market, (2) failure to secure future design wins, and (3) a slower than expected recovery in the Auto market.

### Target Price and Rating

#### Valuation Methodology and Risks: (12 months) for Analog Devices Inc. (ADI.OQ)

**Method:** Our \$200 target price and Outperform rating for ADI are based on ~32 times CY21 P/E. We rate ADI Outperform as we expect it to appreciate more than its peers.

**Risk:** Risks to our \$200 target price and Outperform rating for ADI are: (1) competitive pricing pressure in the analog universe by new entrants and Chinese semiconductor companies and (2) market share loss in amplifiers, data converters, power management, due to new entrants and new technologies being introduced.

### Target Price and Rating

#### Valuation Methodology and Risks: (12 months) for Applied Materials Inc. (AMAT.OQ)

**Method:** Our \$175 target price and Outperform rating for AMAT are based on ~27x our CY22 EPS estimate. We rate AMAT as Outperform, as we would note that (i) AMAT is relatively cheap on CY22E PE. (ii) The company has bought back >25% of shares outstanding, driving further accretion. (iii) OLED is driving a stronger Display investment cycle which, while lumpy, will uniquely benefit AMAT among the large equipment suppliers. We rate AMAT Outperform as we expect it to appreciate more than its peers.

**Risk:** Risks to AMAT's \$175 target price and Outperform rating are material weakness in the semicap cycle due to disappointments in electronics end-demand, or execution issues causing lower peak earnings than we expected.

### Target Price and Rating

#### Valuation Methodology and Risks: (12 months) for Broadcom Ltd (AVGO.OQ)

**Method:** Our Outperform rating and \$580 target price for AVGO are based on weighted avg ~20x times CY22 EV/FCF between Semi Solution (70% of Rev) and Infrastructure SW (30% of Rev), conservatively below peers despite superior returns and profitability. We rate AVGO Outperform as we expect it to appreciate more than its peers.

**Risk:** Risks to our \$580 target price and Outperform rating for AVGO are (1) competitive pressures in the Wireless business, (2) high customer concentration, (3) failure to execute on cost synergies, and (4) the highly cyclical nature of the semiconductor industry.

### Target Price and Rating

#### Valuation Methodology and Risks: (12 months) for Brooks Automation Inc. (BRKS.OQ)

**Method:** We use a price to earnings valuation to calculate our \$70 target price for BRKS, which results in our Neutral rating. We use 28x multiple of CY22 EPS, above industry average multiple of 18x due to higher exposure to lifesciences. We see diversification into Life Sciences as a long-term positive.

**Risk:** We see several risks to BRKS's achievement of our \$70 target price and our Neutral rating. (1) If tool OEMs (original equipment manufacturers) do not accelerate or increase their vacuum system or module outsourcing to BRKS. (2) If the company fails to integrate and grow GENEWIZ acquisition. (3) If introduction of new higher-margin atmospheric robot and module upgrades is later than expected. (4) if its China outsourcing plan gets delayed.

### Target Price and Rating

#### Valuation Methodology and Risks: (12 months) for Cadence Design System (CDNS.OQ)

**Method:** Our \$155 target price and Neutral rating for CDNS are based on ~47x CY21 PE, reflecting multiples for comparable high quality software companies. We rate CDNS Neutral as it is trading at a high valuation.

**Risk:** Risks to our \$155 target price and Neutral rating for CDNS are (i) emulation market share can shift significantly, (ii) competitors catch up in custom design, (iii) stock compensation is increasing, (iv) EDA becomes a commodity, (v) slowing growth of semiconductors, (vi) threat of competition, and (vii) trade wars between US and other countries.

### Target Price and Rating

#### Valuation Methodology and Risks: (12 months) for Intel Corp. (INTC.OQ)

**Method:** Our \$80 target price and Outperform rating for Intel are based on 17x 2021E P/E. Our Outperform rating is based upon the following: INTC remains well levered to Data Growth not only in DCG but also in its IoT and NSG businesses. We believe the company's business model/IP has significant barriers to entry (evidenced by one of the highest "R&D + CapEx to Revenue" ratio), and we continue to argue that Moore's Law has been the cornerstone of Tech economics for 40 years and that INTC will be the Last-man-standing on Moore's Law, leading to market share gains in Compute (including Mobile), as well as Foundry.

**Risk:** Risks to our \$80 target price and Outperform rating for Intel are aggressive pricing, higher manufacturing spending, loss of market share in key enterprise markets, reversal of recent strength in servers where Intel has renewed momentum, ability to maintain share in desktop and mobile, with the new Core i3/i5/i7 offering, lower gross margin due to higher manufacturing costs, and seeing slower-than-expected unit growth of PC units.

#### Target Price and Rating

##### Valuation Methodology and Risks: (12 months) for KLA Corporation (KLAC.OQ)

**Method:** Our TP of \$325 represents 20x CY25 EPS of ~\$20 and discounted back. With the stock trading at just ~17x our CY22 EPS and our long-term thesis intact (EUV SAM expansion, growing process control intensity), we rate the stock Outperform.

**Risk:** Risks to our target price of \$325 and our Outperform rating for KLAC include: (i) KLAC could see increased competition from AMAT and others in the process control segment. (ii) Process control could begin to saturate as a percentage of overall equipment spending, resulting in lower growth rates for KLAC. (iii) We could be under-estimating the risk of oversupply in memory. (iv) A global macro slowdown would negatively impact KLAC and most other stocks in our universe.

#### Target Price and Rating

##### Valuation Methodology and Risks: (12 months) for Keysight Technologies (KEYS.N)

**Method:** While KEYS currently trades at 26x CY21 EPS, we continue to see shares as attractive with sustained demand across end markets, operating leverage and upside to its LT Rev target of a 4-6% CAGR. Our TP of \$175 is based on ~28x CY22 EPS still INLINE with normal premium to SOX and well-below NATI. We rate the shares Outperform.

**Risk:** Risks to our \$175 Target price and Outperform rating on KEYS include (i) Growth could be lower than we anticipate (ii) 5G adoption may be less than anticipated and (iii) Macroeconomic slowdown.

#### Target Price and Rating

##### Valuation Methodology and Risks: (12 months) for Lam Research Corp. (LRCX.OQ)

**Method:** We are using a Price to Earnings Valuation Methodology to come up with our Target Price (TP) for LRCX. Our price target of \$750 represents ~25.3x likely CY22 EPS. We rate the LRCX shares as Outperform given that the company could potentially continue to outgrow peers driven by (i) SAM growth from 3D NAND transition; (ii) increasing adoption of Multi patterning in DRAM, Foundry and Logic; (iii) TSV; and (iv) Market share gains at Intel.

**Risk:** Risks to our \$750 target price and our Outperform rating for LRCX are: (i) Excess supply in the memory industry; (ii) Excess inventories leading to a pause in spending for logic industry; (iii) End-demand weakness due to macro economic factors; (iv) Market share loss for LRCX in its etch, deposition or clean businesses; (v) Margin issues from lower margin clean products which are ramping in volume; and (vi) Unfavorable rulings on tax treatment.

#### Target Price and Rating

##### Valuation Methodology and Risks: (12 months) for Marvell Technology Group Ltd. (MRVL.OQ)

**Method:** Our \$60 target price and Outperform rating for MRVL are based on an in-line ~30x multiple of 2025 EPS estimate discounted back to 2020 at ~8% WACC. We rate MRVL Outperform as we believe new management at MRVL can reduce operating expenses and still have the resources to invest in new growth initiatives. We expect MRVL to appreciate more than the typical stock in our coverage.

**Risk:** Risks to our \$60 target price and Outperform rating for MRVL are: A repositioning of the Company could prove difficult by a structurally declining HDD TAM, an SSD portfolio which does not benefit LT from a structural inflection in SSD demand due to increased competition, and a networking business which has under grown peers over multiple years implying that OpEx spending will likely need to remain high to capitalize on growth opportunities delaying the Company's stated goal of achieving profit levels in-line with peers.

#### Target Price and Rating

##### Valuation Methodology and Risks: (12 months) for Maxim Integrated Products (MXIM.OQ)

**Method:** Our TP of \$74 is based on ~25x P/E on CY21. While MXIM continues to execute on margins - lack of outsized growth relative to peers continues to underpin our Neutral rating.

**Risk:** The key risk factors to our Neutral rating and our \$74 price target are the cyclical nature of the semiconductor industry, increased competition in the analog sector which could erode market share, and pricing pressure from Asian competitors.

**Target Price and Rating****Valuation Methodology and Risks: (12 months) for Microchip Technology Inc. (MCHP.OQ)**

**Method:** Our \$180 target price and Outperform rating for MCHP are based on ~24.5x our estimated CY21 P/E. We believe MCHP should trade near the high end of the group given our structural favorable view of the company. We rate MCHP Outperform rating as we continue to see it as one of the most diversified and well run companies in the Semi Industry - with consistent execution, as well as its strong track record of successful M&A to augment organic growth. We expect MCHP to return more than its peers.

**Risk:** Risks to our \$180 target price and Outperform rating for MCHP are a slowdown in the overall economy, as its revenue is spread over a large number of customers (none over ~2% of revenue) and tends to be tied to the macroeconomic environment, failure to meet the long-term gross margin target, share loss in the MCU market, failure to show good revenue growth in the 16-bit MCU market and a slowdown in auto sales (auto is about 15% of revenue).

**Target Price and Rating****Valuation Methodology and Risks: (12 months) for Micron Technology Inc. (MU.OQ)**

**Method:** Our target price of \$110 represents ~10x CY22 EPS as MU cyclically recovers. We rate MU OUTPERFORM as we believe that MU is near trough levels and see fundamentals improving 1H21 (1) we expect pricing to start recovering (2) structurally, Memory is a different industry now—higher concentration than ever, more diversified demand, and slowing supply—and we argue margins are more resilient now than in the past, and (3) we continue to argue that its strategic value continues to be under-appreciated, particularly given memory's importance to the new data economy.

**Risk:** Risks to MU's \$110 target price and our OUTPERFORM rating are: (1) pricing pressure in the DRAM and NAND markets; (2) execution issues in NAND; and (3) execution issues in converting to 1-alpha DRAM. Major risks for our OUTPERFORM rating are (1) NAND market could weaken with oversupply, (2) the company could continue to have execution issues in DRAM, and (3) new entrants from China could enter the market.

**Target Price and Rating****Valuation Methodology and Risks: (12 months) for NVIDIA Corporation (NVDA.OQ)**

**Method:** Our \$700 target price and Outperform rating for NVDA are based on 35x CY25 P/E - still in-line with average premium to the SOX. We rate NVDA the stock Outperform as we expect it to appreciate more than its peers.

**Risk:** Risks to our \$700 target price and Outperform rating are (1) a shift in consumer preferences in the gaming industry; (2) volatile demand in NVDA's key growth segments; and (3) competition in the Gaming, AV, and AI markets.

**Target Price and Rating****Valuation Methodology and Risks: (12 months) for NXP Semiconductors N.V. (NXPI.OQ)**

**Method:** Our Outperform rating and \$250 target-price for NXPI are based on 26x CY22 EV/FCF. Along with growth, margin expansion and cash return should close the valuation gap. We rate NXPI Outperform as we expect it to appreciate more than its peers.

**Risk:** Risks to our \$250 target-price and Outperform rating for NXPI are (1) below-industry revenue growth rate, (2) execution of new businesses and (3) loss of market share.

**Target Price and Rating****Valuation Methodology and Risks: (12 months) for ON Semiconductor Corp. (ON.OQ)**

**Method:** Our TP of \$17 represents ~13x P/E on CY21. We maintain our Underperform rating as we see shares as fully valued, ON has historically underperformed post y/y Rev peaks, and we see longer-term structural competitive issues without an M&A bid. We see higher quality assets at similar multiples with better risk/reward.

**Risk:** Major Risks to our \$17 target price and our Underperform rating for ON include successful execution towards its LT EPS target and better than expected content gains in Autos and Mobile.

**Target Price and Rating****Valuation Methodology and Risks: (12 months) for Rambus Incorporated (RMBS.OQ)**

**Method:** Our TP of \$19 is based on ~42x CY22 EPS. We are rated Neutral because though there could be upside to the stock if the company can drive growth above the SOX from new markets, given the uncertainty related to macro challenges and accounting clarity, we continue to see better opportunities elsewhere in semis

**Risk:** Risks to our target price of \$19 per share and Neutral rating: (i) Beyond 2023, the licensing agreements with large DRAM companies may be renewed at a lower-than-anticipated rate, (ii) The company may be unable to grow share in buffer chip market, and (iii) RMBS could make dilutive M&A deal.

**Target Price and Rating****Valuation Methodology and Risks: (12 months) for Samsung Electronics (005930.KS)**

**Method:** Our 12-month target price of W126,000 for Samsung Electronics is based on 2.2x FY22E up-cycle P/B. The dividend yield should rise for the next few years, driving P/E multiple expansion as Samsung Electronics' yield approaches the global tech average of about 2.5%. We assign an OUTPERFORM rating to the stock given our confidence on higher earnings and dividends led by, resilient DRAM profitability, OLED or 3D NAND top-line growth, smartphone recovery with new product-cycle, and a more proactive shareholder return policy.

**Risk:** Risks that may impede the achievement of our 12-month target price of W126,000 and our OUTPERFORM rating for Samsung Electronics include: (1) smartphone margin sustainability given intensifying competition, (2) an earlier China entrance into 3D NAND, and (3) worse-than-expected memory pricing.

**Target Price and Rating****Valuation Methodology and Risks: (12 months) for Sony Group (6758.T)**

**Method:** Our ¥14,500 target price for Sony is based on a sum-of-the-parts (SOTP) valuation using EV/EBITDAs for FY3/22 estimates using competitors' average multiples as of Dec 2020 (G&NS: 15X, EP&S: 8X, I&SS: 14X, Movie: 9x, Music: 20X, Others: 13X). We believe the company is likely to follow its normal pattern of setting initial guidance at a cautious level. However, we see prospects for continued profit growth in the medium term on factors such as: (1) improved content capabilities due to stronger intra-group content synergies and aggressive M&A, (2) potential expansion in the customer base and business scope from leveraging the competitiveness of image sensors, and (3) further profitability upside in the EP&S segment. Our OUTPERFORM rating is based on a comparison of the company's 12-month potential total return versus our coverage universe.

**Risk:** Risks to our ¥14,500 target price and OUTPERFORM rating for Sony include lower smartphone demand in the image sensor space and delayed software launches in games.

**Target Price and Rating****Valuation Methodology and Risks: (12 months) for Synopsys Inc. (SNPS.OQ)**

**Method:** SNPS is trading at ~40x CY22 P/E. Our \$300 TP, which helps drive our Outperform rating, represents ~42x CY22 P/E.

**Risk:** Risks to the target price of \$300 and our Outperform rating for SNPS are (i) software testing may not be high growth (ii) litigation risk with Mentor Graphics (iii) acquisition risk (iv) competition from Cadence (v) commoditization of EDA (vi) slowing semiconductor revenue growth (vii) slowing effects of Moore's law and (viii) macroeconomic slowdown.

**Target Price and Rating****Valuation Methodology and Risks: (12 months) for Teradyne Inc. (TER.OQ)**

**Method:** Our \$125 target price and Neutral rating for TER are based on 26x our CY21 EPS estimate of \$4.90. We rate TER Neutral as the macro potentially weighs on IA growth and profit and the memory SoC TAM can be volatile; we expect TER to perform inline with its peers.

**Risk:** Risks to our \$125 target price and Neutral rating for TER are: (i) TER loses share in logic/SoC, or is unfavorably impacted from mix shifts. (ii) Unanticipated declines in non-semi-test businesses. (iii) Mis-execution in new market entry and acquisition strategies. (iv) SoC market declines significantly below our estimate. (iv) Continued decline in the test market.

**Target Price and Rating****Valuation Methodology and Risks: (12 months) for Texas Instruments Inc. (TXN.OQ)**

**Method:** Our \$200 PT represents ~30.0x P/E on CY21. Our Outperform rating is based upon: (1) Street Estimates that are under modeling both Rev Growth and OpM Leverage, (2) Continued dominant franchise position which skews risk to duration not fundamentals, and (3) Solid downside support at ~\$100.

**Risk:** The primary risk factors to our Outperform rating and our \$200 price target are weak end-market demand, share loss in the embedded or analog businesses, less than normal seasonality, and overall company execution. TXN has a broad based business which is affected by many macro economic conditions, any one of which could impact the stock price.

**Target Price and Rating****Valuation Methodology and Risks: (12 months) for Toshiba (6502.T)**

**Method:** Our ¥3,930 target price for Toshiba is based on a fair P/E of 15.9x applied to our ¥247.47 FY3/22 EPS estimate. Our fair P/E is derived from a SOTP model using the valuations for competitors in individual businesses (5-10 companies including Hitachi as well as Mitsubishi Electric, ABB, Siemens, and GE). Profitability improvement is now to be in sight, yet it is hard to take an upbeat view until we can assess progress here of concrete results from Phase 2 of the Toshiba Next Plan, aimed at achieving stable growth as an

infrastructure services company. Accordingly, we expect the market to maintain its wait-and-see approach. Our Neutral rating is based on a comparison of the company's 12-month potential total return versus our coverage universe.

**Risk:** Upside risks to our ¥3,930 target price for Toshiba and Neutral rating include a Kioxia IPO, concrete evidence that services have become a growth business, and M&A activity in the services arena. Downside risks include a downturn in infrastructure-related capex as a result of an economic slowdown and inventory adjustments in the semiconductor business.

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**Companies Mentioned** (Price as of 16-Apr-2021)

**Advanced Micro Devices, Inc.** (AMD.OQ, \$82.15)  
**Allegro Microsystems, Inc.** (ALGM.OQ, \$26.73)  
**Analog Devices Inc.** (ADI.OQ, \$159.51)  
**Applied Materials Inc.** (AMAT.OQ, \$133.73)  
**Broadcom Ltd** (AVGO.OQ, \$478.79)  
**Brooks Automation Inc.** (BRKS.OQ, \$102.33)  
**Cadence Design System** (CDNS.OQ, \$147.26)  
**Intel Corp.** (INTC.OQ, \$64.75)  
**KLA Corporation** (KLAC.OQ, \$333.0)  
**Keysight Technologies** (KEYS.N, \$145.4)  
**Lam Research Corp.** (LRCX.OQ, \$643.71)  
**Marvell Technology Group Ltd.** (MRVL.OQ, \$47.91)  
**Maxim Integrated Products** (MXIM.OQ, \$95.13)  
**Microchip Technology Inc.** (MCHP.OQ, \$158.29)  
**Micron Technology Inc.** (MU.OQ, \$90.66)  
**NVIDIA Corporation** (NVDA.OQ, \$636.5)  
**NXP Semiconductors N.V.** (NXPI.OQ, \$199.38)  
**ON Semiconductor Corp.** (ON.OQ, \$42.18)  
**QUALCOMM Inc.** (QCOM.OQ, \$138.21)  
**Rambus Incorporated** (RMBS.OQ, \$20.39)  
**Samsung Electronics** (005930.KS, ₩83,900)  
**Sony Group** (6758.T, ¥12,080)  
**Synopsys Inc.** (SNPS.OQ, \$260.77)  
**Taiwan Semiconductor Manufacturing** (2330.TW, NT\$610.0)  
**Teradyne Inc.** (TER.OQ, \$129.48)  
**Texas Instruments Inc.** (TXN.OQ, \$191.93)  
**Toshiba** (6502.T, ¥4,600)  
**Xilinx** (XLNX.OQ, \$128.64)

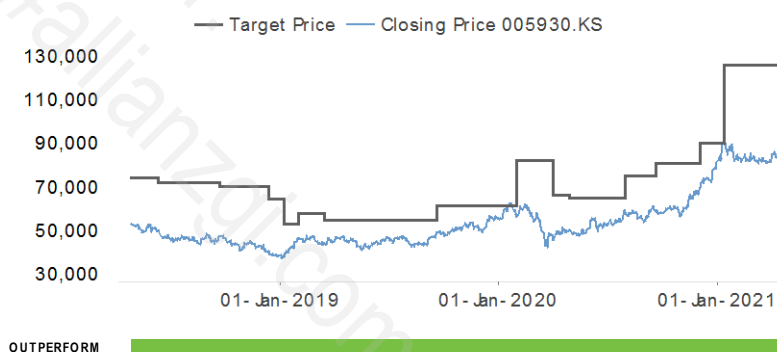
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**3-Year Price and Rating History for Samsung Electronics (005930.KS)**

005930.KS	Closing Price	Target Price	
Date	(W)	(W)	Rating
27-Apr-18	53,000	74,000	O
11-Jun-18	49,900	72,000	
21-Sep-18	47,400	70,000	
13-Dec-18	40,000	64,500	
08-Jan-19	38,100	53,000	
31-Jan-19	46,150	58,000	
15-Mar-19	44,200	54,800	
19-Sep-19	49,150	61,300	
31-Jan-20	56,400	82,000	
02-Apr-20	46,800	66,000	
29-Apr-20	50,000	65,000	
30-Jul-20	59,000	75,100	
21-Sep-20	59,200	81,000	
03-Dec-20	69,700	90,000	
12-Jan-21	90,600	126,000	



\* Asterisk signifies initiation or assumption of coverage.

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**Neutral (N)** : The stock's total return is expected to be in line with the relevant benchmark\* over the next 12 months.

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Restricted	2%	

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