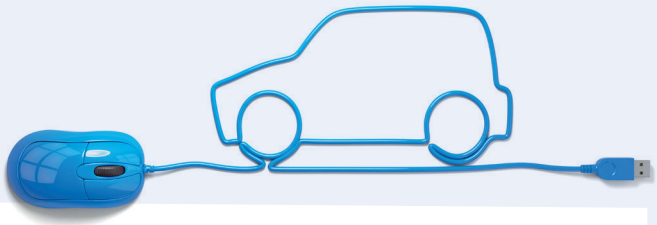
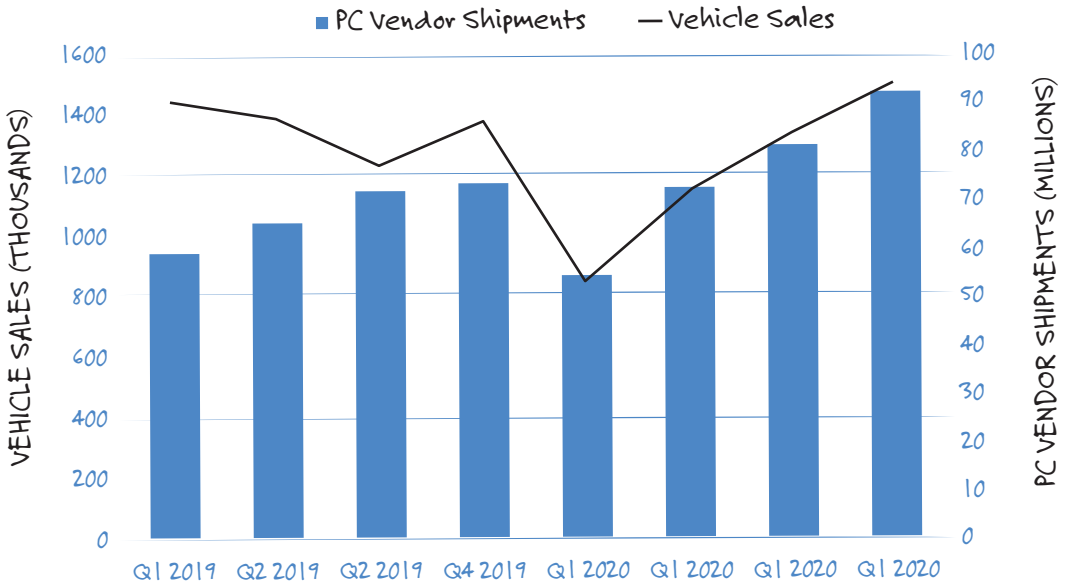
By Robert van der Zwan

Cars and PCs: Their Difference



PC Vendors Shipments and Vehicle Sales in 2020
(Source: IDC, GoodCarBadCar)



In the winter of 2020, Covid-19 caused a shock effect. Its unrelented pace took both East and West by surprise. But the response of the consumer electronics industry was quite different from the car manufacturers. The auto industry cut back on chip orders whereas the consumer electronics industry kept up the good spirit, expecting extra gains from extra time working from home. For that very same reason, the car manufacturers anticipated a drop in demand. But this drop was short lived. During Covid, people want to be alone when traveling from A to B. Result: the shortage of semiconductors was and is especially noticeable in the auto industry.

(Sources: Global X, ICIS, IDC, GoodCarBadCar, Nikkei Asia)

IC Lead Times: An Overview

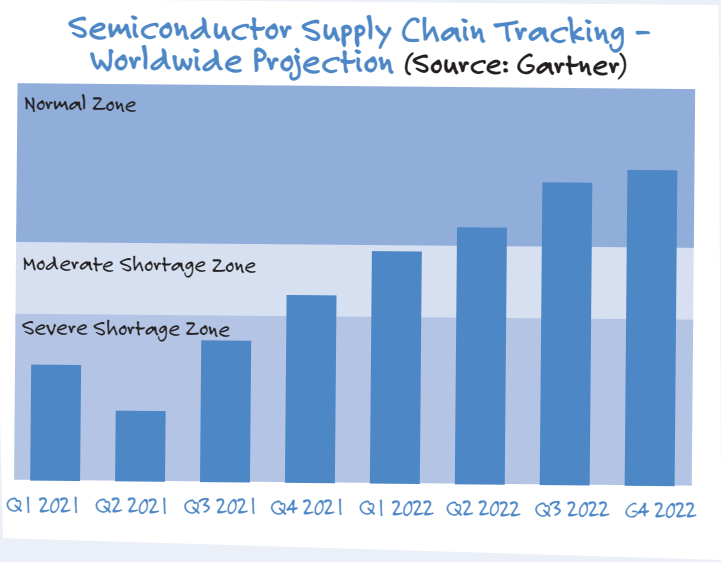
When the shortages were at its peak during the spring of 2021, which ICs had the longest lead times? There is no surprise here. In a 'shortage overview' from April 2021 the power management chips and the microcontroller chips feature most prominently. Undoubtedly, the popularity of the PMUs and MCUs has to do with the exceptionally high demand for 5G devices (not necessarily Covid related) as well as gaming consoles and household appliances (Covid related). CPUs were and are also in short supply, albeit not to the same degree as PMUs and MCUs. Whether needed for 5G or PC, the overall shortage will not end within the next three of four months.

(Sources: Gartner, Nikkei Asia)

Category	Currently	Normally
Power management chips	24-52 weeks	4-8 weeks
Microcontroller chips	24-52 weeks	4-8 weeks
CPUs (Central Processing Units)	12-16 weeks	4-8 weeks
Memory chips	14-15 weeks	4-8 weeks
WiFi chips	24-30 weeks	4-8 weeks

Lead Times for Specific ICs
(Source: Nikkei Asia)

Transition? Watch the Second Quarter of 2022



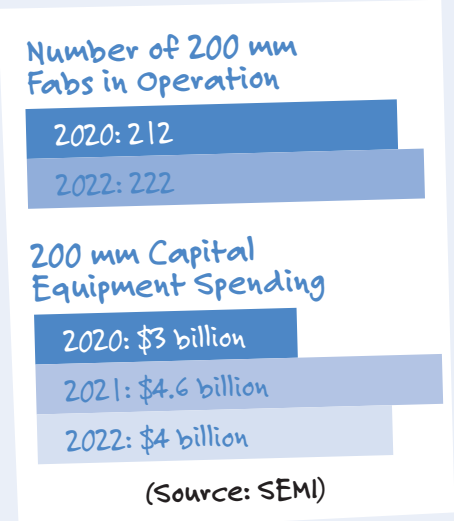
Market research company Gartner thinks a crucial turning point is around the corner. This turning point is somewhere in the second quarter of 2022. While there still will be some shortages during 2021 and the first quarter of 2022, the 'normal zone' with a match between demand and supply will return somewhere after March 2022. This is not to say that in 2022 chips will be delivered in weeks rather than in months. After all, this wasn't the case during pre-Covid days either. It means that there will no longer be disruptions in industries that rely heavily on semiconductors. The times of Japan producing 1 million cars less a year will be over.

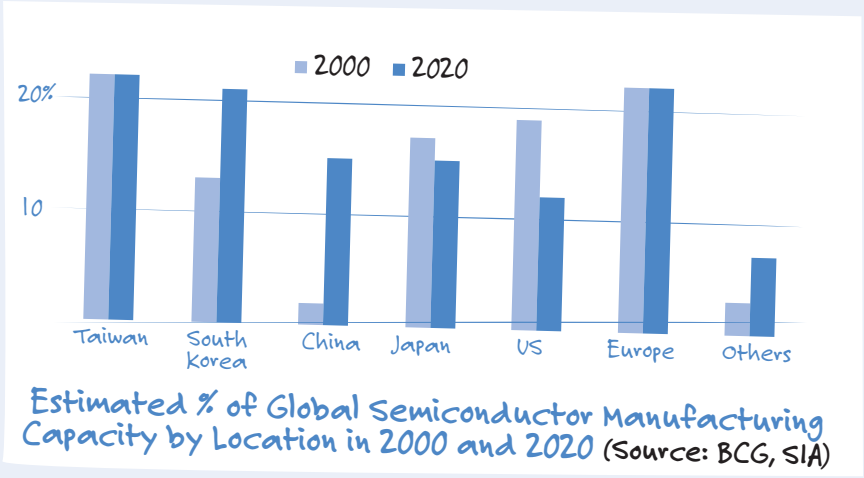
(Source: Gartner, Asia Nikkei)

A **Certain End** to the Shortage

Why are some experts predicting that the semiconductor shortage will be a thing of the past somewhere during the second quarter of of next year? This is because chips coming from 200 mm wafers still constitute a large part of the IC supply. Sure, chips coming from new 300 mm wafers are more lucrative to produce. But ICs coming from 200 mm wafers are still being produced efficiently and can do their job effectively, especially in cars. According to California-based SEMI, an international chip manufacturing equipment industry association, the number of 200 mm fabs will grow from 212 in 2020 to 222 in 2022.

(Sources: IEEE, SEMI)





Where Do the Chips Come From? (Then and Now)

One of the major problems coming out of the pandemic is the regional disbalance in the production of semiconductors. Currently, about 70% of all ICs are manufactured in Asia. This leaves about 30% for the US and Europe. This makes the West – the Whole World for that matter — rather vulnerable for any kind of upheaval in the East, whether political or environmental. This is why Europe and the US want to invest tens of billions of Euros/USDs in local production facilities. South Korea, in the East itself, will not stay behind. It announced a $450 billion programme for the coming ten years.

(Sources: World Economic Forum, BCG, SIA)