



The Economic Impact of Covid-19 on the Auto Industry

Yiyuan Zhang^(✉)

University of Delaware, Newark, DE 19711, USA
sqzyy@udel.edu

Abstract. Covid-19 has slowed the growth of the whole automotive sector, and the market is now overrun by doomsday scenarios. The enormous increase in energy prices in late 2021 and early 2022 will have a severe negative impact on consumers' ability to purchase goods. The influence of COVID-19 and fluctuations in oil prices over this time on the automobile sector will be examined in this study. By examining the direct effects of COVID-19 on the automobile industry, the causes of the effects, the effects of COVID-19 on oil prices, and the changes that oil prices have brought about to the automotive sector. This analysis indicates that COVID-19 and growing oil costs are having a dual impact on the automobile sector, putting it in a more complicated position. For the car industry, the issues with the oil price brought on by the pandemic and the global situation may persist in the future, and the sector must meet the challenges of changes and crises. The car industry may simultaneously investigate the potential for other innovative technologies and new energy sources to address the multifaceted challenge.

Keywords: COVID-19 · oil price · auto industry · impact

1 Introduction

The spread of the Covid-19 virus is not only a threat to human life, but the outbreak of the epidemic has also stalled the economic development of countries around the world. Expansion across the auto industry has stalled due to Covid-19 and changes in global energy costs due to Covid-19, and the market is flooded with negative forecasts for future developments.

The relationship between COVID-19 and the automobile sector has received little attention so far. The influence of COVID-19 and fluctuations in oil prices over this time period on the automobile sector will be examined in this study. This essay examines the impact and connection between COVID-19 and the oil and automotive industries in order to better understand the topic at hand. This study can cover the existing research gap on the link between COVID-19, fluctuations in the price of oil, and the vehicle industry by searching for pertinent papers, news items, and resources.

This article will take a step-by-step analysis by examining why Covid-19 is affecting the auto industry, what is the impact on the auto industry and the impact of changes in fuel prices due to Covid-19.

© The Author(s) 2023

V. Gaikar et al. (Eds.): FMET 2022, AEBMR 227, pp. 123–129, 2023.

https://doi.org/10.2991/978-94-6463-054-1_15

2 Analysis of Why COVID-19 Will Affect the Automotive Industry

The coronavirus, which was first identified in December 2019, quickly spread to other countries such as Europe, North America, and Asia. On March 11, 2020, the WHO declared COVID-19 an international health emergency. Due to the number of people who have been confirmed with the virus, the organization has urged the affected regions to implement effective measures to slow the spread of the disease. To minimize the spread of the disease, the WHO has urged the affected regions to implement effective measures such as restricting travel and social gatherings. They additionally closed schools and universities. In addition, the public was informed about the seriousness of the situation through social distancing measures. These measures are designed to protect individuals who are immunocompromised and prevent the spread of the virus [1].

In this context, large-scale assembly-line manufacturing industries such as the automotive industry and its related auto parts manufacturing industries have been hit by the Covid-19 epidemic. Due to the implementation of the closed policy, workers on the production line have to comply with the government's self-isolation policy for self-monitoring. As a result, the operation and production of automobile production lines were stopped on a large scale. Wu Han is a major supplier of car parts to major car-makers such as Toyota, Volkswagen, and General Motors. Due to the outbreak, several companies in the region have warned their global customers about the effects of the disease. Some of these companies have additionally warned their customers about the potential impact of the disease on their operations [2]. Production halts, plant closures, and a rise in unemployment have severely affected supply and demand for automakers and component suppliers. Automobile manufacturers are spending a lot of money in this climate to keep up with fixed expenses and working capital [3].

3 Influences of COVID-19 on Auto Industry

The first decreases sales. There is a general lack of optimism over the future of the automobile industry. Peugeot, for instance, anticipates a 25% decline in European auto sales this year [4]. In 2020, IHS Markit predicts that worldwide and US auto sales would both decline by 22%. But there is some hope for electric vehicles. Governments in Europe can use trade-in subsidies or tax incentives to assist automobile manufacturers adhere to stricter EU carbon dioxide requirements [3]. However, 59 percent of automobiles sold in Europe in 2019 were gasoline models, compared to 31 percent diesel, 6 percent hybrids, and 3 percent electric cars. With incentives, automakers may dodge potential fines while boosting sales of electric vehicles. However, Kuik [5] had earlier predicted a decrease in the amount of light vehicle sales as a whole. Naturally, this will have a negative impact on the demand for automobile parts. Although the demand for components used in repairs should be more steady, it appears that temporary shutdowns and the anticipated future reduction in demand will have a substantial impact on the manufacturing of new automobiles, since consumer confidence and household incomes are likely to decline [6]. However, the effect on auto sales may be lessened if the government offers incentives to purchase brand-new vehicles.

The second result is an increase in demand for the circulation of auto parts. It is important to note that auto parts producers now need to ensure adequate liquidity [4].

This is due to a variety of factors. First, the researchers contend that automakers have a higher critical mass than auto parts manufacturers, which may assist reduce the burden on profitability and cash flow. The researchers point out that car parts producers are taking corrective action by lowering prices, reducing capacity, and briefly ceasing production, in addition to utilizing different government assistance measures to retain liquidity [5]. Finally, because of the car industry's generally underwhelming performance in 2019, auto parts makers were already experiencing considerable pressure on their revenue, profitability, and credit profile prior to the Novel Coronavirus epidemic. The researchers had high hopes that key car part manufacturers will have entered the epidemic with enough cash buffers in the form of short-term debt or bank loans. In its most recent industry evaluation, which was released at the end of April, Moody's mainly agreed with the researchers' prediction that pressure would build on the liquidity of European auto component suppliers. The rating agency did point out that short-term debt, which made up 19% of all adjusted debt, was in better health than it was before the 2008 financial crisis in terms of maturity [6]. The industry's liquidity is equal to 14% of yearly sales at the same period. Additionally, credit conditions for European auto parts suppliers are better than they were in 2008, according to Moody's, which calculated that the total debt/EBITDA adjusted ratio at the end of 2019 was 2.9 times, down from 4.0 times in 2008 [7]. Leverage is anticipated to increase further, although the rating agency predicted that it would peak below the 5.7 times high seen during the global financial crisis. Finally, margins are also larger than they were during the global financial crisis, when, according to Moody's, EBITA margins dropped to just around zero at 1.4%, as opposed to 6.7% in 2019 [8].

The complexity of the automotive supply chain was identified as one of the factors that challenges its resilience. Dealing with the Covid-19 outbreak presented a challenge in terms of reducing the risk of damage. [7]. The supply chain for a car has more than 10,000 suppliers, dispersed at various levels, making it challenging for incentives and risk-reduction strategies to reach every component supplier. It was unable to build resilience without the difficulty of maintaining pricing during the slump in global economic activity that preceded the Novel Coronavirus pandemic [5]. It takes a lot of time and money to create and maintain goods for suppliers who must be able to create according to precise specifications and adhere to high quality and safety standards. Another strategy to boost resilience is to have more inventory on hand. This will assist in keeping up production in the face of supply chain disruptions upstream, but it will cost more in inventory and working capital [9]. Due to the unique Coronavirus's capacity effect, it is doubtful that the existing supply chain will have the motivation to redesign itself. Yet, as the new environment adapts, there will be greater redundancy in the capacity of conventional components. Compared to conventional automobile engines, electric car motors are simpler, but their electrical systems are more intricate [5]. With the express purpose of minimizing dependency on nations outside the BLOC, having the ability to create batteries for electric automobiles has become a policy objective for the EU. However, because components are made using imported raw resources from Latin America and Africa, the potential for "self-sufficiency" is constrained.

4 Oil Price Developments During the COVID-19 Pandemic

The peak in oil prices, which occurred in February 2021, was a steep rise. This stands in stark contrast to the recent dramatic increase in the price of energy commodities. When oil prices steadied below pre-crisis levels following the 2008 financial crisis. The wholesale price of power has reached record highs since oil prices have now significantly climbed above pre-pandemic levels [5].

Early in 2020, energy commodity prices dropped significantly, mostly as a result of the pandemic's detrimental effects on energy consumption. Kuik predicts that changes in demand as economic activity slows owing to COVID-19-related limitations can account for most of the fall in oil and gas prices at the beginning of the pandemic. The IEA cautioned that the effects on the energy system will be felt for years, given that this year would see an 8% decline in global oil consumption and that Brent prices won't hit \$50 per barrel until 2023 [3]. By the beginning of 2023, global energy consumption will also reach pre-pandemic levels if national plans and objectives are carried out. That moment will be delayed until 2025 if the epidemic persists and the decline worsens. The age of expanding global oil consumption, according to Fatih Birol, chairman of the International Energy Agency, will come to an end in the following ten years. However, there is no indication of a sharp fall in oil consumption in the absence of a significant policy change by the government. Recently, the world's oil demand peaked, according to a number of reputable upstream oil firms and oil trading behemoths, including BP and Total. The IEA's predictions undoubtedly support that conclusion [10]. Opec predicts that the pandemic would significantly harm OECD economic prospects, as the region's oil demand is anticipated to reach a peak of 47 million b/d in 2022–2025 and then progressively fall after that. As a result, the OECD's oil demand may not reach the 47.9 million barrels per day it reached in 2019. While Opec projects that world oil consumption would increase by roughly 10 million b/d from 2019 to 109.1 million b/d by 2045 in its annual report, growth after 2035 will be slow [6]. Compared to the 2040 prediction from the previous year, the 2045 oil demand forecast is more than 1 million b/d lower [9].

According to OPEC, the world oil demand will partially rebound in 2021 if the pandemic can be largely curtailed, with significant recovery anticipated in the following years. From around 52 million b/d in 2019 to 74 million b/d in 2045, non-OECD oil demand will rise. With a growth rate of 6.3 million b/d, India's oil consumption will rise the most throughout the forecast period [11]. The IEA forecasted an 18% decline in global energy sector investment this year. Future market volatility would be more likely if investment growth abruptly declined. According to Norwegian consultant Restar, global oil-related investment is anticipated to decline by more than 30% this year, with a rebound to 2019 levels not anticipated until 2024–2025 [12]. The oil sector may encounter something like a self-fulfilling prophecy if upstream oil corporations reposition their investments based on trends in the energy transition and the belief that oil consumption has peaked. Investors are also exerting external pressure on oil corporations by boycotting them.

5 Oil Price Change Impacts on Auto Industry

In the past, customers have only gradually cut back on their gasoline use as costs have increased. This is primarily since most customers must travel every day to places like work, school, the grocery store, and other locations [12]. Furthermore, there isn't a scalable substitute that can be used right now. The majority of individuals do not have the option of switching to a more fuel-efficient or electric car at the first sign of increased gasoline prices, with the exception of those who live in heavily crowded metropolitan areas [3]. As a result, demand for gasoline is said to be price inelastic, which means that as the price of the good rises, the proportion of demand declines more slowly. Demand declines as quickly as or more quickly than price increases for items with a high price elasticity [6]. Fuel costs might rise to levels where consumers reduce spending on other goods owing to price inelasticity, posing a danger to the whole economy, under a supply-driven price shock like the one we're currently seeing.

Oil prices have increased as a result of COVID-19 and the complicated international environment. Russia has long been a major producer of energy, exporting more than 10% of the world's crude oil. Putin authorized special operations in the Donbass on February 24. Following that, NATO nations-imposed sanctions on Russia, including those related to energy [13]. With the price of crude oil reaching a record high of \$100 on the world market and the political situation in Russia and Ukraine being unclear, Russia's role as a major supplier of oil will have a significant impact on the global supply and demand of energy. International crude oil prices following the direction is still unclear, along with the see-saw Iran nuclear discussions.

Changes in the price of oil have accelerated the growth of the new energy sector. Tesla saw its third consecutive triple-spike in retail pricing on 2022, March 17. The price of the rear-wheel-drive Model Y has increased by 15,000 yuan to 316,900 yuan, according to Tesla's website [14]. According to reports, new energy vehicle prices have lately increased [3]. The increasing cost pressure of power batteries, such as lithium carbonate and other key raw materials since last year, is a greater factor than the loss of subsidies, which has drawn a lot of attention. The cost of lithium carbonate has risen by over 70% in the last two months, with a ton of the material currently costing 494,500 yuan.

6 Conclusion

Overall, given the uncertainty surrounding the manufacturing forecast, the amount of future demand, and the ensuing impact on corporate cash flows, the sector will continue to struggle with the availability of enough liquidity. This study recognizes that the automotive industry is facing more and more complex situations as a result of the dual impact of COVID-19 and rising oil prices by analyzing the direct impact of COVID-19 on the automotive industry, the reasons for the impact, the impact of COVID-19 on oil prices, and the changes brought by oil prices to the automotive industry. The oil price issues brought on by the pandemic and the global environment may persist in the future, and the automotive sector will need to adapt to changes and crises. The car industry may simultaneously investigate the potential for other innovative technologies

and new energy sources to address the multifaceted challenge. The limitations of this study include the absence of first-hand research on this topic as well as a lack of a clearer model illustrating how COVID-19, petrol prices, and the automobile sector are related. As a result, researchers will attempt to construct modeling linkages to inform future development while also attempting to augment the findings of this study with first-hand investigations in future research.

References

1. Guan, D., Wang, D., Hallegatte, S., Davis, S., Huo, J., Li, S., Bai, Y., Lei, T., Xue, Q., Coffman, D., Cheng, D., Chen, P., Liang, X., Xu, B., Lu, X., Wang, S., Hubacek, K. and Gong, P., 2022. *Global supply-chain effects of COVID-19 control measures*.
2. Aquino, E., Silveira, I., et al. 2022. *Medidas de distanciamento social no controle da pandemia de COVID-19: potenciais impactos e desafios no Brasil*.
3. Kingsly, K., & Henri, K. (2020). COVID-19 and oil prices. *Retrieved from*.
4. Norouzi, N. (2021). Post-COVID-19 and globalization of oil and natural gas trade: Challenges, opportunities, lessons, regulations, and strategies. *International journal of energy research*, 45(10), 14338-14356.
5. Kuik, F., Adolfsen, J. F., Lis, E. M., & Meyler, A. (2022). Energy price developments in and out of the COVID-19 pandemic—from commodity prices to consumer prices. *Economic Bulletin Articles*, 4.
6. Ajami, R. (2020). Globalization, the challenge of COVID-19 and oil price uncertainty. *Journal of Asia-Pacific Business*, 21(2), 77-79.
7. Barbosa, F., Bresciani, G., Graham, P., Nyquist, S., & Yanosek, K. (2020). Oil and gas after COVID-19: The day of reckoning or a new age of opportunity. *McKinsey & Company*, May, 15, 2020.
8. Kuzemko, C., Bradshaw, M., Bridge, G., Goldthau, A., Jewell, J., Overland, I., ... & Westphal, K. (2020). Covid-19 and the politics of sustainable energy transitions. *Energy Research & Social Science*, 68, 101685.
9. Wang, K. H., Su, C. W., Xiao, Y., & Liu, L. (2022). Is the oil price a barometer of China's automobile market? From a wavelet-based quantile-on-quantile regression perspective. *Energy*, 240, 122501.
10. Bezemer, D. J. (2021). Seize the day: opportunities and costs in the COVID-19 crisis. *Global Sustainability*, 4.
11. Baek, S., Mohanty, S. K., & Glamboosky, M. (2020). COVID-19 and stock market volatility: An industry level analysis. *Finance research letters*, 37, 101748.
12. Akhtaruzzaman, M., Boubaker, S., Chiah, M., & Zhong, A. (2021). COVID-19 and oil price risk exposure. *Finance research letters*, 42, 101882.
13. 14. Nayak, P., Mishra, V., Singh, M., & Tambuwala, M. M. (2021). Impacts and consequences of COVID-19 epidemic on global economy. *Coronaviruses*, 2(1), 77-88.
14. 15. Hwang, I., & Kim, J. (2022). Oil price shocks and the US stock market: A nonlinear approach. *Journal of Empirical Finance*, 64, 23-36.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

