

A glowing blue microchip is centered on a circuit board. The chip has a grid of connections on its surface and is surrounded by various electronic components and traces. The overall scene is illuminated with a cool blue light, giving it a high-tech, futuristic appearance.

TPC Semiconductor Market Survey

November 12, 2019

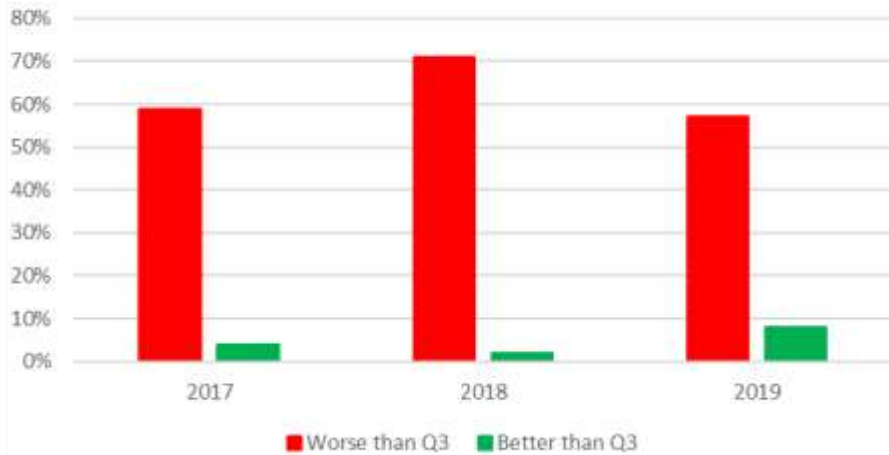
TPC November 2019 Survey Summary

*Survey Date: November 9-11 Respondents: ~12,100 Location: Worldwide (~80% Asia) Who: Active Electronics Industry Professionals
Response Composition (multiple choices): Industrial 40%, Auto 19%, Comm 19%, Computing 22%, Mobile 34%, Data Ctr 19%, Other 13%*

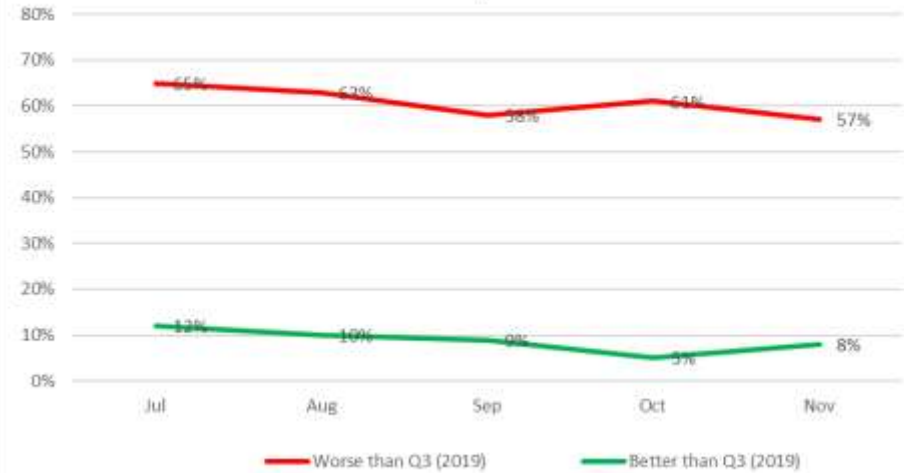
- Our November 2019 Semi industry survey of over 25k electronic industry professionals showed a slight uptick in the demand outlook for both C4Q19 & C1Q20. Seasonality outlook for C4Q19 also improved slightly with C1Q20 seasonality staying roughly the same as last month's survey.
- Our survey also showed bookings expectations are slightly improved in both month-over-month comparisons as well as vs. last year.
- Inventories and cancellation trends in C4Q appear to be moving roughly sideways vs. our last survey.
- **The above continues to lead us to believe that we are at the bottom of the cycle and are showing signs of recovery heading into CY20; albeit slowly during C1Q.**
- The q/q demand outlook for C4Q19 and C1Q20 improved with both quarters also viewed as slightly above the previous 2 year's seasonality.
 - For C4Q, 57% expect weaker q/q growth vs 61% previously while only 8% see better growth. 8% see C4Q as below seasonal vs. 19% seeing it above seasonal. This remains better than the previous 2 years data.
 - Our C1Q data shows 69% expecting down q/q growth vs. 73% previously, but only 17% see it as better than seasonal while 30% see it below seasonal.
- Cancellation expectations (slide 6) which is an indicator that has been negative in the 1H, shows some stabilization over the past couple of months. However, slightly more respondents see cancellations increasing more than decreasing.
- Inventories (slide 7) for C4Q and C1Q appear to be moving sideways given the responses to increasing and decreasing are moving in the same direction with roughly the same magnitude across both quarters combined.
- Slide 8, which shows a more granular view of inventory by key components, shows inventory and availability continuing to be higher than average except for NAND which continues to show a slightly lower than normal availability.
- Pricing appears to also be stabilizing somewhat evidenced by our data on slide 9 where over 60% of the respondents see C1Q pricing flattish q/q.

C4Q19 Growth & Seasonality Outlook

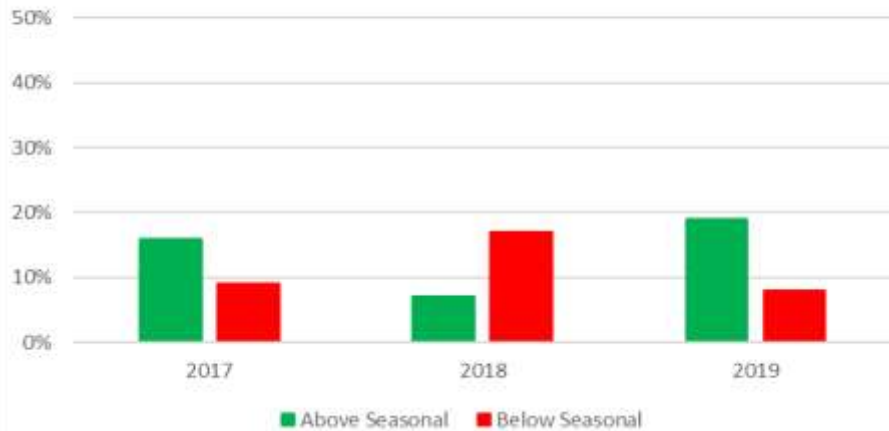
C4Q19 Growth Expectations vs. C3Q



4Q Growth Expectations



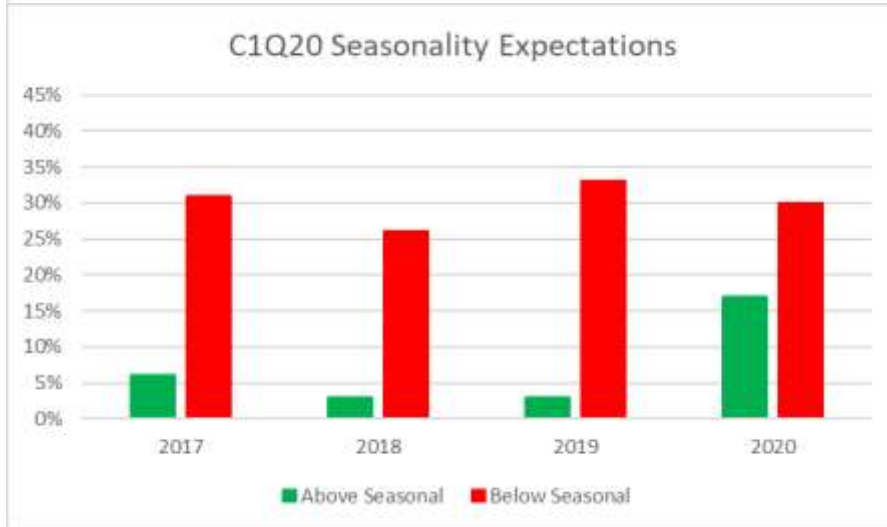
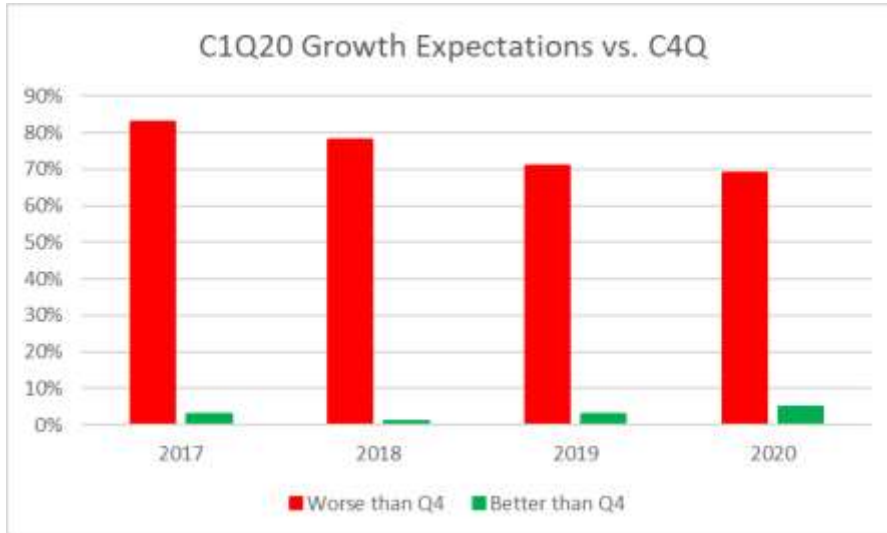
C4Q19 Seasonality Expectations



4Q Seasonality Expectations

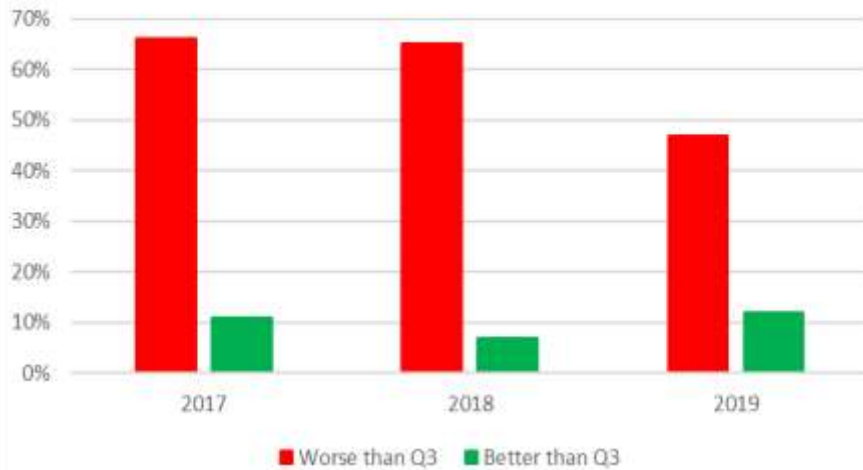


C1Q20 Growth & Seasonality Outlook



Q/Q Bookings Growth Expectations

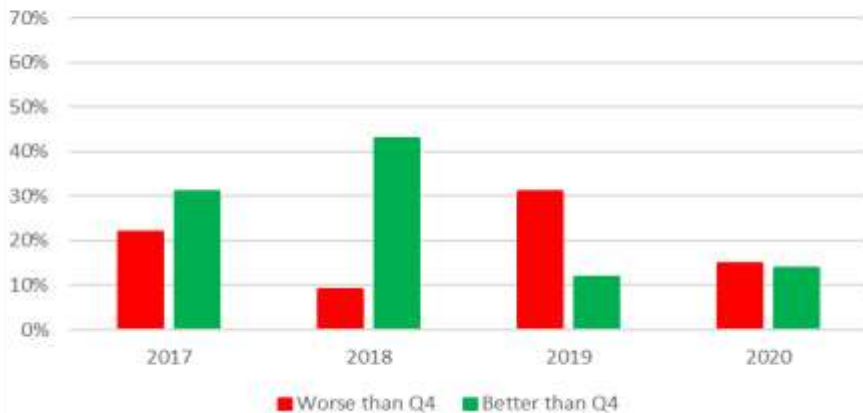
C4Q19 Bookings Expectations Seasonality



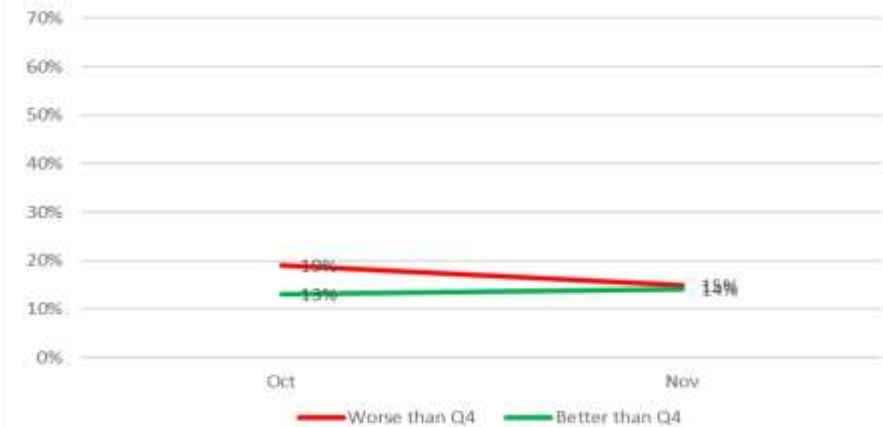
4Q Bookings Expectations



C1Q20 Bookings Expectations Seasonality

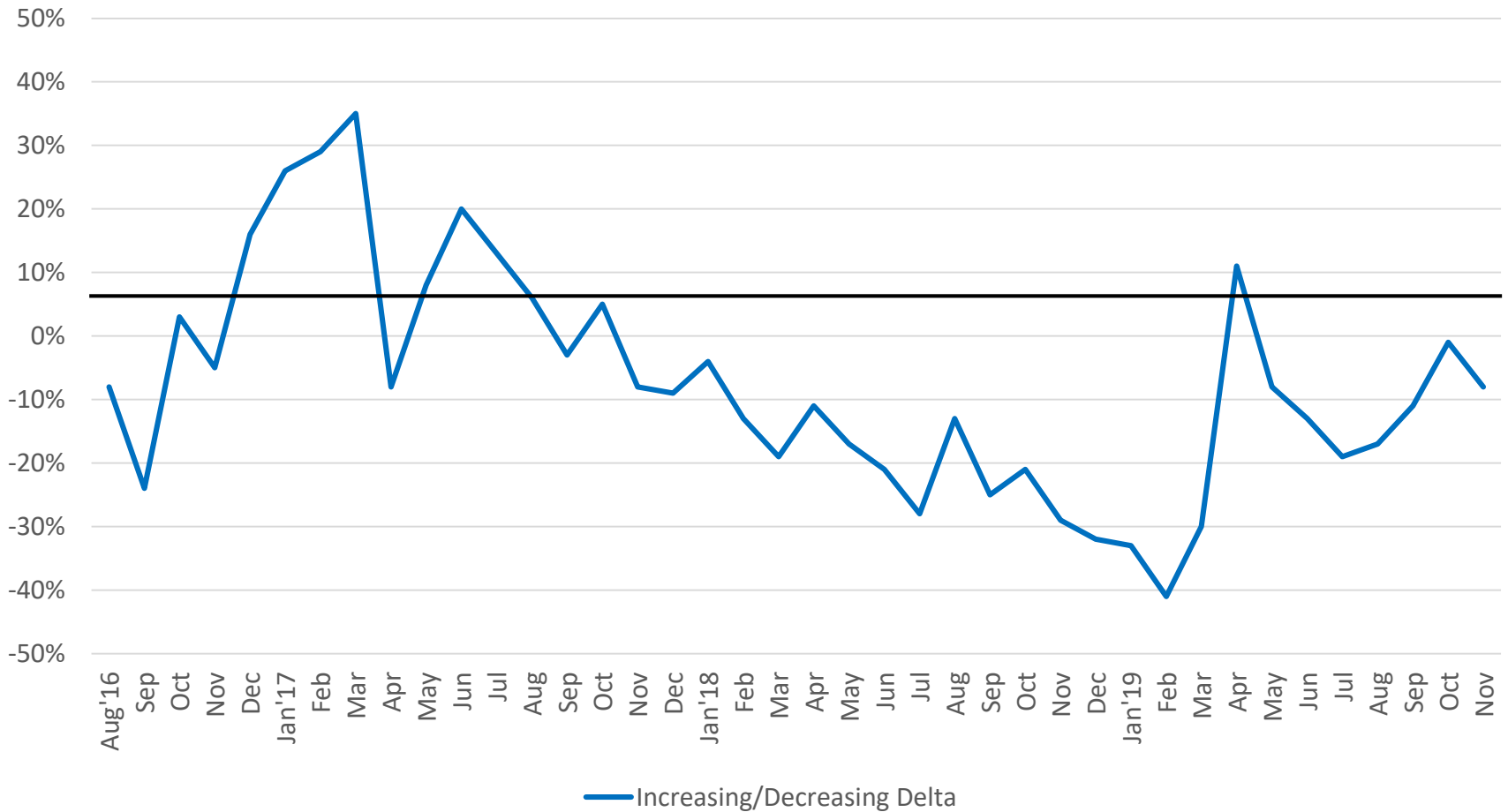


1Q Bookings Expectations



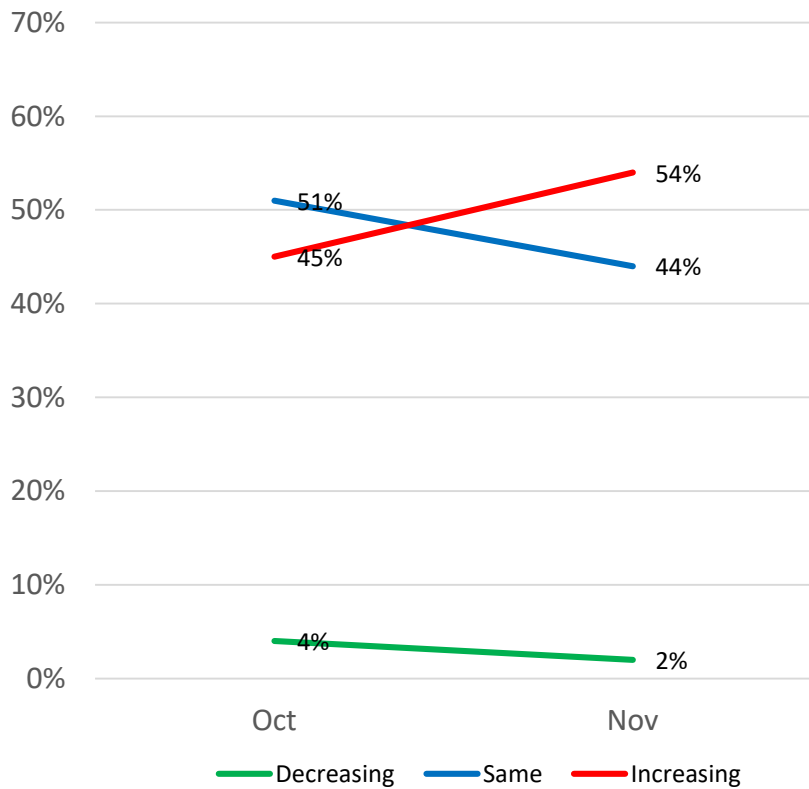
Backlog Order Cancellations vs. 30 Days Ago

(Delta between Increasing and Decreasing Cancellations)

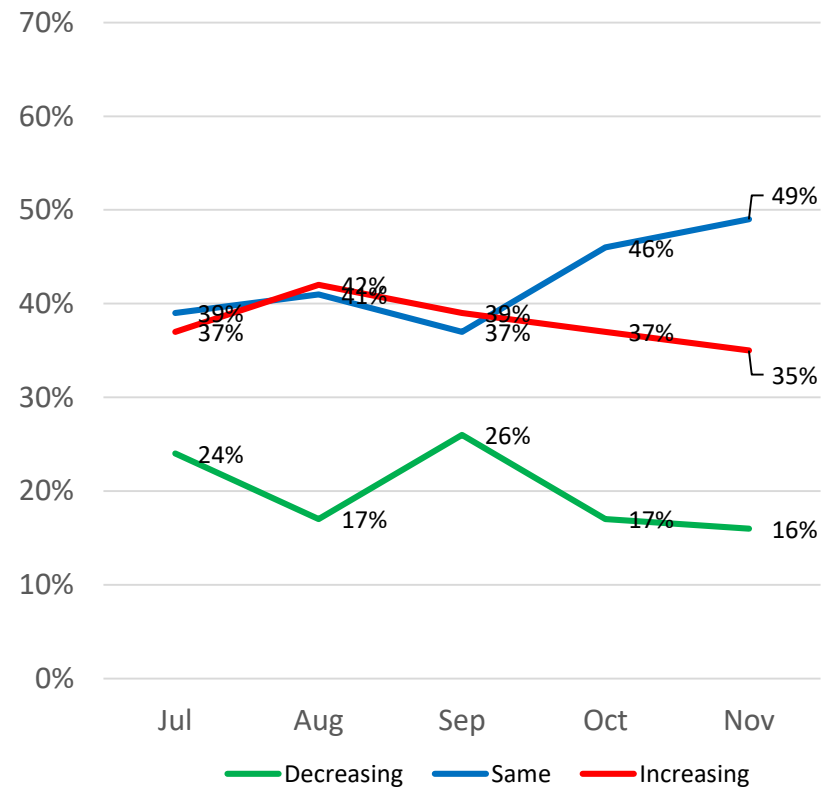


Q/Q Inventory Growth

C1Q20 Inventories vs. C4Q19

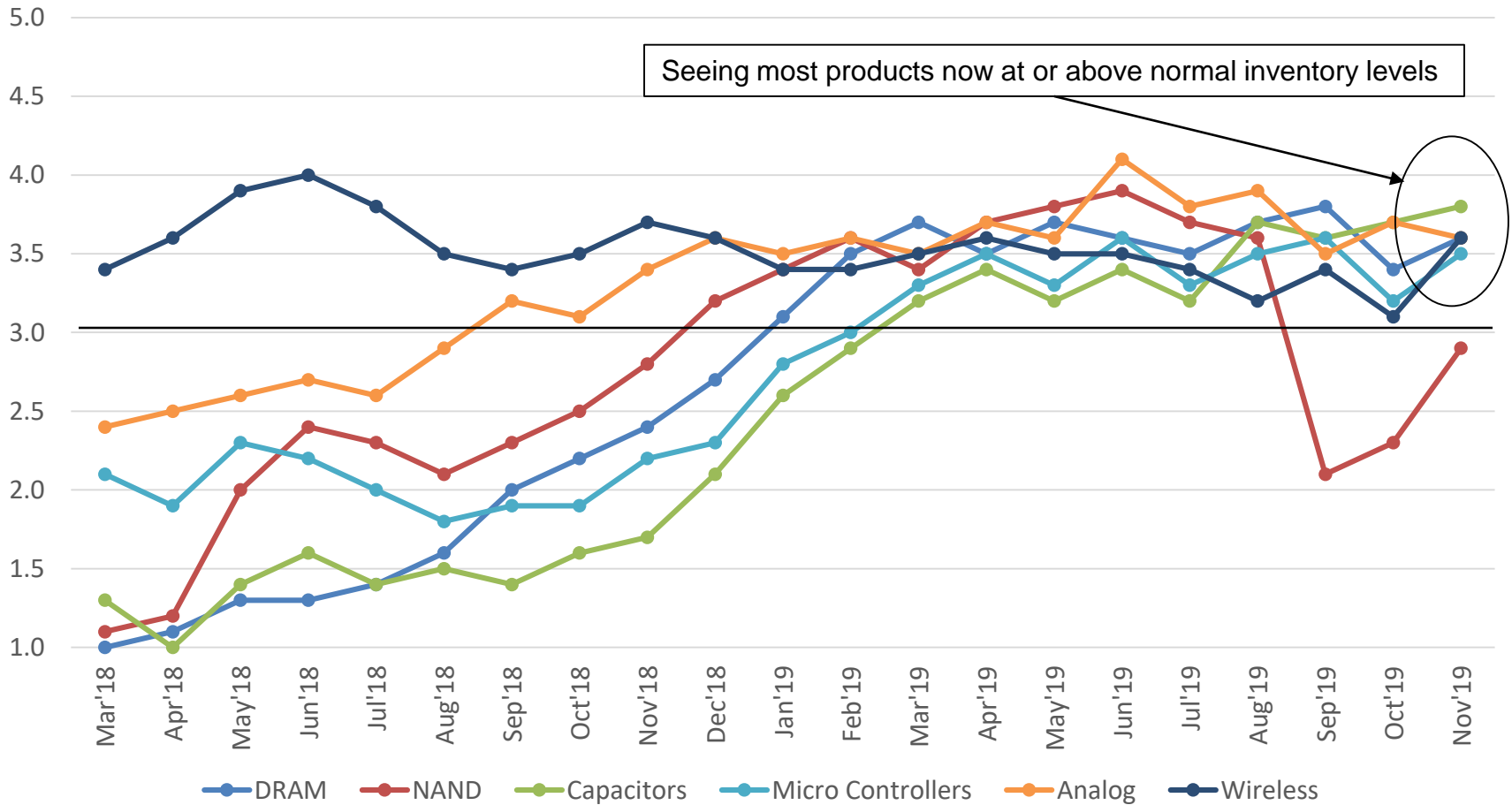


C4Q19 Inventories vs. C3Q19



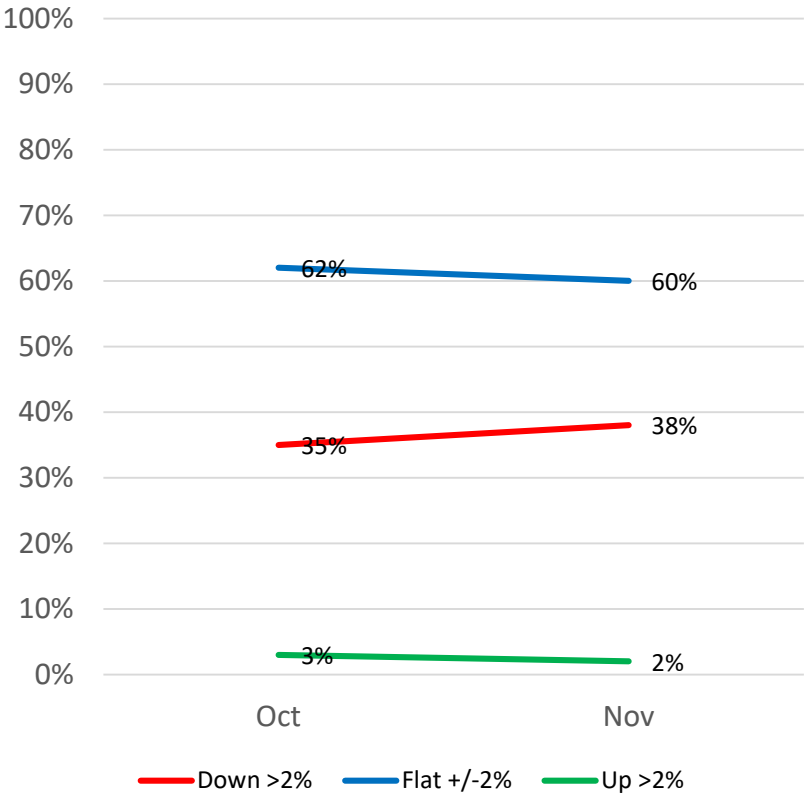
Inventory Status

(Using a scale of 1 to 5 with 1 being extremely low inventory, 3 being the normal amount, and 5 being extremely high; how do you view inventory levels for the following products?)

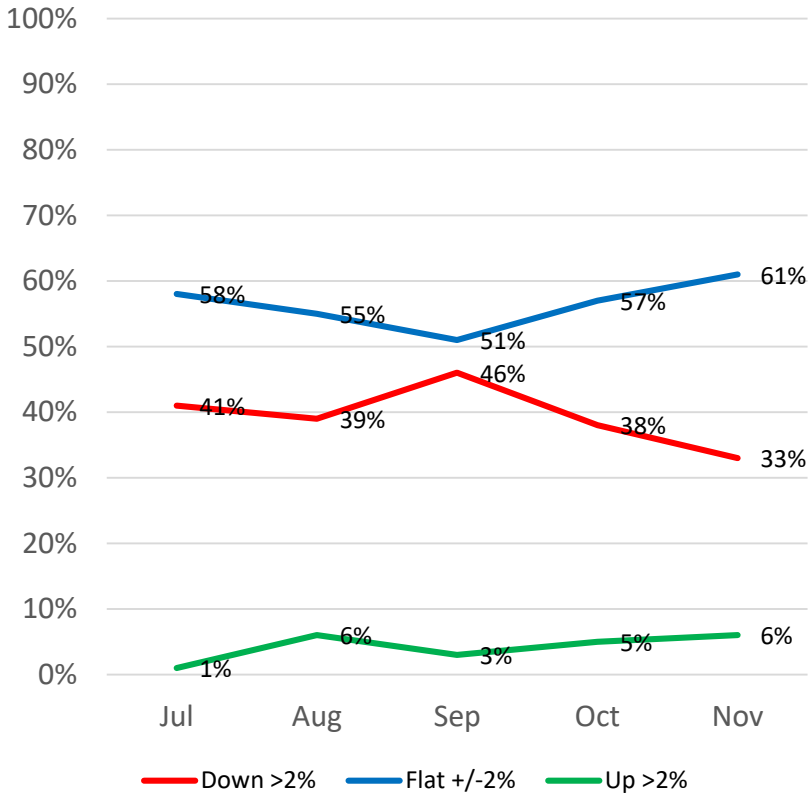


Q/Q Pricing Trends

C1Q20 Pricing vs. C4Q19

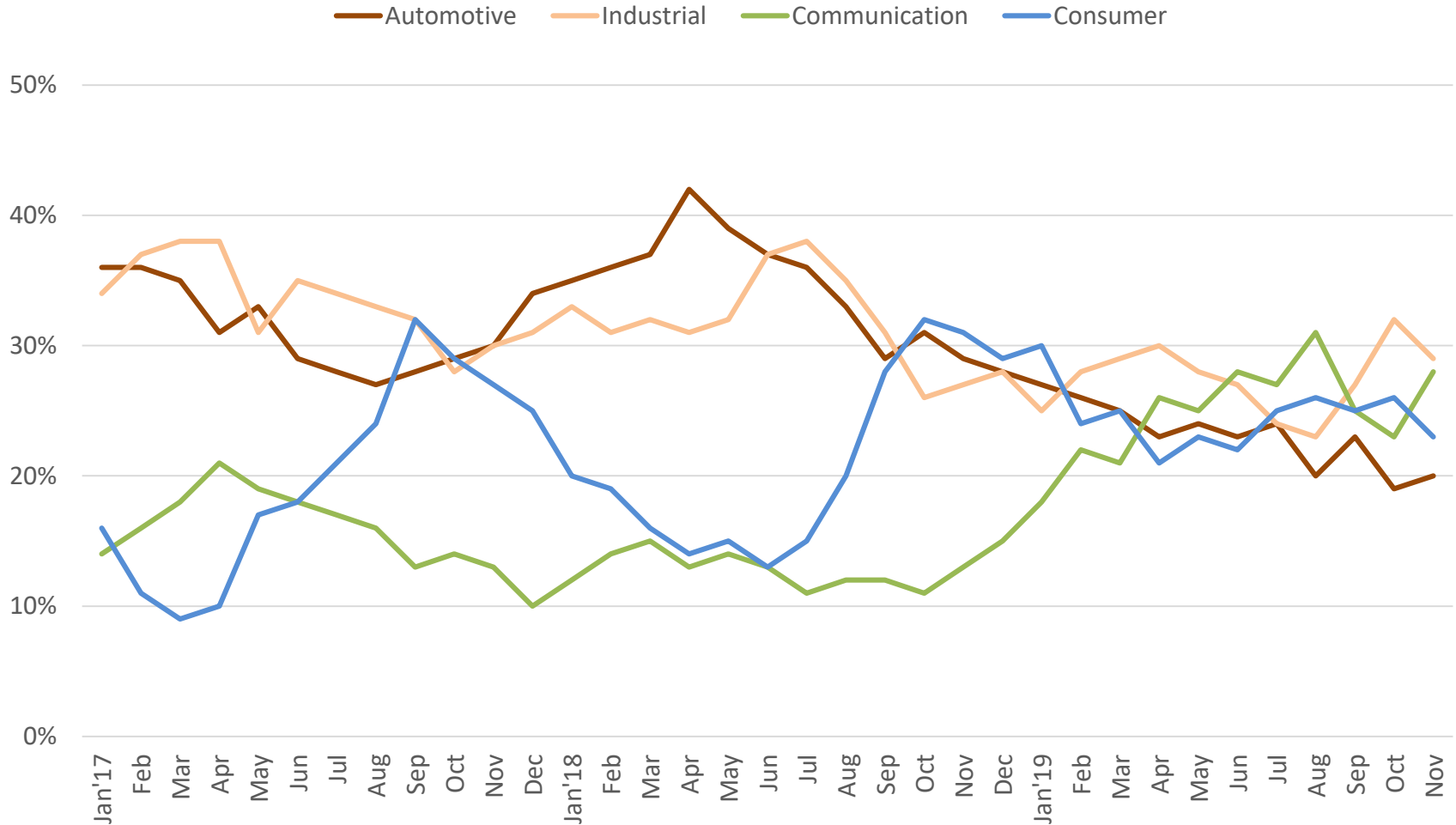


C4Q19 Pricing vs. C3Q19



Vertical Outlook

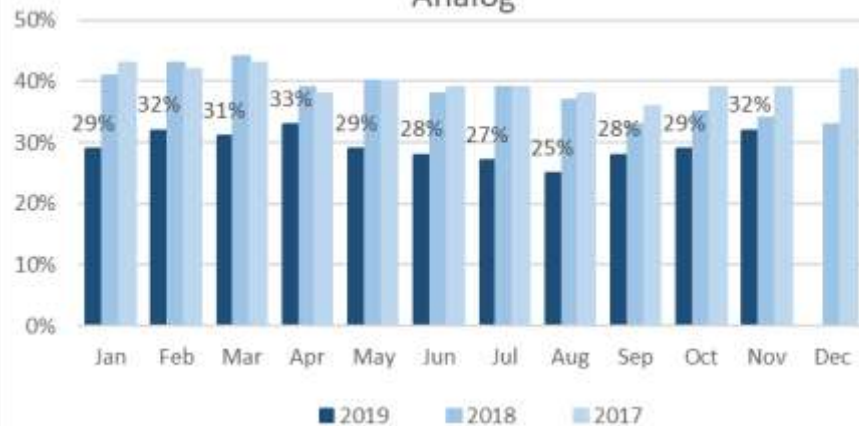
The outlook for Communications continues to be above previous years while Auto continues to erode



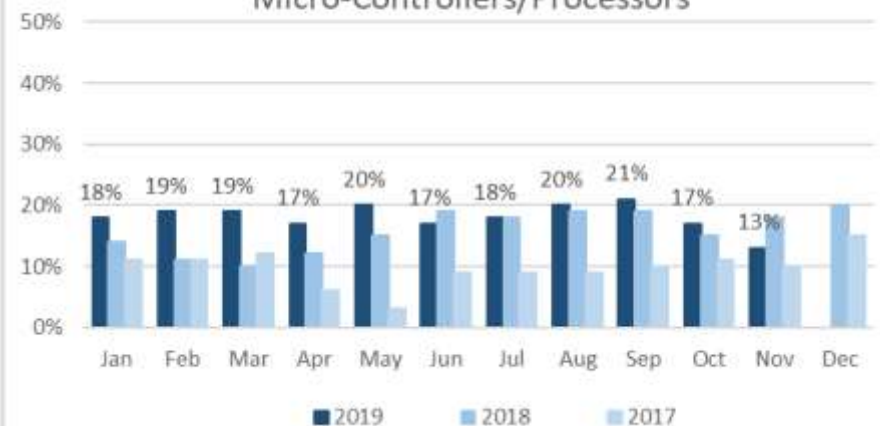
Technology Outlook Over Next 90 Days

(y/y comparison)

Analog



Micro-Controllers/Processors



RF



FPGA

