Americas Technology: Semiconductors

Analog Semis update; we remain on the sidelines given unfavorable risk/reward

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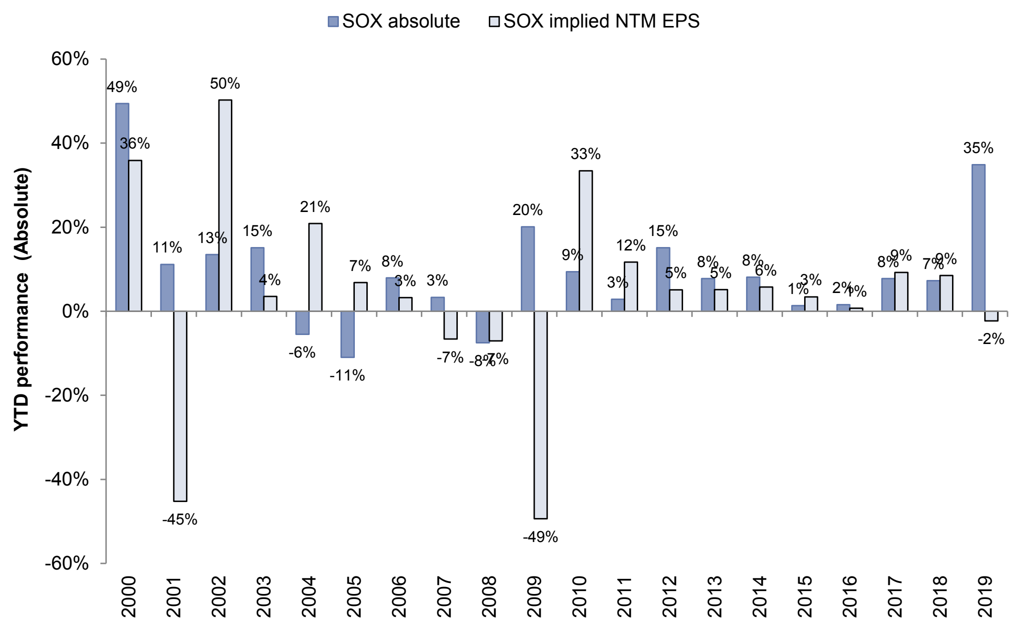
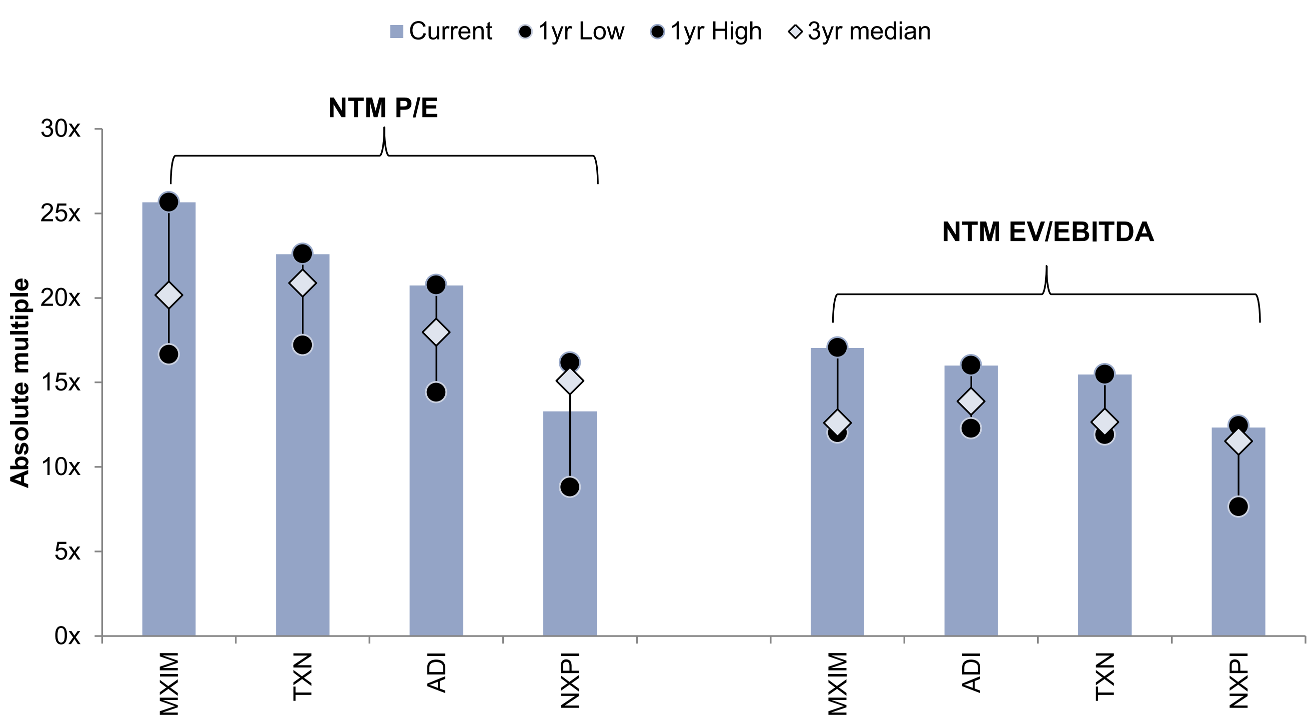
Semiconductor stocks have significantly outperformed the broader market YTD with the SOX up 35% (strongest start to year since CY2000; see below) vs the SPX up 16% (on a relative basis, this is the strongest start to the year since 2009). Analog/mixed-signal stocks are no exception with NXPI/ADI/TXN/MXIM appreciating 37%/34%/22%/18% YTD, respectively. While several companies in the space have called the cyclical bottom - in most cases, citing stabilization in demand and guiding June quarter up qoq - and a number of recent macro as well as micro datapoints have been positive or 'less bad', we remain guarded on the group as we believe the market to a large extent has pre-traded the potential recovery in CY2020. From a single stock perspective, we reiterate our Sell ratings on ADI (12% potential downside) and MXIM (26% potential downside). Inside this note, we outline a number of recent datapoints (i.e. negative revisions by Infineon/Osram/ABB and disappointing bookings at Yaskawa Electric) that indicate continued demand weakness, particularly in the Automotive and Industrial end-markets.

Exhibit 1: The SOX is up 35% YTD, the most since 2000



Source: FactSet

Exhibit 2: Analog/mixed-signal valuations are at/near 1-year highs

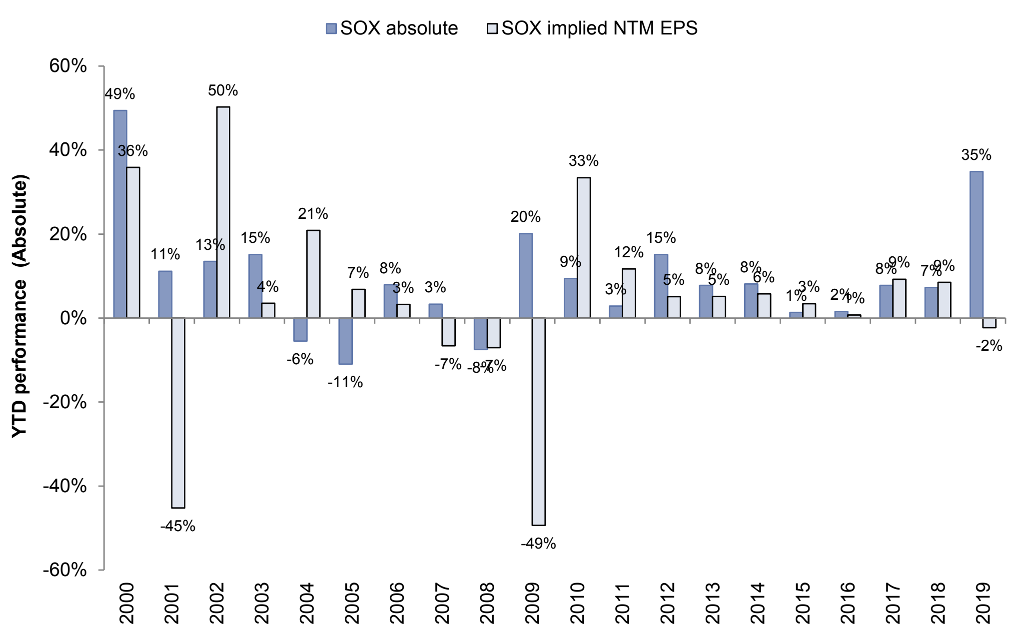


Source: FactSet

Putting the current SOX outperformance in a historical context

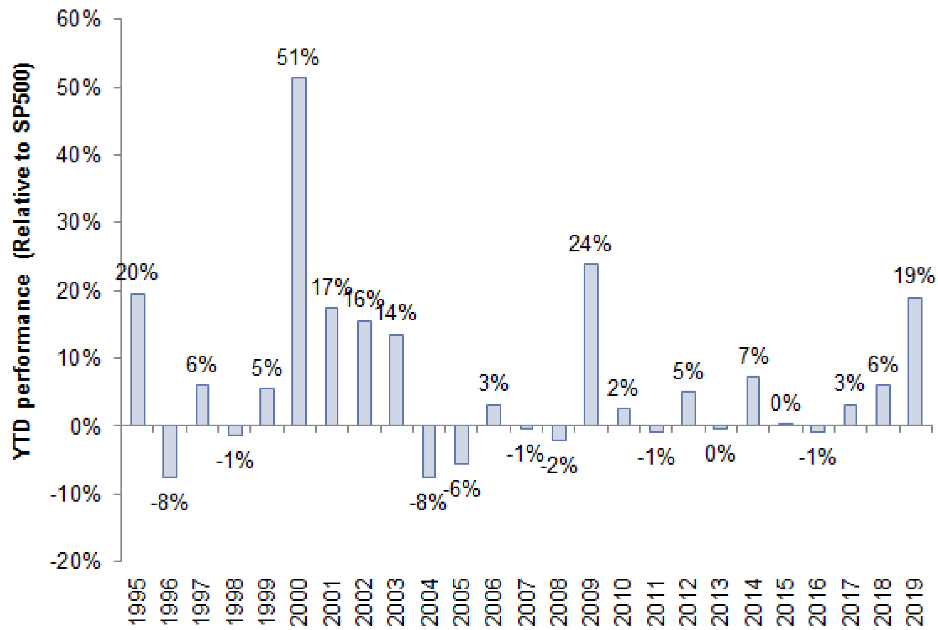
Semiconductor stocks have significantly outperformed the broader market YTD with the SOX up 35% (strongest start to year since CY2000; see below) vs the SPX up 16%. On a relative basis, this is the strongest start to the year since 2009. That said, NTM Street EPS for the median stock in our coverage universe is -4% YTD and -2% for the SOX. Within this context we examined SOX absolute and relative performance during three previous cycles where estimates were flat to down (Exhibit 5). We looked at SOX price and implied SOX EPS (note FactSet provides SOX index price and NTM P/E, enabling the calculation of implied SOX EPS) and found that during the three previous estimate revision cycles, peak-to-trough corrections in NTM EPS were on average 16%, absolute SOX performance was on average -12%, and SOX performance relative to the SP500 was on average 8%. However, during the current cycle (i.e. mid-September 2018 to the end of March 2019), implied NTM EPS estimates declined 8% peak-to-trough (or half the average of the previous three cycles), absolute SOX performance was +1%, and SOX performance relative to the SP500 was +4%. Note that while YTD 2019 absolute SOX performance has been the strongest since 2000, this year is also the first year since 2009 that NTM EPS estimates have declined. All in, we remain guarded on the overall Semiconductor sector as we believe YTD stock performance vs YTD EPS growth implies that the market is pricing in a significant improvement in fundamentals in 2H19, in our view, which we continue to believe is less than certain given limited visibility and datapoints that largely point to weakness/modest stabilization, rather than outright improvement.

Exhibit 3: On an absolute basis, this is the strongest start to the year for the SOX since 2000...



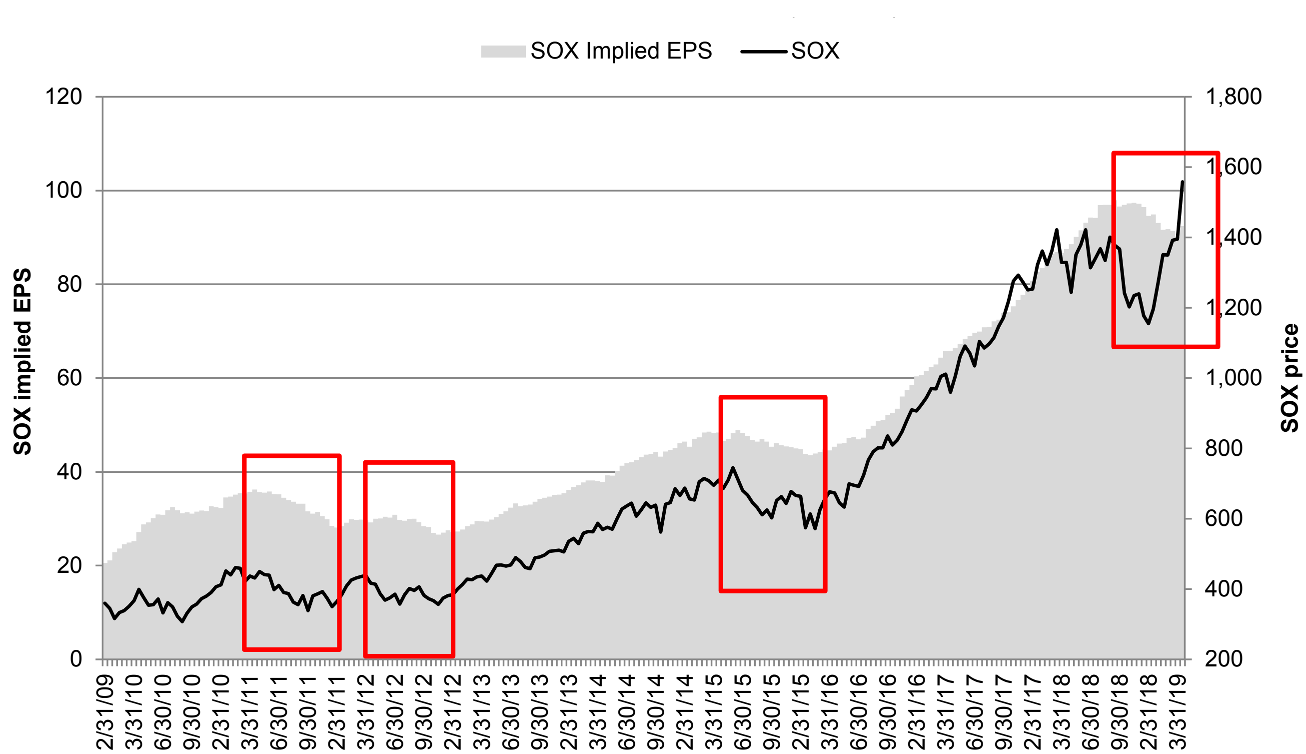
Source: FactSet

Exhibit 4: ...and the strongest start on a relative basis since 2009



Source: FactSet

Exhibit 5: We looked at three previous cycles to put the current cycle in the proper context...



Source: FactSet

Exhibit 6: ...and found that stock price performance relative to past cycles has been significantly better

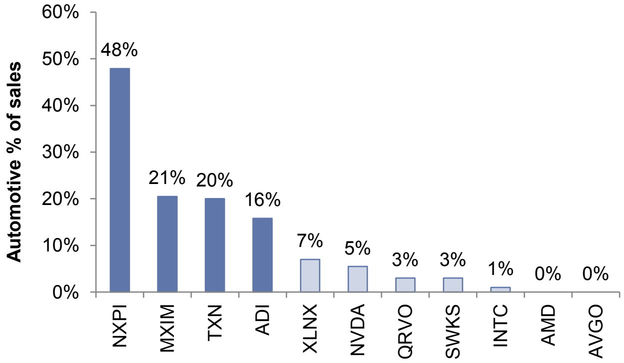
	Peak	Trough	change
Cycle 1			
EPS	36	28	-22.5%
SOX	431	364	-15.5%
SPX	1,320	1,258	-4.7%
SOX vs SPX			**-10.8%**
Cycle 2			
EPS	31	27	-13.7%
SOX	385	356	-7.6%
SPX	1,362	1,353	-0.6%
SOX vs SPX			**-7.0%**
Cycle 3			
EPS	49	44	-11.0%
SOX	713	614	-13.9%
SPX	2,084	1,940	-6.9%
SOX vs SPX			**-7.0%**
Cycle 4			
EPS	98	90	-8.0%
SOX	1,377	1,396	1.3%
SPX	2,905	2,834	-2.4%
SOX vs SPX			**3.8%**
Avg Peak to trough EPS (ex current)			-15.7%
Avg Peak to trough absolute performance (ex current)			-12.3%
Avg Peak to trough relative performance (ex current)			-8.2%

Source: FactSet

Recent datapoints point to continued weakness in the Industrial and Automotive end-markets, while Comms remains a relative bright spot

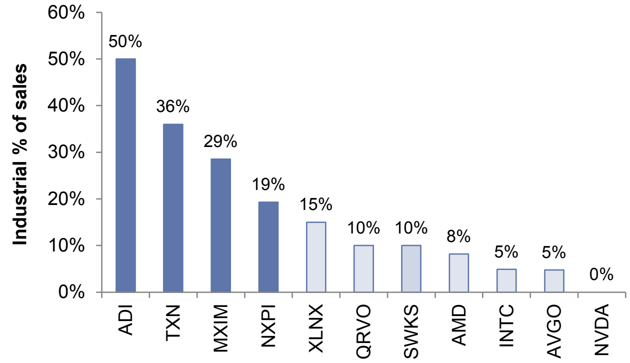
There have been several macro as well as micro datapoints indicating continued weakness in demand, particularly in the Automotive and Industrial end-markets. While demand in certain areas of Automotive (e.g. EV and ADAS) appear to be stable (see comments from Infineon below), and therefore could provide support for specific applications (e.g. BMS. sensor fusion systems), we believe the weak underlying unit environment cited by multiple companies is likely to reduce the overall growth prospects for names exposed to the Automotive space in general (Exhibit 7). In contrast, fundamentals in the Communications end-market remain positive largely due to strong demand stemming from 5G deployments. Below we summarize key datapoints from the past month.

Exhibit 7: Analog companies are disproportionately exposed to the Automotive end market...
CY18



Source: Company data, Goldman Sachs Global Investment Research

Exhibit 8: ...as well as Industrial
CY18



Source: Company data, Goldman Sachs Global Investment Research

Automotive and Industrial

(+/-) Renesas' decision to under-utilize multiple fabs. On 3/7, the Nikkei reported that Renesas would suspend operations at 13 factories in Japan and overseas. According to the report, operations were due to be suspended for up to a total of two months, with 1) operations at six plants in Japan that handle front-end operations suspended for a month from the Golden Week holiday period in April-May and for another month over the summer holiday period in August, 2) production at three domestic plants that handle back-end operations were due to be suspended for several weeks in April-September, and 3) production at four overseas plants that handle back-end operations were due to be suspended for several weeks. That said, a 3/29 article by Bloomberg noted that the production halt could last less than the initial plan as inventory adjustments are nearing an end with comments from Renesas' CEO indicating that the first quarter could be the bottom followed by an improvement in demand in the second quarter.

(-) Infineon guidance cut. On 3/27, Infineon lowered its FY19 (September FYE) guidance to 5% revenue growth from +9% prior due to ongoing macro uncertainties and end-market weakness, particularly driven by a) declining vehicle sales in China (resulting in a sharp increase in dealer inventories) and b) increasing inventory in the broader distribution channel that have lead to an expectation of lower-than-normal seasonal growth in FY2H compared to a better than seasonal trajectory before.

Infineon highlighted an acceleration in the rate of decline in China Auto sales, which has resulted in a sharp increase in dealer inventories, impacting demand for components. According to our Infineon analyst, Alexander Duval, this is primarily related to classic auto revenues, traditionally linked to Global Auto unit production. As such, IFX now assumes low- to mid-single digit Global auto unit declines in FY19 (vs 0% growth prior).

The company also noted that inventory levels continued to rise at distributors in power management related products, particularly for low and mid voltage MOSFETS. Our analyst noted this is related to weakness in the smartphone end market, alongside some inventory build in white goods / air conditioners in China (on both a finished goods level and total overall inventory).

Despite weaker near-term demand for more commoditized products (such as low power MOSFETS), differentiated, high power components (e.g. for Electric Vehicles and certain industrial applications) remain under allocation (i.e. c20%-25% of revenues). Our analyst was encouraged to see that secular demand in autos related to Electric Vehicles remains strong (Infineon's China xEV sales for January more than doubled yoy), with growth in Radar and MCUs also (particularly leveraged to Automated Driving).

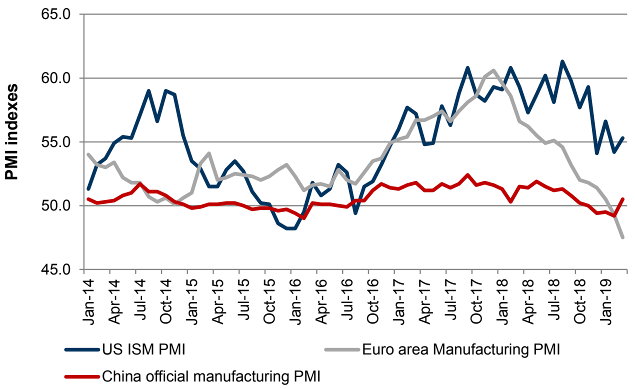
(-) Osram FY guidance cut. On 3/28, Osram lowered its forecast for FY19 due to continued market weakness in the automotive industry, general lighting, and mobile devices, which has lead to significant inventory build-ups, particularly in China. In addition, the company noted that it is facing an ongoing impact due to the general economic slowdown with geopolitical uncertainties continuing to negatively impact demand.

The company expects FY2Q revenue to decline roughly 15% yoy (vs -15% yoy in the prior quarter) and for FY19 (September FYE) revenue to decline 11-14% compared to prior guidance for revenue to be flat to up 3% yoy. With regard to the company's full-year guide, management noted that it had previously provided guidance under the condition that order intake would need to revive meaningfully in support of the second half of the fiscal year 2019; however, at this time, the company noted that this has not occurred yet and it does not expect it to for the rest of its fiscal year.

(+/-) China automotive production. China Auto Market announced on April 13 that March retail auto sales fell 12% yoy to 1.75 mn units, while cumulative retail sales for January-March were also down, falling 10% yoy. Production volume in March fell 7% yoy to 2.01 mn units, while aggregate January-March production fell 13%. Our Asia Auto analyst, Kota Yuzawa, believes that March data alone suggest to us the worst may be over in terms of inventory adjustments.

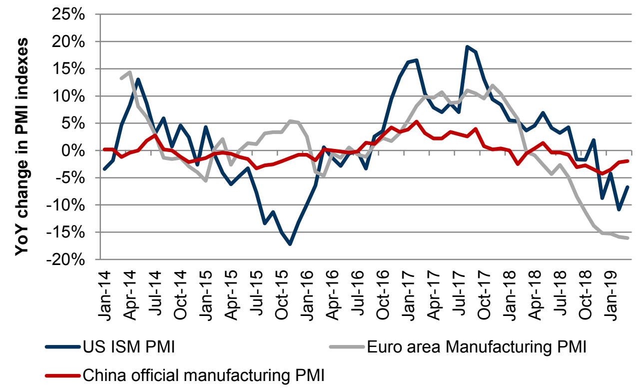
(+/-) PMI data points to stabilization in the US and China. PMI indices in the US, China, and Europe have all softened since mid-2018. Specifically, US ISM PMI has declined from 60.2 in June 2018 to 55.3 as of March 2019, while Euro-area manufacturing PMI has declined from 54.9 to 47.5 and China PMI has declined from 51.5 to 50.5 over the same period. We would note that Analog semi sales have historically been well correlated with broader industrial indicators like the ISM PMI (Exhibit 11). Note in the month of March, US ISM PMI declined 7% yoy, which was a slight improvement from -11% yoy in February and Euro-area PMI declined 16% yoy, which compares to -16% in February and China declined 2% yoy to 50.5 (vs -2% in the prior month). While yoy growth remains in negative territory, we would note the trend improved in the US and China on a mom basis, with the US ISM PMI +2% mom and China PMI +3% mom to the highest level since October 2018.

Exhibit 9: PMI data show stabilization in the US and China, though Europe remains week



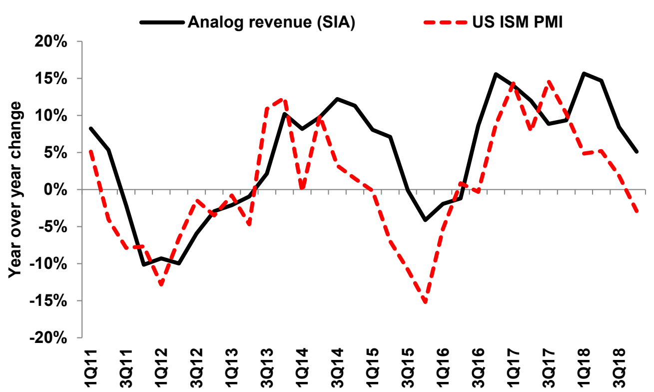
Source: ISM, IHS Markit, China National Bureau of Statistics

Exhibit 10: The yoy growth rate in the US and China improved in February



Source: ISM, IHS Markit, China National Bureau of Statistics

Exhibit 11: Analog industry revenue has historically been correlated with US PMI data



Source: SIA, ISM

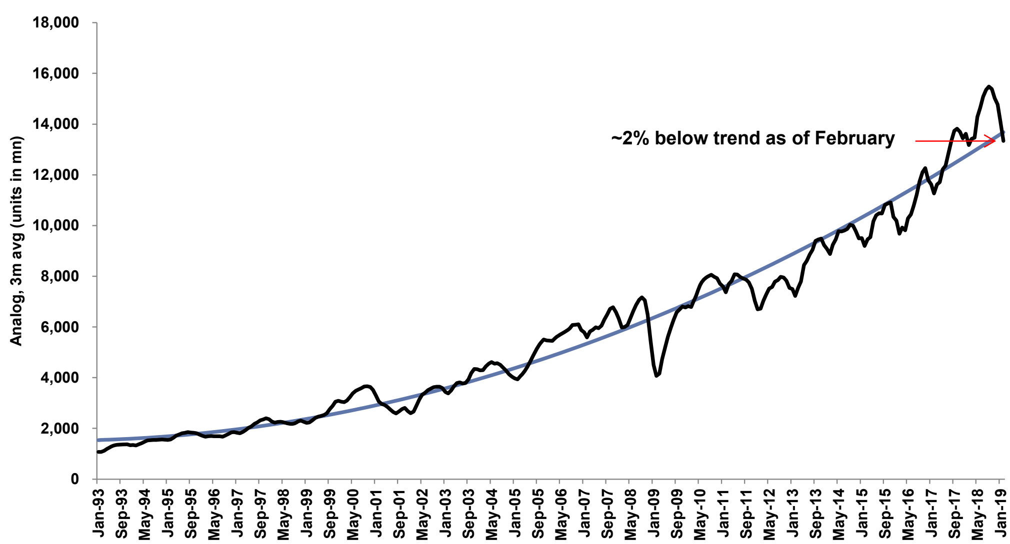
(-) Weak APAC March sales/orders. In APAC, Hiwin's March sales were down 20%+ yoy despite sequential recovery - March's sequential recovery (up 25% mom) also appears weaker than normal seasonality (average March mom growth is +31% over the past five years when Chinese New Year holidays have fallen in February, as was the case this year). AirTAC's mom recovery in March (+102%) was weaker than what seasonality suggests (+126% for the average March mom trend when Chinese New Year holidays were in February, same as 2019). Okuma saw weak orders considering it was the fiscal year-end. The weakness was particularly pronounced in respect of the domestic business. According to Okuma, this was attributable to weak underlying demand and companies holding off ordering before the determination of subsidies. However, Okuma maintained an upbeat stance on the outlook, due in part to signs of an upturn in the number of inquiries, centered on China and North America.

(+/-) ABB (covered by Daniela Costa). ABB pre-announced 1Q19 on 4/17. Orders in the Industrial Automation business were down 5% on a comparable basis and were about ~2% below Street expectations, while Robotics and Motion and Electrification Products orders were in line with Street expectations. In Industrial Automation ABB noted tough comps in large orders and a subdued market in discrete as key drivers of weakness.

(-) Yaskawa (covered by Yuichiro Isayama) robot orders below guidance. Orders in 4Q2/19 (December 2018-February 2019) came in below GS/Street expectations, with qoq/yoy declines for servo motors, inverters, and robots. Yaskawa had been projecting a recovery at the Lunar New Year holidays, but encountered a pronounced seasonal lull. That said, the company said on its earnings conference call that since the Lunar New Year holidays, orders (in March-April) are gaining momentum, and mentioned a bottoming out in orders. For the robot business specifically, 4Q production volume came in nearly 20% below guidance. According to our analyst, the robot business is supposed to have a high direct sales weighting, but the company is having difficulty controlling sales and production/inventories, primarily for general industry and computer, communications, and consumer electronics applications.

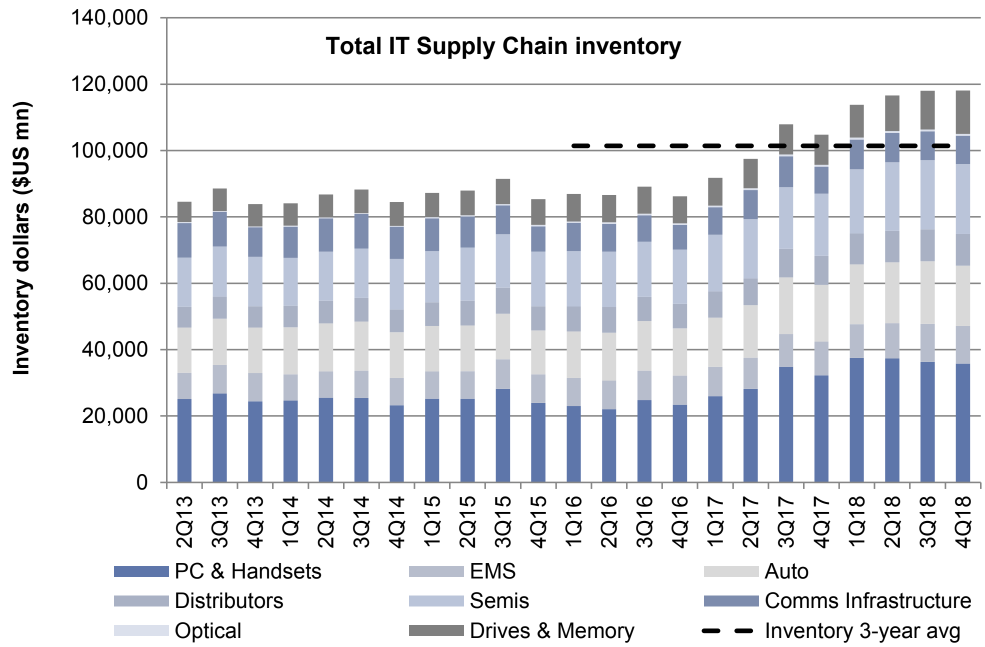
(+/-) Analog unit shipment data. Data released by the Semiconductor Industry Association (SIA) show that analog industry unit shipments exited February 2% below normalized demand (Exhibit 12). While we believe the trajectory over the last few months represents an improvement relative to September 2018 when units peaked at 16% above trend, we think that it will likely take an additional quarter or two of below-trend shipments before inventory in the IT Supply Chain (Exhibit 13), which is currently elevated, is worked down and analog companies begin shipping to true end demand/benefit from potential restocking.

Exhibit 12: Analog units exited February 2% below trend



Source: SIA, Goldman Sachs Global Investment Research

Exhibit 13: IT Supply Chain inventory remains elevated



Source: Company data

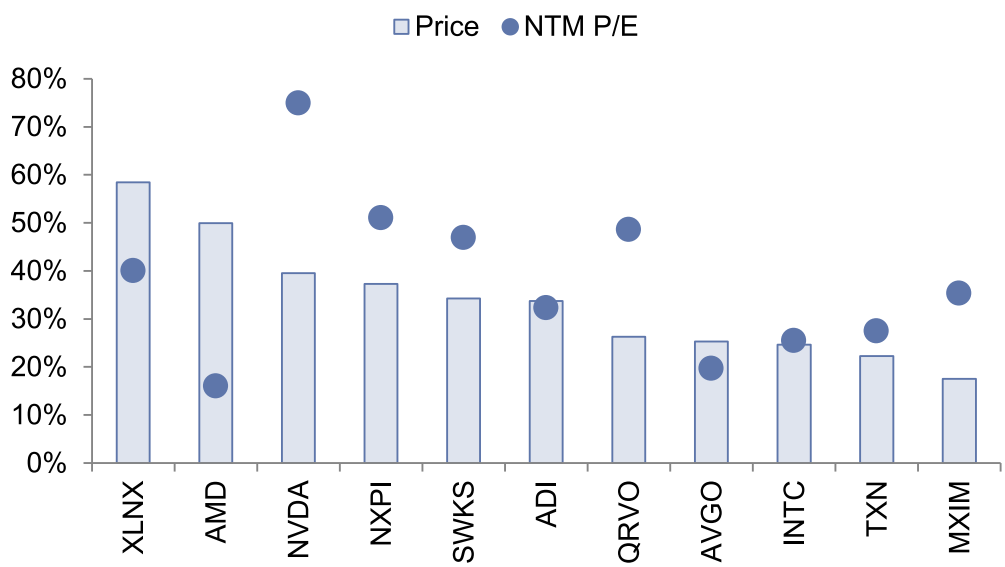
Comms

(+) Ericsson (ERICb.ST, covered by Alexander Duval): 1Q Networks revenues came in above SME consensus and our analyst believes the 10% yoy 1Q organic growth in the segment signals both strong market momentum into the start of the year (especially in N. America which was +40% yy reported). We would note that the company has already announced 18 5G deals with telcos and that 5G services are already being launched in N. America and S. Korea driving spending early in 2019, with large-scale 5G deployments set to begin in other parts of Asia by end of 2019. ERIC continues to expect the market to grow at 3% yoy organic in 2019, with a sustained CAGR of 2% through 2018-23 (per Dell'Oro).

Trading update

On a YTD basis, TXN and MXIM have underperformed our Semiconductor coverage median, while ADI represents the median and NXPI has been the fourth best performing stock (Exhibit 14). Stock performance year to date has been supported primarily by multiple expansion with NTM P/E multiples expanding 28%/32%/34%/53% for TXN/ADI/MXIM/NXPI, respectively, while estimates have declined or remained largely unchanged (NTM Street EPS for TXN/ADI/MXIM/NXPI -4%/+1%/-13%/-9% respectively).

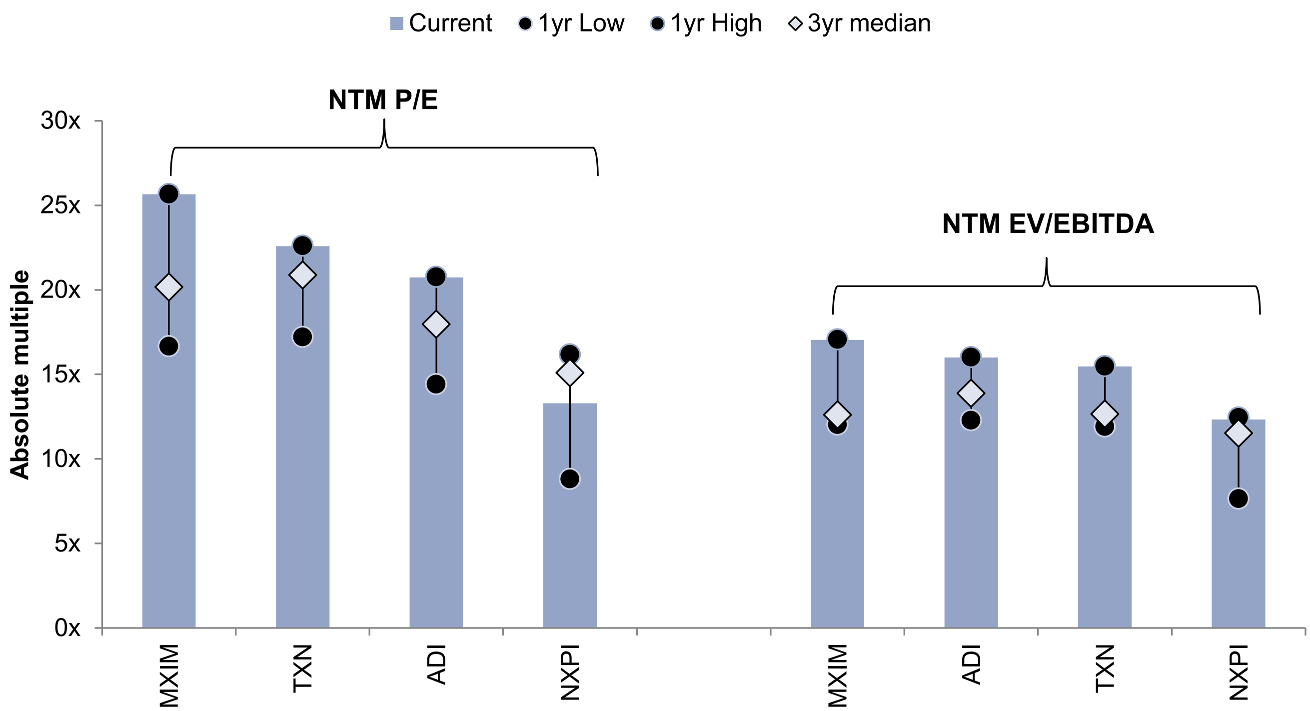
Exhibit 14: YTD stock performance has been driven largely by multiple expansion



Source: FactSet

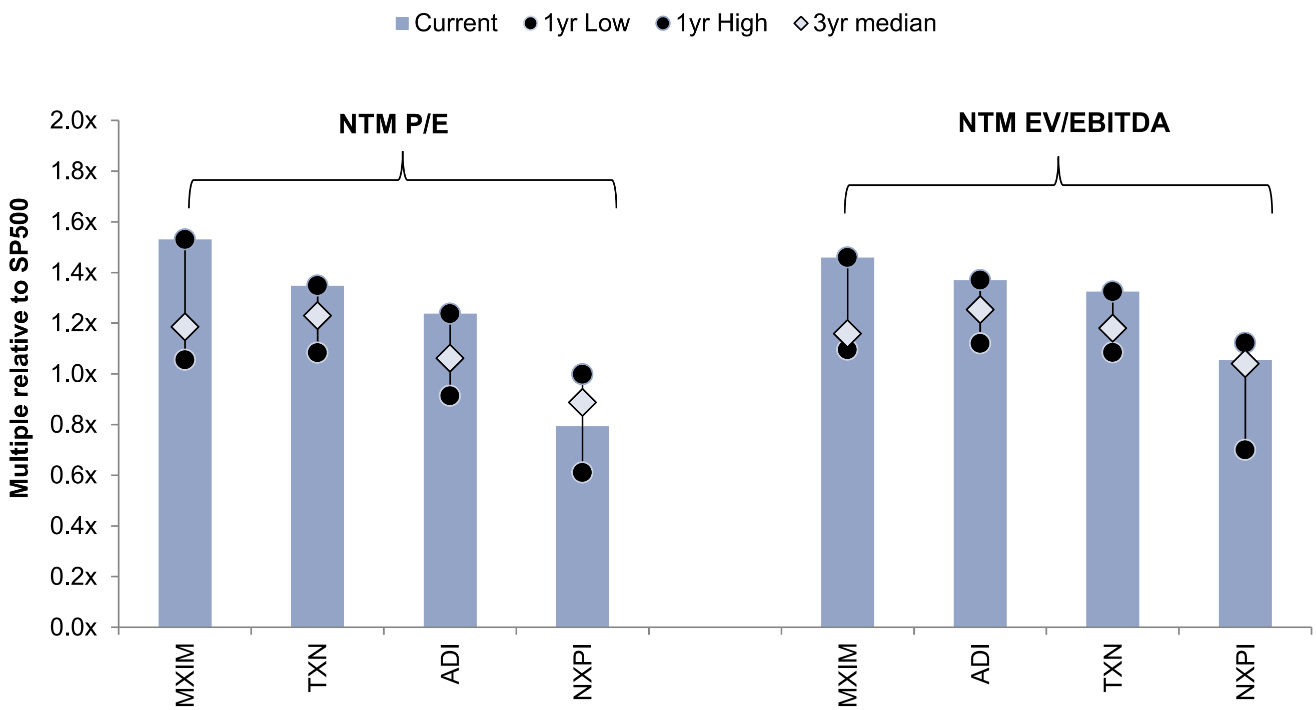
With the exception of NXPI, analog and mixed-signal stocks in our coverage (TXN, ADI, and MXIM) are trading in line with their 1yr high absolute and relative NTM P/E and NTM EV/EBITDA multiples (Exhibits 15 & 16) and valuation relative to history remains elevated. We view valuation as particularly stretched for both ADI and MXIM, where, ADI/MXIM are trading 16%/29% above their 3yr median relative (to SP500) NTM P/E and 9%/26% above their 3yr median relative NTM EV/EBITDA.

Exhibit 15: Analog and mixed-signal stocks are trading at or close to 1yr high valuation on an absolute basis...



Source: FactSet

Exhibit 16: ...and on a relative basis as well



Source: FactSet

Estimate changes

ADI (Sell, $114.40). We raise our FY19/20/21 revenue estimates 0.1-0.5% as we assume a more optimistic view around the trajectory of the Communications business revenue, which is partially offset by a lower outlook for Consumer. Our FY19/20/21 EPS estimates increase from $5.39/$5.68/$6.38 to $5.40/$5.71/$6.41 on higher revenue. Our 12-month price target of $101 (up from $90) is based on 18x (up from 16x on higher comps) normalized EPS $5.60 (unchanged). Key upside risks include, better-than-expected demand in the Industrial and Automotive end markets, faster/higher-than-expected revenue synergy capture post-LLTC, and large Consumer socket wins.

We maintain our Sell rating on ADI with our updated 12-month price target to 12% potential downside (vs -7% for the average Neutral-rated stock in our coverage). We remain guarded on the stock given a) cyclical concerns related to the Industrial (where we believe it is too early to call a bottom) and Automotive (where the company has underperformed peers) businesses and b) elevated valuation. On this, we highlight that the stock is currently trading at 16x NTM EV/EBITDA (+15%/26% vs the 3/5-year median) and 22x NTM EV/FCF (+21%/29% vs the 3/5-year median), both of which are at a 1-year high.

Exhibit 17: We raise our ADI estimates

	FY19E	FY20E	FY21E
Revenue ($mn)			
New	6,165	6,384	6,773
Old	6,156	6,345	6,741
change	**0.1%**	**0.6%**	**0.5%**
Gross Margin			
New	70.3%	70.4%	71.3%
Old	70.3%	70.4%	71.3%
change	**0.0%**	**0.0%**	**0.0%**
EPS			
New	$5.40	$5.71	$6.41
Old	$5.39	$5.68	$6.38
change	**0.3%**	**0.5%**	**0.4%**

Source: Goldman Sachs Global Investment Research

MXIM (Sell, $59.57). We lower our FY19/20/21 revenue estimates ~1% as we take a more conservative view towards Automotive and Industrial segment revenue growth. Our FY19/20/21 EPS estimates decrease from $2.44/$2.42/$2.79 to $2.43/$2.37/$2.73 on lower revenue. Our 12-month price target of $44 (up from $42) is based 85% on a fundamental component of $43 (18x [up from 16x on higher comps] normalized EPS of $2.40 [from $2.55 on lower go-forward estimates]) and 15% on an M&A component of $48 (15x 2019E EBITDA). Risks include 1) a sharp recovery in the end-markets, 2) continued opex cuts, and 3) M&A.

We maintain our Sell rating on MXIM given fundamental concerns (i.e. cyclical weakness in Automotive and Industrial) and valuation. Similar to ADI, we believe valuation for MXIM is stretched, with the stock's absolute NTM P/E 27%/28% above its 3/5yr median, NTM P/E relative to coverage 22%/25% above its 3/5yr median, and NTM P/E relative to the SP500 29%/26% above its 3/5yr median.

Exhibit 18: We lower our MXIM estimates

	FY19E	FY20E	FY21E
Revenue ($mn)			
New	2,315	2,290	2,424
Old	2,324	2,309	2,444
change	**0%**	**-1%**	**-1%**
Gross Margin			
New	66.3%	65.9%	66.8%
Old	66.3%	65.9%	66.8%
change	**0.0%**	**0.0%**	**0.0%**
EPS (operating, incl ESOs)			
New	$2.43	$2.37	$2.73
Old	$2.44	$2.42	$2.79
change	**-1%**	**-2%**	**-2%**

Source: Goldman Sachs Global Investment Research

NXPI (Buy, $101.17). We lower our CY19/20/21 revenue estimates 1-2% as we reflect potential weakness in the company's Automotive business (~50% of revenue). Our CY19/20/21 EPS estimates decrease from $7.67/$9.19/$10.92 to $7.39/$8.73/$10.30 on lower revenue. Our 12-month price target of $96 (up from $94) is based on 15x (up from 14x on higher comps) normalized EPS of $6.40 (from $6.70 on lower go-forward estimates). Risks to our positive view include 1) a weaker-than-expected recovery in the Automotive and Industrial end-markets in 2020, 2) greater-than-expected share loss in

Automotive (note our current estimates currently imply modest share loss), 3) weakness in other parts of the business (e.g. Comms, Mobile, etc), and 4) underwhelming capital return (especially share buybacks).

Exhibit 19: We lower our NXPI estimates

	CY2019E	CY2020E	CY2021E
Revenue			
New	8,727	9,092	9,663
Old	8,863	9,299	9,888
Change	**(1.5%)**	**(2.2%)**	**(2.3%)**
EPS (Ex-SBC)			
New	$7.39	$8.73	$10.30
Old	$7.67	$9.19	$10.92
Change	**(3.7%)**	**(5.0%)**	**(5.7%)**

Source: Goldman Sachs Global Investment Research

TXN (Neutral, $115.60). We lower our CY19/20/21 revenue estimates 2-3% as we assume a more conservative outlook for the company's Automotive and Industrial businesses. Our CY19/20/21 EPS estimates decrease from $5.13/$5.50/$6.03 to $4.86/$5.31/$5.80 on lower revenue. Our 12-month price target of $94 (up from $85) is based on 18x (up from 16x on higher comps) normalized EPS of $5.20 (from $5.30 on lower go-forward estimates). Risks to the upside include better than expected end demand, share gains, and continued gross margin execution. Risks to the downside include a more severe/prolonged analog correction and share loss.

Exhibit 20: We lower our TXN estimates

	CY19E	CY20E	CY21E
Revenue ($mn)			
New	14,301	14,725	15,440
Old	14,745	15,004	15,733
change	**-3%**	**-2%**	**-2%**
Gross Margin			
New	64.4%	64.7%	64.7%
Old	64.7%	64.9%	64.9%
change	**-0.3%**	**-0.2%**	**-0.2%**
GAAP EPS			
New	$4.86	$5.31	$5.80
Old	$5.13	$5.50	$6.03
change	**-5%**	**-4%**	**-4%**

Source: Goldman Sachs Global Investment Research

Disclosure Appendix

Reg AC

We, Toshiya Hari, Charles Long and Matthew Fahey, hereby certify that all of the views expressed in this report accurately reflect our personal views about the subject company or companies and its or their securities. We also certify that no part of our compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in this report.

Unless otherwise stated, the individuals listed on the cover page of this report are analysts in Goldman Sachs' Global Investment Research division.

GS Factor Profile

The Goldman Sachs Factor Profile provides investment context for a stock by comparing key attributes to the market (i.e. our coverage universe) and its sector peers. The four key attributes depicted are: Growth, Financial Returns, Multiple (e.g. valuation) and Integrated (a composite of Growth, Financial Returns and Multiple). Growth, Financial Returns and Multiple are calculated by using normalized ranks for specific metrics for each stock. The normalized ranks for the metrics are then averaged and converted into percentiles for the relevant attribute. The precise calculation of each metric may vary depending on the fiscal year, industry and region, but the standard approach is as follows:

Growth is based on a stock's forward-looking sales growth, EBITDA growth and EPS growth (for financial stocks, only EPS and sales growth), with a higher percentile indicating a higher growth company. **Financial Returns** is based on a stock's forward-looking ROE, ROCE and CROCI (for financial stocks, only ROE), with a higher percentile indicating a company with higher financial returns. **Multiple** is based on a stock's forward-looking P/E, P/B, price/dividend (P/D), EV/EBITDA, EV/FCF and EV/Debt Adjusted Cash Flow (DACF) (for financial stocks, only P/E, P/B and P/D), with a higher percentile indicating a stock trading at a higher multiple. The **Integrated** percentile is calculated as the average of the Growth percentile, Financial Returns percentile and (100% - Multiple percentile).

Financial Returns and Multiple use the Goldman Sachs analyst forecasts at the fiscal year-end at least three quarters in the future. Growth uses inputs for the fiscal year at least seven quarters in the future compared with the year at least three quarters in the future (on a per-share basis for all metrics).

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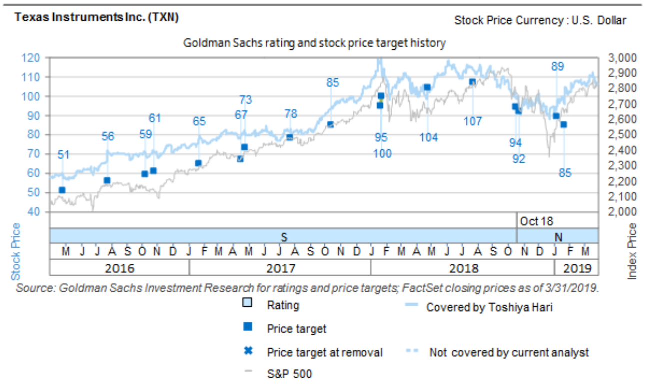

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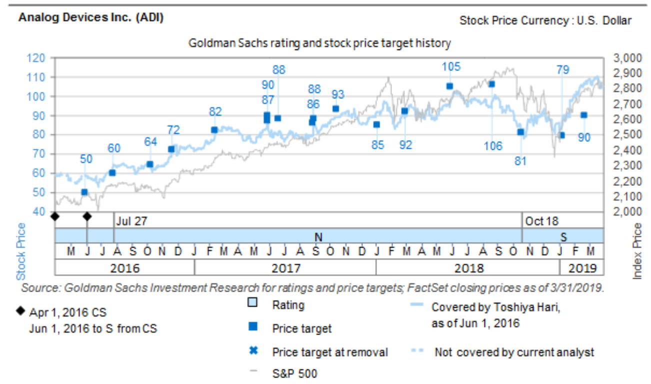

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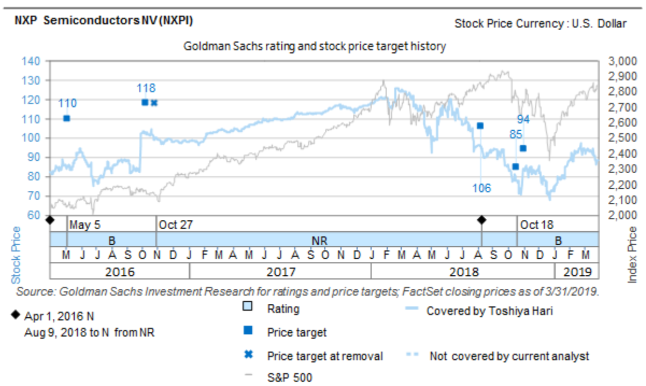

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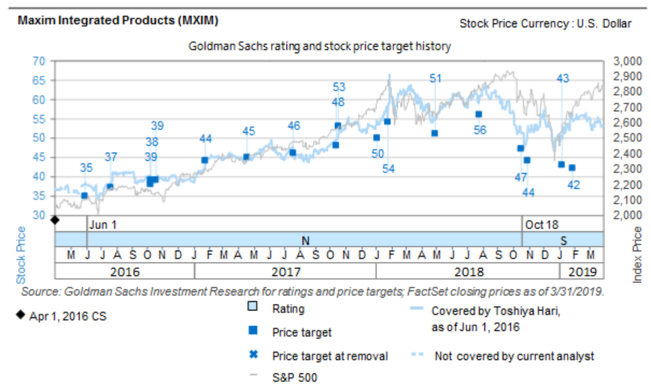

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