

## **Sustainable Development Strategies of China's Transportation Industry Under the Background of COVID-19\***

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### **Abstract**

At the beginning of 2020, the "black swan" of COVID-19 began to wreak havoc in our country and globally, bringing a huge impact to people's lives. At present, the epidemic situation in my country has been clearly controlled, but its impact on economic growth has already appeared. As one of the industries most affected by the epidemic, the transportation industry will face huge challenges in the short term, but there is still room for sustainable development in the long term. Reduce or even completely eliminate the negative impact of COVID-19. This article analyzes and predicts the impact of COVID-19 on traffic from two aspects: road transportation and road construction and proposes countermeasures to ensure sustainable development. In order to ensure sustainable development, while seeking national policy support to resolve investment and financing difficulties, highway companies must take the initiative to turn the epidemic crisis into an opportunity for reform, reduce costs and increase efficiency, explore multiple channels of financing, and let the company pass the difficult period smoothly.

**Keywords:** COVID-19, transportation, road construction, sustainable development, strategy.

### **Introduction**

In January 2020, COVID-19 occurred in 31 provinces (autonomous regions and municipalities) across the country, and all provinces across the country have successively launched first-level response plans, and the nationwide COVID-19 prevention and control campaign has been fully launched (Xinhua News Agency, 2020). The continuous escalation of the epidemic will have a significant impact on transportation, especially the toll highway industry in

the short term. It is worth noting that after the State Council's notice on the national toll road exemption from vehicle tolls during the epidemic prevention and control period, the toll highway operating companies are facing a cliff-like decline in revenue, a significant reduction in operating cash flow, and steep pressure on debt service. Increasing a series of challenges and pressure on solvency will indirectly drag the expressway investment industry. Under this circumstance, it is worth thinking and paying attention to how transportation operations should comply with policies and external conditions and determine the focus of current operations and management with the goal of sustainable development.

## Literature Review

COVID-19 is a major challenge to the world economy (Esin, 2020), with international supply shocks and declining GDP growth in many OECD countries (Welfens, 2020). Affected by COVID-19, countries around the world have implemented a series of measures, including border blockade and social distancing, in order to control the outbreak (H. Lau et al., 2020). Research shows that COVID-19 affects both financial markets (Al-Thaqeb et al., 2020) and the national economy (Banks, J. et al., 2020).

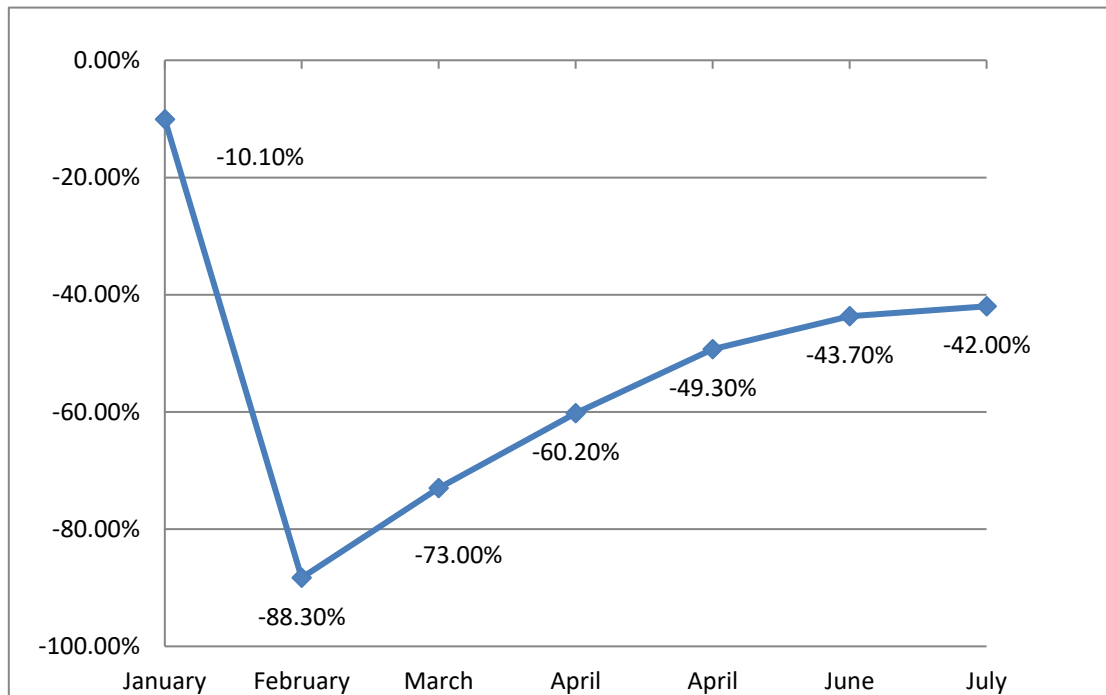
Many experts and scholars have carried out relevant research on the relationship among the epidemic, transportation, road construction, and fiscal revenue. Mayburov (2017, 2018) substantiates that the relationship between traffic taxes and road construction, studied the sources of government funding for highways, and analyzed the possibility of increasing the fiscal and regulatory importance of transportation taxes and charges. Michail (2020) analyzed the impact of Covid-19 on shipping. Aloï et al. (2020) investigated the impact of COVID-19 on urban traffic and pointed out that overall travel dropped by 76%, especially in public transportation users, which dropped by 93%. Ivanov (2020) proposed a simulation of the impact of the outbreak on global transportation, supply chains and COVID-19. Wenhua and Liang (2003) analyzed the negative impact of SARS on different modes of transportation in my country. Guobing (2020) suggested reducing the impact of COVID-19 on China's foreign trade and employment by stabilizing the global supply chain and using fiscal and tax measures to reduce costs. Liu et al. (2020) draw on the experience of the United Nations, the United States, the European Union, the United Kingdom and Japan on the construction of resilient transportation systems and traffic emergency support, and comb out the main points of the system resilience analysis of China's transportation industry.

However, although studies on the transportation supply chain have been conducted in the literature, no attempt has been made to test the impact of COVID-19 on road traffic. Therefore, this article analyzes and predicts the impact of COVID-19 on traffic from two aspects: road transportation and road construction, which is very necessary.

## Methodology

To study the impact of COVID-19 on road transportation, this article is based on relevant theories of transportation economics (Small, 2007), econometrics (Pesaran, 1990) and other disciplines, this article uses retrospective analysis to collect data from government reports, the State Administration of Taxation and the Ministry of Transport to analyze the impact of COVID-19 on road transportation. According to statistics, from January to July, the country completed a total of 4.85 billion commercial passengers, a year-on-year decrease of 52.9%. Among them, commercial passenger traffic on roads fell by 53.2%. Among them, in July, a total of 890 million commercial passenger traffic was completed nationwide, which recovered to 58.0% of the same period last year, and the degree of recovery increased by 1.7 percentage points compared with June (Fig. 1.). From January to July, the investment in fixed assets in transportation completed 1.8 trillion Yuan, an increase of 9.4% year-on-year, and the growth rate was 3.4% faster than that in the first half of the year. Among them, 345.8 billion Yuan was completed in July, an

increase of 26.7% year-on-year. Among them, the completed highway investment was 1272.2 billion Yuan, a year-on-year increase of 11.3% (Government public information 2020).



**Fig. 1: Year-on-year growth rate of commercial passenger traffic from January to July 2020**

*Source: According to the author*

This article uses a combination of theory and empirical methods to select road passenger volume, freight volume, government bonds, transportation fixed asset investment and other indicators that represent the entire industry; in data processing, comparative analysis is used to compare 2019 road transportation data. Analyze the impact of COVID-19 on road transportation from two aspects: road transportation and road construction, and put forward corresponding measures, and put forward strategic suggestions for sustainable development.

## Research

### The Impact of COVID-19 on Road Traffic

In terms of road transportation, the impact of COVID-19 on the transportation industry is huge. According to the "2019 Toll Road Statistics Bulletin", the national toll road toll revenue and expenditure gap in 2019 reached 402.65 billion Yuan. Affected by the epidemic, it is expected that the revenue and expenditure gap of expressway operating companies in 2020 will further expand. Factors such as traffic control measures, the extension of the Spring Festival holiday, and delays in the resumption of work have led to a significant drop in national transportation volume in the short term. From January 10 to February 18 (40 days before and after the Spring Festival), the total number of passengers sent on national roads decreased by 50.8% year-on-year, and the national road freight volume in February decreased by about 51% compared with the previous year (Table 1, Table 2). Wu Chungeng, Director of the Policy Research Office of the Ministry of Transport, said that in the first quarter, 1.85 billion passenger traffic was completed, a year-on-year decrease of 58.4%. In the first quarter, 7.82 billion tons of commercial freight was completed, a year-on-year decrease of 18.4%.

**Table 1: National highway passenger traffic during the Spring Festival 2016-2020**

Year	2016	2017	2018	2019	2020
Passenger volume (100 million passengers)	24.95	25.21	24.8	24.6	12.11

Source: According to the author

**Table 2: National highway freight transport volume in February from 2016-2020**

Year	2016	2017	2018	2019	2020
Freight volume (10,000 tons)	144399	179276	167206	167329	82736

Source: According to the author

Anti-epidemic policies continue to increase, resulting in a sharp drop in toll revenue. After the State Council's notice on the national toll road exemption from vehicle tolls during the epidemic prevention and control period (from February 17 to May 5) was issued, toll highway operating companies are facing a cliff-like decline in revenue, and preliminary statistics are used to reduce tolls nationwide every day About 1.5 billion Yuan. On the basis that the original gap has not been effectively suppressed, toll revenue in the first half of 2020 is likely to decline in a precipitous manner.

In terms of highway construction, highway construction funds are an important factor affecting and restricting highway construction. Since 2018, the growth of investment in highway construction has declined, to a certain extent due to the shortage of construction funds. The sources of funds for highway construction under the current system include financial funds invested by governments at all levels in highway construction projects, and construction funds raised by project entities in accordance with market-oriented operations. Important sources of fiscal funds for highway construction include vehicle purchase tax funds and local government bond funds. Local government bond funds are mainly toll road special bond funds.

After falling for two consecutive years in 2015 and 2016, 2017 ushered in a new increase in vehicle purchase tax revenue. In the whole year, 328.67 billion Yuan of vehicle purchase tax was collected, a year-on-year increase of 22.7%. However, the growth rate continued to decline in 2018. The growth rates in 2018 and 2019 were 5.2% and 1.3%, respectively. Including the impact of the epidemic, the outlook for automobile sales in 2020 is uncertain; vehicle purchase tax revenue may further decline; the arrangement of special funds for vehicle purchase tax for road construction is not optimistic, and it may be a certain degree of investment in speeding up road construction Have an adverse effect.

In recent years, the central government has still paid great attention to infrastructure construction and still regards it as an important support point for stimulating national economic growth. The Ministry of Finance has issued a total of 1,848 billion Yuan in 2020 local government debt limits on November 27, 2019 and February 11, 2020, of which the general debt limit is 558 billion Yuan and the special debt limit is 1.290 billion Yuan. The purpose is to implement debt funds into specific projects as soon as possible, form an effective pull on the economy as soon as

possible, and drive effective investment support to make up for shortcomings and expand domestic demand. In January 2020, 714.8 billion Yuan of special bonds have been issued nationwide. The adverse impact of the epidemic on the development of the national economy further reflects the necessity of this fiscal policy to stimulate economic growth. Therefore, it can be expected that the general bond funds invested in general road construction projects and the toll road special bond funds invested in government toll road construction projects will have a significant increase over 2019, effectively promoting the rapid development of road construction.

An important measure for the development of road construction in accordance with the market-oriented direction is to continue the pace of cooperation between the government and social capital in accordance with the policy guidelines of the State Council, the Ministry of Finance and the Ministry of Transport. The Ministry of Finance has carried out a new upgrade and transformation of the national Public-Private Partnership comprehensive information platform (Ministry of Finance, 2020). The launch of the new platform indicates that standardized management has achieved new results and will continue to make new progress in infrastructure construction. The user payment mechanism is the payment mechanism of the Public-Private Partnership model that is mainly advocated by the Ministry of Finance and is sustainable and does not increase government debt. If the Public-Private Partnership adopts a user-paid mechanism, it means that it is developing a commercial toll road. And some policy changes caused by COVID-19 may cast a shadow on the public-private partnership on the highway to further promote the user payment mechanism.

The prevention and control of the epidemic has prevented travel, and the traffic flow of highways across the country has significantly declined. The prevention and control measures of suspending some passenger transportation and exempting tolls undoubtedly have a serious impact on the operational performance of the project company. The direct impact is the loss of project revenue, the increase in costs, and the sharp decrease in revenue, and the project company may face financial difficulties; the indirect impact is the increase in the financing cost of subsequent projects in the expressway industry, and the reduction of project service quality and efficiency.

During the period of COVID-19 prevention and control, the national toll roads are exempted from vehicle tolls. This is a major decision made by the Chinese government for the public interest. It is necessary to correctly handle the relationship between social public interests and safeguarding the legitimate rights and interests of highway investors and operators in accordance with relevant laws and regulations and promote the sustainable development of highway construction and management.

### **Related Suggestions**

It is recommended that the cash flow of the transportation service industry comprehensively consider factors such as the amount of toll free, the net cash flow of operating activities during the extended toll period, time, and discount rate when calculating the toll period that should be extended. The net cash flow that can be obtained in the future by extending the charging period, its discounted value should not be lower than the free toll.

It is recommended that the principal of loans for the transportation service industry be postponed for one year and returned. The interest of the amount of interest-bearing debt (including equity financing) within the toll-free period will be postponed according to the free period, and the final interest will be paid off. At the same time, it is recommended that the rigid expenditures for operation and maintenance within the free pass period should be funded by the government in the form of special bonds.

At present, the country has appropriately increased the effective supply of the financial supply side through a series of quantitative easing monetary policies such as structural RRR cuts. Depending on the progress of the epidemic,

the number of RRR cuts may be appropriately increased or the time window for RRR cuts may be advanced. But relying on monetary policy alone is not enough. In the next step, the government should make full use of fiscal policies such as fiscal deficits and structural fiscal and taxation to stimulate the rapid release of demand, so as to fully hedge the negative impact of the epidemic.

The current epidemic has rapidly escalated into a major global public health event, which has had a serious impact on the development and layout of the global industrial chain. Only when all countries can work together can the epidemic be effectively contained in the short to medium term.

## Conclusion and Future Research

COVID-19 has caused a great impact on the global economy. China has adopted a unified deployment of prevention and control methods, and the whole country has jointly resisted. It is a foregone conclusion that COVID-19 will have a greater negative impact on road passenger and cargo transportation in 2020. At the same time, fiscal policies such as increasing fiscal expenditures, lowering corporate income tax rates, personal income tax rates, and value-added tax rates are effective in mitigating the economic impact of the epidemic. Road transportation is an important link in the development of the national economy and an important guarantee for the national economy and people's livelihood. During the epidemic, toll free on expressways is also a social responsibility of toll road owners. To ensure sustainable development, highway companies seek national policy support in resolving investment and financing difficulties. While making good use of the government's various preferential support policies, they must also take the initiative to turn the epidemic crisis into an opportunity for reform, and make risk prediction and Plan, reduce costs and increase efficiency, explore multiple channels of financing, and actively carry out business expansion and transformation, so that the company can smoothly pass difficult times, minimize losses as much as possible, and finally achieve sustainable development. This research helps to understand the current situation of China's road transportation under the epidemic situation, know the problems it faces, and take necessary measures according to corresponding strategies.

The sudden COVID-19 epidemic has provided a valuable example for the study and practice of how to adhere to the sustainable development strategy of transportation in the context of major public health emergencies. Review the transportation response strategies during the entire process of the outbreak, analyze and predict the impact of the epidemic on traffic from the two aspects of road transportation and highway construction, and improve the transportation response system for major public health emergencies. It is of great value to guide the formulation of policies for the prevention and control of specific epidemics, and to use taxation policies to help the sustainable development of transportation under major public health emergencies.

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