

A glowing blue microchip is centered on a circuit board. The chip has a grid of small squares on its surface and is surrounded by intricate circuitry. The entire scene is bathed in a blue light, giving it a futuristic and technological appearance.

TPC Semiconductor Market Survey

January 2, 2020

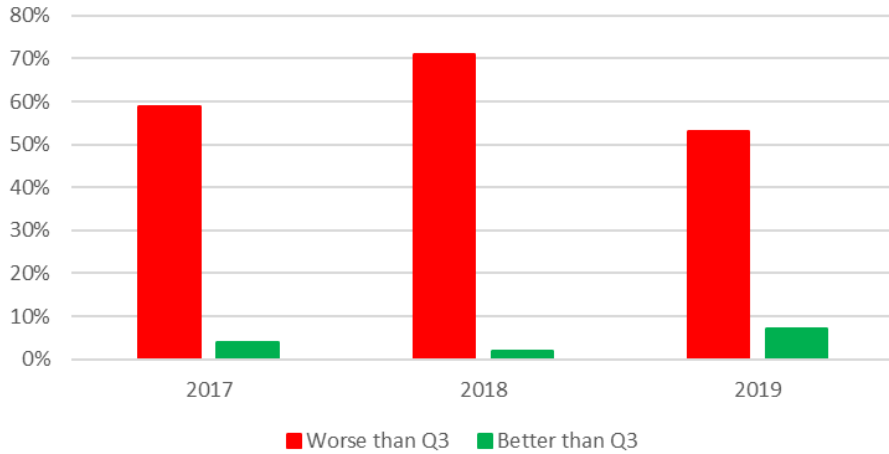
TPC December 2019 Survey Summary

*Survey Date: December 23-29 Respondents: ~8,400 Location: Worldwide (~80% Asia) Who: Active Electronics Industry Professionals
Response Composition (multiple choices): Industrial 39%, Auto 18%, Comm 21%, Computing 19%, Mobile 30%, Data Ctr 21%, Other 8%*

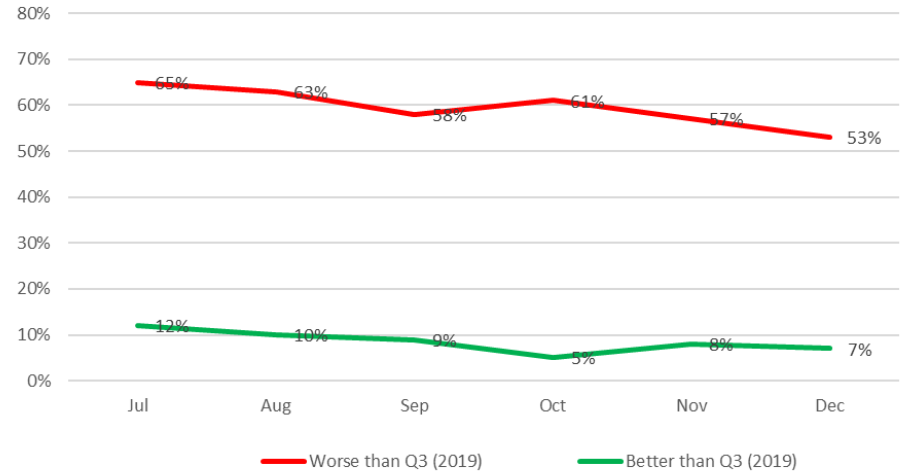
- Our December 2019 Semi industry survey of over 25k electronic industry professionals showed a slight uptick in the demand outlook for C4Q19 while C1Q20 was slightly weaker. Seasonality outlook for C4Q19 also improved slightly with C1Q20 seasonality staying roughly the same as last month's survey.
- Our survey showed bookings expectations are slightly improved in both month-over-month comparisons as well as vs. last year.
- Inventories appear to be getting slightly better while cancellation trends appear to be worsening 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.
- The q/q demand outlook for C4Q19 improved slightly while C1Q20 got slightly weaker. Both quarters are viewed as slightly above the previous 2 year's seasonality.
 - For C4Q, 53% expect weaker q/q growth vs 57% previously while only 7% see better growth. 7% see C4Q as below seasonal vs. 18% seeing it above seasonal. This remains better than the previous 2 years data.
 - Our C1Q data shows 71% expecting down q/q growth vs. 69% previously, but only 15% see it as better than seasonal while 29% see it below seasonal.
- Cancellation expectations (slide 6) which is an indicator that has been negative in the 1H, showed a significant increase in cancellation activity vs. the past few months.
- Inventories (slide 7) for C4Q and C1Q appear to be improving vs. last month's date.
- Slide 8, which shows a more granular view of inventory by key components, shows inventory and availability continuing to be higher than average with NAND also increasing significantly vs. the previous 3 months.
- Pricing appears to also be stabilizing somewhat evidenced by our data on slide 9 where over 60% of the respondents continue to see C1Q pricing flattish q/q.
- The communication sector continues to be the best performing sector and automotive continues to be the weakest.

C4Q19 Growth & Seasonality Outlook

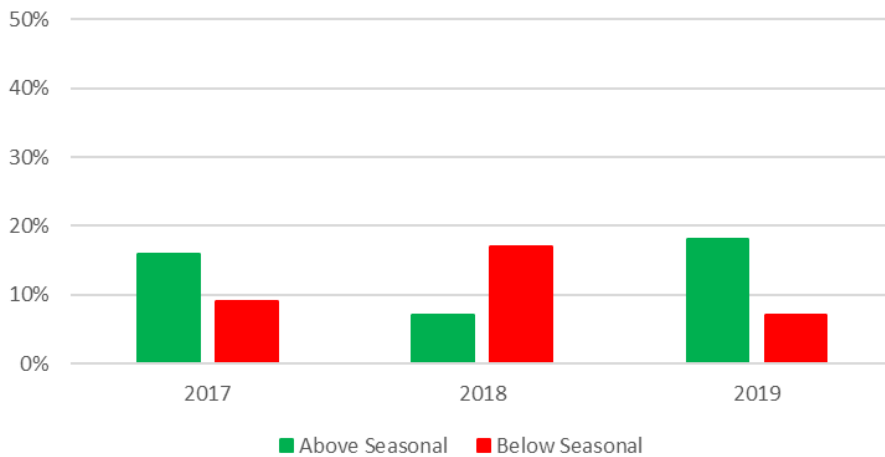
C4Q19 Growth Expectations vs. C3Q



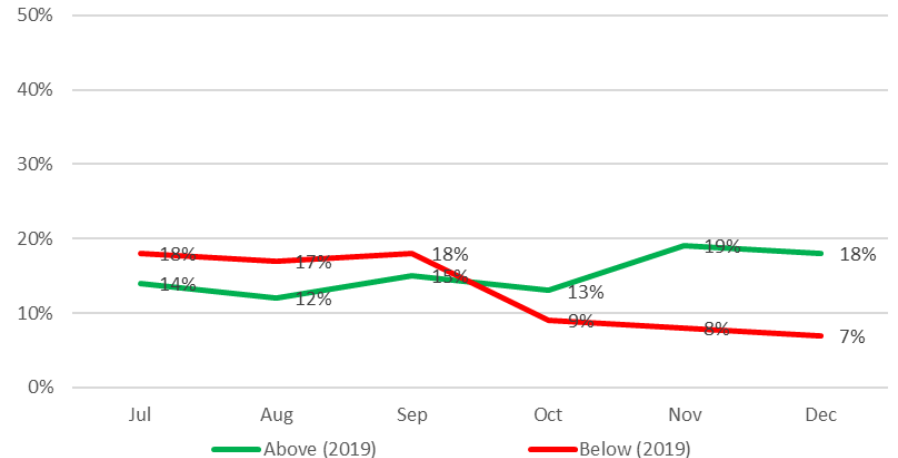
4Q Growth Expectations



C4Q19 Seasonality Expectations

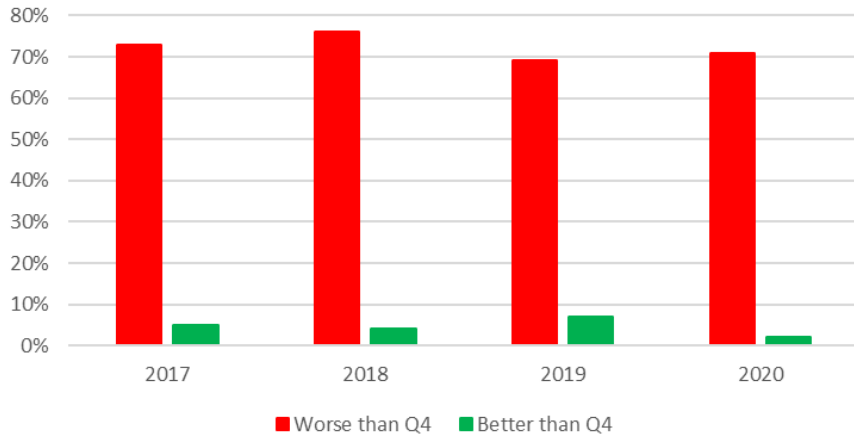


4Q Seasonality Expectations

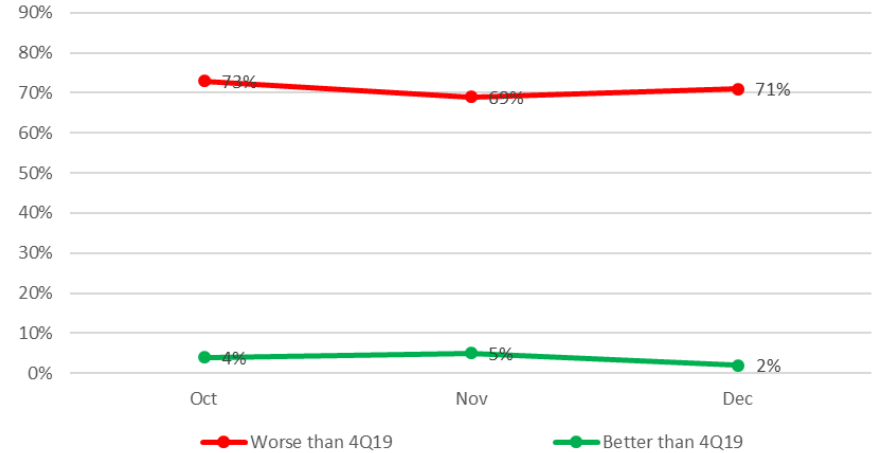


C1Q20 Growth & Seasonality Outlook

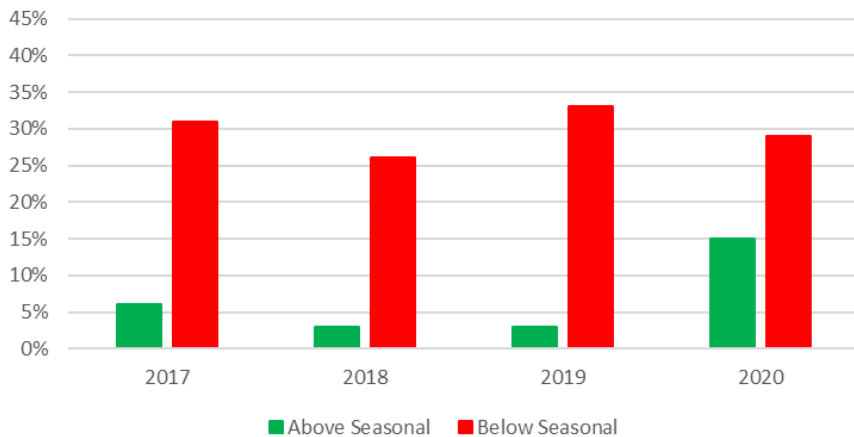
C1Q20 Growth Expectations vs. C4Q



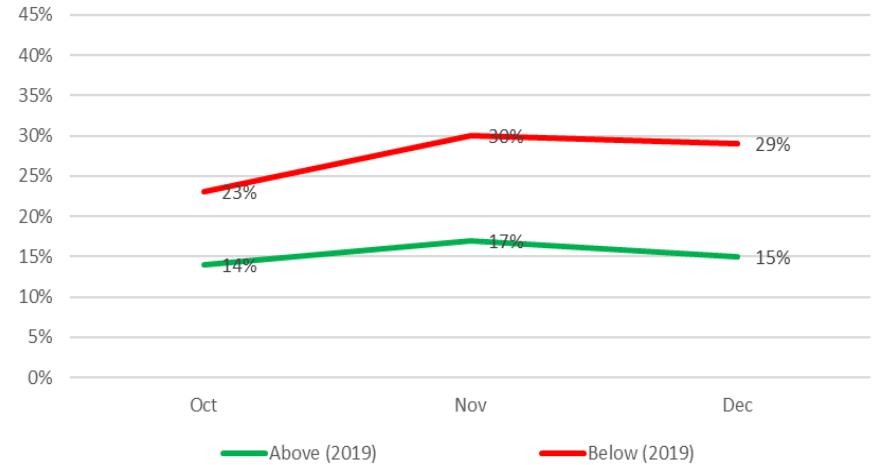
1Q Growth Expectations



C1Q20 Seasonality Expectations

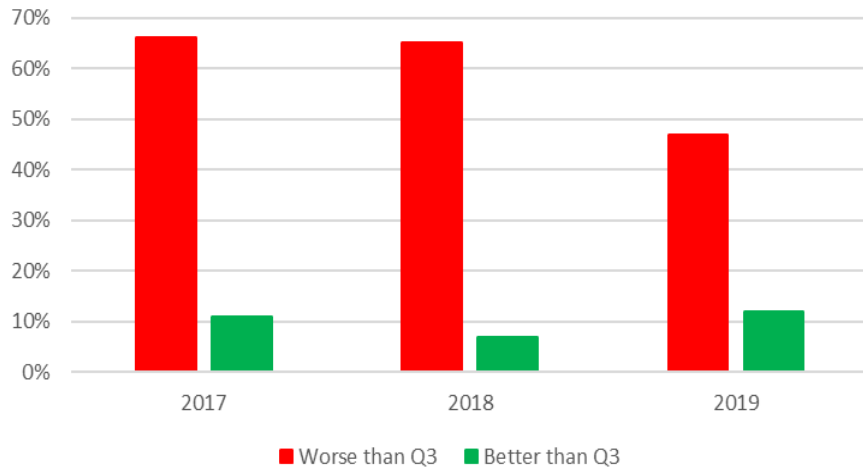


1Q20 Seasonality Expectations

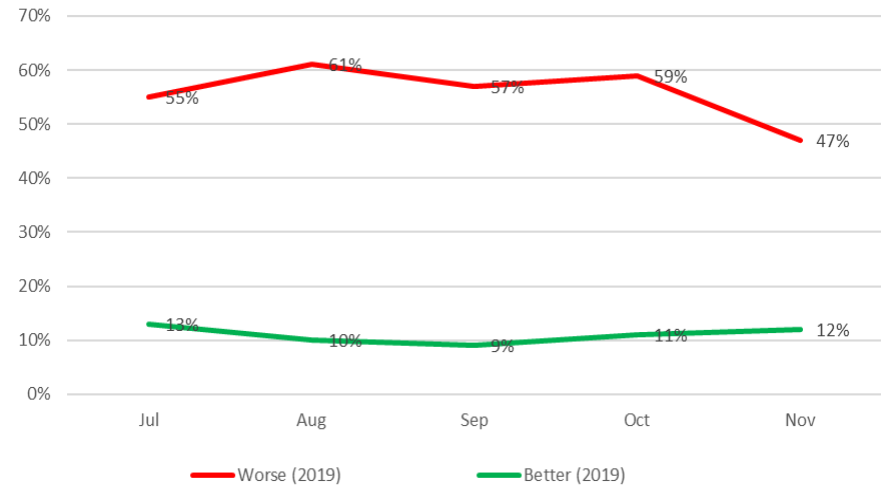


Q/Q Bookings Growth Expectations

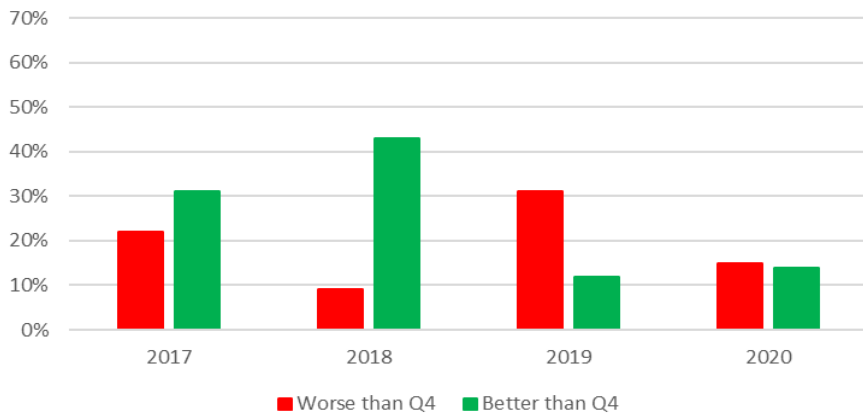
C4Q19 Bookings Expectations Seasonality



4Q Bookings Expectations



C1Q20 Bookings Expectations Seasonality

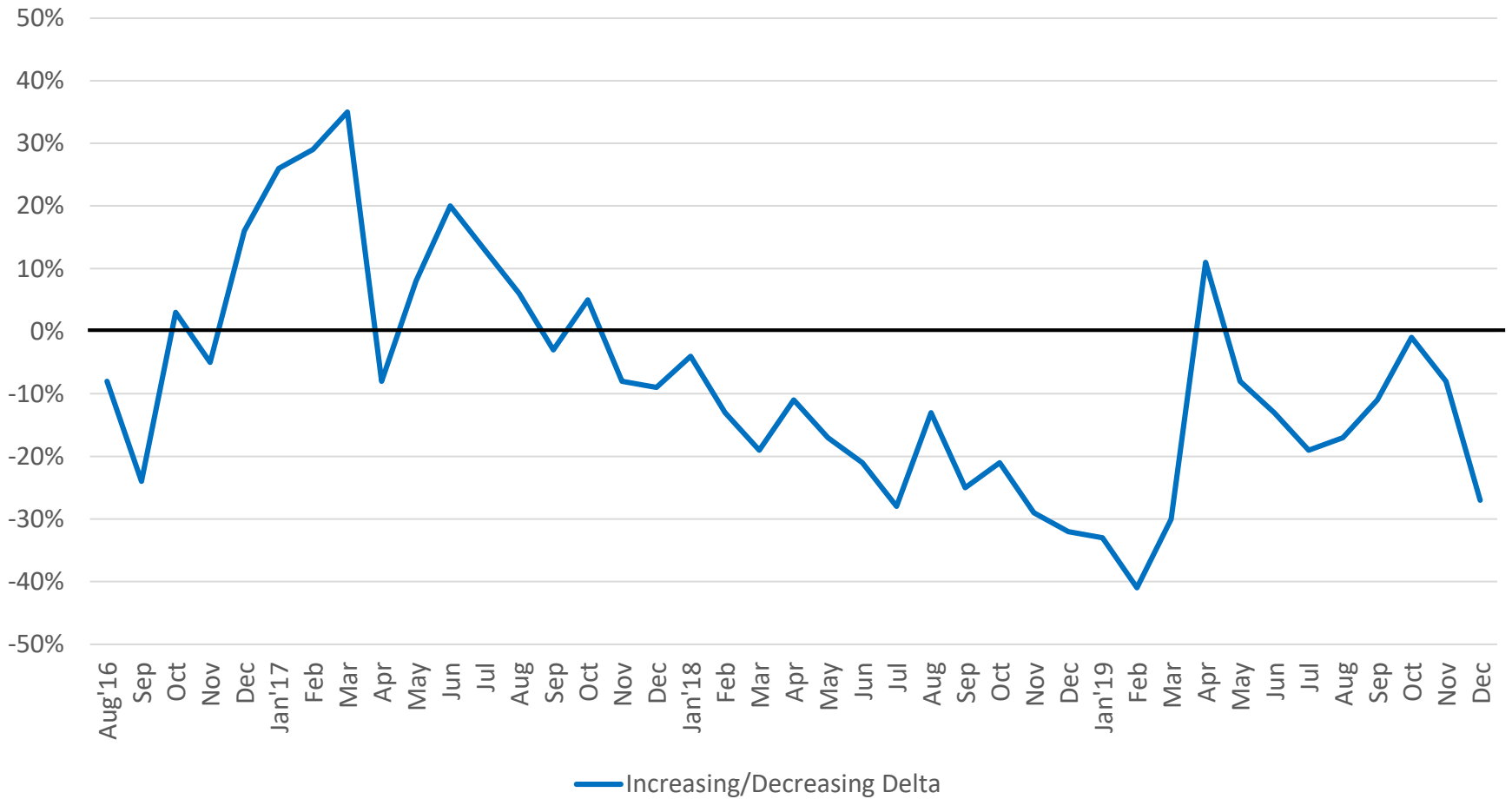


1Q Bookings Expectations



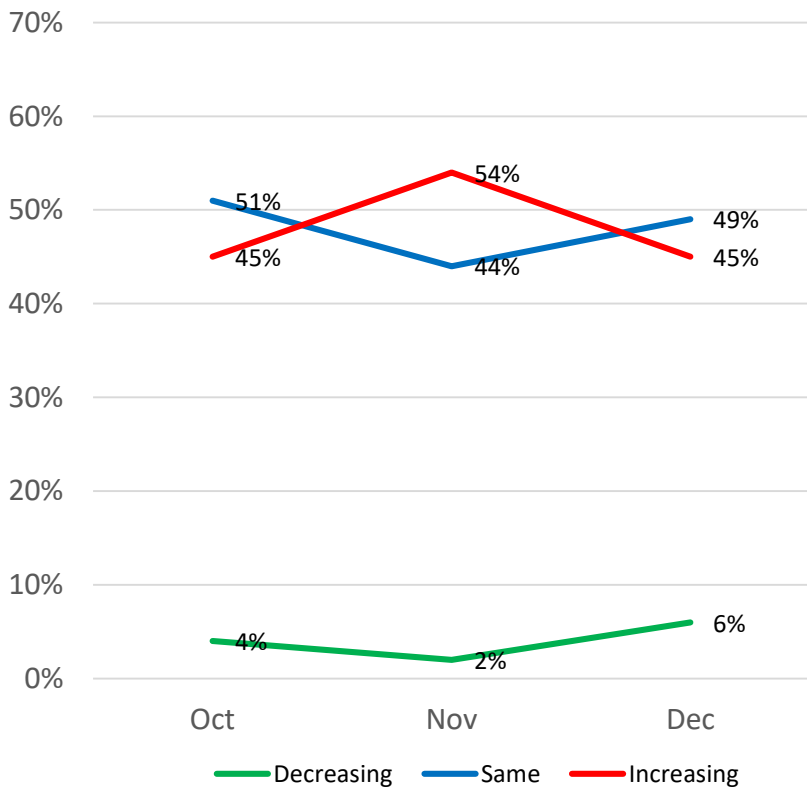
Backlog Order Cancellations vs. 30 Days Ago

(Delta between Increasing and Decreasing Cancellations)

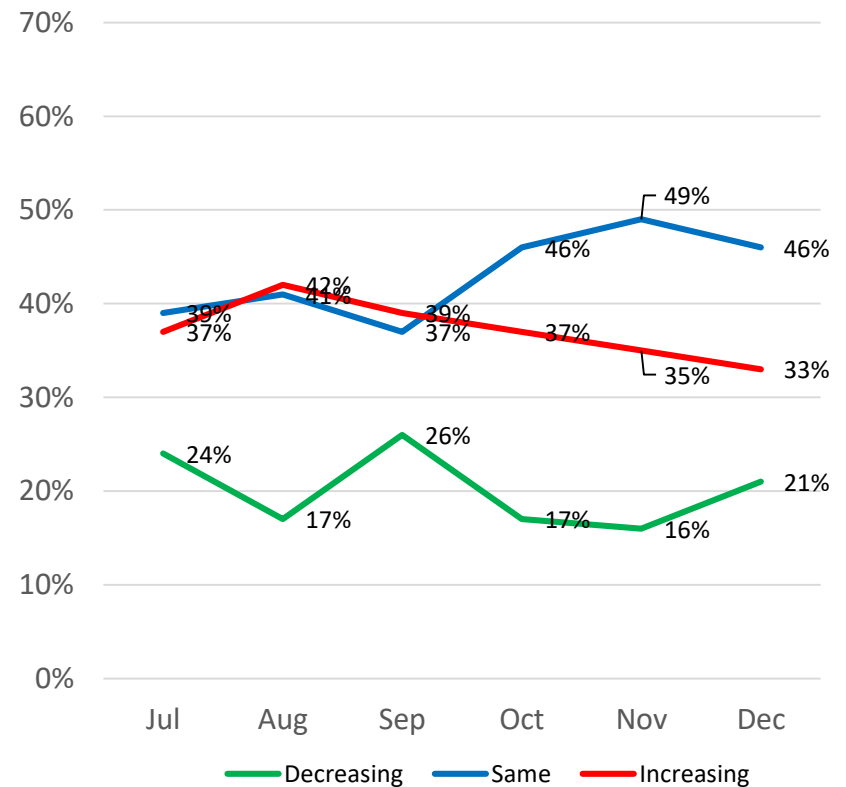


Q/Q Inventory Growth

C1Q20 Inventories vs. C4Q19

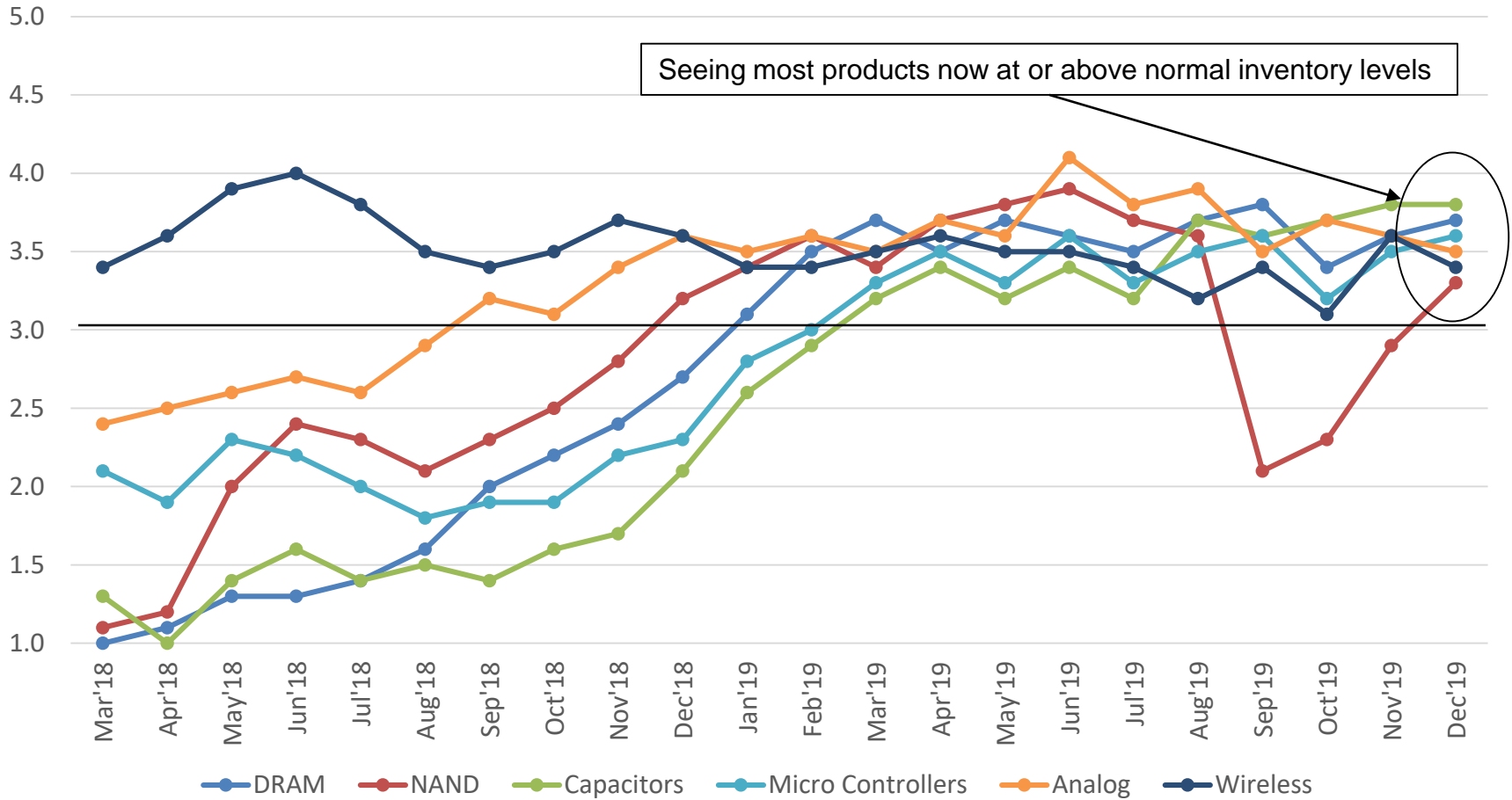


C4Q19 Inventories vs. C3Q19



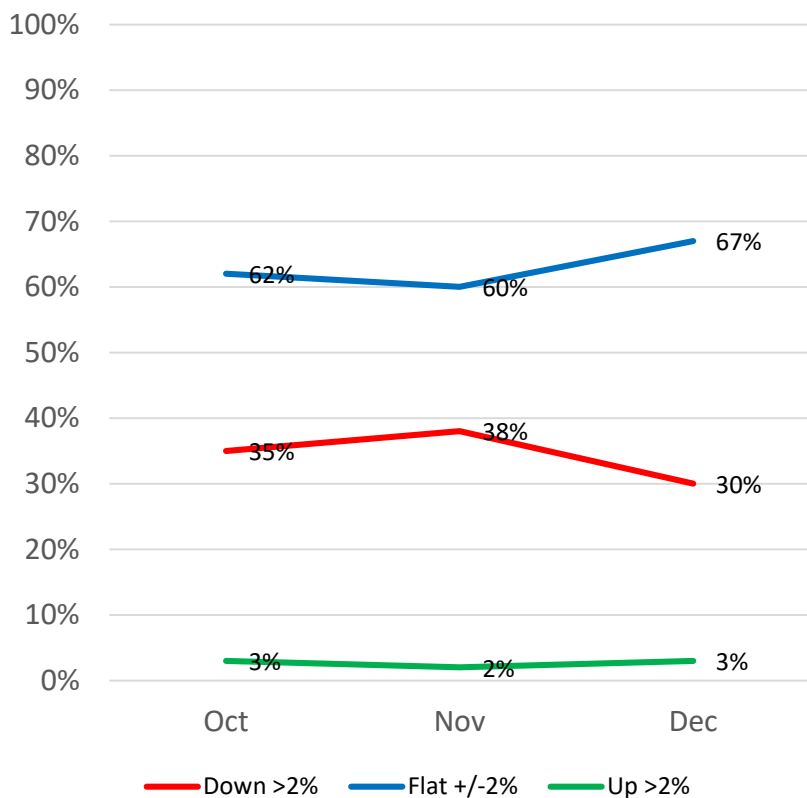
Inventory Status

(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?)

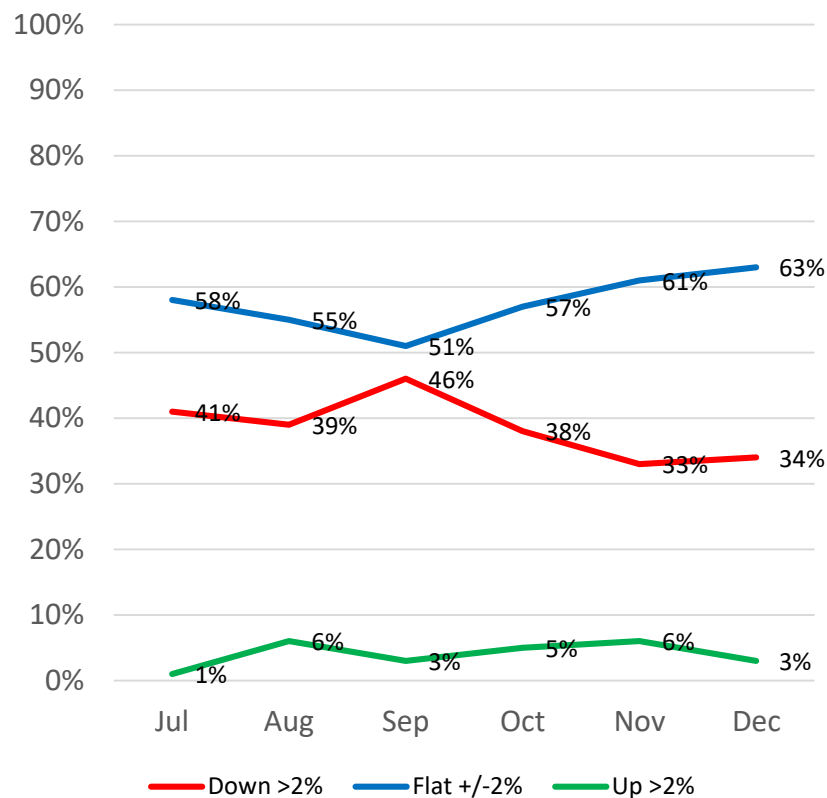


Q/Q Pricing Trends

C1Q20 Pricing vs. C4Q19

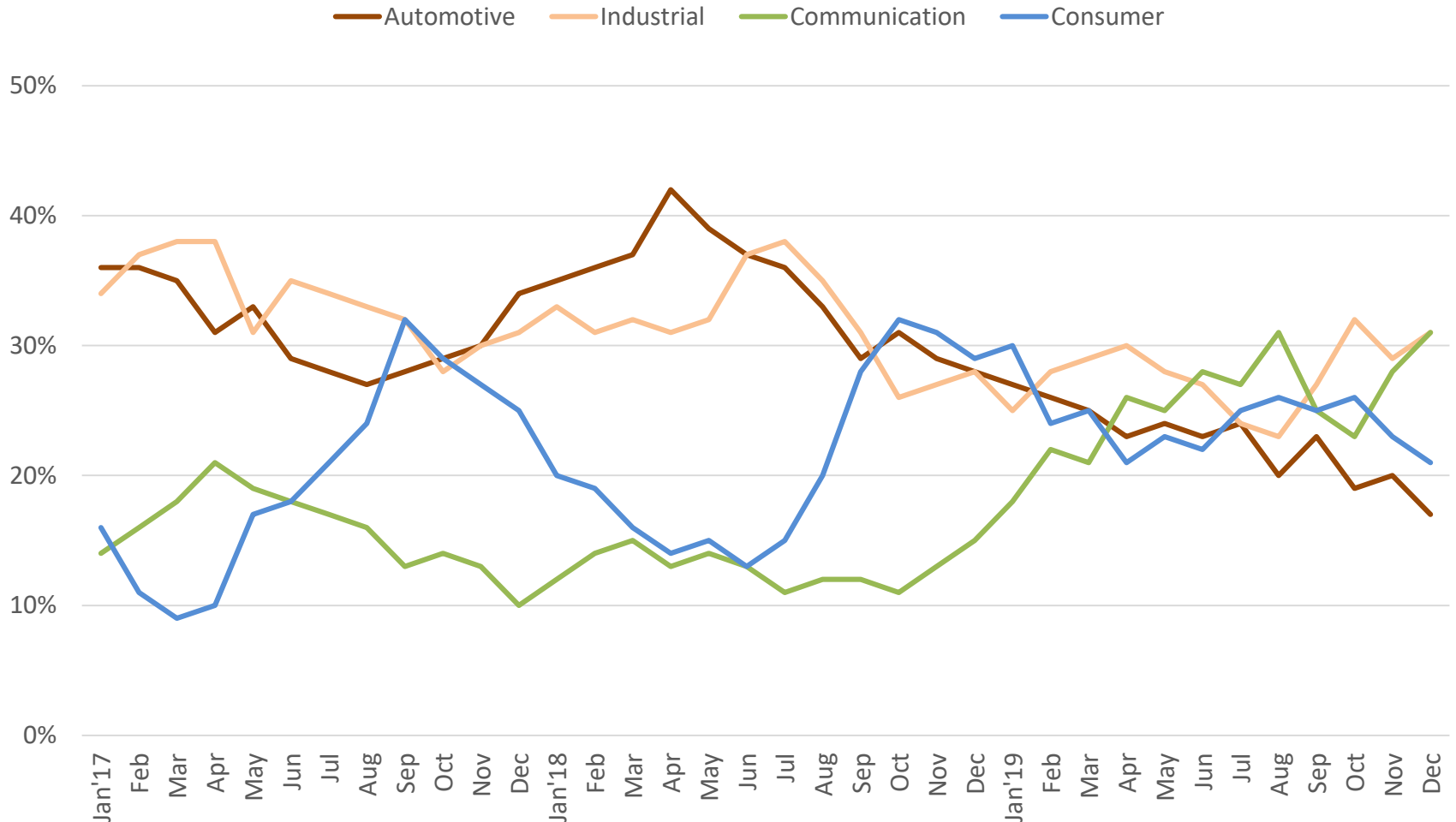


C4Q19 Pricing vs. C3Q19



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)

