

 KOREA ANALYTICS TEAM

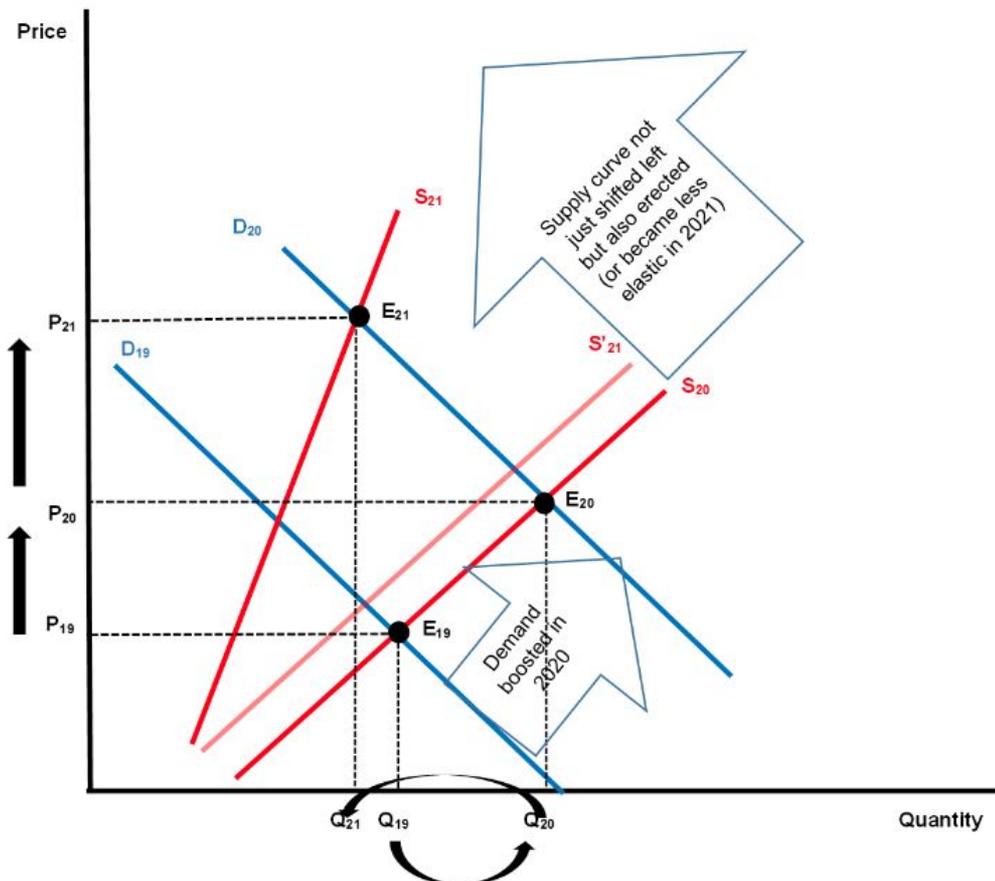
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Korea's automobile demand, supply, and equilibrium during the pandemic

For the last two years or so, the pandemic has heavily impacted both the supply and demand sides of the Korean car industry. In 2020, at the onset of the COVID-19 pandemic, the health crisis changed the Korean car demand pattern in an unorthodox way. COVID-19 crippled auto sales in almost every country in 2020 but Korean light vehicle (LV) sales were booming, reaching 1.86 million units in 2020, marking a 6% year-on-year increase and the highest annual volume in the history of the market. The average sticker price of passenger vehicles in 2020 also jumped by 11.0% YoY in our estimation. In the economics 101 graph below, that was the outcome of shifting demand to the right (D_{19} to D_{20}) at the new equilibrium E_{20} .

In 2021, however, we saw a fall in LV sales by 8.8% YoY to 1.69 m units, below the pre-pandemic level. But in our estimation average sticker prices of passenger vehicles in 2021 continued to jump (by 12.4%), an even greater YoY margin than in 2020, when strong demand pushed up the equilibrium price.

What has caused this combination of stagnant sales and higher inflation (or stagflation at an industry level) in 2021? To answer this question, we have embraced a simple economic textbook analysis of demand and supply.



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Given the huge backlog of orders in 2021, the demand for automobiles in Korea remained strong in 2021, which means the automotive demand curve stayed at the D_{20} level in our graph above. But supply started to buckle under the strain of the global chip crisis and component shortages stemming from lockdowns in some Asian countries including China, India, and Malaysia. Combined with a global shipping crisis, these shortages of automotive inputs developed into a global procurement crisis. As a result, the lack of critical production resources not only pushed up costs, which would have shifted the supply curve left (S_{20} to S'_{21}) but also influenced the supply characteristics, making the supply curve less elastic. In our graph the supply curve shifted to S_{21} from S_{20} , passing S'_{21} because of the global procurement crisis. So, with continuing strong demand and '*less supply and less elastic supply*,' Korea's 2021 LV market ended up at a stagflationary equilibrium of E_{21} in our diagram.

The bigger issue is that the current stagflationary shock in the automotive industry, stemming from the global procurement crisis, is truly global. Facing crisis upon crisis, most global carmakers could not adjust their production in response to greater demand and neither could they find a substitute for a scarce resource like semiconductor chips to keep their production unaffected over time. While the supply is getting ever less elastic, we are witnessing a combination of car price hikes and slumping car sales in most major automotive markets.

According to a classical microeconomic theory, supply is more elastic in the long run than in the short run. At the time of drafting this report, the global automotive supply chain, however, remains tight and stressed because of the enduring chip shortage, draconian disease control measures in China and the outbreak of war in Ukraine, despite more than a year passing since the start of the global procurement crisis. So, we are likely to keep facing poor supply and a less elastic supply curve in the foreseeable future, and the equilibrium continues to occur where the strong demand meets the ever less elastic supply curve. In the automotive market, stagflation became a global norm as time failed to play a significant role in the determination of the price elasticity of supply, as the classical microeconomic theory suggests.

Now more than ever, supply truly matters.