Mobility in Motion

INTERVIEWS

Thomas Schäfer, CEO of VW Passenger Cars, and Robin Zeng, CATL CEO, share their perspectives on the evolving relationship between Europe and China. **Pages 6–7**

GROWTH MARKETS

New World Order

Senior Partners Norbert Dressler and Felix Mogge discuss competition in China, opportunities in emerging markets across the Global South, and the importance of regional differentiation in customer engagement. **Page 2**

SMEs

Mid-sized suppliers are in the midst of a profound transformation. Diversification is taking center stage. **Page 4**

COMPETITION

Within just a few years, domestic automakers in China have captured significant market share. Now they are entering Europe — and European manufacturers are under pressure to respond. **Page 8**

AUTONOMOUS DRIVING

The "Automotive Disruption Radar" tracks global disruptive market trends. The latest edition sheds light on the current state of autonomous driving. **Page 10**

A special supplement in Automobilwoche with Roland Berger

"THE STRENGTH OF GERMAN AUTOMOTIVE BRANDS ..."

Carmakers and suppliers still face major challenges on their path to future readiness.

The brand image of German automakers continues to resonate worldwide. At the same time, Chinese competitors are much faster when it comes to developing and launching new products — the same applies to suppliers. If German companies want to succeed in the key Chinese market, they must not only accelerate but also understand the specific needs of local customers. There is no such thing as a "global car" when customer demands vary so widely across regions. Regionalization — identifying and capturing growth markets — is becoming an essential priority in times of geopolitical uncertainty. Roland Berger Senior Partners Norbert Dressler and Felix Mogge highlight the opportunities for manufacturers and suppliers.

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Norbert Dressler: Senior Partner at Roland Berger and Global Head of Automotive

Where do you still see competitive advantages for the European — and particularly German — automotive industry?

Dressler: Carmakers remain firmly rooted in their home market of Europe, with strong customer loyalty. The brand strength built up over decades — especially by German manufacturers — still carries weight globally, even if it has weakened in recent years. Suppliers continue to drive much of the innovation in future technologies and are sought-after partners for OEMs beyond Europe. But it's also clear: over the past decade, both OEMs and suppliers have lost ground in terms of competitiveness.

"Customer demands vary greatly across regions."

At the same time, China has become more competitive. In which areas exactly?

Mogge: In recent years, China's automotive industry has shown remarkable speed of development. "China Speed" has become a buzzword in R&D departments. This applies equally to OEMs and suppliers. Product development cycles are only about half as long as in Europe, and both vehicles and components are designed far more rigorously for cost efficiency while maintaining strong technical performance. That said, this is not yet consistently profitable — most players are currently reporting losses due to intense competitive pressure.

How important will regional strategies become for the automotive industry to succeed in the future?

Dressler: Regionalization will continue to advance, and aligning strategy accordingly will be a decisive success factor for OEMs and suppliers. The era of the "world car" is largely over. Car buyers' expectations differ so much across regions that in practice, each major region requires its own tailored product portfolio. Suppliers, too, must adapt — with differentiated technical solutions and greater local autonomy in their organizations. At the same time, they must not lose sight of the global synergies that remain essential.

How should OEMs and suppliers position themselves in China to succeed there?

Mogge: The short answer: become more Chinese. For carmakers, this means aligning their product offering in China much more closely with local customer expectations. Chinese consumers place greater value on digitalization and in-car entertainment. And they always expect the latest available technology — whether in assisted driving features or battery charging. Here, European OEMs must not only adapt their vehicles but also significantly shorten their development cycles — and be willing to deviate more often from global technology standards. Many European suppliers have already adapted their product portfolios in China quite successfully. However, to withstand the immense cost pressure from local competitors, they will need to streamline internal processes to the maximum and match the market's development pace. At the same time, these lessons must feed back into product development for other regions.

… STILL CARRIES WEIGHT”

Production capacity remains too high, portfolios lack balance. Yet opportunities remain.

Chinese companies are already entering Europe. How is that playing out?

Dressler: Europe has always been a difficult market for Chinese OEMs — and it still is. Breaking in successfully is far more challenging here than in many emerging economies where Chinese automakers have already celebrated notable success. That’s due to Europe’s demanding customers, complex sales structures, and of course regulatory hurdles. To succeed in Europe, Chinese manufacturers will need to invest heavily in local R&D, production, and sales and service networks. There’s no doubt they have the capabilities to do so, and we will see increased activity, especially in the commercial vehicle segment. But the key question remains whether this will make economic sense for them. In some cases, we do have doubts.

“Europe’s carmakers remain firmly anchored in their home markets.”

What opportunities do other markets, such as India, offer for automakers and suppliers?

Mogge: Over the next few years, structural growth in demand will only come from the markets of the Global South. Alongside China, countries such as India, Southeast Asia, and South America will offer new opportunities for growth. But the same applies here: vehicles must be adapted to local customer expectations, technology standards, regulatory requirements, and cost levels — all of which differ significantly from Europe. Suppliers can benefit, provided they have a local presence. But let’s be clear: this is not a solution to the structural challenges the European market is facing.

Suppliers should focus their portfolios more sharply, and OEMs must keep an eye on costs. But what opportunities do industries like defense offer?

Mogge: Europe’s defense industry is entering a period of exponential growth — there is little doubt about that today. This growth will only materialize if highly complex, heavily regulated defense products can be industrialized and manufactured at scale far more efficiently than before. These are core capabilities of Europe’s automotive industry — and they should, and indeed must, be leveraged to the benefit of all. What’s more, unlike in the traditional automotive sector, cutthroat cost competition with China does not exist here for political reasons.

Where do you see future sources of profit for the automotive industry?

Dressler: For OEMs, expanding service-based business models could become a profitable source, while suppliers may tap into new industries. But at its core, the automotive industry is facing a structural problem that must be solved. In Europe in particular, production capacity is at least 30 percent too high. The technology and product portfolios across OEMs are too fragmented, preventing scaling and the amortization of the required future investments. Moreover, inefficiencies persist due to friction in OEM–supplier collaboration. Reducing overcapacity, fostering more cooperation among OEMs, and consolidating the supplier landscape — along with a new model of collaboration — are prerequisites for restoring sustainable profitability in the industry.

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Felix Mogge:
Senior Partner at Roland Berger and Head of the Supplier Client Team

THE MID-SIZED SECTOR IN MOTION

To offset declining revenues, automotive suppliers are turning to diversification. The defense industry is emerging as a new target sector — but there are challenges to overcome.

There is an ongoing crisis in the automotive Mittelstand. German suppliers have been under pressure for years. New forms of mobility, a volatile market, and cost pressure both from outside and within — it is crunch time for mid-sized companies.

The challenges for the companies are reflected in a recent survey: 66 percent primarily feel the price pressure from customers. Another 53 percent cite the growing intensity of competition as a burden. To be sure, countermeasures are underway. Restructuring, turnaround programs, cost-cutting, and process optimization have been launched everywhere, and in many cases already implemented. Yet 60 percent of companies still see no growth prospects in the market. Global trends such as electromobility, new market entrants, and geopolitical uncertainties are driving market dynamics as never before, putting Germany's Mittelstand under enormous pressure to act.

Focus or diversification: that is the question

Mid-sized suppliers now stand at a crossroads: focus or diversify? The study results are clear: nearly four out of five companies see diversification as strategically valuable. Many are hoping for growth opportunities even beyond the automotive sector. Some are already active in related fields, though still with relatively modest revenues. Entirely new industries, however, remain largely untapped.

Every second survey participant believes that diversification increases resilience against geopolitical and regulatory risks. New growth areas must be opened up — if only to improve capacity utilization. Recently, suppliers have shown increasing interest in the defense industry. Aerospace is also emerging as an attractive sector for the Mittelstand.

For suppliers, the defense industry is becoming attractive

However, entering the defense market is easier said than done: there are entry barriers, new networks and sales channels must be built, and political as well as regulatory conditions must be taken into account. All this takes time.

For those with perseverance, however, opportunities also arise. Traditional automotive suppliers can score points with partners from other industries thanks to their expertise in quality management, materials and manufacturing, and product development. Their cost efficiency and strong culture of optimization also play in their favor. In addition, they bring proven know-how in industrialization and scaling.

Clear success factors and market entry strategies are already emerging. Sales partnerships with established players in target industries, for example, offer access to new customer groups. Production partnerships — such as licensed manufacturing — are another option. Development partnerships with large companies in other sectors or with start-ups can also help pave the way. One thing is clear: the competencies are there, and they are attractive well beyond the automotive sector.

Management Priorities

Share of respondents who assigned high and very highpriority to the issue

Ranking	2025	2024
1.	Increasing price pressure from customers	Increasing price pressure from customers
2.	Lack of growth prospects in the market	High volatility of call-offs
3.	Rising competitive pressure	Regulatory / sustainability requirements
4.	High volatility of call-offs	Recruitment of skilled labor
5.	Regulatory / sustainability requirements	Rising competitive pressure

Source: Roland Berger

RECOMMENDATIONS FOR ACTION

Diversification: Winning new customers in high-growth industries can drive revenues. The key lies in building new networks and sales channels. Sales partnerships with established players are crucial for gaining access to new customer groups.

Target industries: Defense is viewed as the most attractive sector, followed by aerospace and medical technology, and to a lesser extent consumer electronics.

Strengths: Suppliers can leverage their expertise in materials and manufacturing as well as product development.

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NEW BALANCES

The global balance of power is shifting. In China, domestic car brands now hold more than 50 percent market share. In Europe, they are making a massive push. Western automakers are facing the competition and have answers at hand.

In the past, the automotive world was clearly divided. The Germans invented the automobile, the Americans introduced mass production, the customers bought. The major car manufacturers came from the U.S., Germany, and other European countries. In the 1950s and 1960s, Japanese brands began their global offensive, followed by the Koreans. But there was no Chinese industry – and no market either.

That changed with Volkswagen. At the beginning of the 1980s, VW entered the Chinese market, built factories, and for the first time supplied the people there with cars. For decades, the market was firmly in the hands of foreign brands. Sales grew and grew. But then the rise of Chinese automakers began. The number of providers exploded. Current figures speak of 150 car brands, even though consolidation of the oversaturated market is already underway.

By 2024, Chinese consumers were buying mostly domestic brands. At the same time, Chinese manufacturers and suppliers are expanding into Europe, primarily in the field of electromobility. The relationship between European and Chinese companies is changing drastically and at great speed. Competition is fiercer than ever.

The global car market is becoming increasingly polarized, with several decoupled regional ecosystems emerging. China's dominance in key indicators such as technology and customer interest is helping the country to overtake its Western competitors in these areas.

For Europe's volume manufacturers, however, it is hardly possible to ignore the Chinese market, despite the tough competition. That is why the Shanghai Auto Show in spring 2025 was once again a "must-attend" event for brands like VW. "We were the most visible brand at the entire show and showed the world that we have a solid plan for our largest and most important market," said VW Passenger Cars CEO Thomas Schäfer in an interview (see page 6).

Electric cars are at the center of growth both in Europe and in China

Decisive for success in China is the offering of electric cars. "I do not believe that Europe is lagging behind in the transition to electric vehicles – rather, the speed with which China has made progress in recent years may have surprised many," said Robin Zeng, founder and CEO of battery cell giant CATL, on the competitive situation (see page 7).

Background

The Chinese car market posted record growth in 2024. A total of 31.4 million vehicles were sold, including almost 12.9 million New Energy Vehicles (NEVs) – cars powered by electricity. China is by far the world's largest automotive market. In Europe, by comparison, 12.9 million vehicles of all powertrain types were newly registered in the same period. This makes the Chinese market more than twice the size of Europe's.

The new market power of Chinese manufacturers is leading to dynamic market changes. In 2024, the Chinese car companies BYD, Changan, and Nio recorded the highest global growth rates. BYD is now among the world's top ten automakers.

In Europe, however, the market shares of these manufacturers remain modest. BYD & Co. are still in the ramp-up phase, still at the starting point. On the "old continent", traditional European brands with long histories and strong recognition have so far managed to hold their ground.

"WE HAVE BIG PLANS!"

Volkswagen is stepping up its game in China with its core brand. Design and digital features are being tailored to local customer preferences. In Europe, however, VW remains firmly rooted at home, as Brand CEO Thomas Schäfer emphasizes in an interview.

Thomas Schäfer, CEO of the Volkswagen brand, is aware of the importance of Europe for the brand. Even though China offers many opportunities as an attractive growth environment, Schäfer is convinced of Europe as a production location and the heart of the group.

You have set the goal of making VW the world's technologically leading volume manufacturer by 2030 and you have a three-phase plan. What makes you so confident the plan will work?

That's right, the phases we're always talking about in our team are „advance up," „attack," and „achieve." We're already in the middle of the advance phase right now: In terms of roadmaps to the future, this is the biggest one in the history of Volkswagen, and we are delivering on it with all our might. Basically, it's about three things: First, building really good cars that our customers love in terms of quality, design, technology, and price. Second, putting the company on a solid financial footing for the long term. Solid means making enough money from selling our cars to finance our future-proofing investments ourselves. And third, showing that we can build cars competitively in Germany.

The European market is stagnating. What specifically are you doing to put the VW brand back on track for growth in Europe?

We have big plans! We are going to launch nine new models in Europe by 2027. One of my favorite projects will see us switching gears next year, going fully into attack mode: That's when we'll be launching the production version of our fully electric ID. 2all with entry-level prices around the 25,000-euro mark. It will be a real VW that is back to looking like a real VW, and it feels like a real VW.

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In Germany, factories are being consolidated and employees fear job losses, while at the same time you are investing billions in China and software. How do you explain that to employees here?

Changes like the ones we are currently implementing understandably cause a level of uncertainty. We take that very seriously. At the same time, the actions we're taking are out of responsibility for the company's future. More than 20,000 colleagues have already opted in to our voluntary programs such as partial retirement or voluntary redundancy, and all of it has been done in a socially responsible manner and without any compulsory redundancies. Our investments do not signify a move away from Germany as a business location but are the foundations we need to build in order to secure our technology leadership. Only by becoming more efficient today can we create future-proof products and jobs tomorrow.

Many of your suppliers are experiencing persistently low margins and capacity is underutilized. What position will Volkswagen take regarding the structurally necessary consolidation of your suppliers?

At Volkswagen, we are clearly committed to Europe – as a production location and as the heart of our supplier network. Of course, we recognize that some of our partners need to make structural adjustments. That is why we are focusing on long-range planning, transparent communications, and joint solutions to make our supply chains and our network fit for the future.

The vehicles you exhibited at the Shanghai Auto Show this year were very well received. There was a lot of talk here in Germany about them not looking like VWs anymore. Is VW reinventing itself in China and do we need to stop looking at it through European eyes? Which elements can you transfer to Europe?

Auto Shanghai was a huge success for us this year. We were the most visible brand across the entire show and demonstrated to the world that we have a solid plan for our biggest and most important market. The design of the show cars was developed locally by the local teams, guided by our head of design. They took our global design values of „stable," „likeable," and „exciting" and interpreted them in an individual way, adapted to regional needs.

Finally, what initiatives are needed from European legislators to ensure that the European automotive industry remains competitive?

If the transition to electric mobility is really going to succeed, we need to really work in collaboration with policymakers. The President of the EU Commission has initiated a strategic dialogue with Europe's automotive industry, and the Commission has presented its Automotive Action Plan. These were two important decisions that happened in the first half of the year. They make it clear that policymakers have understood the automotive industry's role as the lead industry on this. But we need prospects!

Thomas Schäfer

Thomas Schäfer is a member of the Volkswagen Group Board of Management and CEO of the Volkswagen brand. Born in 1970, Schäfer holds a degree in engineering and began his career at Daimler AG, where he held management positions in various areas in Germany and abroad. In 2012, the top manager moved to Volkswagen AG. After positions in Germany, South Africa, and the Czech Republic, he took on the role of Chief Executive Officer of the Volkswagen brand in the summer of 2022.

"EUROPE IS NOT FALLING BEHIND"

CATL founder and CEO Robin Zeng offers plenty of praise for Europe. He sees the region's automakers as strong contenders — but also points to the faster pace of innovation among Chinese companies.

CATL has been the world's number one with its EV battery cell systems for some time. In an effort to make a significant contribution to the energy transition, CATL founder Robin Zeng announced the strategic goal of achieving carbon neutrality in its core business by 2025 and across the entire battery supply chain by 2035.

How are you strategically positioning yourself in light of the current geopolitical tensions?

I am not in a position to comment on geopolitical tensions. We simply do business with partners who share our values. CATL's goal is to make high-quality technology accessible worldwide, contributing to international sustainability objectives rather than engaging in any politically related matters. In every market where we operate, CATL strictly complies with local laws and regulations.

How do you view the challenges but also the potential competitive advantages of European/German OEMs? What strategy would you recommend to them?

Europe has long pioneered global efforts to fight climate change and promote e-mobility and energy transition, and it remains one of the world's key hubs for the automotive industry and an important global vehicle consumption market.

I believe Europe is not lagging behind in the EV transition — rather, the speed of China's progress in recent years may have come as a surprise to many. It's understandable; the scale and pace of innovation in China has been extremely fast, even for us in the industry. However, European OEMs are still very strong players. They have deep technical expertise, strong brands, huge customer base globally, and the ability to adapt quickly. Once the initial shock wears off, I have no doubt that they will build very competitive models and bring their own strengths into the new era.

How do you view the expansion of Chinese OEMs into Europe?

Europe's automakers will bring their strengths into the new era

Every industry faces competition, and healthy competition is the key to driving sustainable development. Whether in domestic or international markets, innovation should remain the core driver of a company's competitiveness.

What are CATL's plans for building another manufacturing facility in Europe? Is Germany a possible location, or is Germany rather not an option?

Europe is one of our key strategic focuses. CATL is building three plants in the region — located in Germany, Hungary, and Spain, the latter in joint venture with Stellantis. We will consider further expanding our manufacturing footprint in Europe in response to market and customer demand, supporting the energy transition with our advanced technologies and high-quality products.

CATL has focused on technological leadership rather than price leadership in recent years. Will the company maintain this strategy or adapt to market developments and potentially adopt a more price-aggressive approach?

At CATL, we've always believed that technology is the core driver of sustainable growth. It is always about how much value we can bring to our customers.

We believe, when we talk about value, we shouldn't only look at the initial purchase price. What really matters is the cost per cycle — how much energy you can carry, how far you can drive, and how well the battery performs over its entire lifecycle. From that perspective, CATL delivers the highest value to our customers.

You want to introduce a unified battery standard. How far along are you on this path?

Standardization remains a core objective for us. Standardized battery systems offer enhanced flexibility across various automakers and vehicle models, creating significant profit potential while also contributing to a more efficient battery recycling process. The batteries we currently supply to our OEM customers are standardized primarily in terms of interface and form factor, while internal specifications — such as energy density and chemical composition — continue to evolve and improve.

CATL has developed two standardized Choco-Swap battery models, #20 and #25, analogous to #92 and #95 gasoline at gas stations. Our standard battery swap stations are compatible with vehicles featuring wheelbases ranging from 2.55 meters to 3.1 meters, and each station is equipped with 14 to 30 battery compartments. These stations deliver a 99.99% success rate for battery swap operations.

So far, CATL has launched 20 Choco-Swap models with 10 automakers. Looking ahead, we plan to engage with more automotive partners to broaden the range of Choco-Swap-compatible vehicle models and further drive the adoption of unified battery standards.

Robin Zeng

Dr. Robin Zeng is a Chinese battery expert and entrepreneur. He is the founder, chairman, and CEO of CATL, a global leader in new energy innovative technologies. Since the company's founding in 2011, CATL's mission has been to innovate to power people's lives with green power and efficient energy storage solutions. At CATL, Dr. Zeng and his team remain committed to innovations in the material and electrochemistry system, structure, extreme manufacturing, and business model.

THE RACE IS NOT YET LOST

Chinese companies impress with the speed of their development and execution of projects. With this, they aim to score points in Europe. Yet European firms hold an advantage: they bring with them a deep understanding of customers.

Western carmakers and suppliers have long competed with Chinese companies in China. But the situation is changing. The competition is now moving to their own doorstep, as geopolitical upheavals and the tariff policies of the Trump administration push Chinese firms to turn their focus to Western sales markets and to shift capacity, particularly to Europe.

Chinese companies and the Chinese government have invested heavily in technological development. Today, the country leads in 56 of 64 key technology areas, including artificial intelligence and quantum technologies. High-quality, globalized development has become a central strategic theme for Chinese firms, with goals such as global market coverage, building strong brands, and achieving innovation leadership.

The days when Chinese vehicles reached European or North American markets but failed to attract customers are over. Chinese manufacturers now have a much better sense of consumer preferences. In addition, both Chinese and American automakers compete with streamlined product portfolios. A wide variety of models, as offered by Western OEMs, is not typical for Chinese firms.

What's more, discussions in Chinese automakers about what a vehicle must deliver in order to appeal to a significant majority of customers are far more data-driven and pragmatic. There is a clear willingness to set priorities for vehicle functions, avoid unnecessary complexity, and ensure rapid market launch. Together with government subsidies, this has given Chinese companies a head start. The result: they develop faster and at lower cost than the former market leaders.

Chinese players develop 25 to 30 percent faster

Depending on segment and market, Chinese manufacturers bring vehicles to launch with 20 to 30 percent lower product costs than established competitors. For non-critical parts, they accept lower material quality, for example using single-sided instead of double-sided galvanized steel. They also place less emphasis on environmentally friendly materials. Lower energy prices, longer working hours, lower wages, and massive infrastructure investments further contribute to their cost advantage.

Chinese companies also develop 25 to 30 percent faster than their European rivals. While European OEMs need 52 to 60 months for vehicle development, a Chinese OEM manages it in less than 40 months. To save time, they rely heavily on carry-over parts, early supplier involvement, and parallel development processes.

Specifications are also handled with less effort than in Europe. Against this backdrop, the question arises: to what extent are European OEMs prepared to use off-the-shelf parts and components? Or will they, as in the past, commission their suppliers to develop parts to demanding specifications and only then integrate them into their vehicles?

Currently, some Chinese OEMs are approaching established suppliers of their European competitors, offering to keep their existing machinery and production lines running if they agree to supply components for the Chinese newcomers in Europe — provided they can keep up with their rapid development pace.

Even if Chinese firms cannot realize their cost and speed advantages in Europe to the full

extent, more than half of these benefits are likely to carry over. How much of the value chain they will ultimately localize in Europe remains an open question.

For established automakers, the threat in a shrinking European market is clear. For suppliers, however, the picture looks different. They, too, are under pressure to move closer to "China Speed" in terms of cost and development cycles. At the same time, they have the chance to win new customers in Europe. The risk, however, is that European OEMs may turn to Chinese suppliers if traditional players cannot meet the requirements for cost and speed.

There is no doubt: much remains to be done. The gap in costs and development speed must be closed. This requires significant effort and rapid implementation by European and Western manufacturers. For European OEMs, regaining competitiveness vis-à-vis their Chinese rivals is crucial. Only then can other factors, such as superior service, make a difference.

Three to five years left for Europeans to shorten development times

Large suppliers with existing sites in China clearly have an advantage in achieving "China Speed." Yet even for them, transferring these experiences back to Europe is no easy task. Mindsets and processes in Europe differ greatly from those in China. Companies must convince not just a handful but hundreds or even thousands of engineers, buyers, and other employees who are used to relying on processes and specifications built up over many years. It is a difficult endeavor — more akin to a marathon with intensive training than a sprint.

Despite all the challenges, there is reason for optimism for Europe's automotive industry. Companies benefit from their considerable expertise in manufacturing, and some are already working to combine these strengths with the demands of "China Speed." Still, too many players in the market are not moving in this direction, or not decisively enough. Without action, today's visible problems will only worsen.

European firms may have disadvantages in cost and speed, but they have advantages in understanding their customers. Developing, producing, and selling locally gives them a closer relationship to European consumers than Chinese competitors can claim. Yet this shield will weaken once Chinese automakers succeed in localizing their value chains — including R&D centers — in Europe. And that is only a matter of time. If European automakers have not closed the gap by then, they will face serious trouble.

For Europe's OEMs, it is therefore crucial to use the remaining time effectively. The next three to five years will be decisive in shortening development cycles.

RECOMMENDATIONS FOR ACTION:

European companies: Improve development time and product costs to compete on equal terms with Chinese automakers. Shorten development phases by using supplier platforms and maintaining high vertical integration for selected systems. Establish a holistic cost-out operating model from product development to final delivery.

Chinese companies: Better adapt to customer needs in non-Chinese markets.

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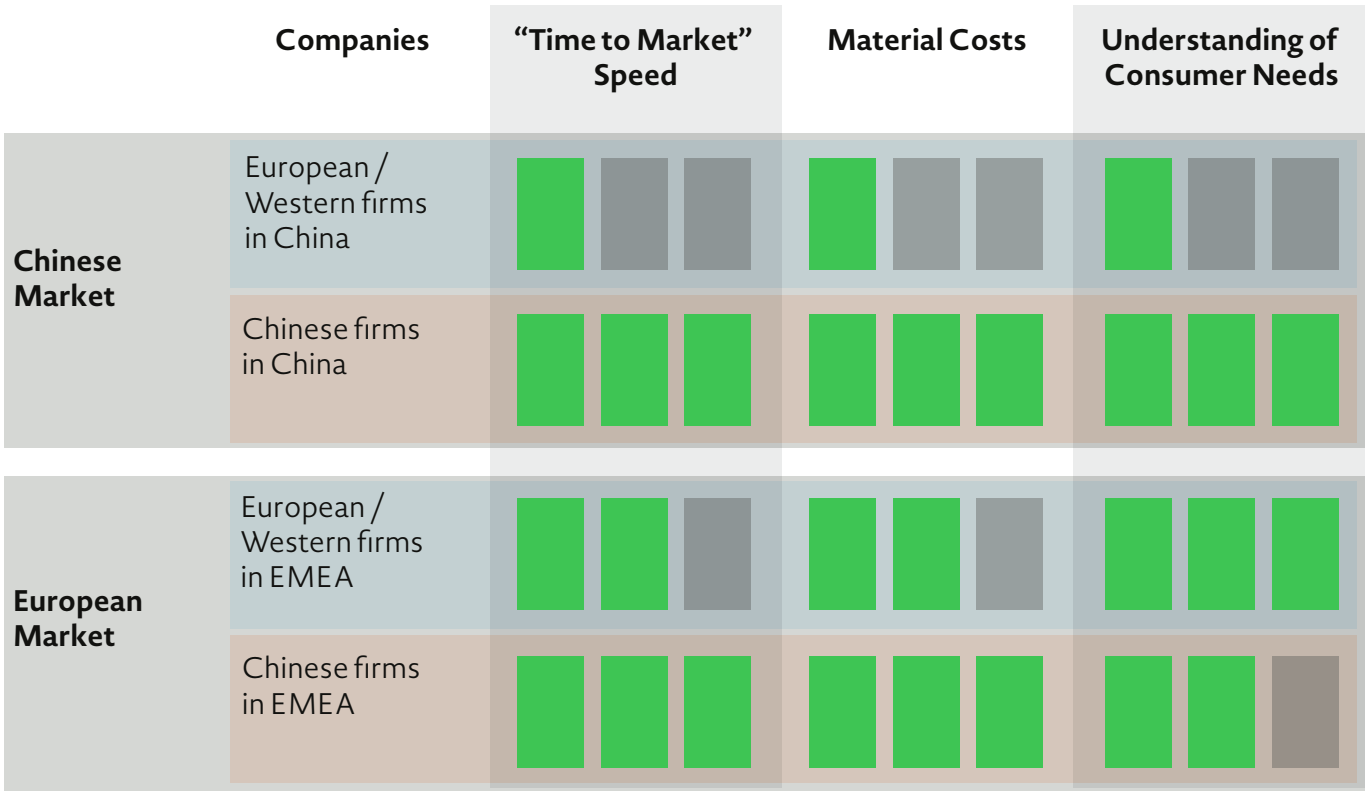
China vs. Europe

Speed and cost advantage meets customer proximity



Source: Roland Berger

DECOUPLED INTO THE FUTURE

Geopolitical tensions and protectionism are fostering the emergence of separate ecosystems in individual regions. Artificial intelligence and venture capital are fueling a new boom in autonomous driving.

Autonomous driving is gaining momentum again after the hype of 2018 and 2019 had initially subsided. But interest is not equally strong in all countries and world regions, as ADR 14 shows. The semi-annual study analyzes current market trends and highlights disruptive changes in the global automotive industry (see "Background").

China leads the ranking in autonomous driving with 87 points, followed by South Korea (83 points) and the Netherlands (78 points). China's strong position is based above all on significant advances in technology and infrastructure. The country is thereby underlining its global leadership in key areas of electric and autonomous mobility — trends that Chinese consumers are embracing with great interest.

Germany maintained its position in the ranking with 74 points, placing it among the leading group. Efficient and fast type approval procedures for autonomous technologies, strong patent activity, and its qualities as a globally recognized, export-oriented OEM nation contributed to this consistent result.

Germany remains in the leading group of countries in autonomous driving

At the lower end of the ranking, several countries have lost momentum since ADR 13. In the United States (65 points), indicators show a downward trend in consumer interest in new mobility concepts or shared mobility services, particularly outside the country's technological epicenters.

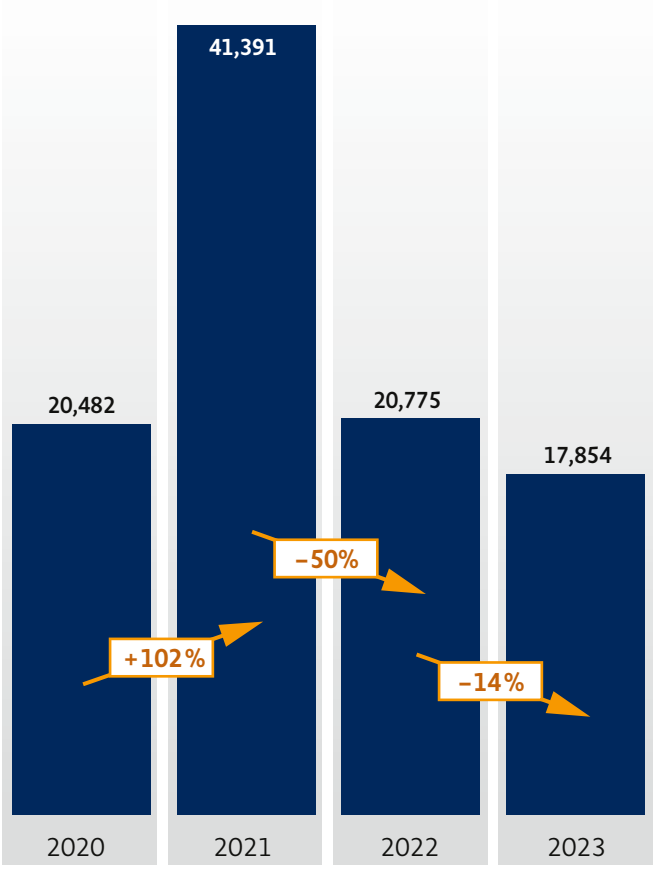
Another key finding of ADR 14 is that technological progress in autonomous driving is outpacing consumer interest. Consumer interest has stagnated since ADR 13, and in particular in core markets such as Germany, Japan and the United States demand remains subdued. In contrast, Chinese customers continue to be enthusiastic about autonomous driving and its technological development.

Technological development is progressing much more dynamically than consumer interest

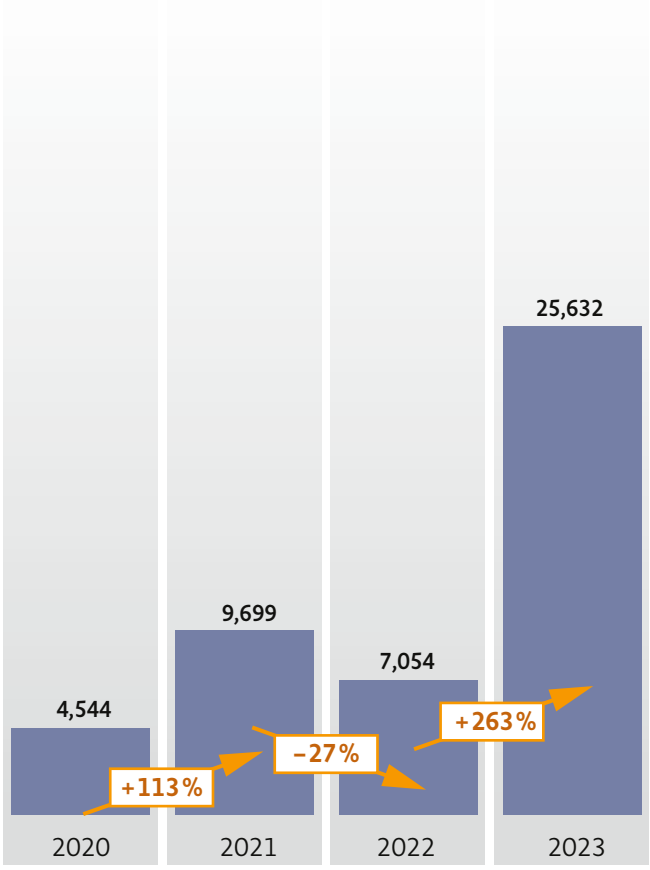
Background

The semi-annual ADR (Automotive Disruption Radar) analyzes current market trends and highlights disruptive changes in the global automotive industry in 22 countries. The ADR was conducted for the first time in January 2017 in order to systematically examine and present the speed of transformation in the automotive industry. The global surveys of around 1,000 people per country are based on 26 key indicators, which were revised again for the 14th edition of ADR to reflect developments in even greater detail and currency.

Venture capital investments in Artificial Intelligence
(in USD million since 2016)



Venture capital investments in Mobility
(in USD million since 2016)



Source: Roland Berger

in Western countries. In recent months, substantial advances have been made in autonomous driving. The rapid development of artificial intelligence in particular has sharply increased venture capital investment in autonomous driving technologies. At the same time, indicators for patent activity have risen sharply.

China in particular is driving forward the development of autonomous driving technologies. The importance of advanced driver assistance systems (ADAS) for Chinese customers is demonstrated by the fact that automaker BYD is even equipping small cars as standard with the "God's Eye" system. This provides semi-automated Level 2+ capabilities. It is designed as part of BYD's "DiPilot" driver assistance platform and is intended to ensure comprehensive and intelligent monitoring of the vehicle environment.

But activities in the field of autonomous driving functions are also increasing dynamically in Western markets: in the United States, Waymo dominates the robotaxi segment as a pioneer, with a fleet expected to grow from around 700 vehicles in 2023 to more than 1,500 in 2025 and 3,500 vehicles in 2026. Technologically, Waymo relies on a complex sensor combination of lidar, radar and cameras — the current gold standard. The EV manufacturer Tesla, on the other hand, pursues an AI-supported, camera-based approach. The US electric carmaker Lucid Motors, together with the ride-hailing service Uber and American technology partner Nuro, plans to bring up to 20,000 autonomous vehicles of its Gravity model to market over the next six years.

In the United States, Europe, China, and Japan/Korea, separate ecosystems are emerging

In Germany, activities are currently focused above all on the automakers BMW and Mercedes-Benz, which are offering Level 3 systems (highly automated driving) as premium features in their home market. Initial robotaxi pilot projects, such as that of VW subsidiary Moia in Hamburg, continue to operate with safety drivers — in contrast to the driverless robotaxi services of Apollo or Waymo.

Another key finding of the ADR 14 survey is the regionalization of the automotive industry and the emergence of several ecosystems. This is leading, among other things, to decoupled software-specific solutions — one for China, one for North America, and one for Europe. Successful automakers therefore need excellent integration capabilities and a broad partner network with access to the relevant technologies.

For Chinese automakers, it is strategically sensible to expand their dominant position in the domestic market. One of their advantages is that they have the best access to the local technology ecosystem. It is therefore more promising for them to focus on gaining market share at home than to, for example, enter the European market and face the highest customer requirements and regulatory standards. A prerequisite for further positive development, however, is that measures against ruinous price competition in China take effect.

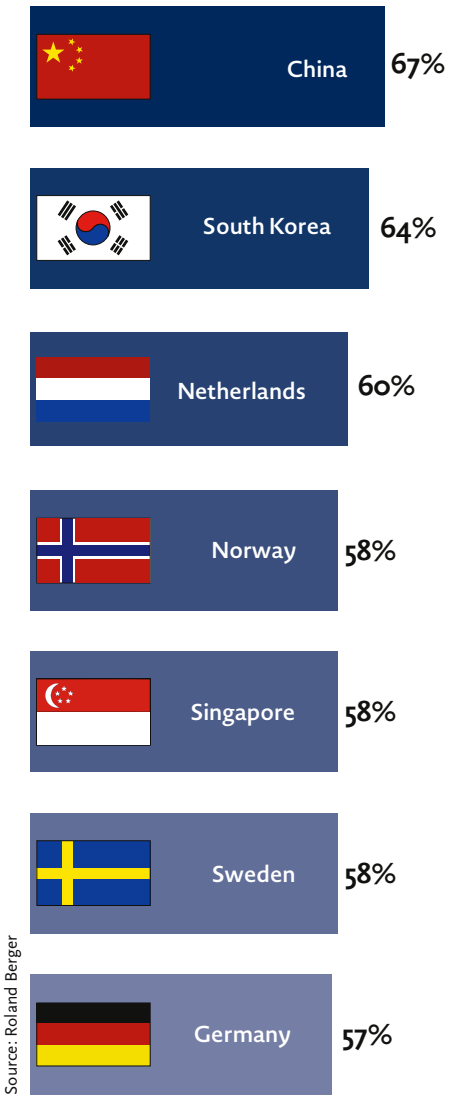
Geopolitical tensions and protectionist economic policies are fostering the emergence of separate ecosystems in the United States, Europe, China, and Japan/South Korea. The restrictive measures in the US are aimed at limiting growth to domestic automakers or those producing locally. Export-oriented Chinese automakers will be hit particularly hard by these trade barriers. This will inevitably have consequences for the European markets, as Chinese automakers such as SAIC Motor (with the MG brand), Geely, BYD and Chery (with the Jaecoo and Omoda brands) focus their activities and are increasingly gaining market share in Europe. In their domestic market, however, they remain clearly dominant. The success of European automakers will depend crucially on whether Chinese customers find their product and price offerings attractive.

To mitigate the consequences of regional decoupling, regionally adapted joint ventures are a suitable approach — for example between Volkswagen and Xpeng or between Toyota and Tencent. With these partnerships, non-Chinese automakers can also meet customer requirements and standards in China without fragmenting their global activities too much.

To deal successfully with technological divergences, OEMs should pursue a dual-track approach: software, cybersecurity and data services should be developed separately for China and the rest of the world, while hardware and base architectures should be shared as far as possible in order to reduce costs and avoid duplication.

Despite the rapid pace of development in China and its ambition to become a global leader in key technologies such as autonomous driving, there is no reason for Western companies to despair. The solution does not lie in paralysis. Rather, Western companies should learn to develop competitive products specifically for the Chinese market, and take inspiration from there. Neither German and European nor American automakers and suppliers should be written off prematurely.

Country Ranking ADR 14: Top 7



Source: Roland Berger

RECOMMENDATIONS FOR ACTION:

Regionally adapted joint ventures to give Western automakers the opportunity to meet customer requirements and standards in China without fragmenting global activities too much.

Automakers should pursue a dual-track technology strategy for software, cybersecurity and data services, developing them separately for China and the rest of the world. In this way, they can deal more successfully with technological divergences.

Attractive product and price offerings from European automakers for Chinese customers.

A broad partner network with access to the relevant technologies.

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