

US Semiconductors

SemiBytes: TMT Conference Recap & Key Highlights, China, QCOM, AMD; MU Remains Top Idea For 2021

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Thoughts from the past week (TMT Conf, China, QCOM)

TMT Conference: UBS hosted its annual Global TMT Conference this past week w/~190 companies and nearly 2,000 investors. Aside from enterprise - which remains weak - demand remains very strong w/upside bias to both CQ4 and CQ1 guidance for most companies. Supply chain constraints continue to gate upside (unless companies can increase prices) but also adds to backlogs as this was a key theme in nearly every meeting and a now pervasive topic (NVDA, MRVL, NXPI, IFX, AVGO, etc.). Highlights as follows: 1) PC strength has legs on "densification" as enterprises go through a hardware cycle to more permanently enable WFH (supported by UBS IT panel --> good for INTC/AMD); 2) cloud infrastructure remains strong as post COVID structural shift should drive strong 2021 capex; 3) smartphone still very strong near-term, in large part due to jockeying to gain Huawei share in '21 - we remain concerned about post CNY inventory correction as some chipset/RF orders are not being filled due to 2x ordering fears + supply shortages for PMIC (power mgmt); 4) autos remain strong as production now back to near pre-COVID levels; 5) SPE suppliers are unwilling to commit to official '21 WFE forecasts, but baseline assumptions seem to be +5-10% (e.g. low to mid \$60Bs) but led less by domestic China (SMIC digestion, YMTC up only slightly) and more by Samsung and TSMC; 6) recent MU DRAM supply disruption may tip the scales" with respect to 1H:21 server contract negotiations in an already rapidly tightening market; 7) back-end test/assembly demand remains very strong w/TER likely to exceed high-end of guide for CQ4 (see [HERE](#)), but we remain concerned that '21 Street EPS is too high. China WFE: [press reports](#) late last week indicated that Tsinghua Unigroup cannot repay a \$450MM loan which could trigger an additional default of \$2B. While other state-backed companies have recently defaulted, we note that domestic China is responsible for ~\$8B of the ~\$11B in WFE growth from C2017-2020 and YMTC is ramping the most aggressively. At the same time, it is hard to see China allowing a significant slowdown regardless of liquidity as government support should remain high. Lastly, we wrote a [note on QCOM](#) in reference to [Bloomberg headlines](#) late in the week that AAPL is starting to work on its own modem - we think 2022 is iPhone target insertion (where the AP would finally shrink to 3nm at TSMC and the step-up in features should be much more significant than in next year's iPhone, in our view) but AAPL could include its modem in iPad next year for cellular SKUs.

Other commentary (AMD model update)

AMD: Following recent company commentary, we are making some modifications to our model. On the back of strong demand for new Sony/MSFT consoles, we now believe semi-custom will be stronger than expected for FQ1:21 (March) - normally down ~40% seasonally but we now assume about half this based on supply chain work. For server, demand backdrop remains very strong and we model units to grow from ~575k in FQ4:20 to ~900k in FQ4:21 implying ~19% share exiting the year on AMD's base of ~20MM units/yr, or about 9-10% based on Mercury's TAM of ~38MM units for C21. We model server ASP of \$850 (from ~\$810) exiting '21 as Milan uplift is still somewhat gated by Rome + other legacy platforms. For PC, we expect AMD to grow total revs 4% w/ mobile share 24% exiting C21 (up from 21% for C20). Lastly, due to increased levels of profitability, we have pulled forward the step-up to 15% tax rate to start in F21 (from F22). Net/net, we increase F21 and F22 revs/EPS (see page 2) and our PT of \$75 is unchanged on ~36x EV/FCF Multiple to C22 FCF of \$2.5B (from \$2.6B). Previously, we

discounted back C22 based valuation ~6 mo. As we approach the end of the year, we are not discounting C22 basis any more as we roll our basis forward.

Stock positioning (MU, NVDA, MRVL, INTC, AVGO, SNPS)

MU remains our top idea headed into 2021. We like AVGO for income investors (new segment disclosures are positive), MRVL for 5G, NVDA in compute, and SNPS remains our top pick in EDA. We like INTC for the narrative inflection we should see in 2021 as it will outsource and it makes a big 3nm commitment w/ TSMC.

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AMD

Model Update

Following recent comments from the company at a competitor conference, we are making some modifications to our model. On the back of strong console demand, we now believe semi-custom will be stronger than expected for FQ1:21 (March) - normally down ~40% seasonally but we now assume about half this. For server, we model units to grow from ~575k in FQ4:20 to ~900k in FQ4:21 which implies ~18% share exiting the year on AMD's base of ~20MM units/yr, or about half of this based on Mercury's TAM of ~38MM units for C2021. We model server ASP to grow from ~\$810 to \$850 C2021 as Milan uplift is still somewhat gated by Rome and other legacy platforms. For PC, we expect AMD to grow total revenue 4% Y/Y with mobile share 24% exiting C2021 (up from 21% for C2020). Lastly, due to increased levels of profitability, we have pulled forward the step-up to 15% tax rate to start next year. Net/net, F2021 and F2022 revs/eps go from \$11.7B/\$2.04 and \$13.2B/\$2.19 to \$11.7B/\$1.78 and \$13.8B/\$2.20.

Figure 1: UBS vs. Street

	2018	2019	2020/1F	2020/2F	2020/3F	2020/4F	2020	2021/1F	2021/2F	2021/3F	2021/4F	2021	2022	2023	2024	CY2018	CY2019	CY2020	CY2021	CY2022	CY2023	CY2024
Revenues (\$MM)																						
UBS	\$6,475	\$6,731	\$1,786	\$1,932	\$2,801	\$3,035	\$9,554	\$2,787	\$2,785	\$3,187	\$3,163	\$11,922	\$13,803	\$15,610	\$17,098	\$6,475	\$6,731	\$9,554	\$11,922	\$13,803	\$15,610	\$17,098
UBS (old)	\$6,475					\$3,034	\$9,553	\$2,640	\$2,758	\$3,168	\$3,127	\$11,692	\$13,237	\$14,972	\$16,867	\$6,475	\$6,731	\$9,553	\$11,692	\$13,237	\$14,972	\$16,867
Consensus						\$3,004	\$9,502	\$2,626	\$2,835	\$3,194	\$3,262	\$11,940	\$14,068	\$15,625				\$9,502	\$11,940	\$14,068	\$15,625	
Delta						1.0%	0.5%	6.2%	(1.8%)	(0.2%)	(3.7%)	(0.1%)	(1.5%)	(0.1%)				0.5%	(0.1%)	(1.5%)	(0.1%)	
EPS																						
UBS	\$0.44	\$0.64	\$0.18	\$0.18	\$0.41	\$0.48	\$1.25	\$0.37	\$0.39	\$0.52	\$0.51	\$1.78	\$2.20	\$2.75	\$3.46	\$0.44	\$0.64	\$1.25	\$1.78	\$2.20	\$2.75	\$3.46
UBS (old)	\$0.44					\$0.48	\$1.24	\$0.41	\$0.46	\$0.60	\$0.57	\$2.04	\$2.19	\$2.82	\$3.45	\$0.44	\$0.64	\$1.24	\$2.04	\$2.19	\$2.82	\$3.45
Consensus						\$0.47	\$1.23	\$0.35	\$0.40	\$0.52	\$0.54	\$1.82	\$2.36	\$2.76				\$1.23	\$1.82	\$2.36	\$2.76	
Delta						3.6%	1.0%	5.1%	(3.7%)	1.1%	(6.7%)	(2.4%)	(7.0%)	(0.4%)				1.0%	(2.4%)	(7.0%)	(0.4%)	

Source : Factset, UBS estimates, Company reports

PT of \$75 is unchanged. PT derived by unchanged ~36x EV/FCF Multiple to C2022 FCF of \$2.5B (\$2.6B prior). In our prior valuation, we discounted back C2022 based valuation ~6 months. As we approach the end of the year, we are not discounting C2022 basis any more as we roll our basis forward.

Figure 2: Valuation

Valuation	New	Old
FCF		
C2022	2,514	2,621
EV/FCF Multiple	36x	36x
Enterprise Value	91,517	95,418
Less: Debt	62	381
Add: Cash	3,367	4,192
Equity Value	94,822	99,229
Shares out	1,265	1,265
Implied Share Price	75	78
Discount Rate		10.00%
Price Target	\$ 75	\$ 75

Source : UBS estimates, company reports

Semiconductors have been outperforming the S&P 500 and outperforming most other S&P 500 Information Technology Industries as shown below

Figure 3: Broad Markets/S&P Sector Performance

Broad Markets	Absolute Performance							Relative to S&P500 Semis & SemiCap Sector							Relative to S&P 500						
	1 Week	1 Month	3 Month	6 Month	YTD	1 Year	2 Year	1 Week	1 Month	3 Month	6 Month	YTD	1 Year	2 Year	1 Week	1 Month	3 Month	6 Month	YTD	1 Year	2 Year
S&P 500	0.04%	3.46%	9.85%	14.98%	13.54%	17.10%	39.06%	(0.07%)	(7.50%)	(11.06%)	(12.12%)	(27.55%)	(33.61%)	(66.15%)							
NASDAQ-100 Index	(0.52%)	6.69%	11.19%	22.86%	42.01%	48.45%	85.58%	(0.63%)	(4.27%)	(9.73%)	(4.24%)	0.92%	(2.26%)	(19.64%)	(0.56%)	3.23%	1.34%	7.88%	28.47%	31.35%	46.52%
DJ Industrial Average	0.10%	1.97%	8.95%	11.15%	5.12%	7.59%	22.83%	(0.01%)	(8.99%)	(11.96%)	(15.95%)	(35.97%)	(43.11%)	(82.39%)	0.06%	1.49%	(0.90%)	(3.83%)	(8.42%)	(9.50%)	(16.23%)
S&P 500 / Semiconductors & Semiconduc	0.11%	10.96%	20.91%	27.10%	41.08%	50.70%	105.22%								0.07%	7.50%	11.06%	12.12%	27.55%	33.61%	66.15%
PHLX / Semiconductor	0.64%	12.85%	27.87%	36.37%	47.80%	58.85%	132.81%	0.54%	1.89%	6.96%	9.27%	6.71%	8.15%	27.60%	0.61%	9.40%	18.02%	21.38%	34.26%	41.75%	93.75%
Average	0.07%	7.18%	15.76%	22.49%	29.91%	36.54%	77.10%	(0.04%)	(4.72%)	(6.45%)	(5.76%)	(13.97%)	(17.71%)	(35.15%)	0.04%	4.66%	7.38%	9.39%	20.47%	24.30%	47.55%
Median	0.10%	6.69%	11.19%	22.86%	41.08%	48.45%	85.58%	(0.04%)	(5.89%)	(10.40%)	(8.18%)	(13.31%)	(17.93%)	(42.90%)	0.06%	5.37%	6.20%	10.00%	28.01%	32.48%	56.33%
S&P 500 Sectors	Absolute Performance							Relative to S&P500 Semis & SemiCap Sector							Relative to S&P 500						
	1 Week	1 Month	3 Month	6 Month	YTD	1 Year	2 Year	1 Week	1 Month	3 Month	6 Month	YTD	1 Year	2 Year	1 Week	1 Month	3 Month	6 Month	YTD	1 Year	2 Year
S&P 500 / Energy -SEC	7.87%	21.09%	27.57%	(3.69%)	(32.10%)	(29.15%)	(33.16%)	7.76%	10.13%	6.65%	(30.79%)	(73.18%)	(79.86%)	(138.38%)	7.83%	17.63%	17.72%	(18.67%)	(45.63%)	(46.25%)	(72.22%)
S&P 500 / Financials -SEC	0.32%	5.55%	17.21%	14.27%	(6.89%)	(4.97%)	16.25%	0.21%	(5.41%)	(3.70%)	(12.83%)	(47.97%)	(55.67%)	(88.97%)	0.28%	2.09%	7.36%	(0.71%)	(20.42%)	(22.06%)	(22.81%)
S&P 500 / Industrials -SEC	0.46%	3.24%	15.72%	22.04%	8.53%	10.13%	30.68%	0.35%	(7.72%)	(5.20%)	(5.06%)	(32.55%)	(40.58%)	(74.54%)	0.42%	(0.22%)	5.87%	7.06%	(5.00%)	(6.97%)	(8.39%)
S&P 500 / Materials -SEC	1.30%	1.09%	10.83%	21.72%	15.72%	19.83%	37.67%	1.20%	(9.87%)	(10.08%)	(5.38%)	(25.36%)	(30.87%)	(67.55%)	1.27%	(2.37%)	0.98%	6.74%	2.19%	2.74%	(1.39%)
S&P 500 / Communication Services -SEC	(0.98%)	4.01%	10.27%	16.87%	20.41%	22.65%	51.07%	(1.09%)	(6.95%)	(10.64%)	(10.23%)	(20.68%)	(28.05%)	(54.15%)	(1.02%)	0.56%	0.42%	1.89%	6.87%	5.55%	12.00%
S&P 500	0.04%	3.46%	9.85%	14.98%	13.54%	17.10%	39.06%	(0.07%)	(7.50%)	(11.06%)	(12.12%)	(27.55%)	(33.61%)	(66.15%)							
S&P 500 / Information Technology -SEC	(0.20%)	5.10%	9.42%	19.63%	35.75%	43.01%	90.90%	(0.31%)	(5.86%)	(11.50%)	(7.47%)	(5.33%)	(7.70%)	(14.32%)	(0.24%)	1.65%	(0.43%)	4.65%	22.22%	25.91%	51.83%
S&P 500 / Health Care -SEC	0.71%	0.61%	7.64%	9.22%	9.74%	13.10%	24.25%	0.60%	(10.35%)	(13.28%)	(17.88%)	(31.35%)	(37.60%)	(80.97%)	0.67%	(2.84%)	(2.21%)	(5.76%)	(3.80%)	(4.00%)	(14.82%)
S&P 500 / Utilities -SEC	(1.56%)	(6.75%)	5.84%	1.55%	(4.46%)	(1.17%)	9.95%	(1.67%)	(17.71%)	(15.08%)	(25.55%)	(45.54%)	(51.87%)	(95.26%)	(1.60%)	(10.21%)	(4.01%)	(13.43%)	(18.00%)	(18.27%)	(29.11%)
S&P 500 / Consumer Discretionary -SEC	(1.02%)	3.16%	5.23%	19.06%	28.10%	32.73%	54.34%	(1.13%)	(7.80%)	(15.69%)	(8.04%)	(12.98%)	(17.97%)	(50.88%)	(1.06%)	(0.30%)	(4.62%)	4.07%	14.56%	15.64%	15.28%
S&P 500 / Consumer Staples -SEC	0.16%	1.42%	4.66%	11.70%	6.45%	7.84%	23.26%	0.05%	(9.54%)	(16.25%)	(15.40%)	(34.63%)	(42.86%)	(81.96%)	0.12%	(2.04%)	(5.19%)	(3.28%)	(7.08%)	(9.26%)	(15.80%)
S&P 500 / Real Estate - SEC	(1.59%)	(1.51%)	1.43%	(1.38%)	(6.73%)	(5.21%)	7.48%	(1.70%)	(12.47%)	(19.48%)	(28.48%)	(47.81%)	(55.92%)	(97.74%)	(1.63%)	(4.97%)	(8.42%)	(16.37%)	(20.26%)	(22.31%)	(31.59%)
Average	0.46%	3.37%	10.47%	12.17%	7.34%	10.49%	29.31%	0.35%	(7.59%)	(10.44%)	(14.94%)	(33.74%)	(40.21%)	(75.91%)	0.46%	(0.09%)	0.68%	(3.07%)	(6.76%)	(7.21%)	(10.64%)
Median	0.10%	3.20%	9.63%	14.63%	9.14%	11.61%	27.46%	(0.01%)	(7.76%)	(11.28%)	(12.47%)	(31.95%)	(39.09%)	(77.75%)	0.12%	(0.30%)	(0.43%)	(0.71%)	(5.00%)	(6.97%)	(14.82%)
S&P 500 Info Tech Industries	Absolute Performance							Relative to S&P500 Semis & SemiCap Sector							Relative to S&P 500						
	1 Week	1 Month	3 Month	6 Month	YTD	1 Year	2 Year	1 Week	1 Month	3 Month	6 Month	YTD	1 Year	2 Year	1 Week	1 Month	3 Month	6 Month	YTD	1 Year	2 Year
S&P 500 / Electronic Equipment, Instrume	0.40%	6.90%	26.60%	27.94%	20.02%	24.34%	49.60%	0.30%	(4.06%)	5.69%	0.84%	(21.06%)	(26.36%)	(55.62%)	0.36%	3.44%	16.75%	12.96%	6.48%	7.25%	10.54%
S&P 500 / Semiconductors & Semiconduc	0.11%	10.96%	20.91%	27.10%	41.08%	50.70%	105.22%								0.07%	7.50%	11.06%	12.12%	27.55%	33.61%	66.15%
S&P 500 / Communications Equipment -IN	0.82%	11.92%	13.90%	(2.42%)	(3.32%)	3.68%	(1.06%)	0.72%	0.96%	(7.02%)	(29.52%)	(44.40%)	(47.02%)	(106.27%)	0.78%	8.46%	4.05%	(17.41%)	(16.86%)	(13.41%)	(40.12%)
S&P 500	0.04%	3.46%	9.85%	14.98%	13.54%	17.10%	39.06%	(0.07%)	(7.50%)	(11.06%)	(12.12%)	(27.55%)	(33.61%)	(66.15%)							
S&P 500 / Technology Hardware, Storage	0.36%	6.81%	9.46%	38.91%	62.07%	76.78%	168.95%	0.26%	(4.15%)	(11.45%)	11.81%	20.99%	26.08%	63.73%	0.32%	3.35%	(0.39%)	23.92%	48.54%	59.68%	129.89%
S&P 500 / IT Services -IND	(0.26%)	2.99%	7.19%	9.85%	15.46%	18.58%	52.10%	(0.36%)	(7.97%)	(13.72%)	(17.25%)	(25.63%)	(32.12%)	(53.11%)	(0.30%)	(0.47%)	(2.66%)	(5.13%)	1.92%	1.49%	13.04%
S&P 500 / Software -IND	(0.94%)	1.10%	3.30%	11.28%	36.43%	41.76%	88.76%	(1.04%)	(9.86%)	(17.61%)	(15.82%)	(4.66%)	(8.95%)	(16.46%)	(0.98%)	(2.36%)	(6.55%)	(3.70%)	22.89%	24.66%	49.69%
Average	0.08%	6.30%	13.03%	18.23%	26.47%	33.28%	71.81%	(0.03%)	(5.43%)	-9.20%	(10.34%)	(17.05%)	(20.33%)	(38.98%)	0.04%	3.32%	3.71%	3.79%	15.09%	18.88%	38.20%
Median	0.11%	6.81%	9.85%	14.98%	20.02%	24.34%	52.10%	0.09%	(5.83%)	-11.26%	(13.97%)	(23.35%)	(29.24%)	(54.36%)	0.20%	3.40%	1.83%	4.21%	14.69%	15.95%	31.37%

Source : Factset

Figure 4: Semiconductors/Semi Equipment Performance

Ticker	Semiconductors/Semi Eqpt	Absolute Performance						Relative to S&P500 Semis & SemiCap Sector						Relative to S&P 500								
		1 Week	1 Month	3 Month	6 Month	YTD	1 Year	2 Year	1 Week	1 Month	3 Month	6 Month	YTD	1 Year	2 Year	1 Week	1 Month	3 Month	6 Month	YTD	1 Year	2 Year
FORM	FormFactor, Inc.	2.22%	21.42%	89.97%	55.47%	64.81%	84.48%	180.29%	2.12%	10.46%	69.05%	28.37%	23.72%	33.78%	75.07%	2.18%	17.96%	80.12%	40.48%	51.27%	67.39%	141.22%
UCTT	Ultra Clean Holdings, Inc.	0.85%	34.16%	76.10%	51.43%	46.91%	53.04%	305.65%	0.74%	23.20%	55.18%	24.33%	5.83%	2.34%	200.43%	0.81%	30.71%	66.25%	36.44%	33.37%	35.94%	266.58%
AEIS	Advanced Energy Industries, Inc.	(0.29%)	15.65%	68.76%	42.55%	37.12%	48.31%	134.07%	(0.39%)	4.69%	47.85%	15.45%	(3.96%)	(2.40%)	28.85%	(0.32%)	12.19%	58.91%	27.56%	23.58%	31.21%	95.01%
BRKS	Brooks Automation, Inc.	1.13%	22.51%	67.03%	55.51%	73.52%	78.94%	172.39%	1.02%	11.55%	46.12%	38.41%	32.44%	28.23%	67.17%	1.09%	19.06%	57.18%	50.53%	59.99%	61.84%	133.33%
LRGX	Lam Research Corporation	1.26%	20.17%	64.75%	62.68%	67.63%	82.22%	255.65%	1.15%	9.21%	43.84%	35.58%	26.55%	31.51%	150.43%	1.22%	16.72%	54.90%	47.70%	54.09%	65.12%	216.58%
NANO	Onto Innovation, Inc.	4.20%	17.72%	62.51%	32.31%	27.64%	41.72%	61.94%	4.09%	6.76%	41.59%	5.21%	(13.44%)	(8.98%)	(43.27%)	4.16%	14.26%	52.66%	17.33%	14.10%	24.62%	22.88%
PI	Impinj, Inc.	(3.93%)	32.05%	62.35%	51.31%	60.90%	35.01%	134.42%	(4.03%)	21.09%	41.43%	24.21%	19.82%	(15.69%)	29.21%	(3.96%)	28.60%	52.50%	36.33%	47.37%	17.91%	95.36%
VECO	Veeco Instruments Inc.	0.76%	16.82%	60.41%	31.55%	17.53%	24.35%	132.93%	0.65%	5.86%	39.49%	4.45%	(23.55%)	(26.35%)	27.71%	0.72%	13.36%	50.56%	16.57%	4.00%	7.25%	93.87%
AMAT	Applied Materials, Inc.	2.08%	26.66%	59.45%	46.83%	43.99%	55.23%	157.21%	1.97%	15.70%	38.54%	19.73%	2.90%	4.52%	52.00%	2.04%	23.20%	49.60%	31.84%	30.45%	38.13%	118.15%
MU	Micron Technology, Inc.	1.97%	28.64%	58.86%	35.85%	32.54%	50.19%	104.83%	1.87%	17.68%	37.94%	8.75%	(8.54%)	(0.51%)	(0.39%)	1.94%	25.18%	49.01%	20.87%	19.00%	33.09%	65.76%
ICHR	Ichor Holdings, Ltd.	(7.10%)	22.32%	58.32%	29.24%	(2.49%)	1.85%	97.44%	(7.21%)	11.36%	37.41%	2.14%	(43.58%)	(48.85%)	(7.77%)	(7.14%)	18.87%	48.47%	14.05%	(16.03%)	(15.24%)	58.38%
LSCC	Lattice Semiconductor Corporation	1.30%	11.10%	55.54%	54.63%	120.64%	124.27%	547.70%	1.19%	0.14%	34.63%	27.53%	79.55%	73.57%	442.48%	1.26%	7.65%	45.69%	39.65%	107.10%	107.17%	508.64%
TER	Teradyne, Inc.	1.71%	17.86%	53.34%	51.65%	69.64%	80.55%	251.93%	1.60%	6.90%	32.43%	24.55%	28.56%	29.85%	146.71%	1.67%	14.40%	43.49%	36.67%	56.11%	63.46%	212.87%
MTSI	MACOM Technology Solutions Holdings,	2.75%	14.84%	52.55%	39.81%	78.65%	93.01%	199.06%	2.64%	3.88%	31.64%	12.71%	37.56%	42.31%	93.84%	2.71%	11.38%	42.70%	24.82%	65.11%	75.92%	159.99%
KLAC	KLA Corporation	(0.55%)	14.41%	47.85%	32.79%	43.67%	57.65%	177.39%	(0.65%)	3.45%	26.94%	5.69%	2.59%	6.95%	72.18%	(0.59%)	10.96%	38.00%	17.81%	30.14%	40.55%	138.33%
KLIC	Kulicke & Soffa Industries, Inc.	8.24%	20.72%	47.78%	43.42%	25.07%	35.27%	75.18%	8.13%	9.76%	26.87%	16.32%	(16.01%)	(15.44%)	(30.04%)	8.20%	17.27%	37.93%	28.44%	11.54%	18.17%	36.12%
ASMIY	ASMI International N.V. Sponsored ADR	7.06%	32.14%	46.95%	49.46%	79.38%	81.30%	416.17%	6.95%	21.18%	26.04%	22.36%	38.29%	30.60%	310.95%	7.02%	28.69%	37.10%	34.48%	65.84%	64.21%	377.11%
ANXK	Alinx, Inc.	(0.72%)	15.61%	55.48%	50.95%	57.67%	64.17%		(0.47%)	6.52%	24.69%	23.85%	6.06%	6.97%	(41.05%)	(0.40%)	14.03%	35.76%	35.97%	33.61%	40.57%	25.70%
PHI	Imphi Corporation	(0.73%)	3.82%	44.81%	29.39%	101.50%	106.35%	328.59%	(0.84%)	(7.14%)	23.69%	2.29%	60.42%	55.68%	223.37%	(0.77%)	0.36%	34.76%	14.41%	87.96%	89.28%	289.53%
NVMI	Nova Measuring Instruments Ltd	4.10%	15.23%	44.40%	37.40%	80.62%	90.65%	187.58%	3.99%	4.27%	23.49%	10.30%	39.54%	39.95%	82.37%	4.06%	11.77%	34.55%	22.42%	67.09%	73.56%	148.52%
ENTG	Entegris, Inc.	(0.31%)	8.26%	43.25%	49.03%	85.87%	96.37%	248.43%	(0.42%)	(2.70%)	22.34%	21.93%	44.78%	45.67%	143.21%	(0.35%)	4.80%	33.40%	34.05%	72.33%	79.27%	209.36%
MKSI	MKS Instruments, Inc.	4.09%	18.59%	42.47%	32.32%	35.51%	39.77%	120.84%	3.99%	7.63%	21.56%	5.22%	(5.58%)	(10.93%)	15.63%	4.05%	15.13%	32.62%	17.34%	21.97%	22.68%	81.78%
DIOD	Diodes Incorporated	(2.85%)	8.78%	42.07%	33.74%	21.08%	42.63%	116.12%	(2.95%)	(2.18%)	21.15%	6.64%	(20.01%)	(8.07%)	10.90%	(2.88%)	5.33%	32.22%	18.76%	7.54%	25.54%	77.05%
CRUS	Cirrus Logic, Inc.	2.20%	9.00%	41.92%	16.05%	(1.20%)	9.67%	120.71%	2.09%	(1.96%)	21.01%	(11.05%)	(42.29%)	(41.03%)	15.49%	2.16%	5.54%	32.07%	1.07%	(14.74%)	(7.43%)	81.65%
ON	ON Semiconductor Corporation	4.95%	12.74%	41.91%	56.94%	25.27%	38.94%	73.62%	4.84%	1.77%	21.00%	29.84%	(15.82%)	(11.76%)	(31.60%)	4.91%	9.28%	32.06%	41.95%	11.73%	21.85%	34.56%
MCHP	Microchip Technology Incorporated	1.01%	14.76%	39.08%	34.08%	33.60%	42.10%	94.59%	0.91%	3.80%	18.16%	6.98%	(7.48%)	(8.61%)	(10.63%)	0.97%	11.30%	29.23%	19.10%	20.07%	25.00%	55.53%
QCOM	Qualcomm Inc	3.90%	11.16%	38.52%	71.14%	76.53%	85.16%	172.10%	3.79%	0.20%	17.60%	44.03%	35.44%	34.46%	66.88%	3.86%	7.71%	28.67%	56.15%	62.99%	68.07%	133.04%
AMKR	Amkor Technology, Inc.	1.55%	18.26%	37.56%	21.16%	16.08%	21.40%	139.14%	1.44%	7.30%	16.64%	(5.94%)	25.01%	(29.30%)	33.93%	1.51%	14.80%	27.71%	6.17%	2.54%	4.30%	100.08%
ACLS	Axcelis Technologies, Inc.	(1.70%)	15.70%	33.41%	(0.61%)	15.34%	21.78%	52.52%	(1.80%)	4.73%	12.50%	(27.71%)	(25.75%)	(28.92%)	(52.69%)	(1.74%)	12.24%	23.56%	(15.59%)	1.80%	4.68%	13.46%
POWI	Power Integrations, Inc.	(1.68%)	8.39%	32.92%	23.17%	45.97%	59.47%	141.20%	(1.78%)	(2.57%)	12.01%	(3.93%)	4.89%	8.76%	35.98%	(1.71%)	4.94%	23.07%	8.19%	32.44%	42.37%	102.13%
QRVO	Qorvo, Inc.	(0.50%)	12.35%	30.36%	37.83%	36.22%	44.12%	166.01%	(0.61%)	1.39%	9.44%	10.73%	(4.86%)	(6.58%)	60.79%	(0.54%)	8.89%	20.51%	22.85%	22.69%	27.02%	126.95%
NVPI	NXP Semiconductors NV	(0.33%)	12.86%	28.57%	43.50%	24.37%	32.89%	108.25%	(0.43%)	1.90%	7.66%	16.40%	(16.72%)	(17.82%)	3.03%	(0.37%)	9.40%	18.72%	28.52%	10.83%	12.79%	69.19%
ASML	ASML Holding NV ADR	1.08%	14.65%	28.24%	31.58%	54.69%	64.02%	183.63%	0.98%	3.69%	7.32%	4.48%	13.61%	13.32%	78.41%	1.04%	11.19%	16.60%	41.16%	46.92%	144.55%	
NXIM	Maxim Integrated Products, Inc.	0.61%	5.49%	27.39%	40.96%	37.41%	48.78%	58.48%	0.50%	(5.47%)	6.47%	13.86%	(3.68%)	(1.93%)	(46.73%)	0.57%	2.03%	17.54%	25.98%	23.87%	31.68%	19.42%
PLAB	Photronics, Inc.	(9.38%)	0.82%	27.26%	(8.56%)	(29.51%)	(11.61%)	21.69%	(9.49%)	(10.14%)	6.35%	(35.66%)	(70.59%)	(62.32%)	(83.53%)	(9.42%)	(2.64%)	17.41%	(23.54%)	(43.04%)	(28.71%)	(17.38%)
SLAB	Silicon Laboratories Inc.	1.83%	7.59%	27.06%	20.00%	4.78%	11.58%	47.31%	1.72%	(3.37%)	6.15%	(7.10%)	(36.31%)	(39.13%)	(57.90%)	1.79%	4.13%	17.21%	5.01%	(8.76%)	(5.52%)	8.25%
SMTC	Semtech Corporation	0.37%	9.18%	26.72%	28.17%	31.68%	48.56%	48.81%	0.27%	(1.78%)	5.81%	1.07%	(9.40%)	(2.14%)	(56.40%)	0.34%	5.73%	16.87%	13.19%	18.15%	31.46%	9.75%
MPWR	Monolithic Power Systems, Inc.	(5.20%)	(0.80%)	26.35%	33.68%	72.60%	86.09%	155.74%	(5.31%)	(11.76%)	5.44%	6.58%	31.52%	35.39%	50.52%	(5.24%)	(4.26%)	16.50%	18.70%	59.07%	68.99%	116.68%
SIMO	Silicon Motion Technology Corporation	5.16%	25.13%	24.71%	(2.59%)	(12.40%)	(3.71%)	28.59%	5.06%	14.79%	3.79%	(29.69%)	(53.49%)	(54.41%)	(76.24%)	5.12%	21.67%	14.86%	(17.57%)	(25.94%)	(20.80%)	(10.08%)
ADI	Analog Devices, Inc.	1.09%	4.82%	23.64%	14.97%	18.88%	23.49%	59.67%	0.99%	(6.14%)	2.72%	(12.13%)	(22.02%)	(27.22%)	(45.54%)	1.08%	1.37%	13.79%	(0.01%)	5.35%	6.39%	20.61%
DSPG	DSP Group, Inc.	(2.66%)	9.28%	22.24%	(8.54%)	4.76%	9.50%	47.23%	(2.76%)	(1.68%)	1.32%	(35.64%)	(36.32%)	(41.21%)	(57.98%)	(2.69%)	5.82%	12.39%	(23.52%)	(8.77%)	(7.60%)	8.17%
PXLW	Pixelworks, Inc.	(10.04%)	7.81%	19.95%	(31.87%)	(34.82%)	(12.80%)	(27.62%)	(10.14%)	(3.15%)	(0.96%)	(58.97%)	(75.91%)	(63.50%)	(132.84%)	(10.07%)	4.35%	10.10%	(46.85%)	(48.36%)	(29.90%)	(66.68%)
TXN	Texas Instruments Incorporated	0.01%	6.94%	18.08%	23.29%	26.28%	33.48%	72.71%	(0.09%)	(4.02%)	(2.83%)	(3.81%)	(14.81%)	(17.23%)	(32.51%)	(0.03%)	3.48%	8.23%	8.31%	12.74%	16.38%	33.64%
PDFS	PDF Solutions, Inc.	(1.04%)	10.47%	17.82%	28.81%	29.96%	39.10%	160.69%	(1.14%)	(0.49%)	(3.09%)	1.71%	(11.13%)	(11.60%)	55.47%	(1.07%)	7.01%	13.83%	16.42%	22.00%	121.63%	
AMD	Advanced Micro Devices, Inc.	(0.70%)	17.53%	16.05%	59.58%	99.87%	132.40%	358.53%	(0.81%)	6.57%	(4.86%)	32.48%	58.78%	81.70%	253.31%	(0.74%)	14.07%	6.20%	44.59%	86.33%	115.31%	319.47%
SNPS	Synopsys, Inc.	(0.13%)	6.77%	15.20%	23.62%	68.23%	77.93%	162.11%	(0.23%)	(4.19%)	(5.72%)	(3.48%)	27.14%	27.22%	56.89%	(0.17%)	3.31%	5.35%	8.64%	54.69%	60.83%	123.05%
CDNS	Cadence Design Systems, Inc.	0.66%	4.50%	14.90%	26.03%	69.33%	78.36%	170.75%	0.55%	(6.46%)	(6.02%)	(1.07%)	28.25%	27.66%	65.53%	0.62%	1.05%	5.05%	11.05%	55.80%	61.26%	131.68%
AVGO	Broadcom Inc.	2.56%	12.92%	14.83%	30.15%	29.75%	30.15%	71.39%	2.46%	1.96%	(6.08%)	3.05%	(11.33%)	(20.56%)	(33.83%)	2.52%	9.46%	4.98%	15.17%	16.22%	13.05%	32.32%
MVRL	Marvell Technology Group Ltd.	(5.73%)	6.42%	11.43%	22.39%	61.56%	81.21%	179.54%	(5.84%)	(4.54%)	(9.49%)	(4.71%)	20.47%	30.50%	74.33%	(5.77%)	2.97%	1.58%	7.41%	48.02%	64.11%	140.48%
SWKS	Skyworks Solutions, Inc.	1.27%	6.05%	7.62%	10.34%	20.40%	39.42%	115.81%	1.17%	(4.91%)	(13.29%)	(16.76%)	(20.68%)	(11.28%)	10.59%	1.24%	2.59%	(2.23%)	(4.64%)	6.86%	22.32%	76.74%
MX	MagnaChip Semiconductor Corporation	(3.97%)	0.15%	7.07%	12.12%	18.69%	20.24%	117.69%	(4.08%)	(10.82%)	(13.84%)	(14.98%)	(22.39%)	(30.46%)	12.48%	(4.01%)	(3.31%)	(2.78%)	(2.86%)	5.15%	3.15%	78.63%
NVDA	NVIDIA Corporation	(3.16%)	1.58%	5.36%	38.49%	120.52%	142.49%	241.6														

Figure 5: Semiconductors I

Company	Rating	Price	Price	Market	EV/Sales		EV/EBITDA		EV/FCF		Price/Earnings		Dividend Yield		FCF Yield		EBITDA Margin		Net Cash as % of MCap	Gross Margin		ROE		Revenue Growth	
		(lc)	Target (lc)	Cap (\$m)	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	Current	2020E	2021E	2020E	2021E	2020E	2021E
Analog Devices	Not Rated	141.28	-	\$52,079	8.7x	9.0x	20.1x	20.4x	25.2x	26.4x	24.1x	24.4x	2.1%	1.8%	4.4%	4.1%	43.2%	44.3%	-8%	69.2%	70.1%	15.8%	17.5%	-7%	13%
Infineon	Buy	29.05	30	\$45,663	4.5x	3.7x	17.6x	12.8x	nm	45.9x	38.1x	25.0x	0.9%	1.2%	-12.8%	2.4%	25.8%	28.9%	-14%	34.6%	37.0%	10.4%	15.0%	22%	3%
Maxim Integrated	Not Rated	84.52	-	\$22,483	7.4x	8.8x	21.1x	21.9x	22.8x	24.8x	27.7x	29.2x	2.9%	1.4%	4.3%	4.0%	35.0%	40.1%	2%	66.1%	68.3%	41.7%	35.4%	-8%	18%
Microchip Technology	Not Rated	139.91	-	\$36,614	8.5x	7.9x	21.1x	18.8x	25.7x	23.7x	22.9x	20.3x	1.0%	1.0%	4.8%	5.2%	40.4%	42.1%	-24%	62.2%	63.1%	27.8%	28.7%	2%	8%
Melexis	Sell	81.55	55.00	\$3,911	6.4x	5.7x	25.2x	21.1x	41.1x	36.7x	51.8x	38.9x	0.0%	1.2%	2.4%	2.7%	25.3%	27.0%	0%	38.8%	40.9%	17.6%	22.1%	12%	12%
NXP	Not Rated	158	-	\$43,810	5.9x	5.2x	18.6x	14.3x	27.9x	21.0x	26.0x	19.2x	0.7%	0.8%	4.1%	5.5%	31.6%	36.2%	-14%	50.9%	53.9%	18.3%	23.0%	-3%	13%
ON Semi	Not Rated	30.54	-	\$12,614	3.0x	2.7x	15.1x	12.0x	43.9x	27.3x	39.9x	22.9x	0.0%	0.0%	2.8%	4.5%	19.9%	22.7%	-22%	32.5%	35.9%	9.1%	15.3%	-6%	10%
Renesas Electronics	Buy	1,014	960	\$16,801	3.2x	3.1x	9.5x	10.0x	17.9x	15.9x	32.8x	28.6x	1.0%	1.0%	7.3%	8.2%	33.7%	30.7%	-29%	45.8%	46.3%	8.1%	8.8%	5%	4%
Rohm	Buy	9800.00	10300.00	\$9,582	2.1x	2.0x	10.9x	8.9x	23.9x	32.8x	41.1x	28.0x	1.6%	1.7%	3.1%	2.3%	19.6%	22.5%	34%	30.8%	32.6%	3.3%	4.7%	-3%	8%
STMicronics	Buy	29	32	\$32,082	3.2x	2.8x	14.7x	10.9x	57.8x	36.0x	33.7x	22.3x	0.6%	0.7%	1.7%	2.7%	21.6%	25.9%	2%	37.0%	39.0%	11.9%	15.6%	5%	12%
TE Connectivity	Not Rated	118.47	-	\$39,122	3.0x	3.2x	15.0x	14.6x	28.2x	24.4x	23.3x	21.7x	1.9%	1.6%	4.0%	4.5%	20.1%	22.0%	-9%	31.0%	32.5%	14.2%	17.7%	-1%	12%
Texas Instruments	Neutral	162.00	146.00	\$147,513	10.8x	9.1x	22.5x	18.3x	30.3x	27.8x	29.2x	24.1x	2.3%	2.6%	3.4%	3.7%	48.0%	49.5%	-1%	63.9%	64.9%	59.8%	73.2%	-1%	19%
Analog Semis				Mean	5.6x	5.3x	17.6x	15.3x	31.3x	28.5x	32.5x	25.4x	1.2%	1.2%	2.5%	4.2%	30.4%	32.7%	-7%	46.9%	48.7%	19.8%	23.1%	0%	11%
				Median	5.2	4.4	18.1	14.4	27.9	26.8	31.0	24.2	1.0%	1.2%	3.7%	4.1%	28.7%	29.8%	-9%	42.3%	43.6%	15.0%	17.6%	-2%	12%

Company	Rating	Price	Price	Market	EV/Sales		EV/EBITDA		EV/FCF		Price/Earnings		Dividend Yield		FCF Yield		EBITDA Margin		Net Cash as % of MCap	Gross Margin		ROE		Revenue Growth	
		(lc)	Target (lc)	Cap (\$m)	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	Current	2020E	2021E	2020E	2021E	2020E	2021E
Advanced Micro Dev.	Neutral (CBE)	91.66	75.00	\$110,096	11.5x	9.4x	nm	42.0x	114.7x	66.8x	73.7x	44.9x	0.0%	0.0%	0.9%	1.5%	nm	22.4%	1%	45.0%	46.2%	33.2%	41.0%	42%	22%
ams AG	Suspended	19.04	-	\$5,743	1.9x	1.2x	9.5x	5.4x	36.1x	15.0x	22.8x	12.2x	0.1%	0.1%	3.8%	9.0%	20.2%	22.5%	-42%	28.7%	31.6%	5.8%	11.1%	97%	58%
Broadcom	Buy	410.04	445.00	\$163,642	8.4x	7.4x	nm	9.1x	17.5x	9.1x	17.9x	13.8x	3.3%	3.6%	7.1%	7.8%	nm	nm	-20%	73.5%	73.5%	38.6%	51.0%	5%	9%
Cirrus Logic	Not Rated	81.42	-	\$4,529	3.4x	3.3x	14.0x	13.4x	nm	21.1x	18.4x	17.6x	nm	0.0%	nm	4.8%	24.5%	24.3%	10%	51.8%	51.8%	nm	16.4%	8%	5%
Dialog Semiconductor	Not Rated	42.22	-	\$3,897	2.4x	2.3x	11.7x	10.4x	27.4x	15.3x	17.3x	15.9x	0.0%	0.0%	3.0%	5.4%	20.5%	22.6%	10%	49.7%	50.6%	13.8%	13.8%	-10%	3%
Intel	Buy	50	67	\$203,097	3.1x	3.3x	6.8x	7.3x	12.9x	15.0x	10.1x	11.0x	2.7%	2.8%	8.9%	7.6%	45.1%	44.3%	-7%	56.4%	56.7%	26.5%	22.8%	6%	-6%
Marvell Technology	Buy	42.91	50.00	\$28,730	10.0x	8.4x	nm	nm	48.2x	34.2x	47.1x	29.2x	0.6%	0.6%	2.1%	3.0%	nm	nm	-3%	63.3%	63.5%	7.4%	11.5%	8%	20%
MediaTek	Neutral	709	670	\$39,907	3.0x	2.6x	19.0x	14.5x	27.3x	18.7x	29.0x	21.5x	1.5%	2.6%	3.2%	4.6%	16.0%	18.0%	18%	44.4%	44.2%	11.1%	14.0%	39%	16%
Nordic Semi	Not Rated	130.20	-	\$2,906	nm	nm	nm	nm	22.8x	91.4x	69.5x	49.9x	0.0%	0.0%	0.4%	0.9%	nm	nm	7%	52.4%	49.3%	nm	nm	42%	28%
NVIDIA	Buy	519	650	\$320,865	20.1x	16.6x	43.7x	35.9x	70.5x	49.6x	55.3x	45.4x	0.1%	0.1%	1.4%	2.0%	45.9%	46.1%	1%	65.4%	66.0%	36.6%	32.9%	48%	21%
Qorvo	Neutral	158.33	133.00	\$17,288	5.0x	4.9x	20.2x	nm	19.3x	16.8x	19.5x	20.3x	0.3%	0.7%	5.5%	6.3%	24.5%	nm	-4%	50.2%	51.2%	20.4%	19.0%	17%	1%
Qualcomm	Neutral	155.75	125.00	\$161,937	nm	5.8x	21.2x	16.3x	30.3x	14.8x	32.2x	22.7x	2.0%	2.2%	3.5%	5.6%	29.8%	28.8%	-3%	58.6%	58.1%	85.5%	98.5%	13%	29%
Skyworks Solutions	Neutral	145.54	139.00	\$23,162	nm	6.1x	21.0x	16.3x	31.7x	19.7x	22.4x	18.3x	1.3%	1.4%	3.3%	5.3%	33.7%	37.4%	-3%	58.6%	58.2%	85.5%	110.7%	-6%	29%
Texas Instruments	Neutral	162.00	146.00	\$147,513	10.8x	9.0x	22.5x	18.2x	30.3x	20.3x	29.2x	24.0x	2.3%	2.6%	3.4%	3.7%	48.0%	49.6%	-1%	63.9%	64.9%	59.8%	72.9%	-1%	19%
TSMC	Buy	512.00	625.00	\$474,985	9.7x	9.2x	14.5x	13.2x	41.5x	31.5x	26.0x	26.8x	1.9%	2.1%	2.3%	3.1%	67.0%	69.3%	3%	52.7%	51.5%	27.5%	24.1%	34%	6%
UMC	Buy	47.30	45.00	\$20,330	3.1x	3.0x	7.8x	7.1x	15.9x	13.6x	25.0x	20.8x	3.3%	4.0%	6.0%	7.0%	39.8%	42.0%	10%	21.6%	24.6%	10.1%	11.7%	27%	4%
Xilinx	Not Rated	143.86	-	\$35,214	nm	nm	nm	nm	36.4x	34.0x	53.2x	45.2x	1.1%	1.1%	2.7%	2.9%	nm	nm	3%	69.0%	69.1%	nm	nm	-1%	8%
Processor/Wireless/Comms Ser				Mean	7.1x	6.2x	17.7x	16.1x	49.2x	28.6x	33.4x	25.8x	1.3%	1.4%	3.6%	4.7%	34.6%	35.6%	-1%	53.2%	53.6%	33.0%	36.8%	22%	16%
				Median	5.0x	5.8x	16.8x	13.4x	31.0x	19.7x	26.0x	21.5x	1.2%	1.1%	3.2%	4.8%	31.7%	33.1%	1%	52.7%	51.8%	27.0%	22.8%	13%	16%

Source : FactSet, UBSE

Figure 6: Semiconductors II

Company	Rating	Price	Price	Market	EV/Sales		EV/EBITDA		EV/FCF		Price/Earnings		Dividend Yield		FCF Yield		EBITDA Margin		Net Cash as % of MCap	Gross Margin		ROE		Revenue Growth	
		(lc)	Target (lc)	Cap (\$m)	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	Current	2020E	2021E	2020E	2021E	2020E	2021E
SK Hynix	Buy	116500.00	125000.00	\$77,113	2.8x	2.5x	6.0x	4.9x	31.9x	22.8x	23.8x	14.7x	1.0%	1.1%	3.3%	4.6%	46.1%	51.1%	-4%	34.1%	40.9%	7.0%	10.3%	23%	12%
Nanya Tech	Not Rated	88.30	-	\$9,368	3.5x	3.1x	9.2x	7.0x	15.1x	20.5x	30.7x	19.9x	1.8%	2.2%	5.4%	4.0%	38.5%	43.9%	17%	26.5%	34.7%	5.5%	8.0%	23%	16%
Micron Technology	Buy	71.28	82.00	\$78,382	3.5x	3.0x	8.1x	5.8x	163.2x	33.6x	22.0x	13.1x	0.0%	0.0%	0.6%	3.0%	43.0%	50.6%	3%	31.3%	36.0%	9.0%	13.4%	-1%	21%
Samsung Electronics	Buy	72,900	82,000	\$401,854	1.7x	1.6x	6.4x	5.5x	19.5x	17.0x	19.1x	15.3x	1.9%	2.1%	4.2%	4.9%	26.7%	29.0%	24%	38.9%	40.5%	8.1%	9.3%	10%	7%
Memory Semis				Mean	2.9x	2.5x	7.5x	5.8x	57.4x	23.4x	23.9x	15.7x	1.2%	1.4%	3.4%	4.1%	38.6%	43.7%	10%	32.7%	38.0%	7.4%	10.3%	14%	14%
				Median	3.1x	2.7x	7.3x	5.7x	25.7x	21.5x	22.9x	15.0x	1.4%	1.6%	3.8%	4.3%	40.7%	47.2%	10%	32.7%	38.3%	7.5%	9.8%	17%	14%

		Price	Price	Market	EV/Sales		EV/EBITDA		EV/FCF		Price/Earnings		Dividend Yield		FCF Yield		EBITDA Margin		Net Cash as % of MCap Current	Gross Margin		ROE		Revenue Growth		
Company	Rating	(lc)	Target (lc)	Cap (\$m)	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E		2020E	2021E	2020E	2021E	2020E	2021E	
Analog Devices	Not Rated	141.28	-	\$52,079	8.7x	9.0x	20.1x	20.4x	25.2x	26.4x	24.1x	24.4x	2.1%	1.8%	4.4%	4.1%	43.2%	44.3%	-8%	69.2%	70.1%	15.8%	17.5%	-7%	13%	
Broadcom	Buy	410.04	445	\$163,642	8.4x	7.4x	nm	9.1x	17.5x	9.1x	17.9x	13.8x	3.3%	3.6%	7.1%	7.8%	nm	nm	-20%	73.5%	73.5%	38.6%	51.0%	5%	9%	
Infineon	Buy	29.05	30.00	\$45,663	4.5x	3.7x	17.6x	12.8x	nm	45.9x	38.1x	25.0x	0.9%	1.2%	-12.8%	2.4%	25.8%	28.9%	-14%	34.6%	37.0%	10.4%	15.0%	22%	3%	
Intel	Buy	42.91	50	\$28,730	10.0x	8.4x	nm	nm	nm	48.2x	34.2x	47.1x	29.2x	0.6%	0.6%	2.1%	3.0%	nm	-3%	63.3%	63.5%	7.4%	11.5%	8%	20%	
Maxim Integrated	Not Rated	84.52	-	\$22,483	7.4x	8.8x	21.1x	21.9x	22.8x	24.8x	27.7x	29.2x	2.9%	1.4%	4.3%	4.0%	35.0%	40.1%	2%	66.1%	68.3%	41.7%	35.4%	-8%	18%	
Microchip Technology	Not Rated	140	-	\$36,614	8.5x	7.9x	21.1x	18.8x	25.7x	23.7x	22.9x	20.3x	1.0%	1.0%	4.8%	5.2%	40.4%	42.1%	-24%	62.2%	63.1%	27.8%	28.7%	2%	8%	
Micron Technology	Buy	71.28	82.00	\$78,382	3.5x	3.0x	8.1x	5.8x	163.2x	33.6x	22.0x	13.1x	0.0%	0.0%	0.6%	3.0%	43.0%	50.6%	3%	31.3%	36.0%	9.0%	13.4%	-1%	21%	
Monolithic Power Systems	Not Rated	307	-	\$13,763	9.7x	9.2x	14.5x	13.2x	41.5x	31.5x	26.0x	26.8x	1.9%	2.1%	2.3%	3.1%	67.0%	69.3%	3%	52.7%	51.5%	27.5%	24.1%	34%	6%	
NXP	Not Rated	158.27	-	\$43,810	5.9x	5.2x	18.6x	14.3x	27.9x	21.0x	26.0x	19.2x	0.9%	0.8%	4.1%	5.5%	31.6%	36.2%	-14%	50.9%	53.9%	18.3%	23.0%	-3%	13%	
Power Integrations	Not Rated	72	-	\$4,342	8.4x	7.5x	32.2x	28.9x	53.4x	38.3x	46.7x	41.4x	0.9%	0.7%	1.7%	2.4%	26.1%	25.8%	10%	50.6%	50.3%	11.9%	12.5%	11%	13%	
Semtech Corp.	Not Rated	69.66	-	\$4,529	7.8x	7.0x	27.0x	22.4x	44.0x	28.1x	40.9x	32.6x	nm	nm	2.3%	3.6%	28.8%	31.0%	2%	61.5%	61.8%	16.5%	19.6%	6%	12%	
Texas Instruments	Buy	512.00	625.00	\$474,985	9.7x	9.2x	14.5x	13.2x	41.5x	31.5x	26.0x	26.8x	1.9%	2.1%	2.3%	3.1%	67.0%	69.3%	3%	52.7%	51.5%	27.5%	24.1%	34%	6%	
TSMC	Buy	47.30	45.00	\$20,330	3.1x	3.0x	7.8x	7.1x	15.9x	13.6x	25.0x	20.8x	3.3%	4.0%	6.0%	7.0%	39.8%	42.0%	10%	21.6%	24.6%	10.1%	11.7%	27%	4%	
Semis Manufacturing					Mean	7.4x	6.9x	18.4x	15.7x	43.9x	27.8x	30.0x	24.8x	1.6%	1.6%	2.3%	4.2%	40.7%	43.6%	-4%	53.1%	54.2%	20.2%	22.1%	10%	11%
					Median	8.4x	7.5x	18.6x	13.8x	34.7x	28.1x	26.0x	25.0x	1.5%	1.3%	2.3%	3.6%	39.8%	42.0%	2%	52.7%	53.9%	16.5%	19.6%	6%	12%

Figure 7: Semiconductor Equipment

Company	Rating	Price	Price	Market	EV/Sales		EV/EBITDA		EV/FCF		Price/Earnings		Dividend Yield		FCF Yield		EBITDA Margin		Net Cash as % of MCap Current	Gross Margin		ROE		Revenue Growth	
		(lc)	Target (lc)	Cap (\$m)	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E		2020E	2021E	2020E	2021E	2020E	2021E
Advantest	Neutral	7540.00	5800.00	\$14,284	4.9x	4.5x	20.2x	16.7x	28.3x	25.8x	31.0x	26.7x	1.0%	1.2%	3.2%	3.6%	24.4%	27.0%	-7%	56.0%	56.1%	19.1%	19.4%	6%	10%
Applied Materials	Neutral (CBE)	87.89	73	\$80,278	4.6x	4.3x	16.6x	14.8x	30.2x	15.1x	20.6x	18.1x	1.0%	1.3%	3.3%	4.0%	27.8%	28.9%	2%	45.2%	46.3%	36.0%	38.7%	18%	10%
ASM International	Not Rated	166.25	-	\$9,855	5.8x	5.3x	18.9x	17.7x	45.8x	25.6x	28.2x	23.7x	1.2%	1.2%	2.1%	3.7%	30.8%	29.9%	5%	46.8%	46.0%	15.1%	16.4%	18%	11%
ASM Pacific Tech	Neutral	97.45	90	\$5,172	2.6x	2.4x	nm	10.2x	46.1x	40.3x	nm	16.6x	2.3%	3.3%	2.3%	2.6%	nm	23.2%	-6%	34.1%	37.6%	nm	17.4%	6%	10%
ASML	Neutral	376.95	350.00	\$192,670	11.8x	10.2x	37.7x	29.8x	122.3x	50.4x	49.2x	37.2x	0.8%	1.0%	0.8%	2.0%	31.3%	34.2%	0%	48.2%	50.2%	23.3%	29.3%	23%	15%
Disco	Neutral	32,750	30,000	\$11,472	6.8x	6.2x	21.2x	17.9x	60.3x	35.3x	35.6x	29.8x	1.2%	1.2%	1.5%	2.6%	32.3%	35.0%	7%	59.6%	60.9%	13.6%	14.8%	21%	10%
Eugene Tech	Buy	32150.00	39000.00	\$667	3.2x	1.6x	19.8x	6.2x	125.1x	13.6x	89.4x	10.9x	0.7%	1.0%	0.7%	6.3%	16.1%	25.5%	13%	50.0%	48.8%	3.4%	21.5%	7%	102%
Jusung Engineering	Not Rated	8,580	-	\$368	4.4x	2.4x	nm	16.4x	nm	23.4x	nm	18.1x	0.7%	0.7%	-19.7%	5.5%	-8.1%	14.8%	7%	28.5%	42.3%	-10.4%	9.5%	-51%	81%
KLA Corp	Neutral	255.98	205.00	\$39,800	6.9x	6.5x	19.2x	16.6x	23.3x	25.7x	22.3x	20.1x	1.4%	1.5%	4.5%	4.1%	35.9%	39.2%	-4%	61.4%	62.4%	60.6%	57.1%	14%	11%
LAM Research Corp.	Buy	490	450	\$70,439	6.1x	5.2x	19.6x	15.7x	27.6x	22.4x	24.8x	19.5x	1.0%	1.2%	3.7%	4.5%	31.3%	33.0%	2%	46.4%	46.9%	54.0%	65.9%	10%	29%
Nikon	Not Rated	672.00	-	\$2,519	0.2x	0.2x	nm	4.2x	nm	nm	nm	nm	3.6%	2.7%	-5.9%	-3.9%	-3.8%	3.9%	112%	33.8%	38.6%	-6.1%	-0.5%	-22%	1%
Screen	Neutral	7,160	5,900	\$3,450	1.2x	1.1x	12.8x	10.8x	31.5x	25.1x	27.1x	19.6x	0.9%	1.3%	3.2%	4.0%	9.0%	10.5%	7%	26.4%	28.1%	6.7%	8.8%	-3%	3%
Teradyne	Sell	115.68	88.00	\$19,143	6.5x	6.7x	19.4x	21.8x	25.5x	23.1x	25.3x	28.8x	0.3%	0.4%	4.1%	4.6%	33.3%	30.7%	5%	57.3%	58.8%	35.9%	32.8%	39%	-3%
Tokyo Electron	Buy	36,420	33,000	\$54,977	4.2x	3.9x	16.9x	14.7x	33.2x	28.7x	26.0x	22.6x	1.9%	2.2%	2.8%	3.3%	24.9%	26.8%	6%	41.0%	42.0%	23.7%	24.1%	17%	8%
VAT Group	Buy	194.70	207.00	\$6,749	9.1x	8.0x	29.4x	23.4x	52.6x	38.5x	41.0x	31.9x	2.0%	2.6%	2.0%	2.7%	30.9%	34.1%	-2%	62.2%	62.1%	26.7%	31.3%	32%	14%
Wonik IPS	Buy	43,250	47,000	\$1,951	1.8x	1.4x	10.0x	7.4x	9.1x	16.6x	17.4x	11.1x	0.8%	0.9%	9.9%	5.4%	17.8%	19.3%	8%	41.7%	40.6%	18.1%	22.5%	73%	25%
Semi Equipment				Mean	5.0x	4.4x	20.1x	15.3x	47.2x	27.3x	33.7x	22.3x	1.3%	1.5%	1.2%	3.4%	22.3%	26.0%	10%	46.2%	48.0%	21.3%	25.6%	13%	21%
				Median	4.8x	4.4x	19.4x	16.0x	32.4x	25.6x	27.1x	20.1x	1.0%	1.2%	2.5%	3.8%	27.8%	28.0%	5%	46.6%	46.6%	19.1%	22.0%	15%	10%

Source : FactSet, UBSe

Figure 8: Apple Suppliers

		Price	Price	Market	EV/Sales		EV/EBITDA		EV/FCF		Price/Earnings		Dividend Yield		FCF Yield		EBITDA Margin		Net Cash as % of MCap Current	Gross Margin		ROE		Revenue Growth		
Company	Rating	(lc)	Target (lc)	Cap (\$m)	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E	2020E	2021E		2020E	2021E	2020E	2021E	2020E	2021E	
ams AG	Suspended	19.04		\$5,743	1.9x	1.2x	9.5x	5.4x	36.1x	15.0x	22.8x	12.2x	0.1%	0.1%	3.8%	9.0%	20.2%	22.5%	-42%	28.7%	31.6%	5.8%	11.1%	97%	58%	
Broadcom	Buy	410.04	445	\$163,823	8.4x	7.4x	nm	9.1x	17.5x	9.1x	17.9x	13.8x	3.3%	3.6%	7.1%	7.8%	nm	nm	-20%	73.5%	73.5%	38.6%	51.0%	5%	9%	
Cirrus Logic	Not Rated	81.42	-	\$4,524	3.4x	3.3x	14.0x	13.4x	nm	21.1x	18.4x	17.6x	nm	0.0%	nm	4.8%	24.5%	24.3%	10%	51.8%	51.8%	nm	16.4%	8%	5%	
Dialog Semiconductor	Not Rated	42.22	-	\$3,897	2.4x	2.3x	11.7x	10.4x	27.4x	15.3x	17.3x	15.9x	0.0%	0.0%	3.0%	5.4%	20.5%	22.6%	10%	49.7%	50.6%	13.8%	13.8%	-10%	3%	
Qualcomm	Neutral	155.75	125.00	\$162,246	nm	6.1x	21.0x	16.3x	31.7x	19.7x	22.4x	18.3x	1.3%	1.4%	3.3%	5.3%	33.7%	37.4%	-3%	58.6%	58.2%	85.5%	110.7%	-6%	29%	
Skyworks Solutions	Neutral	146	139	\$23,236	10.8x	9.0x	22.5x	18.2x	30.3x	20.3x	29.2x	24.0x	2.3%	2.6%	3.4%	3.7%	48.0%	49.6%	-1%	63.9%	64.9%	59.8%	72.9%	-1%	19%	
Qorvo	Neutral	155.75	125.00	\$161,937	nm	5.8x	21.2x	16.3x	30.3x	14.8x	32.2x	22.7x	2.0%	2.2%	3.5%	5.6%	29.8%	28.8%	-3%	58.6%	58.1%	85.5%	98.5%	13%	29%	
Catcher	Neutral	203	205	\$5,448	0.9x	0.9x	3.2x	2.8x	3.0x	3.8x	9.9x	8.6x	5.0%	5.0%	17.4%	13.8%	27.4%	31.3%	50%	25.5%	29.2%	10.1%	10.8%	9%	0%	
Foxconn Technology	Sell	53.20	45.00	\$2,661	0.2x	0.2x	2.3x	2.0x	6.1x	1.7x	10.3x	9.9x	4.9%	4.9%	3.9%	13.9%	7.2%	8.5%	117%	nm	nm	6.0%	4.9%	5%	-5%	
Zhen Ding Technology	Buy	120	150	\$3,967	0.9x	0.8x	5.0x	4.0x	nm	148.5x	12.6x	10.1x	3.8%	4.5%	-2.3%	0.7%	18.5%	20.3%	16%	21.6%	23.2%	11.5%	14.5%	9%	14%	
Largan	Buy	3415.00	4050.00	\$15,809	6.4x	5.3x	9.6x	7.8x	17.2x	15.0x	18.5x	14.0x	2.4%	2.1%	4.7%	5.4%	66.7%	67.8%	23%	67.7%	66.6%	17.7%	20.0%	-1%	22%	
Goertek	Neutral	39.20	42.50	\$18,753	2.3x	1.7x	22.8x	17.7x	nm	41.0x	45.6x	31.8x	0.3%	0.5%	-1.9%	2.6%	10.1%	9.8%	-5%	17.2%	17.0%	15.0%	18.0%	69%	33%	
Luxshare	Buy	51.80	65.00	\$54,111	3.8x	2.8x	33.4x	22.5x	2961.9x	62.4x	49.5x	31.8x	0.3%	0.5%	0.0%	1.6%	11.5%	12.4%	0%	20.0%	20.1%	27.1%	30.6%	85%	38%	
AAC	Sell	41	32	\$6,424	nm	nm	nm	nm	38.6x	33.5x	nm	nm	nm	nm	2.8%	3.3%	nm	nm	-7%	25.0%	28.0%	nm	nm	nm	nm	
Apple suppliers					Mean	3.8x	3.6x	14.7x	11.2x	290.9x	30.1x	23.6x	17.8x	2.1%	2.1%	3.7%	5.9%	26.5%	27.9%	11%	43.2%	44.1%	31.4%	36.4%	22%	19%
					Median	2.4x	2.8x	12.9x	10.4x	30.3x	17.5x	18.5x	15.9x	2.1%	2.1%	3.4%	5.3%	22.5%	23.4%	0%	49.7%	50.6%	16.3%	18.0%	8%	19%

Source : FactSet, UBSe

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We use various valuation techniques such as P/E, EV/FCF for valuing the companies in this report. Risk factors include but are not limited to macroeconomic factors such as a downturn in the economy, a disruption of international trade, technological disruption due to new inventions, or business model innovation whereby structural changes in the industry alter the future course of unit sales, ASPs, and revenues

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12-Month Rating	Definition	Coverage ¹	IB Services ²
Buy	FSR is > 6% above the MRA.	50%	31%
Neutral	FSR is between -6% and 6% of the MRA.	38%	29%
Sell	FSR is > 6% below the MRA.	12%	19%
Short-Term Rating	Definition	Coverage ³	IB Services ⁴
Buy	Stock price expected to rise within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%
Sell	Stock price expected to fall within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%

Source: UBS. Rating allocations are as of 30 September 2020.

1:Percentage of companies under coverage globally within the 12-month rating category.

2:Percentage of companies within the 12-month rating category for which investment banking (IB) services were provided within the past 12 months.

3:Percentage of companies under coverage globally within the Short-Term rating category.

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UBS Securities LLC: Diana Chang, Pradeep Ramani, Seth Gilbert, Timothy Arcuri.

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Company Name	Reuters	12-month rating	Price	Price date
Advanced Micro Devices Inc ^{16,20}	AMD.O	Neutral (CBE)	US\$91.65	11 Dec 2020
Broadcom Limited ¹⁶	AVGO.O	Buy	US\$405.82	11 Dec 2020
Intel Corp. ^{16,7,6a,6b}	INTC.O	Buy	US\$49.73	11 Dec 2020
Marvell Technology Group ¹⁶	MRVL.O	Buy	US\$42.94	11 Dec 2020
Micron Technology Inc ¹⁶	MU.O	Buy	US\$70.53	11 Dec 2020
NVIDIA Corp ¹⁶	NVDA.O	Buy	US\$520.53	11 Dec 2020
Synopsys Inc ¹⁶	SNPS.O	Buy	US\$236.39	11 Dec 2020

Source: UBS. All prices as of local market close.

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