Allianz Research

Automotive industry unplugged?

What to watch: perceived vs. actual inflation, Alpine inflation divergence and recession signals from capital markets

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What to watch

- **In the eye of the beholder** – perceived vs. actual inflation in the Eurozone
- **Alpine divergence** – inflation differentials in German-speaking Europe
- **Mixed feelings** – why equity and bond markets give different signals about the probability of a recession in the US

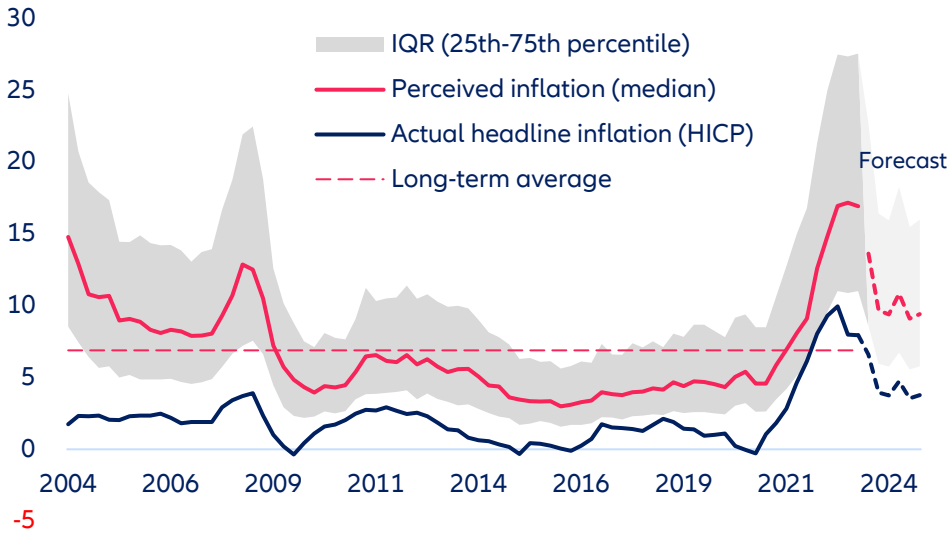
In focus – Automotive industry unplugged? Accelerating car registrations and Chinese competition

- **New car registrations in Europe are accelerating but remain in the slow lane as the market consolidates.** New car registrations for May were up by +17% y/y to 780,000 units. However, year-to-date registrations are still -26% below their 2019 levels. The passenger-car market share of the top three carmakers has increased to 53% this year (up from 45% in 2015) amid higher concentration (with the Herfindahl-Hirschman Index climbing by 20%). We anticipate registrations in Europe's top five markets to bounce back by +8% in 2023.
- **China-made vehicles make further inroads.** Three made-in-China battery-electric vehicles have been some of the category's best-selling models year-to-date, bringing the share of Chinese imports to about 3-4% of total registrations (compared to virtually zero in 2019). Europe's automotive trade surplus with China has shrunk by two-thirds within just a few years.
- **M&As are unlikely to help European carmakers defend market share against Chinese competitors.** Major moves would come under close antitrust scrutiny and smaller moves would not affect current competition from abroad. We expect carmakers (and their suppliers) to pool resources into cash-consuming activities, especially electric-battery manufacturing to increase scale in critical activities with a lower likelihood of antitrust scrutiny. Because battery-electric vehicles are faster to assemble and require less labor, carmakers could consolidate production using fewer platforms and factories. Together with the end of internal combustion engine technologies, this adaptation to the economics of battery-electric vehicle manufacturing could reshape automotive production in Europe.

In the eye of the beholder – perceived vs. actual inflation in the Eurozone

Since Russia's invasion of Ukraine, the gap between perceived and actual inflation has widened to a near record of more than 9pps due to the rapid rise in energy and food prices. While the perception of inflation rates tends to be generally higher than the officially measured rates, current inflation dynamics have increased the gap between perceived and actual inflation and amplified its effect on inflation expectations. While headline inflation (HIPC) dropped to 6.1% y/y in May, perceived inflation was almost three times as high (at 16.9% y/y). Perceived inflation has also been more pronounced in Eurozone countries with historically low inflation, such as Germany.

Figure 1: Eurozone: actual vs. perceived inflation (historical and forecast) (%)



Sources: ECB, Refinitiv Datastream, Allianz Research. Note: IQR=inter-quartile range (75th percentile to 25th percentile)

We expect perceived inflation to remain than double the rate of actual inflation (5.6% y/y in 2023), and structurally above the historical average of 6.8%, with persistent uncertainty over the medium term. The growing disconnect of perceived inflation is similar to that observed during the run-up to the global financial crisis (GFC) when rising asset and real estate prices pushed up overall price levels. However, there is also an important difference – the large share of households experiencing inflation to be higher for longer suggests that perceived inflation has become stickier (Figure 2). Thus, households will take longer to adjust their inflation expectations, which could impact the ECB's capacity to keep high inflation from becoming embedded in the economy (Figure 3).

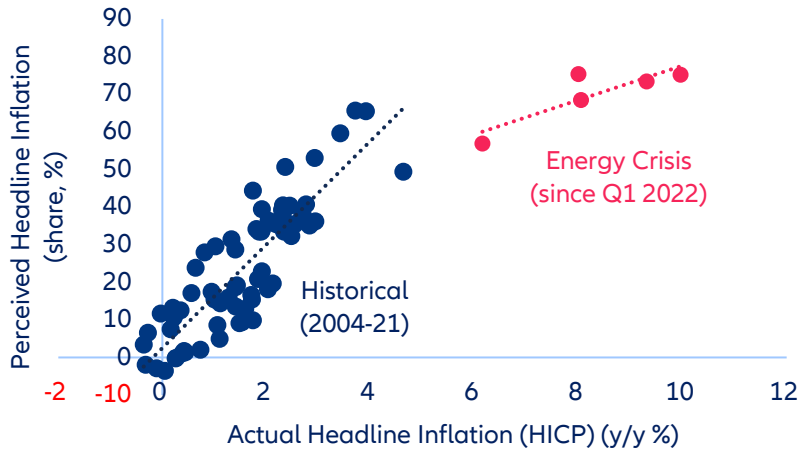
While official statistics provide a standardized framework for assessing inflation, several factors contribute to the perceived inflation being higher than the reported figures of actual inflation:

- *Frequency bias:* Consumers pay more attention to the change in prices for out-of-pocket purchases that occur frequently, such as convenience food and beverages, fuel and grocery errands. If these prices have increased above average, individuals tend to extrapolate a higher perceived inflation and overestimate actual inflation. Conversely, price changes of goods and services, which are purchased less frequently (such as cars and furniture) or occur automatically (via direct debits), such as rent payments, subscriptions or insurance fees, are likely to weigh less on our perceptions of the inflation rate.
- *Personal consumption bias:* Individuals tend to have unique consumption patterns and preferences. If the prices of the goods and services they primarily consume increase at a faster rate than the overall inflation rate, they may perceive inflation to be higher. People tend to focus more

on the prices of essential items such as housing, healthcare or education, which have experienced substantial cost increases in recent years.

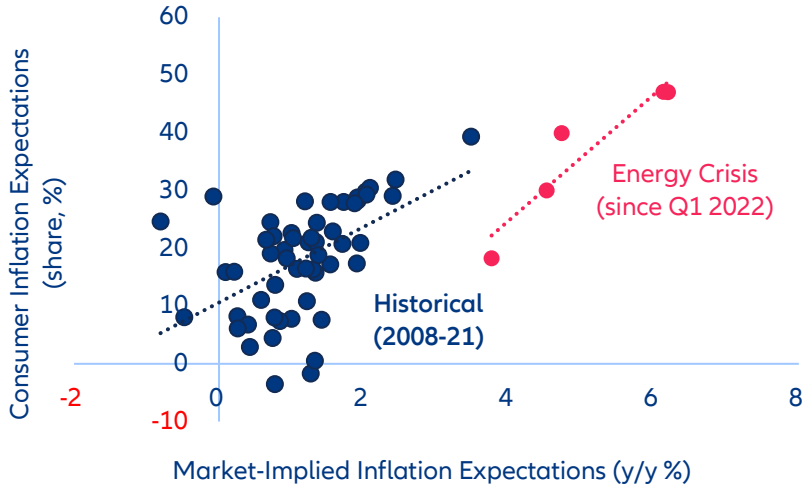
- *Perception bias and anchoring:* Psychological factors can influence how individuals interpret and remember price changes and create cognitive bias. People tend to focus on significant and/or more recent price increases or memorable instances of price inflation, which can contribute to the perception of higher inflation rates. Conversely, stable or declining prices tend not to be noticed but are included in the calculation of the average inflation rate.
- *Regional and demographic variations:* Inflation rates can vary across regions, cities or even neighborhoods. Official measurements rely on national or regional averages, which may not accurately reflect the situation at a micro level. Individuals residing in areas with a higher cost of living or experiencing local supply shocks may perceive inflation to be higher than what is reported nationally.
- *Substitution bias:* The official inflation rate is calculated based on a fixed basket of goods and services. However, as prices fluctuate, consumers often substitute their purchases for more affordable alternatives. This substitution bias is not fully accounted for in official measurements. As a result, individuals who observe substantial price increases in their preferred goods or services may perceive higher inflation rates.
- *Quality adjustments:* The quality of goods and services can change over time, making direct price comparisons difficult. Official statistics attempt to adjust for quality improvements, but these adjustments may not always capture the true impact on individual experiences. If consumers perceive a decline in quality or reduction in features while prices remain constant or increase, they may perceive inflation to be higher.
- *Limitations of official inflation measures:* Official inflation measurements focus on consumer goods and services and often exclude asset prices such as the cost of shelter. Since real estate prices and rents have increased significantly in recent years, individuals may perceive inflation to be higher due to rising costs that actual inflation does not capture by design. In addition, inflation is not immediately felt by individuals as it takes time for price changes to trickle down through supply chains. By the time the effects of inflation become apparent, the official measurements may not fully reflect the current situation. This lag between price changes and official reporting can contribute to the perception of higher inflation rates.

Figure 2: Eurozone: actual vs. perceived inflation (2004-23) (%)



Sources: European Commission, Refinitiv Datastream, Allianz Research

Figure 3: Eurozone: consumer vs. market-implied inflation expectations (%)



Sources: European Commission, Refinitiv Datastream, Allianz Research

The gap between perceived and actual inflation matters for insurance companies. It can significantly impact risk assessments, profitability and customer behavior. Insurers rely on accurate inflation data to calculate premiums and manage their liabilities effectively. If perceived inflation deviates significantly from actual inflation, it can lead to a mispricing of insurance products and inadequate reserves. Therefore, insurers need to closely monitor the gap between perceived and actual inflation to mitigate risks and ensure sound financial management.

It also matters for the ECB. The gap between perceived and actual inflation serves as a vital barometer of public sentiment and consumer expectations. When people perceive inflation to be higher than the official figures, it can influence their behavior, leading to adjustments in consumption, investment decisions and savings habits. A deeper understanding and acknowledgment of the large difference between perceived and actual inflation informs better decisions on the evolving policy rate path. Our projection of a large gap until the end of next year (Figure 1) confirms our above-consensus expectation that the ECB will maintain its restrictive monetary stance until September, with three more 25bps rate hikes at the next three meetings of the Governing Council until September to reach a terminal rate of 4.0% for ECB deposits (which is the effective policy rate).

Reconciling perceived and actual inflation requires proactive measures to enhance communication, accuracy and transparency. Some possible measures include:

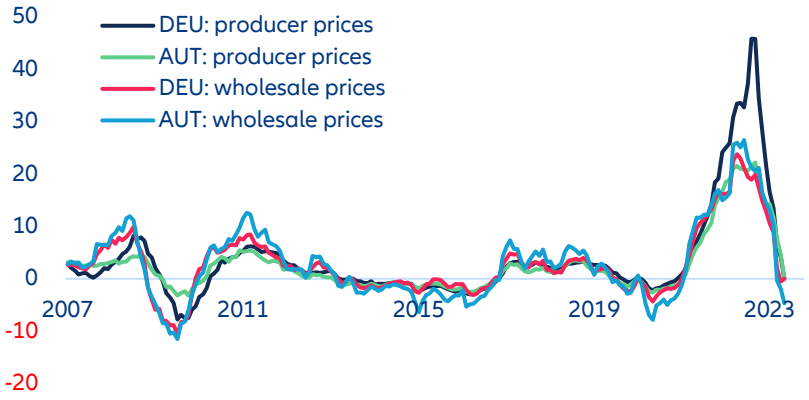
- *Financial literacy and "authenticity":* Educating the public about how inflation is measured and its impact on daily lives can help align perceptions with official measurements. This could also be combined with efforts aimed at developing consumer price indices that reflect the specific consumption patterns of different demographic groups or regions. This can bridge the gap between the generic basket of goods used in official measurements and individual experiences.
- *Enhanced data collection and transparent reporting:* Statistical agencies at the national and European levels can improve data-collection methods to capture real-time price changes accurately to reduce latency and incompleteness. Incorporating technological advancements, such as big data analytics and online price monitoring, can enhance the accuracy and timeliness of inflation measurements. This also includes more surveys to gauge consumer perceptions of inflation, identify discrepancies and understand the reasons behind the gaps. Some national statistical agencies should also provide clear and accessible explanations of their inflation measurement methodologies, including the factors considered, sample sizes and frequency of updates.

Alpine divergence – inflation differentials in German-speaking Europe

Inflation rates vary across the Eurozone. While inflation rates have fallen over the recent months to slightly more than 6% in May, they vary a lot across countries – from 2.8% in Greece to more than 11.0% in the Baltics as of May. Germany is not only geographically in the middle of Europe but also in the middle of the pack at 6.1%, while Austria struggles with 8.8%. However, Switzerland – one of the two countries' largest trading partners, albeit not a member of the EU nor the Eurozone – records very low inflation (2.2%).

What explains the gap? Geographic proximity to Russia, dependence on energy and food imports, government intervention to lower individual prices and currency strength. In Germany, all these factors conspire to keep inflation high. The embargo on cheap energy imports from Russia caused the energy bill to rise sharply at the onset of the war in Ukraine. The German government counteracted this with expensive price breaks and subsidies. In the Eurozone overall, a weak euro has increased inflation by raising the cost of dollar-denominated commodities such as oil or gas. More recently, however, Germany has benefited from the stronger euro due to the ECB's interest rate hikes. Producer and wholesale prices have thus fallen since fall 2022, which has eased inflation with a lag (Figure 4).

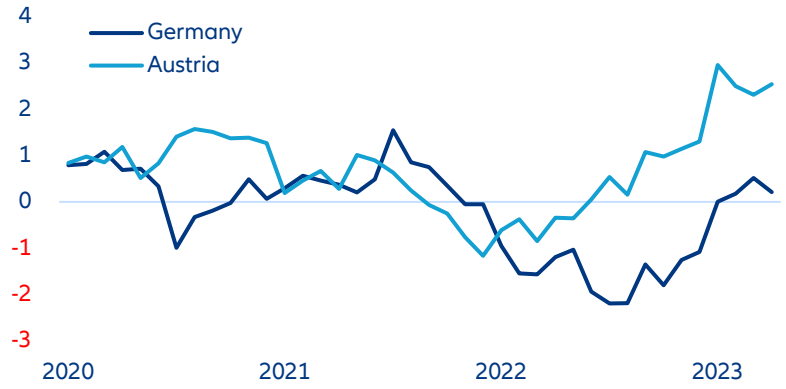
Figure 4: German and Austrian producer and wholesale prices (2007-2023, y/y %)



Sources: Refinitiv Datastream, Allianz Research

Austria generally tends to have somewhat higher inflation than its larger neighbour. Since the mid-1990s and until 2007, Austria's inflation rate was on average a quarter of a percentage point higher than that of Germany. After that, it was even close to half a percentage point. Even though inflation in Austria was lower than in Germany in the second half of 2021, inflation rates have begun to converge. However, given the still high inflation in both countries, the gap remains at about 2pps. This is also true for Austria relative to the Eurozone at large. During the initial phase of the energy crisis, the differential was negative, but before that it had been positive for years (Figure 5).

Figure 5: Inflation differential between Germany-Eurozone and Austria-Eurozone (pp)



Sources: Refinitiv Datastream, Allianz Research

Differences in the basket of goods partially explain higher inflation in Austria. The country's economy depends heavily on a strong tourism sector where investments in higher quality have recently led to a sharp increase in prices. As the tourism sector has almost three times the weight in the basket of harmonized consumer prices in Austria compared to Germany, price changes in the sector have a higher bearing on inflation rates. The difference also persists in terms of government support measures. German fuel rebates in the summer of 2022 significantly reduced energy taxes by up to 20%. In addition, the introduction of the EUR9 ticket for local public transport (which was followed by the EUR49 ticket in May) further dampened inflation. While both countries temporarily reduced VAT in the summer of 2020, the revenue measure lasted a year longer in Austria (until the end of 2021). While the relief was higher with -8pps in Austria, it was applied only to selected sectors. The reduction was less (-3pps) but the VAT cut virtually covered the entire consumer basket. The reversal of the VAT cut led to steeper price increases in respective sectors in Austria with inflation in full swing by the end of 2021.

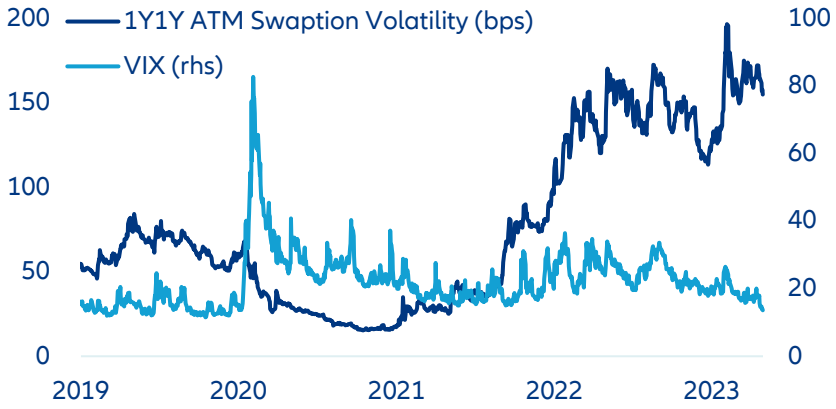
Meanwhile, in Switzerland, a strong currency and energy independence have kept inflation in check. The country is a special case in many respects. Although inflation reached a 30-year high of 3.5% in August 2022, the absolute change in prices was small compared to that of Austria and Germany. In May 2023, inflation fell to 2.2%. The strong Swiss franc (also thanks to FX interventions by the Swiss National Bank) dampened inflation via lower import prices and different consumption structures due to higher income levels in Switzerland. Moreover, although foodstuffs account for 12.6% in the basket of goods in both Switzerland and Germany, Switzerland imports less and operates a variable tariff-reduction model. As a result, Swiss households were more insulated from the surge in global food prices. Similarly, the country is largely self-sufficient in electricity due to large hydroelectric and nuclear power capacity. Energy also accounts for only 5% of the basket of goods in Switzerland, compared to 12% in Germany. Hence, higher energy prices had a lower impact in Switzerland.

Going forward, inflation dynamics in all three countries suggest a gradual cooling but some structural measures could help hasten the pace of normalization. A greater push for the green transformation in Austria and German could reduce volatility in energy prices as cheap gas imports from Russia have de facto stopped permanently. In addition, Austria in particularly needs an active stabilization policy to once and for all get rid of the persistent inflation differential to the Eurozone. As for a broader measure, taking Switzerland as an example, the EU could implement a variable tariff-reduction model, particularly for foodstuffs.

Mixed feelings – why equity and bond markets give different signals about the probability of a recession in the US

Ahead of the next round of central bank meetings, the fear of a recession in the US is fading with every passing day. Strong job market data and robust consumer spending fueled a rally in equity markets, with the S&P500 up by more than +15% since the beginning of the year. Simultaneously, the VIX, a measure of 30-day expected volatility in the US stock market, has dropped to pre-pandemic lows[1]. However, the yield-curve inversion, which serves as a signal of impending recessions, has persisted for over a year.The volatility of short-term interest rate swaps also remains high and does not show any easing even after the resolution of the debt-ceiling stand-off in the US (Figure 6).

Figure 6: USD rates-implied swaption volatility vs. equity market volatility (VIX)

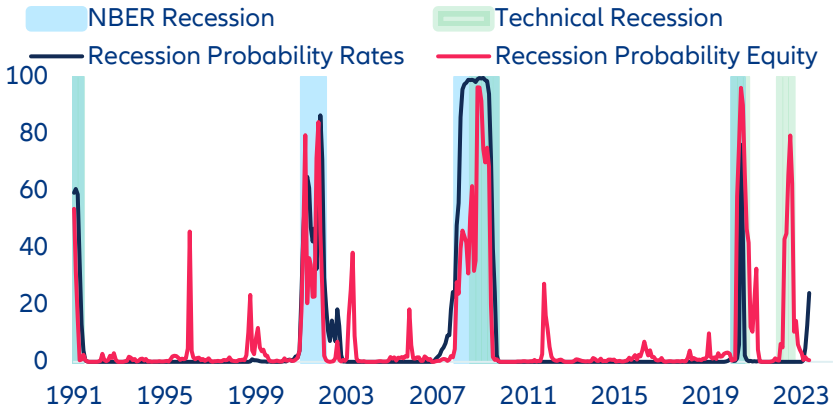


Sources: Refinitiv Datastream, US Federal Reserve, Allianz Research

Rates imply a much higher recession probability than equity markets. This divergence is confirmed by a pair of logistic regression models we developed on timeseries between the end of 1990 and today (Figure 7). Both models predict the probability of US recession but differ in the input data used, leaning more towards equities or rates[2]. The results indicate that after a spike in recession probability following the Ukraine invasion, equity markets currently price no recession risk at all. In contrast, the rates model did not react much during the turmoil of 2022 but shows a steep increase since the end of January 2023, leading to a recession probability of around 25% for the end of May.

[1] *The same holds true for related longer-term products like the CBOE S&P 500 1-Year Volatility Index.*
[2] *The rates model uses average weekly hours, ISM new orders, curve steepness and the realized volatility of short-term US Treasuries as inputs. The equity model also includes average weekly hours and ISM new orders with the rates model but substitutes the curve steepness and fixed income volatility with equity volatility (VIX) and consumer expectations.*

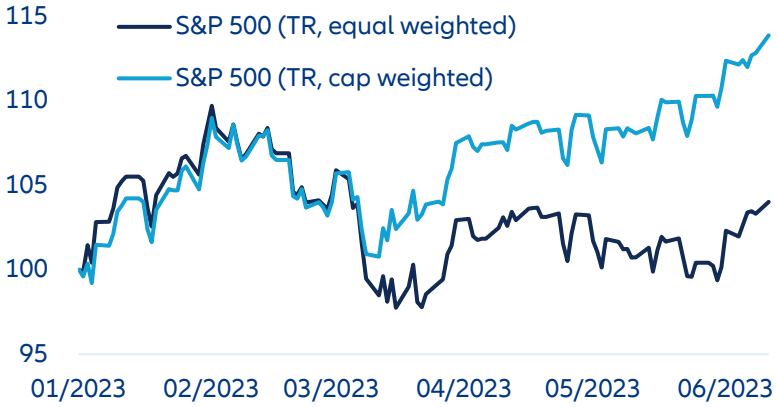
Figure 7: US recession probability



Sources: Refinitiv Datastream, Allianz Research

So which market is right on the chances of a US recession? We lean towards rates as repricing in inflation expectations and increased issuance / supply of US Treasuries are likely to keep higher for longer. Especially the latter could drive rates even higher in the short term, draining deposits from the banking sector and further tightening lending conditions. This would primarily impact smaller businesses in the equity market that are not experiencing the full upswing we observed so far this year as most of the S&P500 gains are driven by a few heavily capitalized technology giants (Figure 8).

Figure 8: Equally-weighted vs. market capitalization-weighted S&P 500 performance (YTD, indexed at 100)



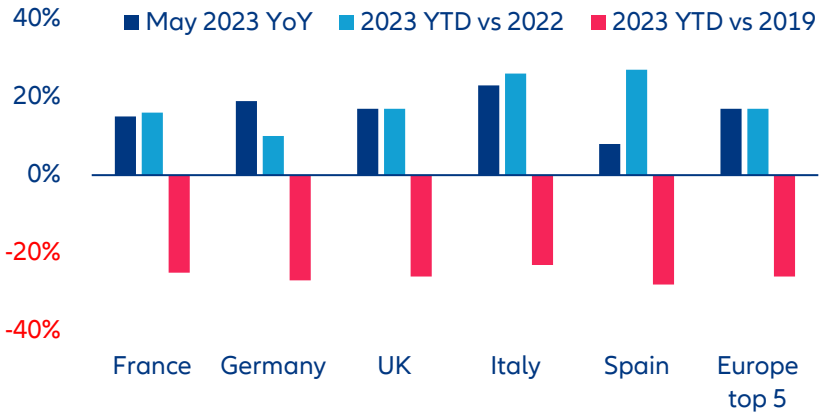
Sources: Refinitiv Datastream, Allianz Research

In focus – Automotive industry unplugged? Accelerating car registrations and Chinese competition

New car registrations are accelerating in Europe but remain in the slow lane. New car registrations in May were robust in Europe's top markets, growing by a combined +17% y/y to 780,000 units and marking the tenth consecutive month of sales growth. Breaking down results by country, we find that Italy led the pack (+23%) ahead of Germany (+19%), the UK (+17%), France (+15%) and Spain (+8%). Rising car registrations primarily reflect a recovery in car production after more than two years marked by massive disruption caused by semiconductor shortages. However, the situation has hardly normalized: 2023 year-to-date registrations are still -26% below their 2019 levels (Figure 9). Durably depressed automotive production is felt very differently along the supply chain: While carmakers and top automotive suppliers

managed to preserve their profitability, thanks to a more profitable product mix and higher prices, this has not been the case for smaller suppliers reliant on volumes.

Figure 9: Car registrations in top European markets (%)



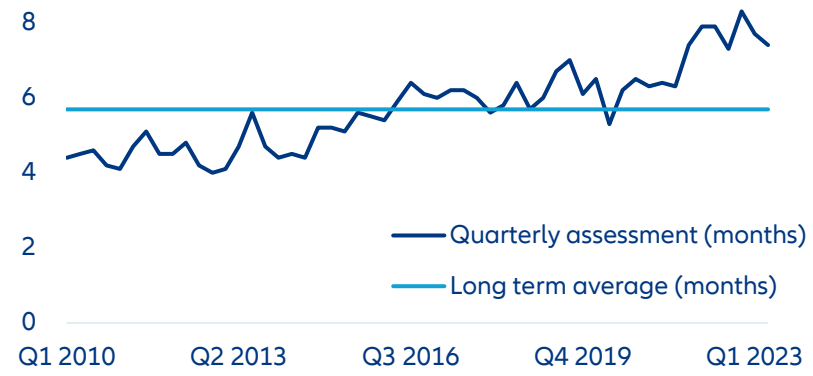
Sources: KBA, PFA, SMMT, ANFIA, ANFAC, Allianz Research

While we anticipate registrations to continue edging higher by the end of the year, we believe 2019 levels are nowhere in sight and the European market is in for durably lower activity levels:

- On the demand side, the cost-of-living crisis combined with higher interest rates and the general increase in new car prices have driven a significant share of potential customers out of the market. The purchase of personal vehicles is the largest single item out of the durable goods aggregate in Europe (50%), and a significant contributor to the wider household consumption aggregate (4%).
- On the supply side, carmakers have been particularly successful at coping with lower demand by focusing production on their most profitable models and passing broad price increases onto customers. With orderbooks equivalent to more than seven months worth of production but new orders returning to their long-term average, carmakers are looking to keep production to an optimum of high-margin vehicles and low inventory levels (Figure 10).

Factoring in a continuous but careful recovery in production and a tougher comparison basis in the second half of the year, we anticipate car registrations in Europe's top five markets to bounce by back +8% in 2023.

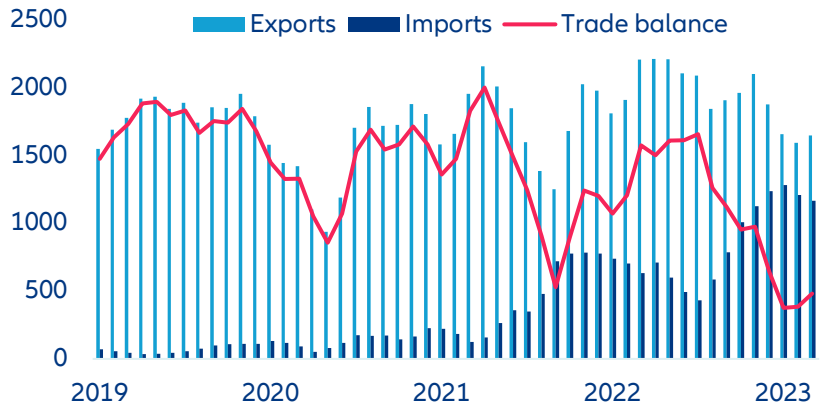
Figure 10: Duration of production assured by current order-book levels (months)



Sources: Eurostat, Allianz Research

Hectic competition for electric vehicles. Meanwhile, the share of battery-electric vehicles (BEVs) will continue to grow and could reach 15% of all passenger-car sales as dominant carmakers race to launch new models and BEV specialists respond by aggressively cutting prices. As outlined in our recent report3, the shift to electric vehicles in Europe is an unprecedented export opportunity for the Chinese automotive industry, which boasts the largest and most integrated electric vehicle ecosystem in the world. Year-to-date registrations in Europe show the trend is consolidating, with three made-in-China BEVs among the category's best-selling models and the share of Chinese imports climbing to an estimated 3-4% of all car registrations, compared to virtually zero a few years ago. The rising competitiveness of Chinese carmakers is best reflected in Europe's bilateral car trade with China, whose surplus has considerably shrunk on the back of booming imports (Figure 11).

Figure 11: EU automotive trade balance with China (EUR mn)



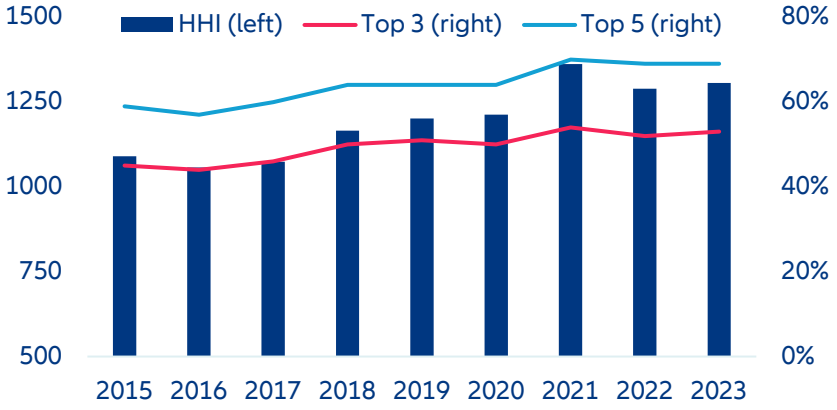
Sources: Eurostat, Allianz Research

Chinese competition will shake up a market that has significantly consolidated in recent years. The commercial ramp-up of BYD, "the Tesla of China", will no doubt further shake up Europe's car industry. Using registration data for the European market, we compute market shares over time to track changes in three of the most-used proxies for industry concentration: the CR3, CR5 and Herfindahl-Hirschman Index[4] (Figure 12). We observe that the top three carmakers (CR3) have gone up from 45% to 53% of all passenger-car registrations between 2015 and 2023, and the top five carmakers (CR5) from 59% to 69%, while the Herfindahl-Hirschman Index climbed from 1,090 to 1,306 (a +20% increase).

[3] *See The Chinese Challenge to the European Automotive Industry, May 2023*

[4] *The CR3 (concentration ratio) sums the market shares of top three competitors and the CR5 of top five competitors. The Herfindahl-Hirschman Index is the sum of the squared market shares of the competitors. An index comprised between 1,000 and 2,000 suggests a moderately concentrated market for which possible mergers and acquisitions typically require antitrust scrutiny if they contribute to increase the HHI by 250 points.*

Figure 12: Concentration ratios and Herfindahl-Hirschman Index (HHI) in Europe's passenger-car market



Sources: ACEA, Allianz Research

The consolidation of the car industry has gathered pace over the last decade, including a larger merger of France and Italian car manufacturers. Consolidation has also been the outcome of competition, with smaller brands seeing their share falling further and top brands increasing their leads. Higher concentration has been instrumental in improving industry profitability, allowing carmakers to spread their fixed costs over a greater number of models, built using a reduced number of platforms, in factories whose capacity-utilization rates have improved, thanks to the elimination of underperforming sites. It has also improved industry discipline and most likely facilitated the general increase in prices observed since the second half of 2021

Could M&As help European carmakers fend off Chinese competition? Achieving strong volumes of battery-electric vehicles will be crucial for the profitability of European carmakers. Because China boasts both a wider domestic market and a higher penetration of BEVs, the country sells three times as many BEVs as Europe, giving domestic manufacturers a significant scale advantage over their foreign competitors. While accelerated consolidation among carmakers present in Europe would help them to scale up faster, we find the possibility of a new wave of M&As in the European market unlikely:

- First, the market shares of dominant European carmakers are so high that any deal involving two European firms would trigger close antitrust scrutiny. Rather than considering the entire European market, European authorities would most likely narrow down their analysis to what they call "relevant markets" that include a geographic dimension. Because most cars are purchased within the buyer's country of residence, market shares would be computed at national levels, where they are considerably higher than the European average. For example, in France, the CR3 stands at 68%, the CR5 at 80% and the HHI at 1,906.
- Second, competitive foreign automotive groups operating in Europe have considerable scale globally and would be very unlikely to divest from Europe. At the same time, smaller players have little to offer since they mostly operate with an asset-light business model in Europe, relying on exports from other regions.

Carmakers will have to find efficiencies elsewhere. In the face of a very mature market and rising Chinese competition, carmakers will have to use different options to maintain their profitability:

- *Driving smaller players out of the European market.* We believe the additional competitive pressure from Chinese players could be the last straw for foreign brands with limited volumes that are also late in the BEV race. Excluding Chinese players, groups with a market share inferior to 2% have a combined market share of around 6%.

- *Developing new horizontal and vertical partnerships to pool resources into cash-consuming activities, especially electric-battery manufacturing*. Joining forces would help carmakers increase scale in critical activities with a lower likelihood of antitrust scrutiny.
- *Consolidating production further around a reduced number of platforms and factories.* Because battery-electric vehicles use considerably simpler powertrains, they are faster to assemble and require less labor – a 40% difference compared to internal combustion engine (ICE) vehicles, according to Ford's CEO Jim Farley. Carmakers could consequently reach similar production volumes while operating a reduced number of production lines and employing less workers. Combined with the planned decline of ICE technologies, this adaptation to the economics of battery-electric vehicle manufacturing could reshape the geography of European automotive production at local, national and regional levels.

These assessments are, as always, subject to the disclaimer provided below.

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