

# CRISES IN THE AUTOMOTIVE INDUSTRY

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## Abstract

*The COVID-19 pandemic and the war in Ukraine have changed the global automotive industry in an unprecedented way. The pandemic with its lockdown measures meant that the manufacturers also had to close their production facilities for days on end and when they did reopen, there were a lot of precautionary measures that had to be taken. On the other hand, the war in Ukraine and the imposed economic sanctions on Russia, violently affected the supply chain as, a large quantity of raw materials was sourced from these economies. The result is unheard delays in delivering automobiles for the customers and an upward trend in prices, both for new and used cars.*

**Keywords:** *Ukrainian war, semi-conductors, COVID-19, automotive industry*

**JEL Codes:** F01, F15, F18, F23

## Introduction

The past few years, the last four, in particular, have been quite interesting for the automotive industry due to highly oscillating sales volumes of new cars, a pandemic outbreak, a supply-chain crisis, and recently, the Russian-Ukrainian war. But, fortunately, this industrial sector managed to surpass part of these shortcomings and its recovery is highly expected both by the stakeholders and the customers, as well.

The global automotive industry was on a slightly downward trend in 2019, as manufacturers recorded a 4.1% drop in sales, compared with 2018. Of course, not all regions “behaved” in the same way, meaning that in some parts of the world, 2019 was a better year in sales than 2018. For instance, in Europe and in Brazil, the sales were on an upward trend with a 1.2% and 7.7%, respectively. Unfortunately, these regions were the only ones that ended the year on a positive note, as in all the other regions of the world car manufacturers recorded losses. The biggest reduction in sales volumes manifested in India with a 12.7% contraction, followed closely by China with a 9.5%. The Chinese economy had recorded, in 2019, the second year of slow sales and the worst year for the automotive industry since 2015, but that didn’t affect in any way its status of the biggest market in terms of car sales.

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**Table 1.** Worldwide car sales in 2019<sup>1</sup>

Region	2019	2018	18/19%
Europe (EU+EFTA)	15,805,800	15,624,500	1.2
Russia*	1,759,500	1,800,600	-2.3
USA*	16,965,200	17,215,200	-1.4
Japan	4,301,100	4,391,200	-2.1
Brazil*	2,665,600	2,475,400	7.7
India	2,962,100	3,394,700	-12.7
China	21,045,000	23,256,300	-9.5
*Light vehicles			
Combined:	65,504,300	68,157,900	-3.9

Continuing the analysis on Asia, one can see that Japan, another important player, had a bad year, as well. The new light vehicles recorded a 2% reduction which in absolute figures translates into 4.3 million cars. This was the biggest drop in sales in three years, but somewhat justified by the introduction of a new sales tax.

Within the United States of America the car sales also manifested a reduction in sales compared with 2018. Granted, the difference of 1.4% is falling into the oscillating pattern from the previous years, but the interesting fact is that only the light passenger cars suffered, as the light trucks continued to gain market share to an all-time record of 75% out of all new passenger vehicles.

### The COVID-19 pandemic

According to specialists the automotive sector is “the largest and one of the most complex industries in the world...”<sup>2</sup> That being said, it is also extremely responsive to all external factors and any disruption in one part of the world will have effects at the global level.

After a year with low sales throughout the entire world, 2020 delivered the challenge in the modern era: the outbreak of COVID-19 pandemic. It was expected that 2020 will be the comeback year in terms of sales, and according to a study performed by KPMG<sup>3</sup>, digitalization and connectivity were the key words that would define the future of the automotive industry. Moreover, the study respondents considered that industry will go through a fundamental change in the following years. Unfortunately those predictions did not come true, as all the vehicle manufacturers throughout the world had to close down their production facilities during the lockdown.

As such, in terms of sales, 2020 was, of course, a disaster, as globally, there were almost 17% less cars sold compared with 2019, which was already a bad year for the sector. It was said that the first year of the pandemic was the worst year in a very long time. So the manufacturers and dealers had to come up with innovative solutions that will allow them to cut their losses. And since showrooms were closed and all the buyers were locked down into their homes, the solution was simple, effective and cutting edge, all in the same time as during the pandemic the cars were sold online.

<sup>1</sup> Source: Car sales statistics.

<sup>2</sup> Richard Bartlett-Rawlings, Graham Bushby – The Road to Recovery: How the automotive industry can come back from COVID-19.

<sup>3</sup> KPMG – Global Automotive Executive Survey, 20<sup>th</sup> edition, 2019.

Most of the manufacturers and dealers shifted from the offline face-to-face interaction with the prospective clients to an online interaction where the car was presented online through a series of pictures and videos with live online negotiations. Even paperwork and the payments were conducted online. This method appealed mostly to the younger buyers, who were the predominant buyers during the pandemic. The reason was that they felt more protected from the virus inside their own car compared to the public transportation or ride sharing services.

The fact that the automotive industry had to shut down its activity for a limited period of time has impacted other industrial sectors, which, in the end, led to another crisis. Very affected by this temporary shutdown were the companies that produce semiconductors or popularly known as chips. As consumers desired more and more gadgets and functions in their personal vehicles, the manufacturers were more than happy to oblige, as that is a good way to increase revenues. As a result, the modern car contains a large number of such semi-conductors, anywhere from 300 to 3000 for every car, depending on the car type (electric, hybrid or conventional) and all the amenities that the vehicle incorporates. So, when the demand for new cars ground to halt, during the pandemic, of course the manufacturers closed the production lines in order to prevent stocking up. So they had to cancel the orders to all their suppliers, including the companies that produce the all-important chips. These suppliers, saw themselves in a difficult situation as they also had to survive, so they re-oriented their production towards a sector that was basically booming: electronics and information technology. Due to the COVID-19 outbreak and the fact that all the national governments issued lockdown regulations, a lot of companies had to convert their activities from working onsite to working remote or from home. A big part of these companies' budgets went into electronic devices that could help the workers perform their duties (laptops, tablets, web cams etc.). The educational system also had to shift from the traditional style of teaching and learning to a more cutting edge online process where a whole new range of devices had to be used in order to accomplish the learning goals. Moreover, since all the outdoor activities and travelling had been limited by the lockdown, the demand for new TVs, monitors, gaming consoles, smartphones and so on, skyrocketed. Since all these devices uses semiconductors, it was only natural that the manufacturers shifted from the automotive business to electronics and IT. This strategic move ensured the sector's success during the pandemic.

In 2021, when the pandemic seemed to lose steam and people tried getting back to their regular, day-to-day activities, the automotive industry tried to recover two years of bad sales. So the car manufacturers found themselves in another critical situation: the semiconductors they needed to build the cars were quite scarce as the producing companies were supplying the electronics and IT sector. That lead to a logistical nightmare as the manufacturers and dealers could not deliver the cars to their paying customers. At first, the delays in 2021 were from one to three months, to six months in June-July '21, to one year at the end of 2021. This year, 2022, the delays are even worse as some manufacturers do not offer an estimate delivery date to their customers that had already paid for their vehicles.

The solution that the countries came up with is to limit the dependence on these chip manufacturers that are mostly clustered in Taiwan (92% of the high end chips are produced here, while the rest of 8% is covered by South Korea) by creating more

factories that are closer to the factories where they are used. But creating new factories that are is going to take up years (five to ten years in the best case scenario) as the manufacturers in the automotive sector need a solution as fast as possible in order to prevent bankruptcy.

**Table 1.** Worldwide car sales in 2020<sup>4</sup>

Region	2021	2020	% 20/21
Europe (EU+UK+EFTA)	11,774,900	11,961,200	-1.5
Russia*	1,666,800	1,598,800	4.3
USA*	14,913,700	14,450,800	3.1
Japan	3,675,700	3,810,000	-3.5
Brazil*	1,977,100	1,954,800	1.1
India	3,082,400	2,435,100	26.7
China	21,090,200	19,790,000	6.6
*Light vehicles			
Combined:	58,180,800	56,000,700	3.9

### The war in Ukraine

As if the COVID-19 pandemic and the chip shortage were not enough, the war between Russia and Ukraine represents another crisis for the automotive industry. Ukraine and Russia are important suppliers for car manufacturing industry. They provide raw materials for the automotive industry like palladium, nickel, lithium and neon gas. Palladium is used in the catalytic converters and the Russian mines provide almost 40% of the global palladium production. The situation is similar for nickel (which is refined and then combined with lithium to produce lithium-ion batteries), as the Russian economy is the fourth nickel producer in the world. Last but not least, neon which is a noble gas used in manufacturing different types of bulbs for the automotive lightning systems. However it is used in copious quantities for producing semiconductors. This gas is actually a byproduct in the Russian steel factories, but in order to be used in the chip industry, it is processed in Ukraine. Between the two countries the production of neon totals for about 80-90% of the global production.

Aside from the provided raw materials for the global automotive industry, Ukraine supplies components and sub-assemblies, as well. Wiring harnesses that are considered the communication highways between the cars' different electric or electronic modules are manufactured by Ukraine for the majority of the European car manufacturers, like BMW, or the Volkswagen Auto Group. Since the factories were destroyed by the Russian bombing, the car manufacturers, especially the European ones were highly affected and their production was delayed if not stopped entirely. S&P Global Mobility (a research and rating company) estimated that the global production of light vehicles will be reduced by millions of units. Moreover, they assessed that the global production for 2022 and 2023 will be 2.3 million smaller than the original estimate.

<sup>4</sup> Source: Car sales statistics.

Although the war is another crisis that adds up to the existing ones, the European manufacturers announced after the beginning of the war, that they will start the production at full capacity. BMW officials said that their main factory in Germany will resume production and their estimates for production volumes will surpass the 2021 values. However, the Mini production plant located in the United Kingdom will remain closed, as it is affected by the war. The solution that the company had found was to work “with suppliers to duplicate, not relocate, the wire harnessing production to attempt to keep jobs in the country”<sup>5</sup>. Volkswagen has decided also to start and increase the production in the homeland, in order to recuperate the losses from the pandemic, but the factories that manufacture electric vehicles will remain closed, as they rely on Ukrainian raw materials. Porsche, one of the Volkswagen Auto Group’s division, also stopped the production within the Leipzig power plant, for the same reason, the war.

### Conclusions

The COVID-19 pandemic can be considered one of the triggers for the current automotive crisis. The lockdown affected the car manufacturers and the dealers as fewer people wanted to buy a new car. As a result, the manufacturers had to reduce and restructure their activity in order to better cope with the new situations. That often meant that capital had to be redirected from different compartments, namely R&D, towards the daily operations, in order to keep their business going.

The semi-conductor shortage, the second trigger for the current automotive crisis, influenced the prices, making the new vehicles pricey as they were, even more out of reach for more consumers. Another negative effect of the chip shortages, was the delivery deadlines for the new cars that from a point were quite absurd. For instance, there are consumers that ordered and paid for a new car in June 2021 they haven’t receive it in 2022. Even more so, there are situations when customers bought a certain model of a car, but due to large delays in deliveries, they ended up with the newer version of that particular car and they had to pay for the difference.

The war in Ukraine and the economic sanctions for Russia are the newest factors of impact for the automotive market. Their influence on this economic sector is similar with semi-conductor shortage as the prices and the delivery deadlines will increase. Subsequently, this lead to an increase of prices for the second-hand vehicles as the demand for cars cannot be satisfied by the car manufacturers. Another negative effect generated by the war is the increased costs of transportation. Since the railroad and the maritime transportation costs were already on an upward trend after the pandemic started, nowadays due to the fact that shipping companies have to use alternative routes the prices have gone up 15-20 times.

The increased prices for oil on the international markets and the high levels of inflation have also resulted in more highly priced cars. As a result of this profoundly negative context, the new car prices have skyrocketed, as there are markets that have recorded 30-38% increase. The situation, unfortunately, is similar for the second-hand market. Since the consumers cannot buy a new car within a reasonable time frame and

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<sup>5</sup> Michael Wayland - *Russia’s invasion of Ukraine will lower car production by millions of units over two years*, S&P says.

budget, they will try to buy a used one. And this demand for cars was 11% higher on some markets. In the end, the increased demand for second-hand cars drove the prices up, just like the new car markets. The prices went up so much, that cars that are three or four years old are bought at the same price that they had been bought when new.

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