

# US Semiconductors/Semi Equipment

## UBS Evidence Lab inside: Employee Sentiment Monitor – NVDA and INTC Lead, MU Lags

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### Employee Satisfaction at 5-year high despite Business outlook having peaked

We utilize UBS Evidence Lab's analysis of Glassdoor data to see trends in active employee sentiment among major US-based semis and SPE companies. In aggregate, the data shows consistent improvement in overall satisfaction across the industry over the past 5yrs with particularly strong improvement at AMD and NVDA. Employees at INTC have also become notably more optimistic, particularly around business outlook (somewhat surprising given the manufacturing challenges) and CEO change. On the other hand, overall satisfaction at MU has declined over the period and is the worst among the cohort. Among semi equipment companies, satisfaction is the highest at LRCX with significant recovery from last year, maybe related to CEO changes.

### Business outlook – AMD leading, NVDA remains consistently high

Employees are most optimistic about overall business prospects at AMD – a strong validation of CEO Lisa Su's leadership and competitive positioning. Scores at NVDA have remained consistently very high for the past several years and employees have, over the past 3yrs, become quite bullish about MRVL's prospects given new leadership and a host of strategic changes/M&A. Despite legal challenges, QCOM has seen some steady improvement ahead of 5G while the outlook among employees at AVGO has declined materially over the past several years (potentially due to internal uncertainty given its ongoing M&A strategy). Business outlook has deteriorated for semicaps in general (likely due in part to the recent memory cycle), but AMAT saw a particularly big decline this year. TXN's employee ratings remains solid and very consistent.

### CEO Approval – AMD, NVDA on top but INTC improving

AMD and NVDA (we remain v bullish) enjoy the highest CEO ratings w/ >95% approving. AVGO is lowest on an absolute basis (though again, likely M&A related) followed by MU. Approval of Steve Mollenkopf at QCOM improved considerably this year as it struck the deal with AAPL and works through the legal appeal of the FTC verdict. Despite 10nm challenges, CEO approval at INTC climbed considerably this year while approval at AMAT dropped considerably to now more middle-of-the-pack.

### Longer-term observations

AI has transformed employee bullishness at NVDA, AMD appears to have considerable staying power, and MRVL has improved along all dimensions with new management.

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## Highlights from the UBS Evidence Lab Employee Survey

Which companies in the US Semiconductor industry lead and lag based on Employee Satisfaction and CEO Approval? UBS Evidence Lab has collected more than 3MM employee reviews across 7000+ distinct employers to help answer this question. We interpret the results from the UBS Evidence Lab survey.

### NVDA ranks highest, MU lowest in aggregate

UBS Evidence Lab looked at several major evaluation criteria including career opportunities, compensation/benefits, work/life balance, senior management/CEO, culture/values, and overall business outlook. The project also looked at how likely employees were to recommend the employer to a friend. Taking the current snapshot of ratings from employees, we see NVDA with the highest overall employee satisfaction ranking very high across the board on all factors. Somewhat surprisingly, given all of the issues around manufacturing, INTC ranks second overall. On the other hand, MU ranks last overall due to such factors as senior management and culture/values (though we note some of this is likely due to potential uncertainty given leadership changes over the past few years and the overall memory cycle).

**Figure 1: Ranking of major semis and SPE companies**

	Overall	Career Opportunities	Compensation & Benefits	Work Life Balance	Senior Management	Culture Values	Business Outlook	CEO Approval	Recommend to a Friend
Nvidia	4.50	4.33	4.34	4.05	4.23	4.44	92%	95%	94%
Intel	4.30	4.10	4.19	4.15	3.77	4.25	81%	79%	89%
Texas Instruments	4.11	3.86	3.93	3.70	3.61	4.10	83%	87%	81%
AMD	4.10	3.94	3.39	4.04	3.68	4.09	94%	95%	88%
Qualcomm	3.93	3.72	3.83	3.52	3.26	3.76	75%	73%	79%
Marvell Technology Group	3.90	3.48	3.68	3.91	3.76	4.05	76%	90%	78%
Lam Research	3.88	3.56	4.03	3.37	3.37	3.91	75%	78%	78%
Broadcom	3.73	3.31	4.00	3.93	3.05	3.53	52%	52%	62%
Applied Materials	3.67	3.38	3.52	3.32	3.24	3.42	64%	71%	67%
KLA Corp	3.66	3.12	3.33	3.19	3.32	3.59	73%	72%	76%
Micron Technology	3.37	3.33	3.76	2.95	2.85	3.17	60%	58%	60%

Source: UBS Evidence Lab, Glassdoor

### Overall employee satisfaction in semis at 5yr highs even as the perception is that business prospers have peaked

We then looked at the numbers over time, focusing on the past 5yrs to see notable changes. Overall employee satisfaction scores in Semis have been steadily improving since 2014 (with 2018 being the only exception) and have reached 5yr highs in 2019 (average score of 3.92 in 2019 vs. 3.52 in 2014). Underneath the hood, every company in Figure 1 has improved its score over the 5yr period, with NVDA leading the group on overall satisfaction (also the top scoring company in our large cap technology peer group).

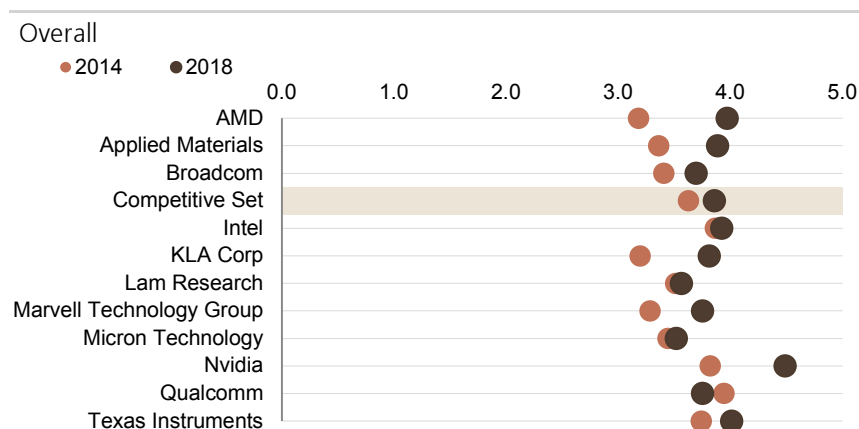
**Figure 2: Overall Employee Satisfaction**

Entity	Period					
	2014	2015	2016	2017	2018	2019
AMD	3.18	3.24	3.75	3.76	3.97	4.10
Applied Materials	3.36	3.59	3.65	3.60	3.89	3.67
Broadcom	3.41	3.43	3.55	3.68	3.69	3.73
Intel	3.87	3.82	3.72	3.90	3.92	4.30
KLA Corp	3.20	3.42	3.69	3.72	3.81	3.66
Lam Research	3.51	3.83	3.85	4.02	3.56	3.88
Marvell Technology Group	3.28	3.39	3.66	4.02	3.75	3.90
Micron Technology	3.45	3.51	3.52	3.63	3.52	3.37
Nvidia	3.82	3.92	4.14	4.51	4.49	4.50
Qualcomm	3.94	3.56	3.63	3.82	3.75	3.93
Texas Instruments	3.74	3.83	4.01	3.97	4.01	4.11
Average	3.52	3.59	3.74	3.88	3.85	3.92

Source: UBS Evidence Lab, Glassdoor

Notable positive movers over the past 5yrs are AMD – expected and logical given Lisa Su's appointment and clearly better direction now for the company, NVDA as its prospects continue to improve, and AMAT – in part due to CEO Gary Dickerson's direction (our view).

**Figure 3: Overall Employee Satisfaction**



Source: UBS Evidence Lab, Glassdoor

Source: UBS Evidence Lab, Glassdoor

## Business outlook

When we break this down a little further into each factor, we see that the perception around business outlook for semis in aggregate seems to have peaked in 2017 (on average) although employees at NVDA and AMD are far more bullish about the company's prospects than at other companies. Interestingly, despite all of its recent issues around manufacturing, employees at INTC remain reasonably optimistic about its business prospects.

On the other hand, employees at MU and AVGO have become much more bearish about the overall prospects of the company in recent years but some of this could be due to the substantial changes each has undergone over the period.

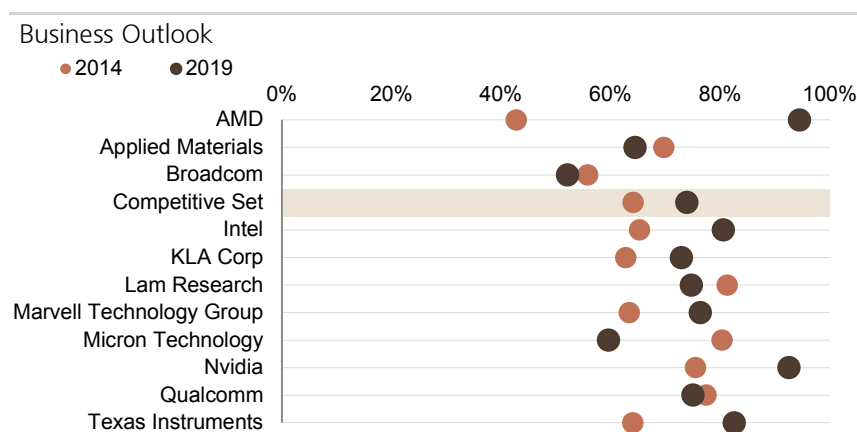
**Figure 4: Business Outlook Perception appears to have peaked**

Business Outlook		Period					
Entity		2014	2015	2016	2017	2018	2019
AMD		0.43	0.38	0.66	0.79	0.89	0.94
Applied Materials		0.70	0.70	0.83	0.87	0.84	0.64
Broadcom		0.56	0.58	0.64	0.61	0.54	0.52
Intel		0.65	0.73	0.62	0.75	0.78	0.81
KLA Corp		0.63	0.53	0.77	0.86	0.77	0.73
Lam Research		0.81	0.87	0.88	0.89	0.72	0.75
Marvell Technology Group		0.63	0.52	0.54	0.84	0.76	0.76
Micron Technology		0.80	0.70	0.58	0.82	0.75	0.60
Nvidia		0.75	0.83	0.92	0.95	0.93	0.92
Qualcomm		0.77	0.46	0.66	0.69	0.57	0.75
Texas Instruments		0.64	0.80	0.87	0.85	0.87	0.83
Average		0.67	0.65	0.72	0.81	0.76	0.75

Source: UBS Evidence Lab, Glassdoor

Interestingly, AMD has gone from ranking last in overall business outlook to now ranking the best in our peer group.

**Figure 5: Business Outlook change 2014-2019**



Source: UBS Evidence Lab, Glassdoor

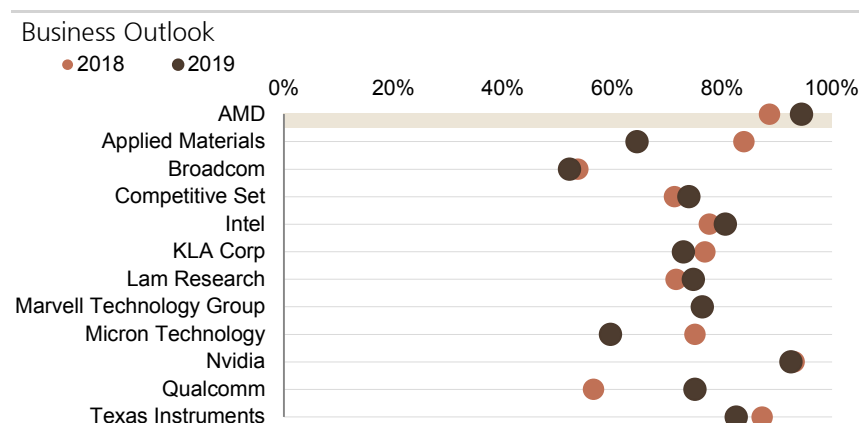
Source: UBS Evidence Lab, Glassdoor

We think that as product cycles at both NVDA (RTX,Ampere) and AMD (Rome, Ryzen) ramp and with INTC Ice Lake still expected in H2:2020 employee perception the general business outlook on average (>90% of employees surveyed for AMD/NVDA) seems more positive than in the rest of semis.

On the other hand, the memory industry is still working through the cycle and we think this largely explains MU's scores (60%) at the lower end. With memory likely to bottom in early/mid 2020, we are expecting MU's scores to start inflecting higher as we work through the cycle.

With AVGO working through M&A integration and with AVGO indicating its longer-term intention to focus on capital allocation (which we think could include dividends, repos and more M&A), we think this could be one factor that potentially depresses AVGO employee Business outlook perception scores (52%).

**Figure 6: General Business Outlook**



Source: UBS Evidence Lab, Glassdoor

Source: UBS Evidence Lab, Glassdoor

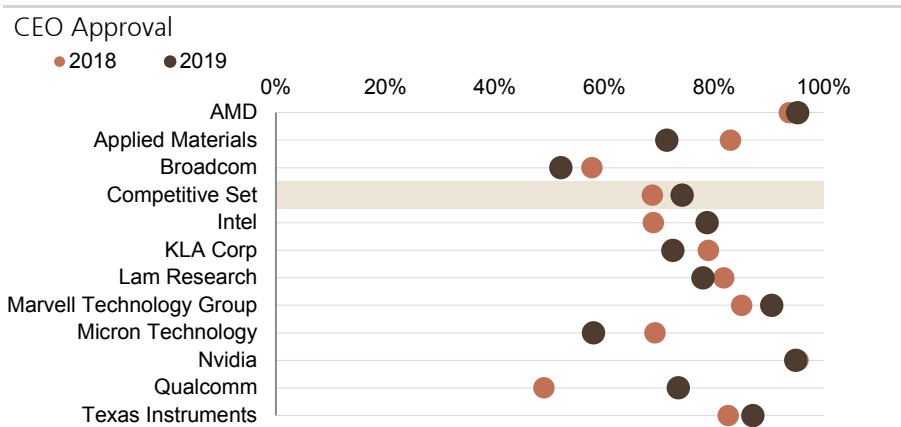
On a relative basis (2018 vs. 2019) QCOM's scores have shown the largest improvement (from 57% in 2018 to 75% in 2019), we think this increase makes sense directionally given that QCOM is making progress on the litigation front and is highly levered to the 5G that is only just beginning to ramp worldwide. TXN is working through the inventory/macro cycle, but TXN's largest customer still only accounts for <1% of revs, meaning TXN's diversified product portfolio/customer base is helping it weather the storm and we think that somewhat explains a slight deterioration of its scores from 87% in 2018 to 83% in 2019.

### CEO Approval

On an absolute basis, NVDA and AMD CEO's enjoy the highest approval ratings (~95% of the employees taking the survey approve), with QCOM showing the largest Y/Y improvement in score. This somewhat mirrors the favorable business outlook survey results but is a bit surprising on QCOM given the ongoing legal challenges and FTC appeal.

Similarly, MU and AVGO approvals are lagging, but again we think this can be explained by the memory cycle (which should turn early CY2020) and AVGO working through M&A integration.

Figure 7: CEO Approval



Source: UBS Evidence Lab, Glassdoor

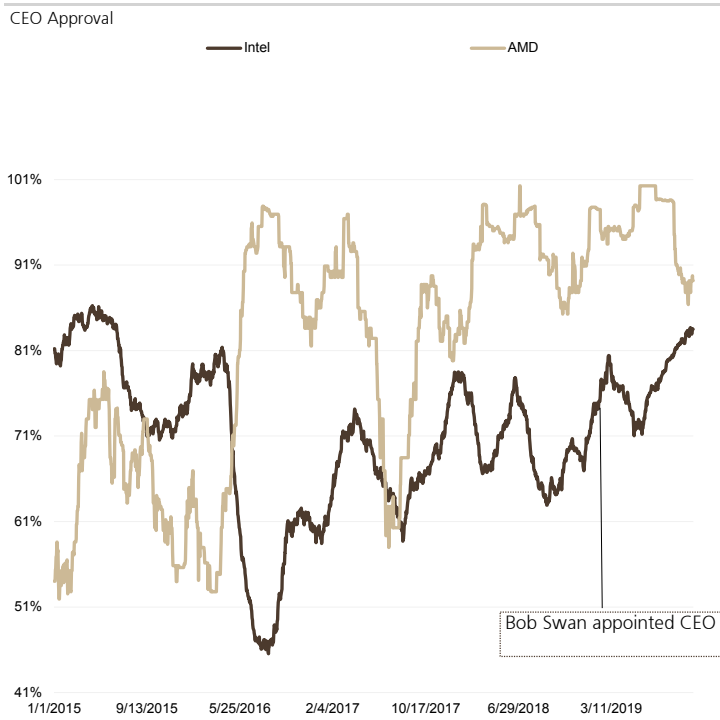
Source: UBS Evidence Lab, Glassdoor

Some other interesting comparisons

AMD vs. INTC

With AMD gaining momentum/share in all segments (Server, Mobile, PC), AMD's CEO ratings remain highly favorable. Interestingly, for INTC on the other hand, post appointment of Bob Swan as CEO, despite INTC's process challenges, CEO approval ratings have recovered and are north of 80%, meaning his strategy to transition INTC towards a more data centric company seems to be favorably reflected in our survey.

**Figure 8: INTC vs. AMD**

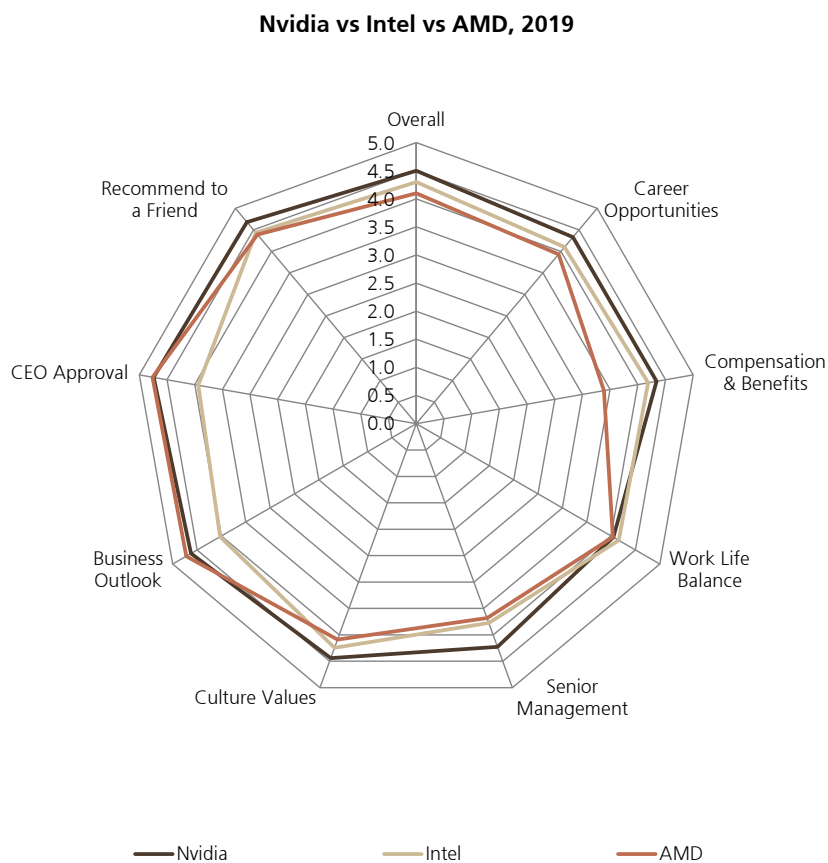


Source: UBS Evidence Lab, Glassdoor

Source: UBS Evidence Lab, Glassdoor



Figure 9: NVDA vs. INTC vs. AMD



Source: UBS Evidence Lab, Glassdoor

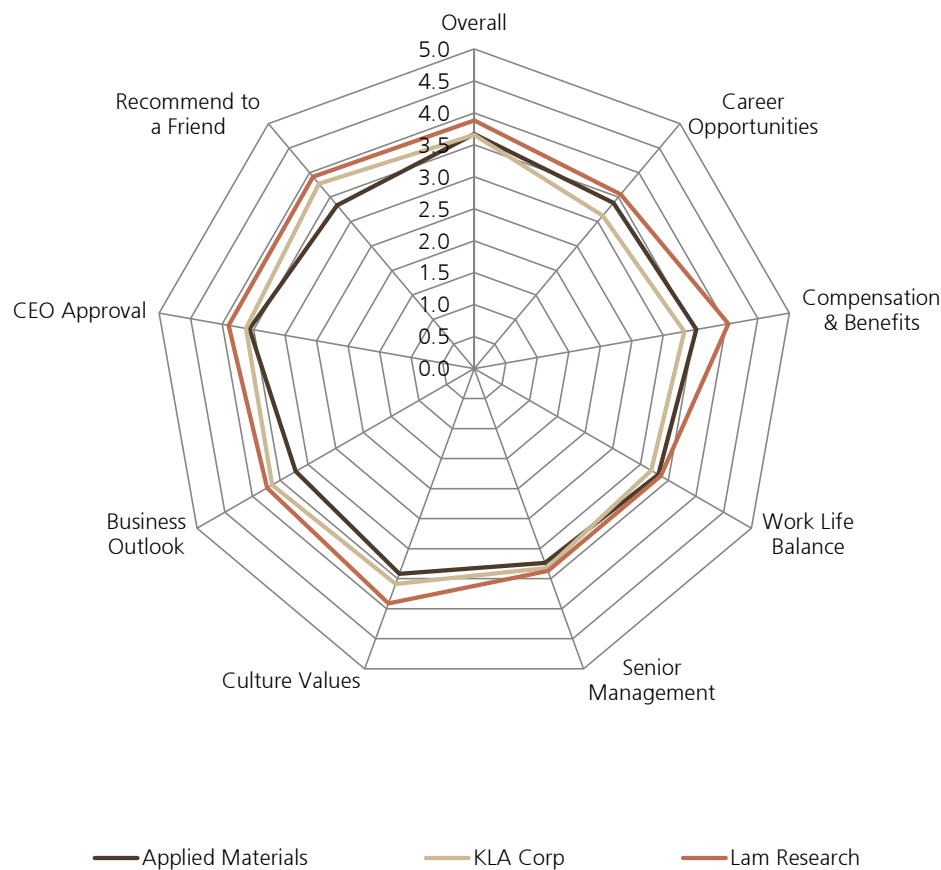
Source: UBS Evidence Lab, Glassdoor

**LRCX scores highest among SPE companies across most dimensions**

LRCX scores higher than AMAT/KLAC on all dimensions, including CEO approval and compensations/benefits, although all three companies saw a decline among employees in the perception around the CEO in the past year.

**Figure 10: AMAT vs. KLAC vs. LRCX**

**Applied Materials vs KLA Corp vs Lam Research, 2019**



Source: UBS Evidence Lab, Glassdoor

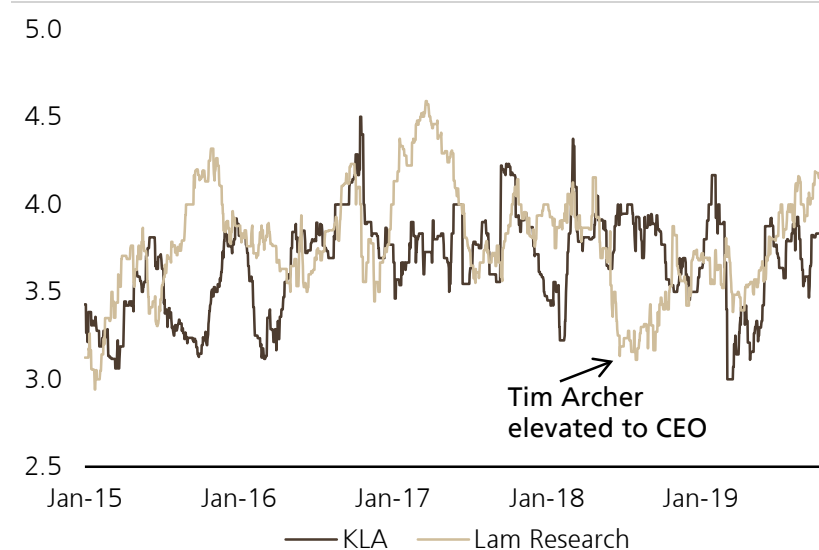
Source: UBS Evidence Lab, Glassdoor

**Overall ratings at LRCX reflect recent changes**

Overall employee satisfaction declined materially during the time preceding the CEO change on 6/24/18 and have since steadily recovered since Tim Archer was appointed. Ratings are now back close to their historic highs at LRCX while KLAC has been more consistent over time given the long tenure now of Rick Wallace.

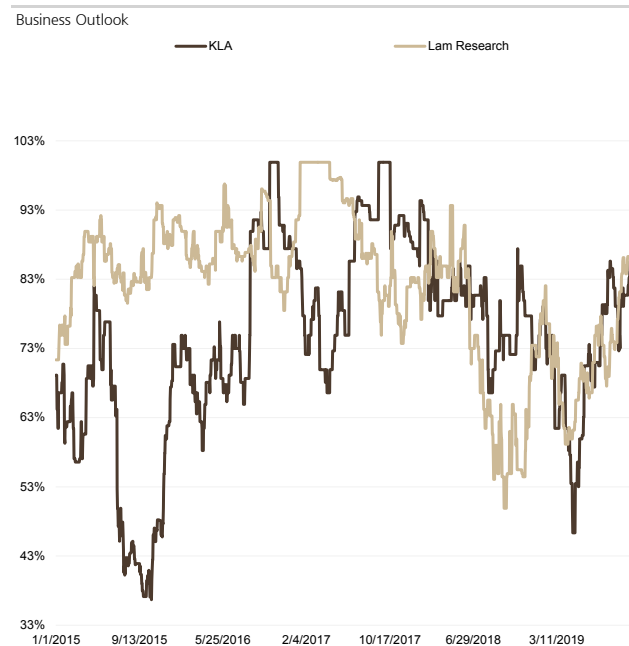
LRCX does score materially better than KLAC on factors such as career opportunities and compensation/benefits.

**Figure 11: KLAC vs. LRCX (Overall)**



Source: UBS Evidence Lab, Glassdoor

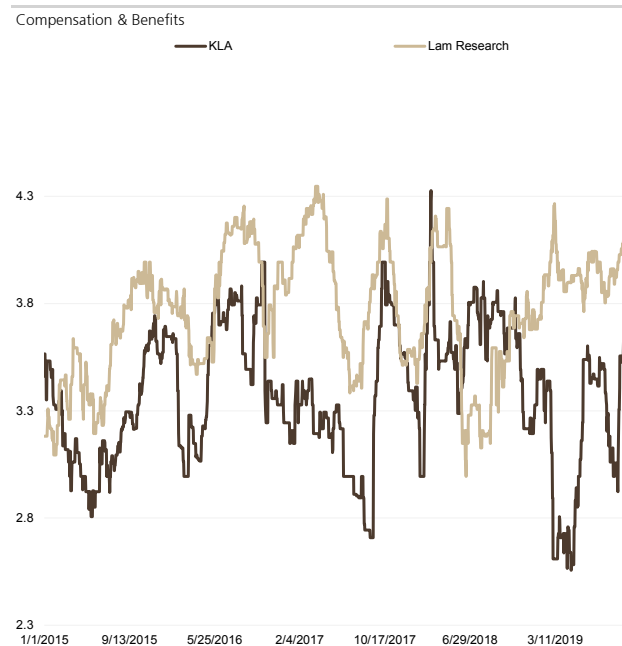
**Figure 12: KLA vs. LRCX (Business Outlook)**



Source: UBS Evidence Lab, Glassdoor

Source: UBS Evidence Lab, Glassdoor

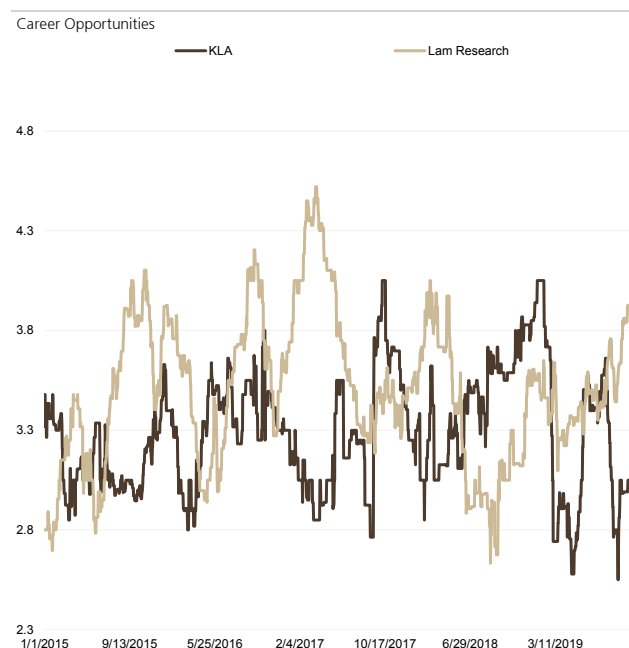
**Figure 13: KLAC vs. LRCX (Compensation/Benefits)**



Source: UBS Evidence Lab, Glassdoor

Source: UBS Evidence Lab, Glassdoor

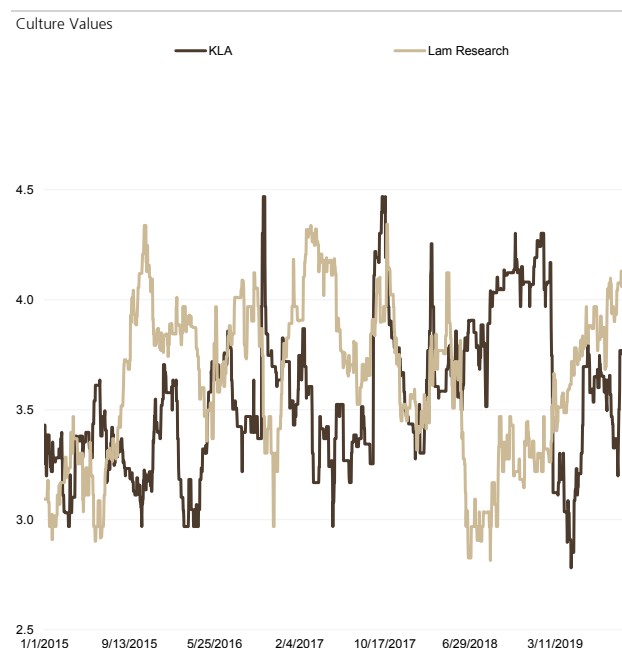
**Figure 14: KLA vs. LRCX (Career Opportunities)**



Source: UBS Evidence Lab, Glassdoor

Source: UBS Evidence Lab, Glassdoor

**Figure 15: KLA vs. LRCX (Culture Values)**



Source: UBS Evidence Lab, Glassdoor

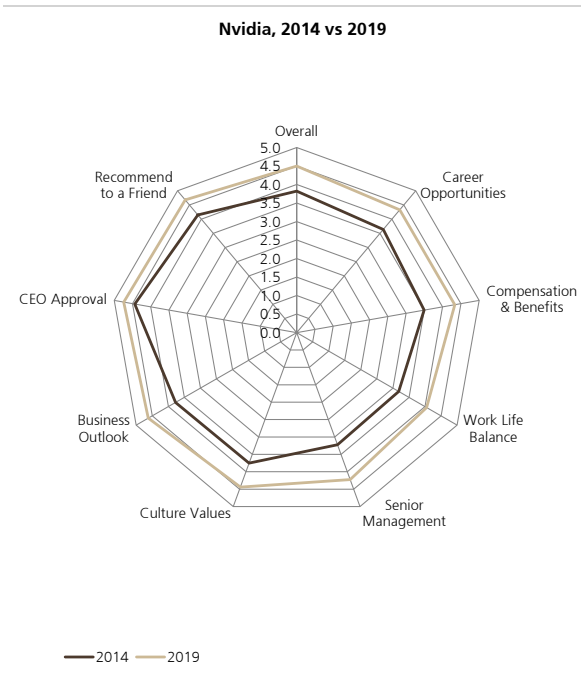
Source: UBS Evidence Lab, Glassdoor

## Longer-Term View

### NVDA, MRVL, TXN showing improvement across multitude of vectors

Taking a longer-term view, our survey results demonstrate that NVDA has shown improvement across all vectors (on an absolute basis). With the AI wave transforming NVDA over the last 5yrs, survey shows business outlook scores are much higher now (4.62 in 2019 vs. 3.77 in 2014) with NVDA scores 4.50 overall (vs. 3.82 in 2014). Survey results also show that NVDA's improved Business outlook is being reflected in Employee Compensation/Benefits score expanding from 3.540 to 4.34 over the 5yr period. On a relative basis (see comparison with INTC, AMD) NVDA still has the highest overall scores.

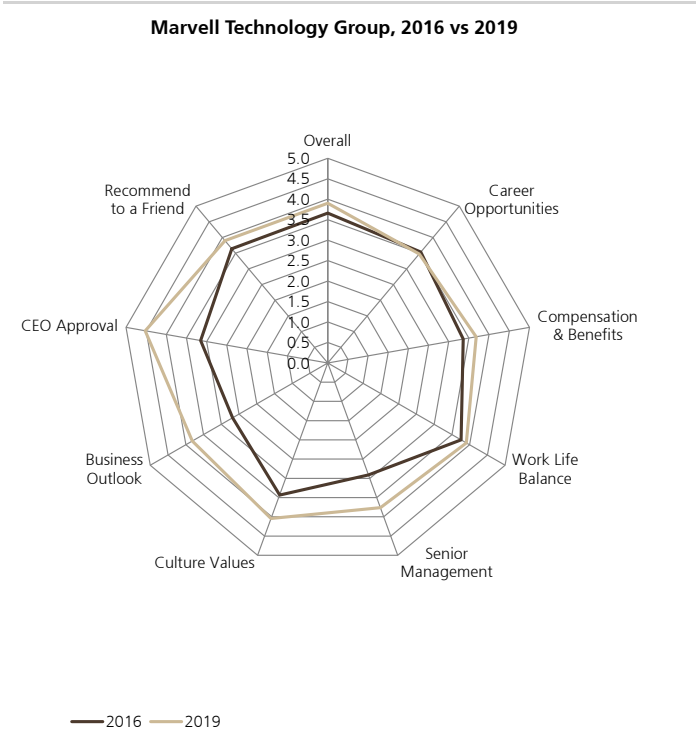
Figure 16: NVDA has shown improvement across all vectors



Source: UBS Evidence Lab, Glassdoor

We have had a generally favorable view of the transformation underway at MRVL, and survey results indicate that the company has indeed improved along most dimensions since the new management team took over. Notably both CEO approval and Senior Management scores have expanded over this period from 3.15 to 4.52 and 2.91 to 3.76, respectively.

**Figure 17: MRVL scores have shown broad-based improvement since the new mgmt team took over in 2016**

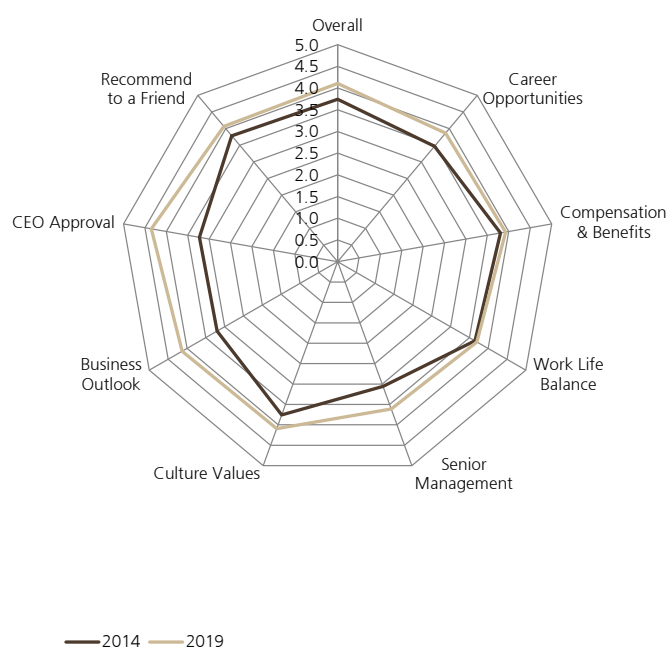


Source: UBS Evidence Lab, Glassdoor

Source: UBS Evidence Lab, Glassdoor

**Figure 18: TXN shows improvement along a multitude of vectors**

Texas Instruments, 2014 vs 2019



Source: UBS Evidence Lab, Glassdoor

Source: UBS Evidence Lab, Glassdoor

We show below the historical numbers for each of the metrics not shown above.

**Figure 19: Career opportunities**

#### Career Opportunities

Entity	Period					
	2014	2015	2016	2017	2018	2019
AMD	3.01	2.91	3.50	3.50	3.74	3.94
Applied Materials	3.28	3.18	3.28	3.38	3.61	3.38
Broadcom	3.16	3.07	3.18	3.27	3.32	3.31
Intel	3.54	3.49	3.50	3.64	3.65	4.10
KLA Corp	3.02	3.07	3.25	3.24	3.44	3.12
Lam Research	3.26	3.56	3.48	3.67	3.31	3.56
Marvell Technology Group	3.04	3.16	3.54	3.81	3.68	3.48
Micron Technology	3.13	3.18	3.35	3.39	3.34	3.33
Nvidia	3.63	3.63	3.89	4.29	4.34	4.33
Qualcomm	3.70	3.27	3.38	3.65	3.48	3.72
Texas Instruments	3.47	3.63	3.72	3.74	3.92	3.86
Average	3.29	3.28	3.46	3.60	3.62	3.65

Source: UBS Evidence Lab, Glassdoor

**Figure 20: Compensation and benefits**

Compensation & Benefits						
Entity	Period					
	2014	2015	2016	2017	2018	2019
AMD	3.26	3.15	3.34	3.27	3.38	3.39
Applied Materials	3.51	3.52	3.47	3.48	3.88	3.52
Broadcom	3.56	3.58	3.72	3.88	3.90	4.00
Intel	3.90	3.76	3.86	3.85	3.82	4.19
KLA Corp	3.24	3.29	3.46	3.33	3.62	3.33
Lam Research	3.54	3.70	3.88	3.83	3.66	4.03
Marvell Technology Group	2.90	3.11	3.36	3.49	3.70	3.68
Micron Technology	3.69	3.47	3.57	3.67	3.80	3.76
Nvidia	3.50	3.68	3.84	4.35	4.26	4.34
Qualcomm	3.94	3.69	3.51	3.67	3.80	3.83
Texas Instruments	3.81	3.89	4.06	3.85	3.87	3.93
Average	3.53	3.53	3.64	3.70	3.79	3.82

Source: UBS Evidence Lab, Glassdoor

**Figure 21: Work/life balance**

Work Life Balance						
Entity	Period					
	2014	2015	2016	2017	2018	2019
AMD	3.46	3.54	3.93	3.73	4.13	4.04
Applied Materials	3.03	3.29	3.35	3.41	3.37	3.32
Broadcom	3.64	3.58	3.69	3.81	3.91	3.93
Intel	3.79	3.66	3.66	3.79	3.89	4.15
KLA Corp	2.91	3.01	3.25	3.52	3.50	3.19
Lam Research	2.92	3.10	3.19	3.21	3.27	3.37
Marvell Technology Group	3.23	3.17	3.76	3.81	4.00	3.91
Micron Technology	3.33	3.34	3.31	3.22	3.10	2.95
Nvidia	3.18	3.41	3.61	3.93	3.93	4.05
Qualcomm	3.40	3.15	3.21	3.49	3.42	3.52
Texas Instruments	3.65	3.57	3.66	3.71	3.56	3.70
Average	3.32	3.35	3.51	3.61	3.64	3.65

Source: UBS Evidence Lab, Glassdoor



**Figure 22: Senior management**

Senior Management						
Entity	Period					
	2014	2015	2016	2017	2018	2019
AMD	2.72	2.59	3.12	3.17	3.49	3.68
Applied Materials	2.78	3.10	3.17	3.20	3.33	3.24
Broadcom	2.81	2.83	2.98	3.11	3.01	3.05
Intel	3.21	3.25	2.98	3.19	3.30	3.77
KLA Corp	3.02	3.03	3.23	3.24	3.53	3.32
Lam Research	3.38	3.25	3.33	3.44	2.98	3.37
Marvell Technology Group	2.56	2.91	2.91	3.74	3.49	3.76
Micron Technology	3.05	3.16	2.98	3.14	2.89	2.85
Nvidia	3.22	3.57	3.79	4.24	4.14	4.23
Qualcomm	3.42	2.87	2.95	3.20	2.95	3.26
Texas Instruments	3.06	3.41	3.58	3.52	3.62	3.61
Average	3.02	3.09	3.18	3.38	3.34	3.47

Source: UBS Evidence Lab, Glassdoor

**Figure 23: Culture/values**

Culture Values						
Entity	Period					
	2014	2015	2016	2017	2018	2019
AMD	3.29	3.14	3.65	3.44	3.94	4.09
Applied Materials	3.12	3.46	3.56	3.46	3.62	3.42
Broadcom	3.39	3.37	3.42	3.53	3.62	3.53
	3.56	3.53	3.59	3.75	3.75	3.93
Intel	3.82	3.76	3.64	3.81	3.86	4.25
KLA Corp	2.98	3.32	3.54	3.53	3.92	3.59
Lam Research	3.54	3.64	3.86	3.86	3.37	3.91
Marvell Technology Group	2.93	3.00	3.43	3.70	3.83	4.05
Micron Technology	3.50	3.50	3.34	3.46	3.28	3.17
Nvidia	3.75	3.89	4.04	4.44	4.39	4.44
Qualcomm	3.68	3.38	3.41	3.54	3.50	3.76
Texas Instruments	3.76	3.84	4.12	4.08	3.99	4.10
Average	3.44	3.49	3.63	3.72	3.76	3.85

Source: UBS Evidence Lab, Glassdoor

**Figure 24: CEO approval**

CEO Approval						
Entity	Period					
	2014	2015	2016	2017	2018	2019
AMD	0.61	0.67	0.80	0.81	0.94	0.95
Applied Materials	0.72	0.65	0.76	0.73	0.83	0.71
Broadcom	0.58	0.61	0.66	0.69	0.58	0.52
Intel	0.75	0.76	0.59	0.69	0.69	0.79
KLA Corp	0.70	0.74	0.79	0.76	0.79	0.72
Lam Research	0.82	0.86	0.88	0.84	0.82	0.78
Marvell Technology Group	0.55	0.63	0.63	0.91	0.85	0.90
Micron Technology	0.75	0.77	0.72	0.75	0.69	0.58
Nvidia	0.89	0.88	0.92	0.97	0.95	0.95
Qualcomm	0.84	0.54	0.64	0.71	0.49	0.73
Texas Instruments	0.65	0.80	0.85	0.85	0.83	0.87
Average	0.71	0.72	0.75	0.79	0.77	0.77

Source: UBS Evidence Lab, Glassdoor

## Figure 25: Methodology

### Methodology

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#### Overview

**Glassdoor** is a leading careers website that allows employees to review their employers. Employers are rated on nine dimensions including overall satisfaction, compensation and benefits, views of senior management, and business outlook. We track employee satisfaction scores to provide insights into the ability of these companies to attract and retain employees. CEO Approval and satisfaction with senior management scores are also important as they provide a view into how employees perceive their management and the direction of their company.

#### More Details

For our Glassdoor analyses, we focus on the reviews of current employees only. Filtering out the reviews of former employees is a proprietary approach that allows for a more robust analysis. It is not possible to map the review of a former employee to a distinct date – the employee could have left the company six months ago or six years ago. By removing the reviews of former employees, we resolve this date issue and are able to show rating trends over time.

To analyze these trends in ratings, UBS Evidence Lab aggregates review scores by year. For select companies and the competitive set, we can also create 90-day rolling averages of current employee ratings.

For many of the metrics such as **Overall Satisfaction, Compensation & Benefits, and Senior Management**, employees are asked to rate satisfaction scores on a 5-point scale. The score is an average of the responses.

For **Business Outlook**, employees who posted a review on Glassdoor were asked if Business Outlook over the next six months was getting better, getting worse, or staying the same. The business outlook metric is a diffusion index that is calculated based on the responses to that question and is the percentage of positive responses plus one half of the percentage of neutral responses. Values above 50 indicate that business outlook for the next six months is improving and values below 50 indicate that business outlook is getting worse.

For **CEO Approval**, employees were asked if they approve of the CEO, have no opinion of the CEO, or disapprove of the CEO. The CEO approval rating, as is the case for the Business Outlook rating, is also a diffusion index, which means it is reflective of the number of reviewers who approve of the CEO plus one half of the number of reviewers who have no opinion of the CEO, divided by the number of people who responded to the CEO approval question.

For this report, UBS analyzed current employee reviews from Glassdoor, a leading careers website, to measure trends in employee satisfaction metrics and CEO approval across 103 leading companies in US Semiconductor sector. UBS Evidence Lab used advanced web scraping techniques to collect over 30,000 current employee reviews. This report leverages the following UBS Evidence Lab asset: US Semiconductor Employee Reviews Monitor [Glassdoor]. The reviews are current through 10/21/19.

### Valuation Method and Risk Statement

Valuations were not performed as part of this report. We use various methodologies such as EV/FCF, P/TBV, P/E for valuing companies in our coverage universe. 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 <sup>1</sup>	IB Services <sup>2</sup>
<b>Buy</b>	FSR is > 6% above the MRA.	45%	29%
<b>Neutral</b>	FSR is between -6% and 6% of the MRA.	40%	29%
<b>Sell</b>	FSR is > 6% below the MRA.	15%	21%
Short-Term Rating	Definition	Coverage <sup>3</sup>	IB Services <sup>4</sup>
<b>Buy</b>	Stock price expected to rise within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%
<b>Sell</b>	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 2019.

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.

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

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**UBS Securities LLC:** Timothy Arcuri; Pradeep Ramani.

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Company Name	Reuters	12-month rating	Short-term rating	Price	Price date
<b>Advanced Micro Devices Inc</b> <sup>16, 20</sup>	AMD.O	Neutral (CBE)	N/A	US\$44.15	20 Dec 2019
<b>Applied Materials Inc</b> <sup>16, 20</sup>	AMAT.O	Sell (CBE)	N/A	US\$61.81	20 Dec 2019
<b>Broadcom Limited</b> <sup>16</sup>	AVGO.O	Buy	N/A	US\$319.00	20 Dec 2019
<b>Intel Corp.</b> <sup>4, 6a, 6b, 6c, 7, 16, 22</sup>	INTC.O	Buy	N/A	US\$58.95	20 Dec 2019
<b>KLA Corporation</b> <sup>16</sup>	KLAC.O	Sell	N/A	US\$177.47	20 Dec 2019
<b>LAM Research Corp</b> <sup>16</sup>	LRCX.O	Sell	N/A	US\$297.41	20 Dec 2019
<b>Marvell Technology Group</b> <sup>16</sup>	MRVL.O	Buy	N/A	US\$25.96	20 Dec 2019
<b>Micron Technology Inc</b> <sup>16</sup>	MU.O	Neutral	N/A	US\$55.06	20 Dec 2019
<b>NVIDIA Corp</b> <sup>16, 22</sup>	NVDA.O	Buy	N/A	US\$239.37	20 Dec 2019
<b>Qualcomm Inc.</b> <sup>3, 16</sup>	QCOM.O	Neutral	N/A	US\$88.85	20 Dec 2019
<b>Texas Instruments Inc</b> <sup>16</sup>	TXN.O	Sell	N/A	US\$128.95	20 Dec 2019

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

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