The Impact of Rising Oil Prices on New Energy Vehicle Sales

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Abstract. Will higher oil prices lead to higher sales of fuel-cleaned cars? To answer this question, this study tries to find out the correlation between oil prices and new energy vehicle sales. In order to gather information on the recent increase in oil prices, the volume of new energy vehicle sales since 2022, people's decrease in the use of gasoline vehicles as a result of the increase in gasoline prices, and local government policies on new energy vehicles, this research applies the method of data gathering and avoidance with new energy vehicles as the object. It is concluded that with the rise of oil prices, new energy car sales are also increasing, which can make new energy vehicle manufacturers better understand the demand for new energy vehicles. It may also reflect the rising trend in new-energy car popularity. In order to guarantee the constant expansion of new energy vehicles, the government must simultaneously develop a number of measures.

Keywords: Sales; oil price subsidy; New energy vehicles.

1. Introduction

More and more new energy vehicles are appearing as a result of recent advances in science and technology, and those who purchase them are no longer a minority. Since 2022, China's domestic oil prices have continued to rise, which has increased the economic pressure on many gasoline car owners. Many car owners worry that gasoline prices will stay high for a long time and that they may not be able to afford a gasoline car. Many car owners are beginning to consider replacing their gasoline cars with new energy vehicles. Thus, the rise in oil prices has also promoted the popularity of new energy vehicles to some extent. Because of new energy vehicles more in line with the concept of green travel, the government recently subsidies for buyers of new energy vehicles. For increasing the number of new energy vehicles, the government at the same time to strengthen the construction of new energy vehicle infrastructure, to help meet those requirements.

Clarifying the internal link between the price of oil and sales of new energy vehicles is very important from a practical standpoint. The income, consumption preferences, desire to pay, cost of new energy cars, and level of oil prices are only a few of the numerous variables influencing the sales of new energy vehicles. Some consumers who are price sensitive may decide to purchase new energy cars as a result of the increase in oil prices. The government offers automobile subsidies in addition to other incentives to encourage individuals to purchase new energy cars. This study combines previous data on oil prices and sales of new energy vehicles, and try to find the relationship between them through some ICONS, and finds out whether the rise in oil prices will increase the sales of new energy vehicles.

2. Literature Review

Through the clean energy car development overview, new energy car important technology development route, electric vehicle industry development faced by the dilemma and clear energy vehicle technology development strategy of several aspects of its specific research and analysis [1]. From the standpoint of consumption, the effects of policies related to charging infrastructure, purchase subsidies, and price of oil related policies on green power automotive consumption will be simulated in order to analyze the implementation effect of China's new fuel car consumption incentive policies [2]. The consumer market has been supported by government subsidies at all levels for new energy cars, and new energy vehicle development has been promoted by consumption subsidies [3].

This research analyses the regulations governing new cars subsidies during the previous twelve years, identifies recent issues with these programs, and offers alternatives [4]. Using Nanjing as an illustration, the promotion of new energy cars illustrates the significance of the growth of the new energy sector and the necessity of government assistance during the initial stages of the development of energy-washing vehicles [5]. Study of the effects of changes in global oil prices on China's economy and political system. Finally, this study offers specific policy recommendations from the supply, demand, policy, and international levels in accordance with the findings of the empirical research [6]. The rise in oil price will change consumers' intention to buy cars and their travel mode, reflecting the impact of the rise in oil price on different residents, who will use less fuel cars and turn to more public transportation or buy new energy vehicles [7]. In the conclusion, this study offer practical policy recommendations to address the effects of the changing features of the international oil price in the future, taking into account both the current state of China's economic development and the conclusions of the whole study [8]. This paper conducts a focused research and analysis using the overview of the development of new-energy vehicles, the significant technology development route of new fuel vehicles, the challenge faced by the industry in the development of new evs, and the development strategy of renewable power vehicles technology [9]. Continue doing effective analyses of the renewable automotive industry and the state of the sector in our nation given the current state of the world economy. On the basis of these analyses, create effective sales strategies to assure the renewable power automobile sector's rapid growth [10].

Some scholars have studied the influence of oil price on car purchase intention, the sensitivity of people with different wages to oil price and car purchase intention, and the influence of government subsidies on new energy vehicle purchase intention. Their research does not, however, address whether high oil costs will affect the sales of new energy cars. To figure out the influences of oil price on the sales of new energy car, this study will aggregate relevant data and gather some information.

3. Analytical Framework

3.1 Price of Oil Increasing

The price of crude oil on the international market is now fluctuating at around $10 per barrel due to shifting political considerations and uncertainties. Oil prices have changed since 2020 as a result of COVID-19. People's need for oil has grown since 2021 as a result of the cohabitation of choice and the epidemic, which has led to a sharp spike in the price of global crude oil as nations increasingly open their borders and the COVID-19 vaccines become more widely used. It can be found that, from 2020 to 2022, there was a general pattern of continuous growth in oil prices, and the increase during these two years was extremely large (Fig. 1). Despite fluctuations in Brent and WTI oil prices, they generally showed a rapid upward trend, with prices reaching their two-year peak in 2022 (Fig. 2). The cost of a barrel of gasoline increased by almost $100 during those two years, almost doubling.

The government's subsidies for new energy vehicles were increased at the beginning. As new energy vehicles became more and more popular and subsidized cars became more and more popular, the government began to gradually reduce some subsidies for new energy vehicles and use the money to build more infrastructure related to new energy vehicles.

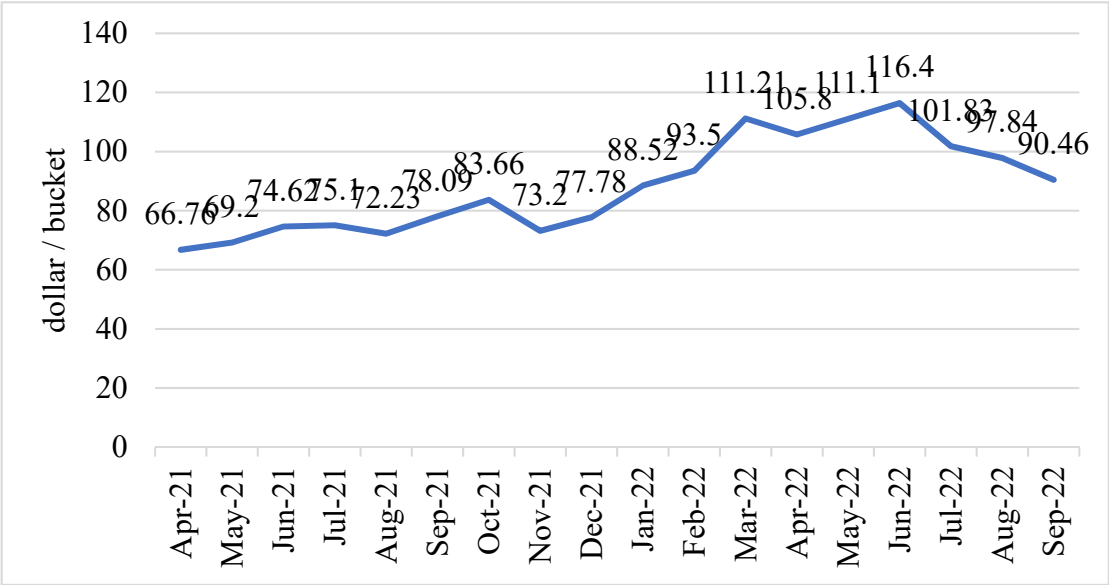

Fig. 1 Brent oil price trend

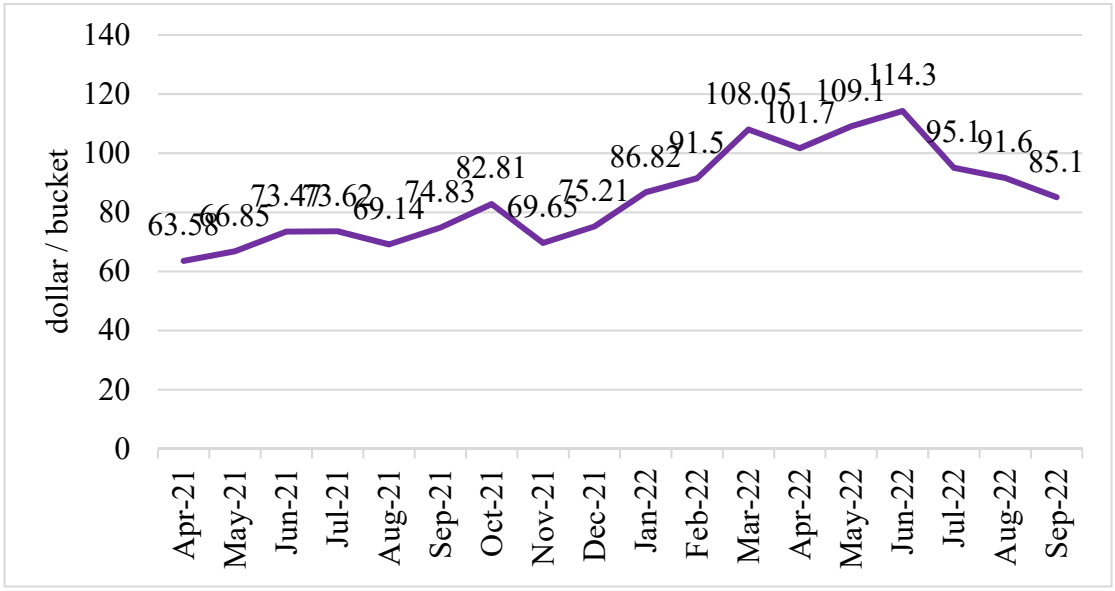

Fig. 2 WTI oil price trend

3.2 Sales of New Energy Vehicles

China's new-energy vehicle sales increased 1.2 times year over year to 593,000 units, continuing a trend of rapid development and capturing 24.5 percent of the market, according to the China Association of Automobile Manufacturers. From January to July in 2022, the sales volume of domestic new energy vehicles was 3.194 million units, up 1.2 times year on year, and the market share reached 22.1% (Fig. 3). although there were some changes in the sales of energy washing vehicles, the overall trend was still on the rise.

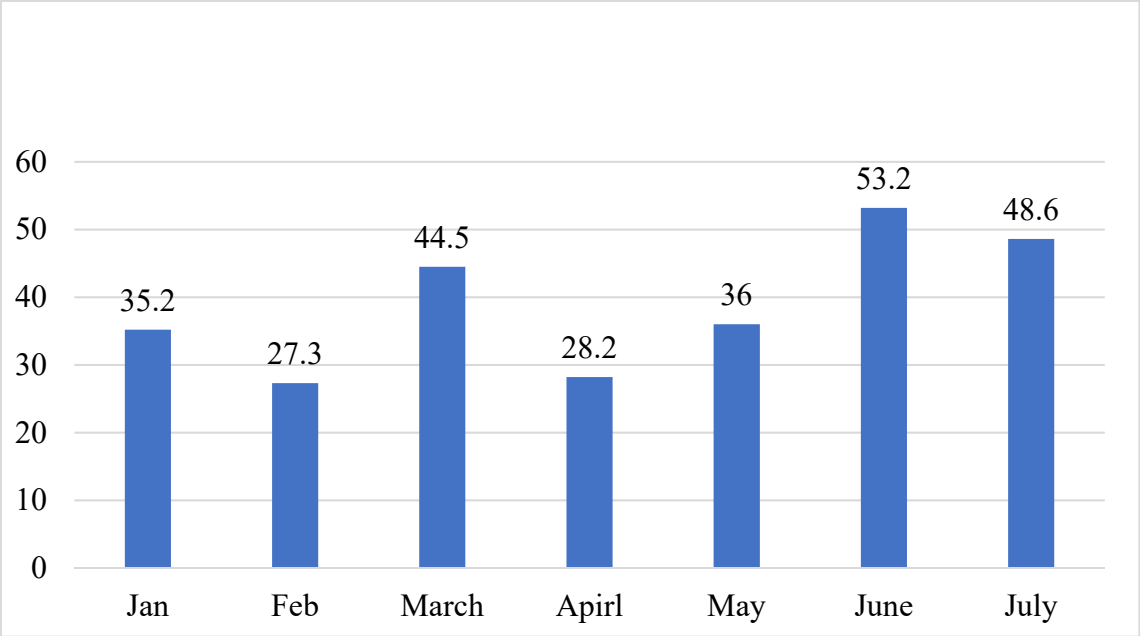

Fig. 3 Domestic retail sales of new energy vehicles in 2022

3.3 Relevant Supporting Policies

China has enacted a wide range of new energy vehicle regulations since the turn of the century, including support for integrated battery research and development and purchase subsidies. There are three stages: from 2001 to 2008, new energy vehicles gradually began to appear on the market. In the second stage, from 2009 to 2017, the sales volume of new energy vehicles gradually increased. The third phase is from 2018 to the present, when government policies promote the innovation and upgrading of battery technology. The promotion of new energy vehicle battery research and development is included in the New Energy Vehicle Development Plan, which was released on October 9, 2020. In order to increase the output of new energy cars, government policy is currently progressively shifting away from the nose patch policy of the past and toward boosting associated goods and innovation of these vehicles. Therefore, the government also began to gradually improve the basic policies on energy washing vehicles. On March 31, 2020, Tianjin issued measures on the construction of public electric piles in residential areas, which can meet the changing needs of these new energy vehicle owners. In the Notice of The State Council on the Printing and Distribution of Energy Conservation and New Energy Vehicle Industry Development Plan (2012-2020) (Guofa [2012] No. 22), the Guiding Opinions of The General Office of the State Council on Accelerating the Promotion and Application of New Energy Vehicles.

Several electric vehicle policies have also been released in recent years by Nanjing, including "On the issuance of Nanjing New Energy Vehicles Promotion and Application Policies" (issued by Ning Government Office [2015] No. 143), "Several Opinions of Nanjing Government on Further Supporting the Promotion and Application of New Energy Vehicles," and "Implementation Opinions on the Promotion and Application of New Energy Vehicles in Nanjing (2014-2015)" (Ning Government Office issued No. 156 [2017]) The Nanjing government's policies also support the development of energy vehicle charging stations, implement automobile purchase incentives, and enhance the oversight of new energy vehicle safety. Colleagues who work to create an atmosphere and conditions that are favorable to the development of new energy-efficient vehicles also help to allay customer fears about purchasing such cars.

Because of the popularity of energy washing vehicles and the gradual increase in sales over the past decade, the government's subsidies for new energy vehicles initially increased and then gradually decreased. As a result, the government may now choose to spend money on building infrastructure for energy washing vehicles (Table 1).

Table 1. Government subsidies for new energy vehicles

Year	Total consumption subsidy (10000 yuan)	Subsidized New Energy vehicle (car/10000 unit)	Compensation received for each vehicle (yuan)	Year-on-year growth Rate (%)
2010	66065.20	0.72	92000.00	
2011	75850.00	0.82	92500.00	0.54
2012	130857.51	1.28	102232.43	10.52
2013	199278.31	1.76	113226.31	10.75
2014	608211.29	7.48	81311.67	-28.19
2015	2185077.56	33.11	65994.49	-18.84
2016	2040997.51	34.64	58917.36	-10.72
2017	1413998.85	34.12	41441.94	-29.66
2018	1934498.65	53.8	35957.22	-13.23
2019	957897.99	27.68	34606.14	-3.76
2020	1053712.25	58.5	18012.18	-47.95

3.4 Substitution Effect of High Oil Price

As the price of fuel increases, the number of people who use private cars decreases and gradually shifts to other modes of transportation. The statistical results show that when the oil price rises to 12 yuan/liter, the proportion of giving up private car travel is 21.52%, 29.6% when it rises to 15 yuan/liter, 23.77% when it rises to 20 yuan/liter, and 13.9% when it exceeds 20 yuan/liter. However, 11.21% of car drivers said that they would not give up driving because of the rising oil price, that is, when the fuel price reached 15 yuan/liter, more than 50% of private car owners would give up driving, and when the fuel price reached 20 yuan/liter, 75% would switch to other ways of traveling.

For two kinds of Goods, if the rise in the price of one lead to the increase in the demand for the other, they are called Substitute Goods. The cross-price elasticity of substitutes is greater than 0. At the same time, new energy vehicles can also be used as a means of transportation for people to travel, and can almost perfectly replace the existence of gasoline cars. Therefore, new energy vehicles are a substitute for gasoline vehicles. This means that when the demand for gasoline cars declines, the demand for alternative energy vehicles will increase at the same time, which will lead to a gradual increase in the sales of energy vehicles.

Furthermore, the rise in oil prices will also lead to the increase in the cost of transportation logistics. For example, the transportation of domestic products, the transportation of raw materials for manufacturing or the transportation of end products. These increases in transportation costs will also be reflected in oil prices.

4. Conclusion and Future Outlook

The purpose of this study is to ascertain whether increased oil costs will increase the sales of new hybrid cars. The study found that the increase in oil costs will actually increase sales of clean energy vehicles. Since 2022, oil prices have been on the rise, and the government has also subsidized the car owners who buy new energy vehicles, which led to the sales of new energy vehicles in 2022 doubling compared with 2021 and hitting a record high. This research demonstrates the rising popularity of new energy vehicles. The slow rise in popularity of new energy vehicles is reflected in this development trend, as is the question of whether automakers should raise automobile production to keep up with rising consumer demand. However, this research may not consider low-income consumers, or the manufacturers of new energy vehicles may raise the price of new energy vehicles in order to obtain greater profits. This may also relatively reduce a part of the energy washing car sales. Future new energy vehicle manufacturers should change output according to sales data to meet market demand. At the same time, the government can also continue to introduce some policies to

support new energy vehicles and encourage more people to buy new energy vehicles, which means that this kind of vehicle can reduce green emission and environmental pollution.

The statistics can show that a spike in the manufacture of new energy vehicles is a result of rising oil costs. It's possible that higher oil prices won't lead to an increase in the production of new energy vehicles. Consumers who may otherwise be willing to pay less would choose not to buy new energy cars because they are more expensive, which could lead to a fall in renewable power vehicle sales. Because of their low wages and weak purchasing ability, these people may not be able to afford new energy vehicles, so they continue to use gasoline cars or other means of transportation. After collecting relevant data, draw charts and draw conclusions through observation and comparison. Whether this explanation is consistent with previous research. This study shows people that new energy vehicles are becoming more and more popular, the development trend of these cars, and whether new energy vehicle manufacturers should increase the production of cars to meet the growing demand of people. It has been determined that higher oil prices will result in more new energy vehicle sales. The government can introduce more policies to support new energy vehicles in the future, such as boosting new energy vehicle subsidies, expanding the infrastructure for electric vehicles, and promoting investment in new energy vehicles. These supporting polies will encourage more individuals to purchase clean-energy automobiles that help reduce carbon emissions.

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