



TPC Semiconductor Market Survey

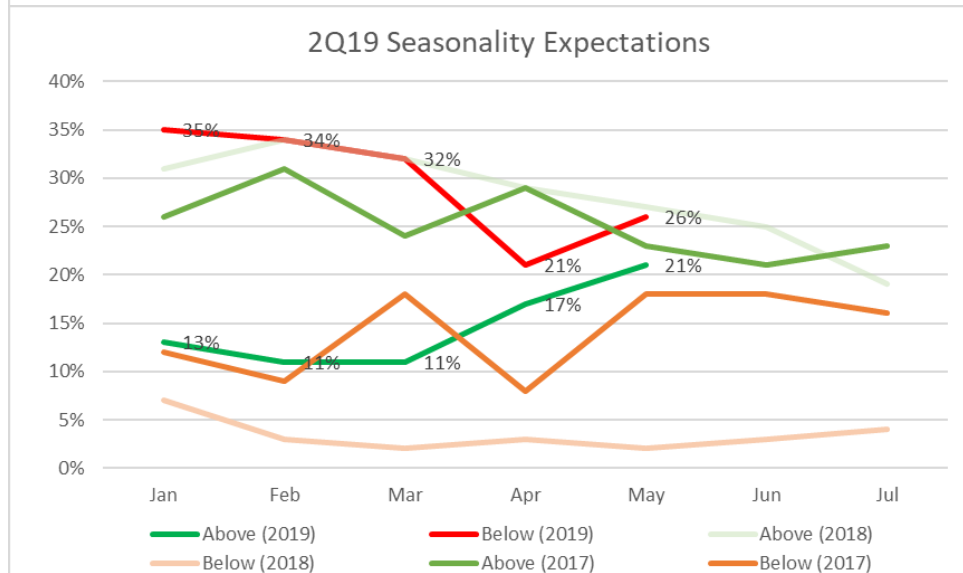
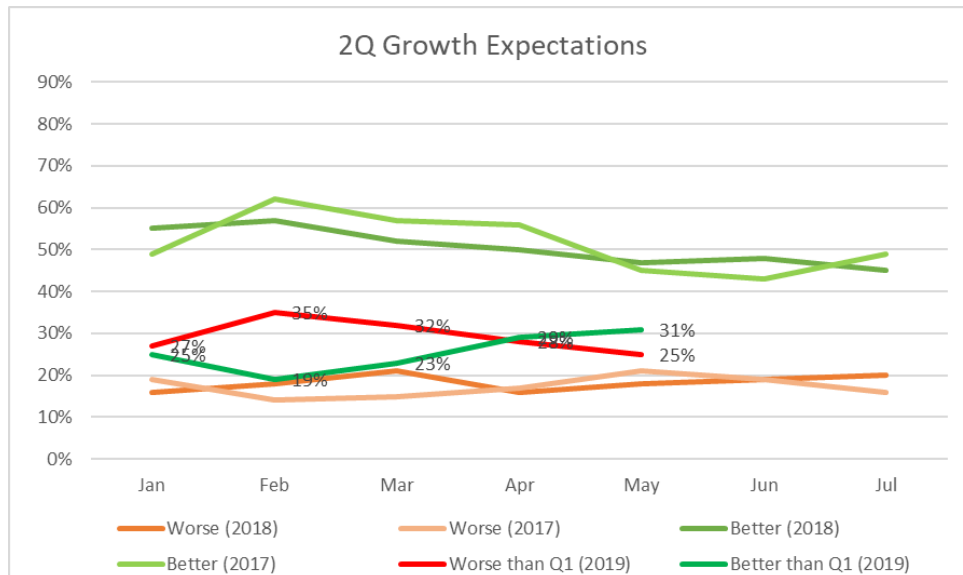
May 15, 2019

TPC May 2019 Survey Summary

*Survey Date: May 9-12 Respondents: ~13,800 Location: Worldwide (~80% Asia) Who: Active Electronics Industry Professionals
Response Composition (multiple choices): Indust 44%, Auto 19%, Comm 14%, Computing 24%, Mobile 31%, Data Ctr 14%, Other 9%*

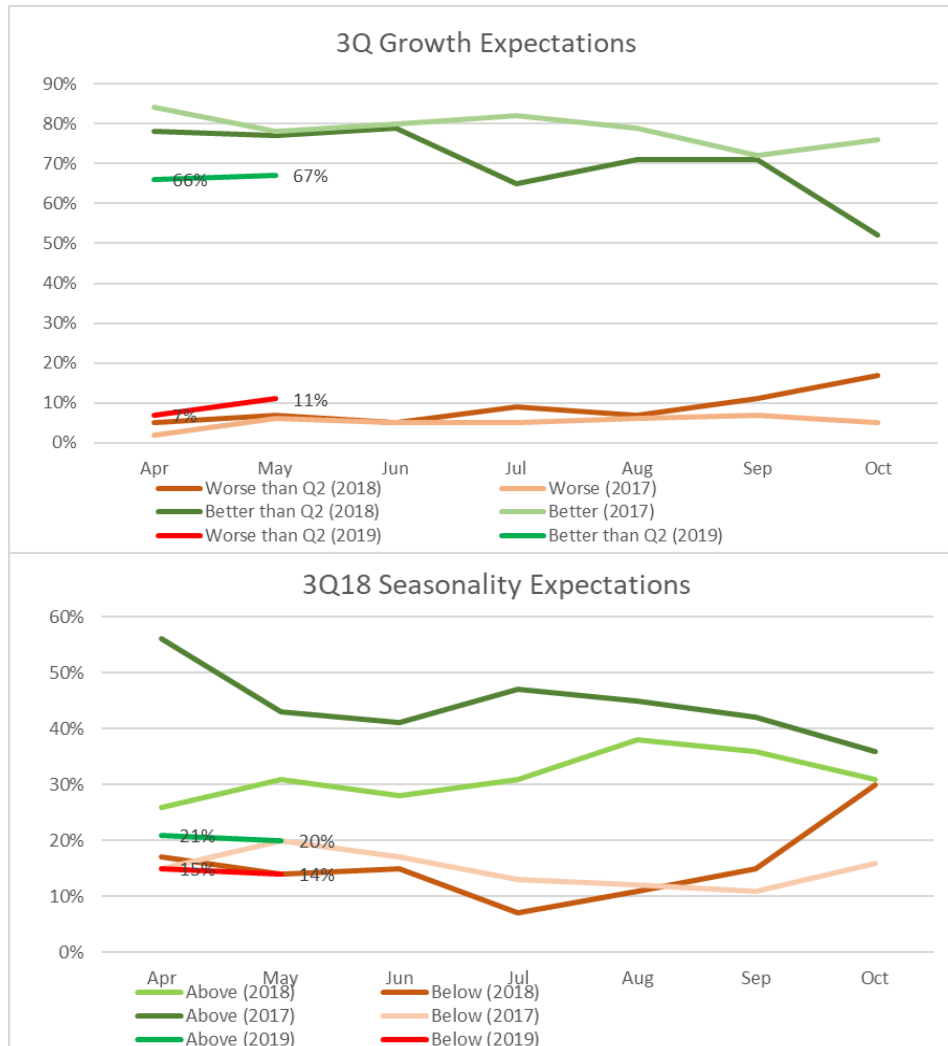
- Our May 2019 Semi industry survey of over 20k electronic industry professionals showed mixed results. While we are seeing slight improvements in demand; bookings and cancellation trends continue to be choppy. Additionally inventories, while generally improving, continued to be elevated in some product areas.
- Based on our survey results and conversations with various supply chains leads us to believe the industry is close to if not at a bottom. However, there continues to be concern over the macro environment especially in China.
- We still question how quickly the recovery in the back half of the year will be, especially with the recent increases in tariffs that will likely put further downward pressure on demand.
- The q/q demand outlook for C2Q19 and C3Q19 upticked slightly, but C3Q is still viewed as sub seasonal.
 - For C2Q, 31% expect weaker q/q growth vs. 28% previously.
 - 26% see C2Q as sub seasonal vs. 21% seeing it above seasonal. While this remains weaker than the previous 2 years data, it is an improvement vs. last month's seasonal data.
 - Our C3Q data shows 67% expecting growth vs. C2Q, but only 20% see it as better than seasonal. Both are less than the prior 2 years results.
- C2Q19's booking expectations decreased slightly with 43% expecting bookings to increase q/q vs. 50% in last month's survey. Only 15% expect weaker bookings vs. C1Q. However, our C3Q results show only 23% expecting bookings to increase while 19% expect them to be weaker vs. C2Q.
- Cancellation expectations (slide 7) which is an indicator that has been quite negative over the past few months was starting to show a positive shift. However, things reversed slightly in May and took a slightly negative tone.
- Inventories (slide 9) are decreasing in C2Q, yet increasing in C3Q. For C2Q, 33% responded inventories are increasing while only 25% see inventories decreasing. For C3Q, 30% see inventories going down (a decrease from last month), while 24% see inventories rising (an increase from last month).
- Slide 10, which shows a more granular view of inventory by key components, shows inventory and availability continuing to improve and inventories growing on most products. We are seeing all previously allocated products now above what would be considered normal inventory levels.
- Pricing continues to erode evidenced by our data on slide 10 where a third of the respondents see C3Q pricing decreasing by >2% q/q.

C2Q19 Growth & Seasonality Outlook



- Both C2Q19's demand growth outlook and seasonality outlook is significantly weaker than the previous 2 years.
- ~2x weaker demand growth vs. C2Q17/18
- ~2x weaker seasonality outlook vs. C2Q17/18.

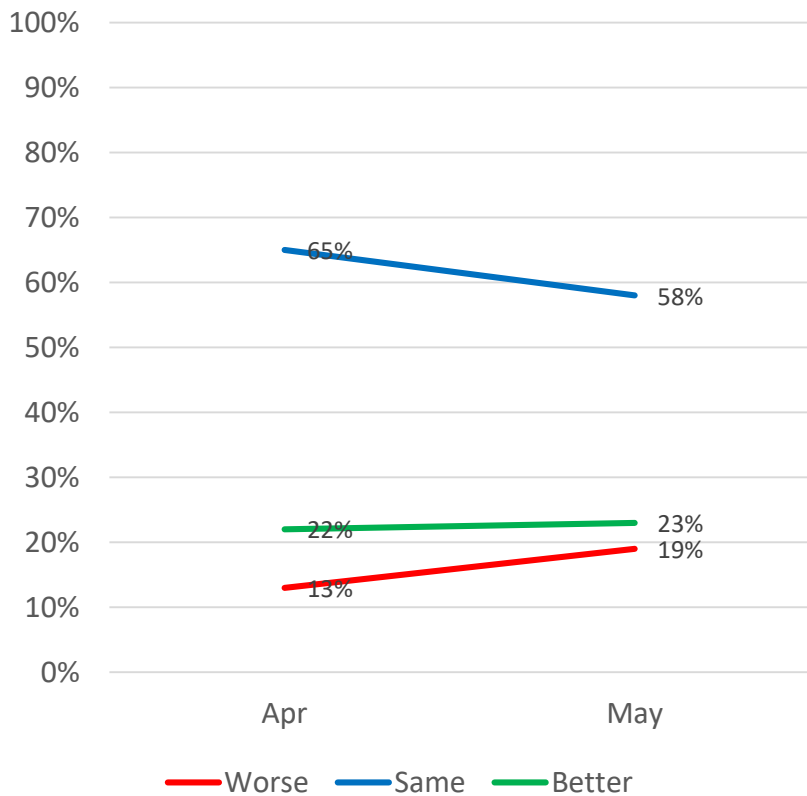
C3Q19 Growth & Seasonality Outlook



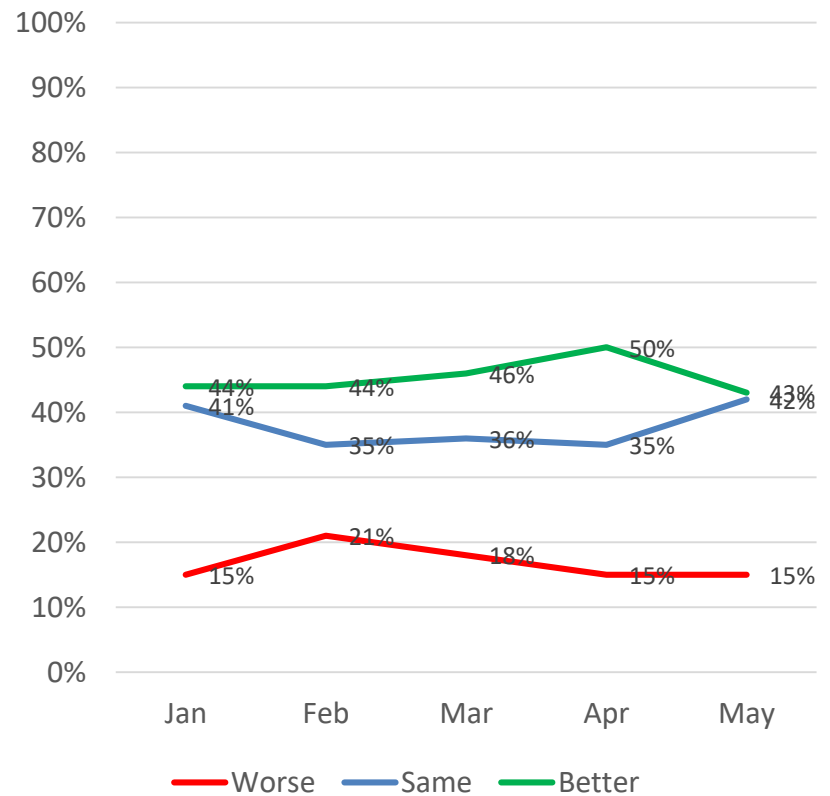
- While initial C3Q19's demand growth outlook is generally in line vs. the previous 2 years, seasonality outlook is weaker than the previous 2 years.

Q/Q Bookings Growth

C3Q19 Bookings vs. C2Q19

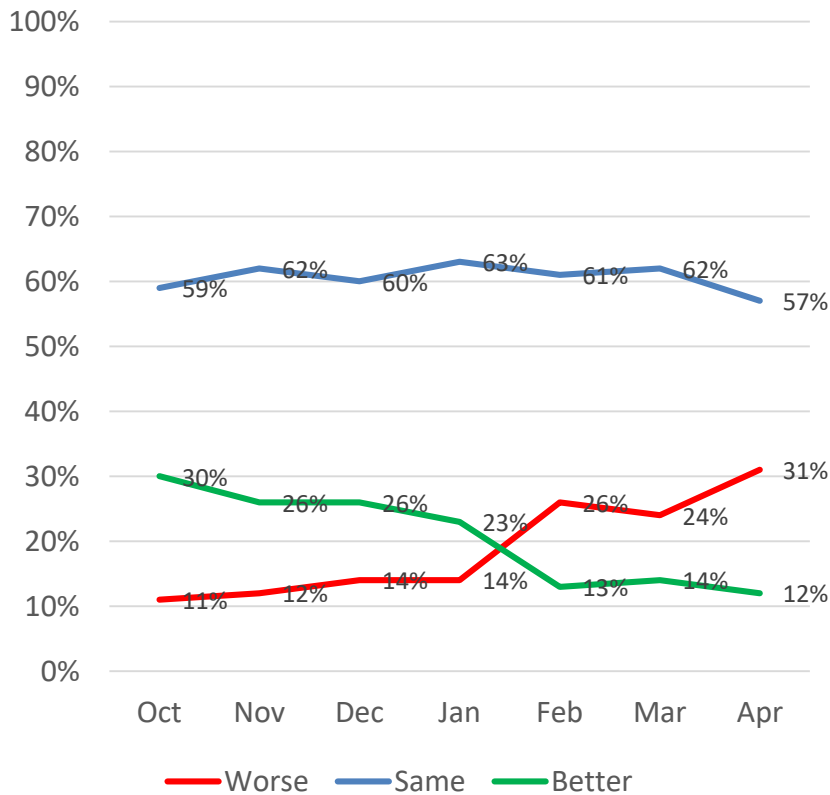


C2Q19 Bookings vs. C1Q19

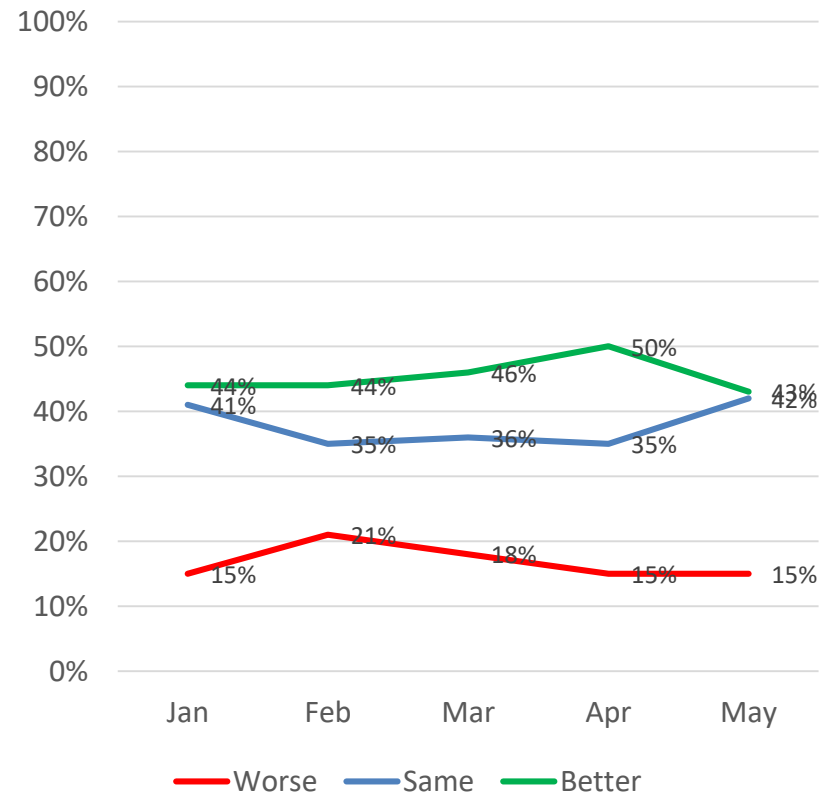


Q/Q Bookings Growth

C1Q19 Bookings vs. C4Q18

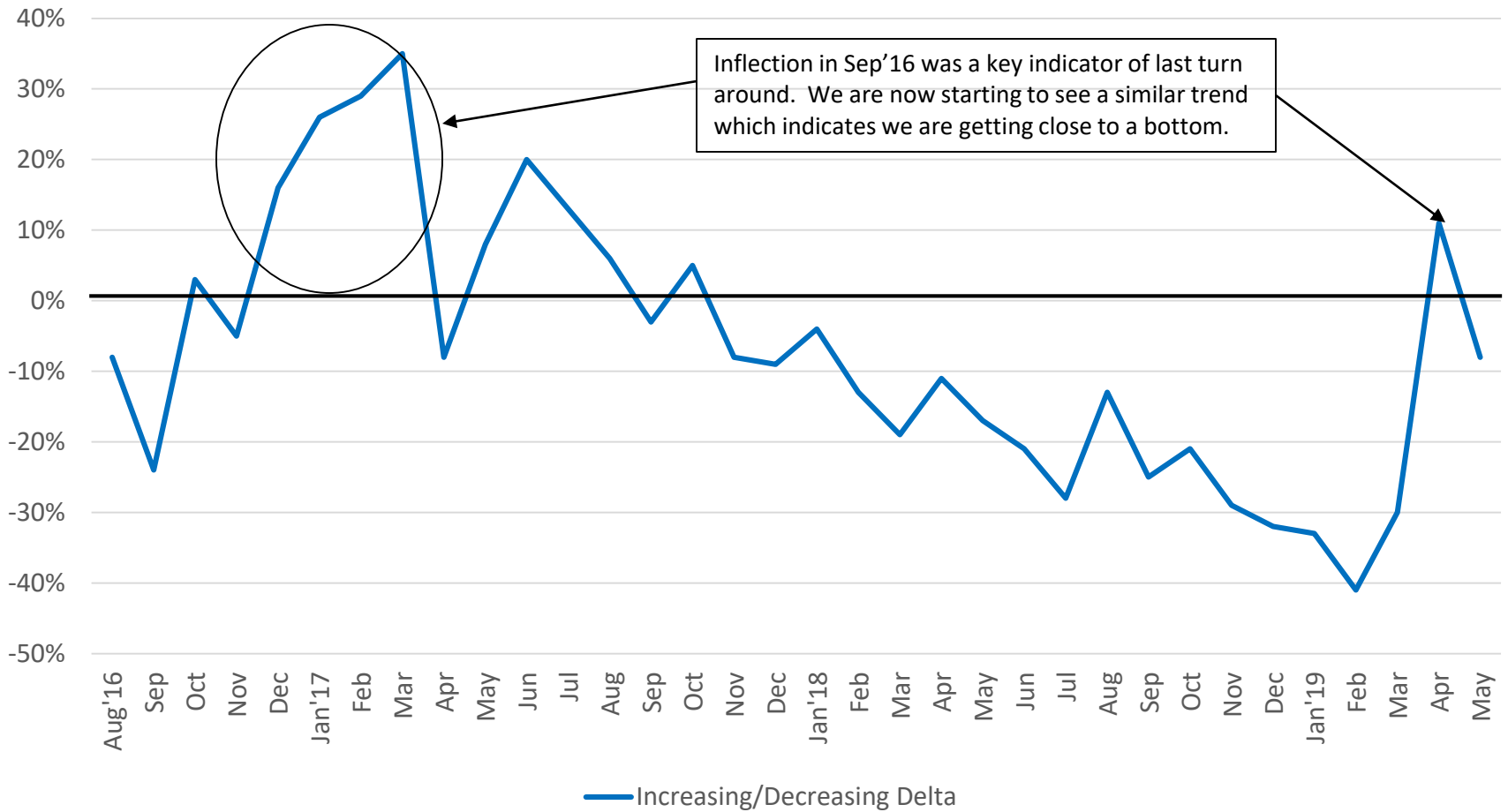


C2Q19 Bookings vs. C1Q19



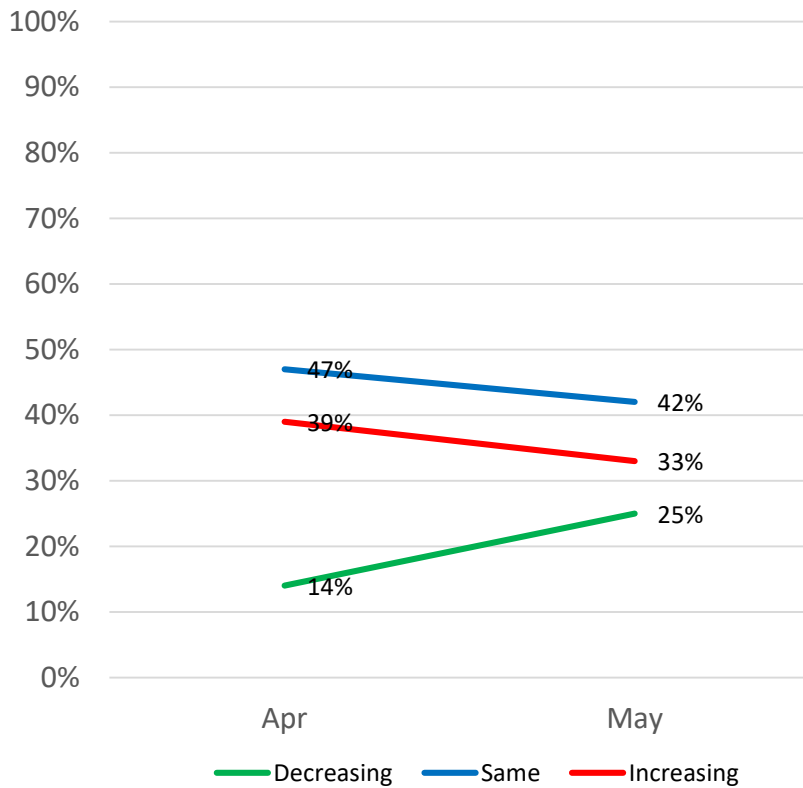
Backlog Order Cancellations vs. 30 Days Ago

(Delta between Increasing and Decreasing Cancellations)

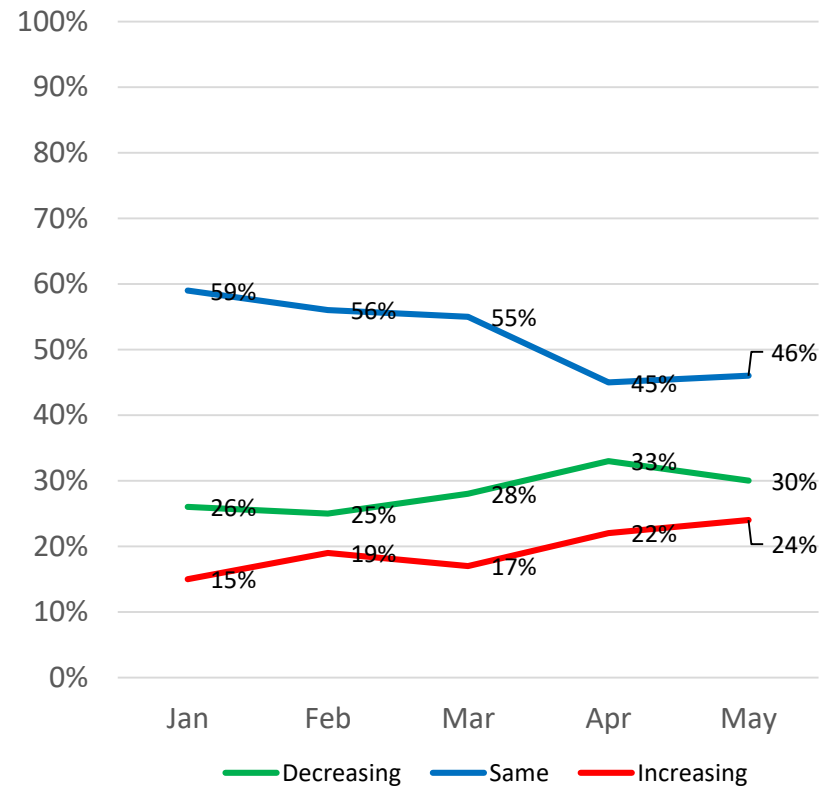


Q/Q Inventory Growth

C3Q19 Inventories vs. C2Q19

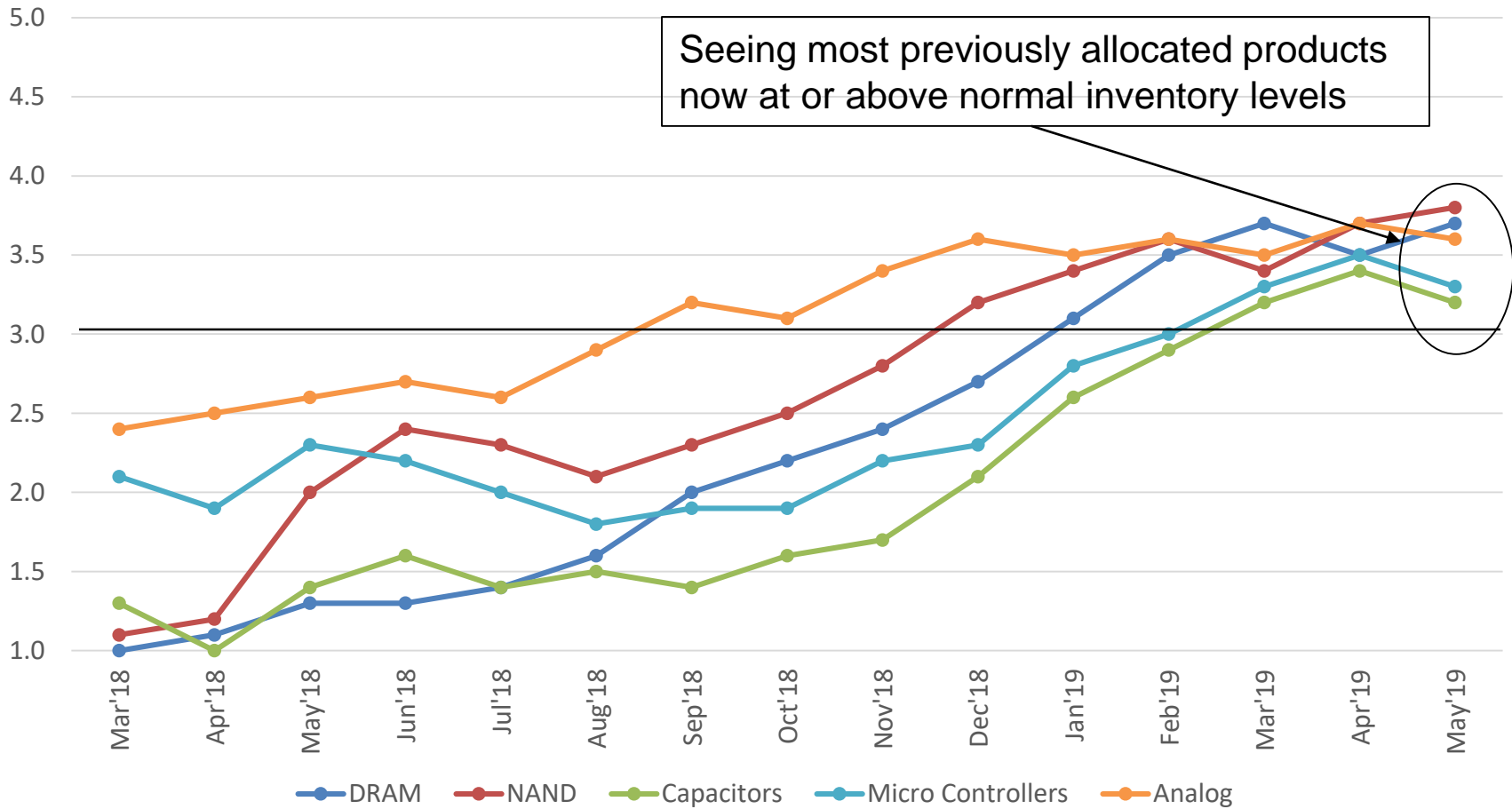


C2Q19 Inventories vs. C1Q19



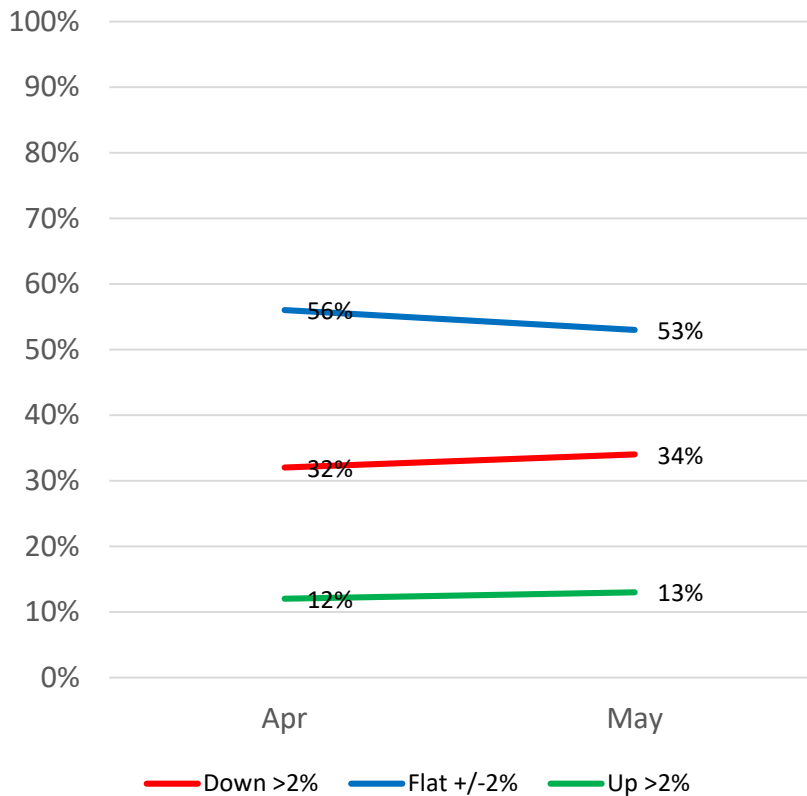
Inventory Status

(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?)

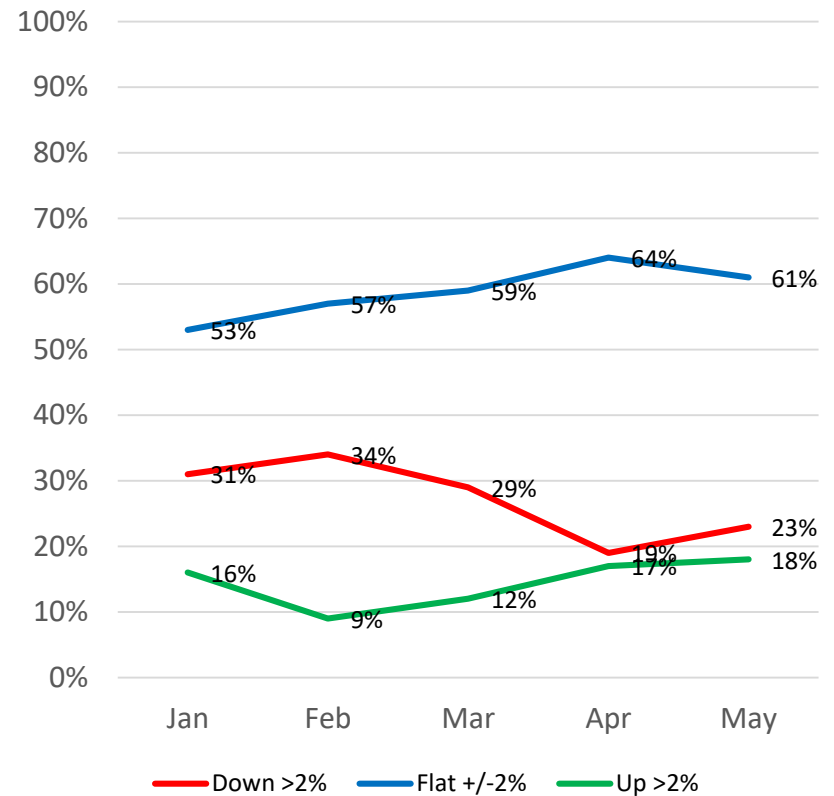


Q/Q Pricing Trends

C3Q19 Pricing vs. C2Q19

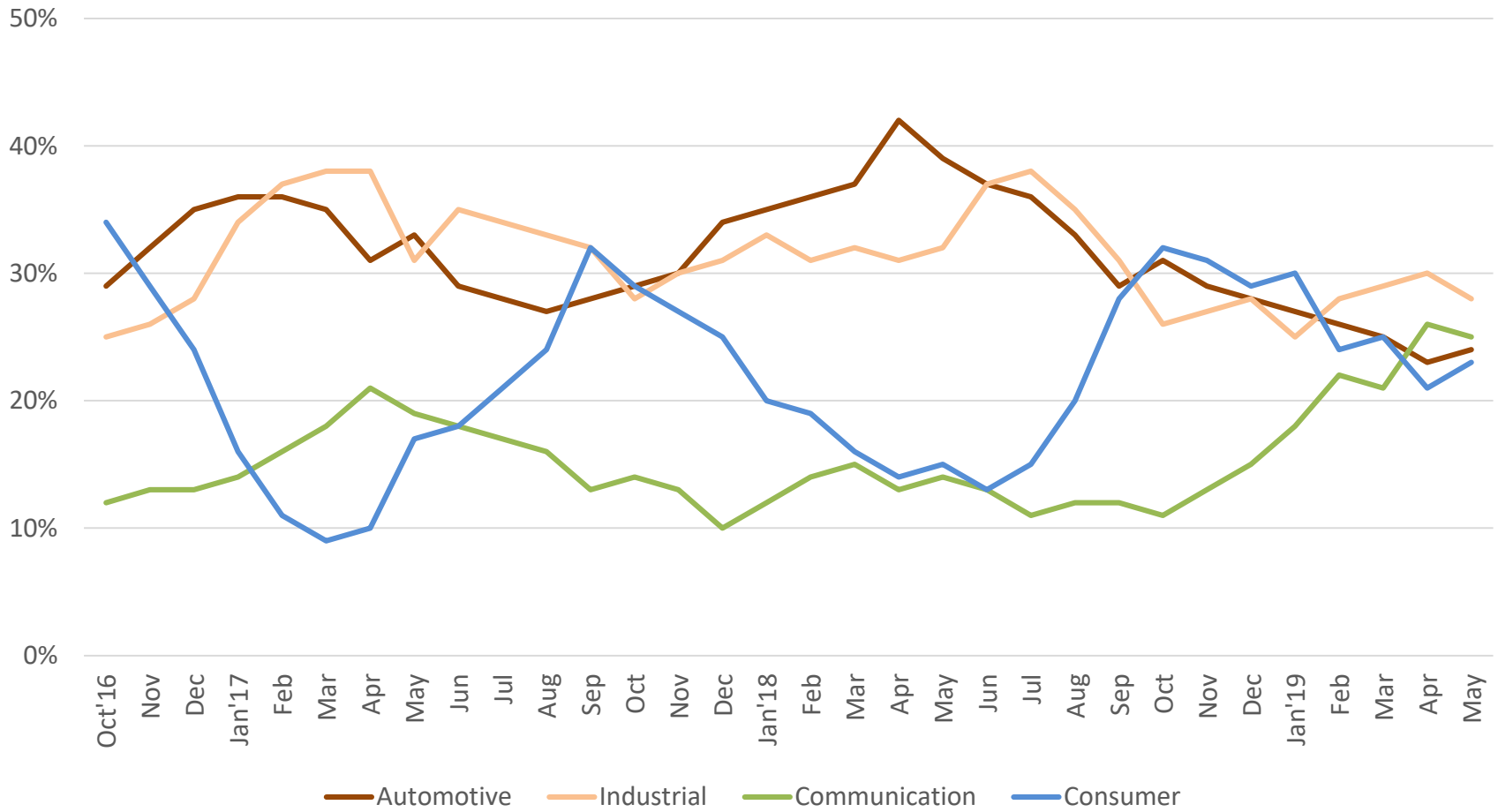


C2Q19 Pricing vs. C1Q19



Vertical Outlook

The outlook for Comm and Industrial improves while Auto and Consumer weaken



Technology Outlook

(y/y comparison)

