

Risky Asymmetry in the Automotive Cosmos

A love-hate relationship: this is the best way to describe the current state of affairs between automakers and their suppliers. It is true that there have always been problems with supply chains, but these dramatically intensified during the Chinese government's zero-Covid policy. Because collaboration between all those involved along the value chain is to a high degree asymmetrical, a radical change in direction is now necessary.

Just weeks after the first Asian migrant workers began to show the initial symptoms of a serious illness, confidence in rising sales figures for the year 2020 was quickly replaced by expressions of horror in the boardrooms of German carmakers. Overnight, so to speak, there was suddenly a shortage of all kinds of technical products. But above all, there was an acute lack of highly integrated semiconductor components. Covid-19 not only meant that a large proportion of the workforce was off sick, the initially drastic measures to contain the worldwide pandemic also led to the closure of many of China's important production facilities and ports.

Within a few months, a virus had therefore made a mockery of the entire international supply chain strategy and also revealed just how vulnerable the European Single Market is to global disruptions. The consequences can still be felt even today, three years after the virus broke out at a Chinese fish market. And even if "the supply chains from China that are necessary for production operations in European

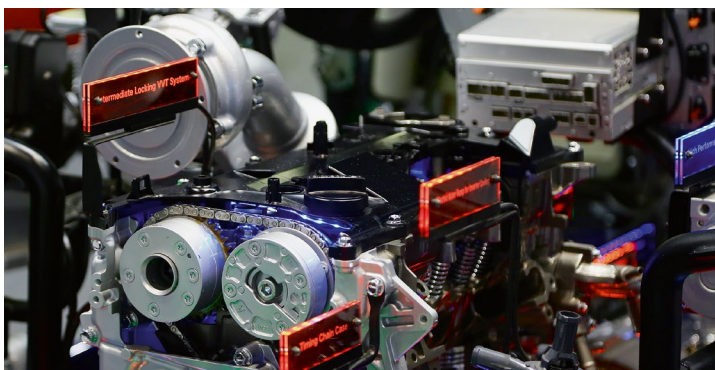
plants are currently stable", as the Volkswagen Group informed us in response to our enquiry, the fear of a new supply lockdown runs deep.

DREADED PROCUREMENT STRATEGY

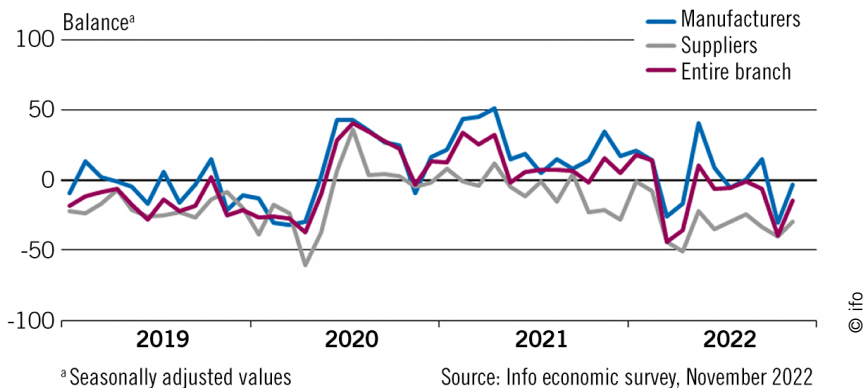
Therefore, "the primary objective of the Volkswagen Group is to maintain the supply chains in order to minimize the impact on the production network as far as possible". The Wolfsburg-based carmaker says that it is monitoring developments on the world markets very closely "in order to apply appropriate measures together with our suppliers if necessary" – a statement that could have been taken from a handbook for senior management.

Constant pressure on prices reminiscent of the cost-cutting Lopez Effect of 1993, hard-fought improvements in efficiency, and efforts to control losses in quality, as well as the most spectacular conflict to date between Volkswagen and Prevent Group in 2016, clearly showed the power games that were taking place. At that time, the

It is not immediately apparent, but even vehicles with an internal combustion engine require numerous semiconductors; this shows that even slight disruptions in the supply chain will result in problems in production



Business expectations in the German automotive industry



In spite of considerable problems with supply chains, the business situation of German automobile manufacturers and their suppliers improved somewhat in November: this is one of the findings of a recent ifo survey – in November 2022, the figure rose to minus 2.2 points, after minus 4.3 in October

supplier wanted, among other things, to force the OEM to accept a sharp increase in its prices. Although the dispute was ultimately resolved, it showed how dependent even global corporations are on seemingly simple products. The strike by the suppliers brought production at numerous Volkswagen plants to a standstill. And this was not an isolated case. Above all, however, scenarios like these reveal the structural problem of Germany's import-dependent manufacturing sector.

ASYMMETRICAL BALANCE OF POWER

This crisis in the security of supply was also made worse by the abolition of companies' own warehousing facilities. Just-in-time delivery was the new buzzword, and it had the effect of shifting the burden of responsibility solely onto the suppliers. And even worse: it meant that carmakers were able to cancel the agreed delivery quantity spontaneously – and above all cheaply. The ensuing problems had to be solved by the suppliers alone, who in turn passed their cost pressure on to their sub-suppliers. The fact that this balance of power is asymmetrical has a huge effect of exacerbating the situation for the supplier industry.

The past two years have revealed this to an extreme extent. For example, during the coronavirus pandemic, far fewer vehicles were produced than originally planned. Delivery call-offs and calculations by suppli-

ers collapsed – a knock-out criterion in the current economic situation. The huge increase in the costs of raw materials and above all energy is having a devastating impact on some companies. In an interview with the German business magazine *Wirtschaftswoche* [1], Christoph Münzer from the *Wirtschaftsverband Industrieller Unternehmen Baden* (Trade Association of Industrial Enterprises in Baden) described the current situation at an unnamed metal forming company.

ENERGY COSTS MAY BE DECISIVE

This Baden-based company relies on natural gas for its processes. Its energy costs have doubled to 8 million euros as a result of the higher market prices. Münzer calculates that, based on sales of 100 million euros, the 4-% margin had already disappeared at the beginning of 2022. Volkswagen also takes a critical view of the rises in energy prices and also the potential "deficit situation for energy resources such as gas". However, the Group informs us that it is well prepared in this respect. It says it has "prepared intensively and in the best possible way for a possible gas shortage and its consequences for the company, its workforce, and its production".

But even if most automobile manufacturers see themselves as being well prepared to survive even a prolonged crisis, the supply sector will only get help from carmakers if "manufacturers are desperately in need of a supplier because they cannot find a replacement

in the short term," Münzer says, criticizing this "abuse of power". When asked why we never hear of any resentment among the suppliers affected, the director of the Baden Trade Association replied that "the manufacturers punish their suppliers if they express criticism". This is also the reason why we were only able to collect background information for this article, which we were able to use in context, but were not allowed to mention in connection with a specific company.

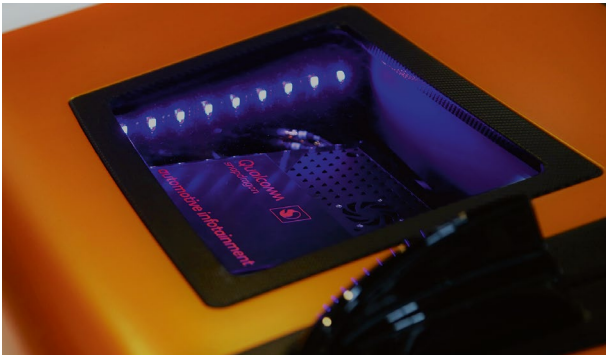
PROCESS OF TRANSFORMATION EXACERBATES THE SITUATION

Some suppliers make a rule of not commenting on supplier relationships or supply chains on principle. However, numerous discussions have revealed that, in spite of the current crisis, some suppliers already see themselves well prepared to adopt a more advantageous negotiating position, especially with the focus on alternative drive systems. This does not include leading semiconductor companies, as these did not submit to the dictates of the automotive industry in the first place. On the contrary: they are now the ones who are dictating the rules of the game.

This had sometimes drastic consequences for the entire automotive sector. The shortage of semiconductors that are specifically required for automobiles is still causing headaches for development and production managers. Because semiconductors were not a typical component of a car until a few years ago, other industries such as telecommunications and consumer electronics were given preference. Although the share of sales of semiconductors specifically designed for automotive applications is recorded in the books of semiconductor manufacturers, it is still very small. But now, the transformation to electric mobility is further intensifying the crisis.

THE BERMUDA TRIANGLE OF SEMICONDUCTOR PROCUREMENT

The demand for chips for battery-electric vehicles will increase by a factor of 10 compared to current vehicles with an internal combustion engine according to a study by the management consulting firm AlixPartners [2], contributing to



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At present, there is a worldwide shortage of certain semiconductor components; it is currently not possible to predict when this bottleneck will be resolved



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According to Mercedes-Benz, in spite of geopolitical insecurities and a volatile semiconductor market, the global demand for vehicles remains robust; nevertheless, due to the unstable political situation and ongoing restrictions caused by the Covid-19 pandemic, the overall situation is still volatile

the fact that capacities will not be sufficient to meet the entire demand of the automotive industry. . Even though the world’s largest contract chip maker TSMC announced in summer 2022 that it was for the first time building up new capacities for semiconductor generations that are urgently needed by carmakers, the dependence on silicon chips is still high.

After all, several thousand semiconductors are installed in a modern electric vehicle, and if only one of them is missing, the car will not leave the assembly line. The dependence on the business policies of primarily Asian companies, as well as on the Covid-19 pandemic and now also

on the effects of the war in Ukraine, is making it essential for buyers to safely circumnavigate the Bermuda Triangle of semiconductor procurement. So far, they have managed reasonably well. According to AlixPartners, this situation will prevail until at least 2024 and will continue to slow down car production.

SUPPLY CHAIN AS A VERTICALLY INTEGRATED MODEL

Fully aware of this critical dependence in the supply chain, some carmakers are moving to a vertically integrated model that includes microchip production

and are “taking direct responsibility for multi-year, high-volume contracts to ensure there are no capacity bottlenecks in the future”. But in spite of all such preventive measures, it is difficult to implement a crisis-proof supply chain. Nevertheless, it is possible to mitigate the consequences, as Mercedes-Benz told us in response to our enquiry.

In order to deal with the international supply chain problem better in the future, they are considering “measures to reduce complexity within our product portfolio”. This is a clever approach by the Stuttgart-based automaker. Having fewer components in a vehicle will not



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Partner at the management consulting firm Arthur D. Little



2 QUESTIONS FOR ...

Are you currently concerned about what is happening in China with regard to their Covid strategy?

SCHMITZ _ One of China’s main objectives in lifting the Covid restrictions was to initiate economic recovery, since the rigorous shutdowns of plants and local lockdowns at the slightest indication have severely disrupted their economy and supply chains. The calculation behind this is that, instead of imposing a 100-% lockdown in a city or a plant, there will be a lower percentage of the workforce that is absent due to illness. As the worst cases of illness tend to occur in older and previously ill people, this calculation

might work – despite all the negative consequences for the people.

And then there might soon be a return to normality?

SCHMITZ _ The chip crisis is currently easing in some areas, due to the reduced demand for consumer and business electronics and the recovery of the supply chains. However, there is still a shortage of automotive and industry-specific chips. The Ukraine war is also having a negative impact on the supply of cable harnesses, as well as the availability of truck drivers, and therefore on logistics in general.

only disentangle the complexity of the supply chain, but could also significantly simplify the handling of variants. An urgently necessary step: by 2025, “the number of battery-electric models coexisting with legacy internal combustion engine (ICE) platforms will probably boost the number of variants per carmaker by 50 to 100 % worldwide,” according to a recent analysis by management consultants OliverWyman [3]. In the age of powertrain shift to electric mobility, car complexity has reached the point where there are so many options to choose from that it has gotten overwhelmingly cluttered.

COMPLEXITY AS A COMPETITIVE DISADVANTAGE

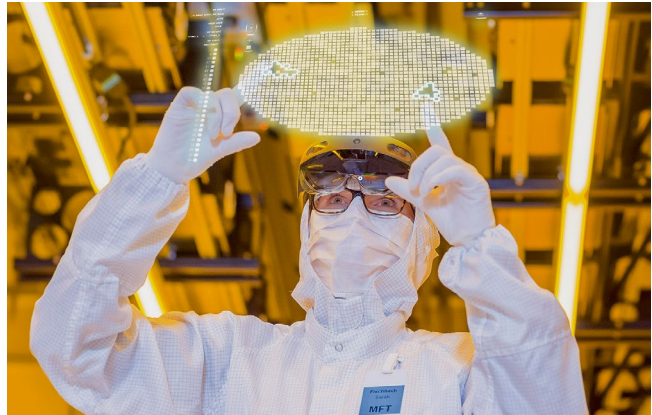
According to the authors of the Oliver Wyman study, roughly 30 to 40 % of all OEM employees are involved in dealing with variants and the associated complexity issues. This limits the capital available for company transformation, new technologies, and new business models, while at the same time new automotive players are increasing the speed of their transformation, Oliver Wyman reports. However, if an OEM succeeds in reducing complexity, this will yield benefits across its entire value chain.

The earlier a company tackles complexity in the product development process, the greater the success. According to the study, this can increase profits by between 500 and 750 euros per car. A further advantage is that the supply chains also become more stable. For Mercedes-Benz for example, such measures and also “more specific agreements on delivery acceptance, longer planning cycles, the creation of security stocks at various points in the supply chain, and multiple sources of supply” are a top priority.

EMERGENCY PLAN FOR THE GERMAN DOMESTIC MARKET

Measures to reduce complexity are not, however, a guarantee for smooth business operations at all times. The tipping points of international agreements are too unpredictable. Once again, China is an example, as was seen in December 2022. Following protests by its own population against its zero-Covid policy, the government agreed to relax numerous

In a statement, Bosch reports that it can currently maintain its supply chains in this challenging situation, apart from the constraints caused by the global market bottleneck for semiconductors, the disruptions in Russia and Ukraine, and the Covid-19 restrictions in China in 2022



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restrictions. It seemed that normal production could pick up speed again. But it was too early to give the all-clear, as the number of infections rose at an extreme rate. Some now fear that the majority of the workforce will fall ill and that production facilities that are important for the German automotive industry will come to a standstill once again.

Worries about another shortage economy are certainly justified. This is also the reason why the European Commission is working flat out on an emergency plan to preserve the free movement of goods and services in the Single Market in the event of future emergencies. This Single Market Emergency Instrument (SMEI) provides “a general framework for crisis prevention and response as well as two crisis levels: a vigilance mode and an emergency mode”, as the Federal Ministry for Economic Affairs and Climate Action (BMWK) explained in its statement [4] in September 2022.

RESILIENCE AND PREPAREDNESS FOR A CRISIS

The focus of the EU Commission members is on both the freedom of movement of goods and services in the Single Market and the maintenance of strategic supply chains. “In view of disrupted supply chains, the Covid-19 pandemic, and the Russian war against Ukraine, the EU must improve its resilience and preparedness for a crisis,” says Dr. Franziska Brantner. The Parliamentary State Secretary at the BMWK hopes that this will enable the Single Market to continue to function properly in a crisis. Transparency and coordination are essential for this. Brantner promises that

the German federal government will analyze in detail the EU proposal of introducing an emergency instrument.

However, all crises have shown so far that friendship ends when it comes to disputes over money. Unfazed by any criticism, Elon Musk has shown just how consistently large corporations in particular are a model for such behavior. His strategy is to systematically reposition the carmaker Tesla as a broad-based technology group. It will develop its own semiconductors in-house, which will then also be produced by TSMC and others. Although this does not fully protect him from possible geopolitical catastrophes, he can simply rewrite the software and firmware in the semiconductors and convert the chips for his own purposes.

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OPINION

“The geopolitical game regarding inventory management cannot be mastered. A worker coughing at an Asian production facility can result in the shutdown of German industry. Even more incalculable are sanctions imposed as a means of applying pressure to prevent crimes against international law. The risk of a shortage economy can only be minimized by shorter supply chains, less complex vehicle technology, and the development of national high-tech companies that are located close to the OEMs.”



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