

Automotive sector: supply and demand imbalance and its impacts

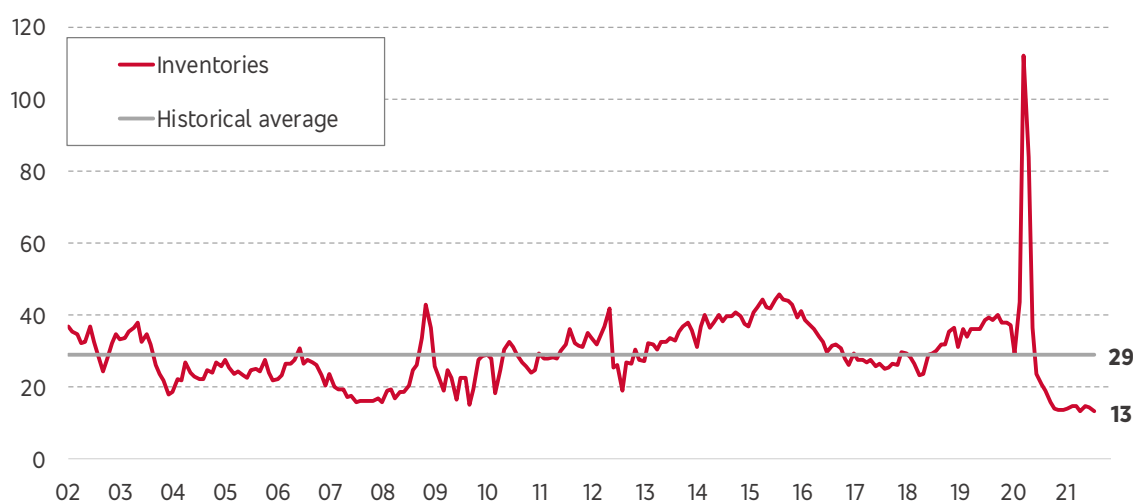
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The shift in consumer spending from goods to services has occurred very gradually, keeping industry and retail inventories at historically low levels. Early in the pandemic, the global industrial sector prepared for an unprecedented shock in demand, partially or completely halting production over months. However, the large fiscal and monetary stimuli provided in response to the pandemic resulted in an unexpectedly strong recovery of demand. The consumption of goods especially benefited from these measures, due to the disruptions in the services sector due to social distancing. This combination of strong demand for goods and slower production drove inventories down to historic lows in some segments. In Brazil, most industrial sectors are gradually rebuilding their inventories. However, the automotive sector is moving in the opposite direction, with production and inventory levels trending down in recent months. In August, the auto industry produced 164,000 light and heavy vehicles, the lowest total for the month since 2003.

The global shortage of chips and other semiconductors remains the key factor holding back auto production. The first reports of semiconductor shortages in the world date back to this past January, but the first temporary shutdowns in the Brazilian auto industry took place between March and April, which was also when the pandemic worsened in the country. While the decline of Covid cases allowed for an easing of public health restrictions, the shortage of semiconductors has worsened, imposing new shutdowns on several automakers. Inventories have been setting new historical lows every month, reaching just 13 days of sales in August, well below the historical average of 29 days (Chart 1).

Chart 1: Vehicle inventories

Days of sales, seasonally adjusted



Source: Anfavea, Fenabrave, Bradesco

In this context, supply has not been enough to meet the demand. New vehicle sales started the year 9.6% slower than in February 2020, seasonally adjusted. In August, that measure was 29.5% below pre-pandemic levels (Chart 2). The contrast with the positive performance of the other good-producing sectors in recent months is an indication that there is pent-up demand. This thesis is reinforced when we evaluate the performance of the used vehicle market, which are substitute goods. At the beginning of this semester, used car sales exceeded the pre-pandemic level by 9% (Chart 3). The impacts of supply shortages in the sector are more concentrated in the light vehicle segment, especially passenger cars, although heavy vehicle production has also been affected at times. The demand for trucks remains high due to fleet renewal initiatives, which have been driven by new environmental measures that will take effect between 2022 and 2023, and helped by favorable financing conditions.

Chart 2: New vehicle sales



Source: Fenabrave, Bradesco

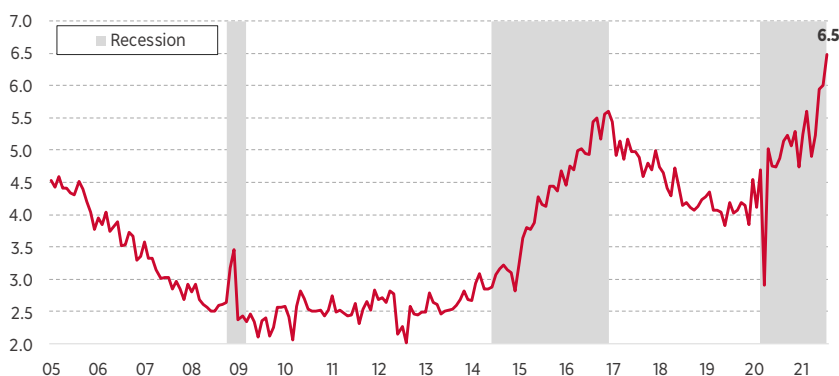
Chart 3: Used vehicle sales



Source: Fenabrave, Bradesco

Thus, sales of new vehicles remain weak, mainly due to the lack of inventory at dealerships and longer delivery times. The used/new car ratio is at the peak of the historical series started in July 2004 (Chart 4). It is true that in times of recession this ratio tends to increase, given the greater demand for used cars, which, on average, are cheaper than new vehicles. However, we believe that this metric would be closer to pre-pandemic levels, were it not for the supply problems, when we consider (i) the large amount of fiscal and monetary stimulus that supported the demand recovery, by preserving the wage bill; (ii) built-up savings and the inability to consume some services; and that (iii) sales of new vehicles were in the process of recovery before the pandemic, so the pre-pandemic level is already a low level of comparison.

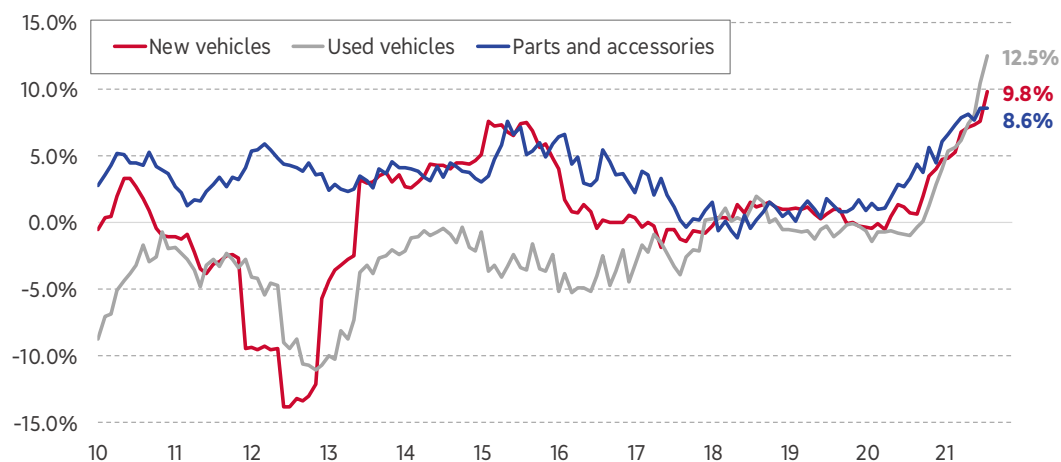
Chart 4: Used/new car ratio
Seasonally adjusted data



Source: Fenabrave, Bradesco

Given these imbalances between supply and demand, the market has adjusted through prices. The shortage of new vehicles results in a higher final price for vehicles. The 12-month Broad Consumer Price Index (IPCA) for new vehicles stood at 9.8% at the end of August. Used vehicle prices were up 12.5% over the same period. Demand for used vehicles has resulted in an aging fleet, therefore leading to higher demand for parts and accessories, which rose 8.6% on average over the past twelve months.

Chart 5: IPCA for new and used vehicles, and parts and accessories
(12-month rate)



Source: IBGE, Bradesco

According to our estimates, supply shortages meant that automakers sold 370,000 and 520,000 units less than the industry's potential in 2021. Using the used/new vehicle ratio, we can simulate what the level of new sales would be if this ratio were (i) equal to the 2019 average; (ii) equal to the 2020 average; and (iii) equal to the 2017-2019 average. We considered the period from March to August, since in January and February there were no shutdowns in the automotive industry due to a shortage of inputs. The amount of new and used vehicles in the period has not changed. The analysis was initially performed with seasonally adjusted data and then seasonal factors for each month were applied to obtain the original volume of unsold vehicles.

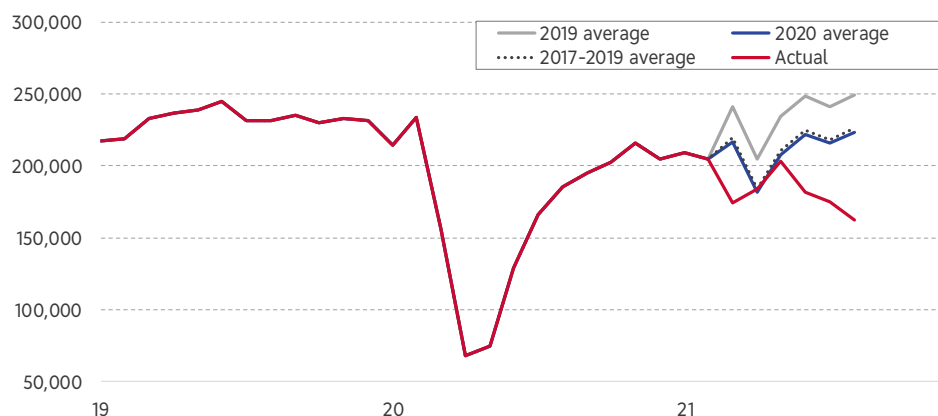
Table 1: Counterfactual scenarios for new vehicle sales

Original series

	2019 average	2020 average	2019-2019 average	Average
Used/New vehicle ratio	4.1	4.7	4.6	4.5
Sales (original series)	1,419,522	1,268,212	1,283,232	1,323,656
Actual	894,430	894,430	894,430	894,430
Difference	525,092	373,782	388,802	429,226

Chart 6: Counterfactual scenarios for new vehicle sales

Seasonally adjusted series



Source: Bradesco

We use these scenarios to quantify the size of the impact of supply constraints. In the worst case scenario (2020 average), sales would be 8.7% below February 2020 levels, which should be completely reversed by the first half of 2022 – a period that coincides with our initial estimates, before the semiconductor crisis. The scenario based on the average used/new vehicle ratio for 2017-2019 includes a period of recovery in demand for vehicles that followed the recession ended in the fourth quarter of 2016. The figures obtained from this simulation are similar to the scenario that uses the 2020 average and suggest that sales would be 7.6% below the pre-pandemic level in August. In the most positive scenario, which considers the 2019 average, the demand for new vehicles would have already exceeded the pre-pandemic level by 2.2%.

The coming months are expected to be challenging to the supply recovery in the auto industry. We do not anticipate the normalization of the global semiconductor chain before 2H2022. However, as we do not expect new shutdowns related to lack of semiconductors in the light vehicle industry, we believe that the worst time for the automotive sector should be between August and September, with production picking back gradually starting in October. As a result, sales should get back to the gradual recovery seen before the semiconductor crisis. We expect new vehicle sales to grow 6.6% in 2021, which is not enough to offset the 26.6% decline of 2020.

Table 2: Forecasts for the automotive sector

Thousands of units

	2019	2020	2020 (%)	2021	2021 (%)	2022	2022 (%)
Light Vehicles	2,659	1,951	-26.6%	2,079	6.6%	2,235	7.5%
Heavy Vehicles	129	107	-16.7%	142	32.6%	147	3.0%
Motorcycles	1,078	915	-15.0%	1,116	21.9%	1,195	7.0%
Used Vehicles	10,976	9,454	-13.9%	11,705	23.8%	12,002	2.5%
Agricultural Machinery	44	47	7.3%	55	17.1%	55	0.6%

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