Thoughts on Innovation of Toll Highway Policy

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Abstract. The main problems existing in current toll highway policy are analyzed. From the angle of economics, it is proved that the expressway should stick to the principle of "user pays" and use the method of long term toll collection. And on "long fee" policy advantages and disadvantages, put forward the need to build a set of system design from the pricing mechanism, balance mechanism, management and supervision etc..

The Main Problems Existing in the Toll Highway Policy

In the early period of reform and opening up, the ability to provide highway infrastructure by the government financial funds can not meet the rapid growth of transportation demand, and highway traffic has become a bottleneck restricting the development of national economy seriously". Under this background, in 1984 the State Council established "road loans, loan fees policy, breaking the shackles of financial funds, large-scale use of bank loans in more than 30 years of rapid construction of highway network is about 140 thousand kilometers, powerfully and supporting China's rapid economic and social development. But after 30 years of development and evolution, the current toll roads are facing the following serious problems.

Debt Risk Continues to Climb

With the continuous expansion of China's highway network, construction projects continue to economically underdeveloped areas and mountainous areas, compared with the early construction project, post construction project construction costs continue to rise, the overall presentation of the traffic flow decreasing continuously, resulting in the toll road benefit straight down, in accordance with the provisions of 30 years 25% of the existing capital, charging period. Calculation method of cost benefit of the toll rate is far greater than the public acceptability, price departments tend to perform public acceptance rates, resulting in the late construction project is becoming more and more difficult to pay debts. Especially since the financial crisis in 2008, as an important measure of highway construction investment, stimulate economic growth, in the capital, charging time and charging rate are established in reality, even if the financial evaluation conclusion poor project also hastily, constitutes a huge debt risk for the day after. From the debt scale, 2010-2016 year toll road debt increased from 2 trillion and 300 billion yuan to 4 trillion and 800 billion yuan, an increase of 2.12 times, the average annual growth rate of 13.3%, as of the end of 2016, Tianjin, Henan, Guizhou and Yunnan provincial state highway operation enterprise asset liability rate exceeded 75%.

Debt Treatment is Imminent, Existing Disposal Methods are Not a Permanent Solution

The development of toll road Chinese has more than 30 years, more and more highway toll are due, as of the end of 2016, there are 11 provinces in the country about 4000 kilometers of government loan highway faces due to the left of the huge debt, government finance has become unbearable. There are three main types of debt disposal in the provinces.

One is to stop charging, financial fallback. This method follows the original intention of the current toll highway system design, promises, stops the charge at maturity, and the debt balance is
paid by the finance. But this is only the financial strength of the individual to individual road practices, most of the provinces do not have the ability to reveal all the details of the future finance more and more toll road debt maturity. If widely used this method to solve the debt problem, or a large number of financial capital expenditures for highway toll and stop debt management, thus affecting the other public service supply, or stop toll Expressway in money management, rapid damage, resulting in enormous waste of public resources.

Two is to implement the reconstruction and expansion, and re calculate the charging period. Is an existing toll road through the implementation of the expansion, become a new project to enter a new round of charging period, with relatively small construction costs, in exchange for permission to continue charging, with the renovation and expansion of the fee income to pay before the expiration of the debt balance, is actually a disguised form of extended charge time limit. If this method is widely used to solve the debt problem, originally by maintenance could keep the corresponding service level of the highway, but by the high cost of a reconstruction to several times to repay more debt, financial capital and public itself is an enormous waste of resources.

Three is to implement the unified loan system. As soon as the project is tied up, as long as one of the projects fails to pay off the debt, the other roads tied up will continue to charge to repay the debt. A matter of fact it is disguised extended highway bundling the charging period, in order to repay the debt is not repaid, the "toll road regulations" (Amendment) (Draft) to launch the system by the system also scheme's predecessor, in order to alleviate the debt burden of the provinces. However, system by the system also can implement policies to face enormous challenges, because the system by the system also will become a single project independent accounting accounting for tying and bundling of several projects, including the construction of the project in the project, including the project, the scale of the proposed project, construction time, construction cost charge, income, and project financing accounted for all of the maintenance costs are very uncertain, therefore not explicitly given the general term system by the system also, therefore not easily through the "Regulations" (Revised) proposed system by the system also scheme.

The Implementation of Various Financing Methodsis Lack of Practical Feasibility

Under the new budget law policy framework, both PPP, industrial development funds, special bonds, asset securitization and other financing tools are difficult to play the role of attracting social capital. The fundamental reason is that, in the "bound 30 fee period" and "public acceptance rates" under construction and proposed toll road solvency weakening, autonomous decision-making of the investors are lack of toll roads may have reasonable income in 30 years is expected (Xin Xin), from the current practice the highway construction in PPP chaos as remarkable, such as some provinces of the expressway project is BT financing package for the PPP project, the government to promise a fixed return on the condition of financing; some provinces by Ming shares of real debt fund mode will credit debt funds package for equity funds, fixed income provided by the government and the commitment expires repurchase. No social capital attraction, but under the encouragement of the state, must do, can only produce a variety of distortions, has long deviated from the original intention of the PPP system design, is not sustainable financing.

Lack of Supervision Leads to Deterioration of Development Environment

The toll road development process, due to lack of information disclosure, to safeguard the social public to the toll highway operation and management of the right to know, and there is a toll road transfer is not standardized, management is not in place and other issues in the actual work, cause the public to the policy is not fully understood, even the existence of misunderstanding, further deterioration of the environment for the development of toll road.
The highway debt risk is high, the highway debt is difficult to solve, the proposed highway financing measures are weak, so the development of toll roads in China is deadlocked.

The Rationality Analysis of the New Deal Based on the "User Pays"

The Bottom Logic of the Policy is "Tax Payment", Which is Inefficient from the Economic Point of View, and is Not Feasible from the Practical Point of View.

Milton Friedman once said, economists have no school, but only good or bad; good or bad is whether to believe that there is a free lunch in the world. A lot of public policy, backfire and cause a huge waste, "expect free lunch" is derived from this simple fallacy. The current toll highway policy for free payment of highway loans is just the best example of this argument.

If a product or service is provided, it has to pay, without three circumstances, either "tax payment" or "user pays" or both.

The basic logic of China's current policy is: highway toll roads are public goods, the government funds to provide adequate road infrastructure and free to use, but because the government finance funds, thereby the "loan" financing, in order to repay the loan and charge, the hidden meaning is to pay off the loan should not charge. But no longer "user pays" does not mean that the provision of such services can arise from the outside world. To keep the service level unchanged, the "tax payment" method is needed to continue to provide. However, from the perspective of reality, even without considering the new highway, built 124 thousand km of highway network debt is about 4 trillion and 500 billion, maintenance cost is about 200 billion per year, China's government whether the central government or local governments are unable to afford the products and services of the expressway. No ability to pay tax, are unwilling to pay, the result can only be unable to enjoy this service, the highway network has been built as damaged and destroyed, before trillion construction costs will become sunk costs, resulting in a huge waste of social resources.

From the Perspective of Optimal Allocation of Resources, the Highway is More Suitable for Long-Term Use of "User Pays" Way.

Adam Smith is a representative of the classical school of economics, for public goods funding, proposed the beneficiaries pay (tax) point of view, which is a specific public goods supply, its sources of funding should directly benefit and enjoyment of the public goods is taxpayer hook, which reflects the fairness and efficiency of tax.

In 1920, the founder of welfare economics A C Pigou first proposed two roads in the example of "welfare economics" in one book, the two roads leading to the same destination, excellent road is always too crowded, but always inferior road is sparsely populated, which makes the cost of driving the excellent road the greatly improved. When the congestion reaches a certain level, there is no difference between the good road and the bad road for the driver. This difference means that the excellent road above the inferior road value completely disappeared, which economics said the "tragedy of the commons" (rent dissipation), if the charges for intervention, will be part of the vehicle from the good road to the inferior Road, the total social welfare will increase.

The above theory is to promote social welfare through the horizontal comparison of two different service levels through charging intervention. According to the main representative figures of the school of public choice Buchanan "club" model from the time axis vertical comparison, a freeway traffic flow at first is less, the user does not affect other users increased, with the increase of traffic flow caused by the continued crowded, which is competitive and the time cost of users increases, the need to further improve charge (increase the cost of money, time) to exclude the relatively low cost of the user, and the time of the relatively high cost of users continue to enjoy the service level of the highway, that is the "club" effect remains need more users to enjoy higher service.
The above discussion from the angle of economics to explain why the need to adopt to guarantee the highway toll through the optimal allocation of resources, just because the "polluter pays" to screening high user demand, so the limited service to use higher value up to reduce social costs, optimize the allocation of resources, and the period of expressway construction by way of financing, what whether there is no direct relationship between borrowing.

The other is circumstantial evidence in our country, other public services, both the railway and civil aviation, public transportation, subway and other transportation services, or postal services, health and education, utilities and other public facilities are not set, after the expiration of the charging time can be free to use the system. These public services are the "user pays", so that users do not need not use wanton unnecessary consumption of public services, so as to avoid the enormous waste of resources, but also objectively protect the sustainable funding of the service.

Although the "toll" policy on the surface of the "polluter pays", but based on the "resource allocation" the principle of "polluter pays" compared to the essential difference is that the "toll" logic "loan repaid free of charge, will eventually allocation of resources to the" tax payment, based on "toll" policy on the modified version of the system by the system also policy, theoretically will eventually lead to "tax payment, just in time delay. However, the principle of "resource optimization allocation" has always adopted the "user pays" approach, so as to maintain the optimal allocation of resources.

From the Perspective of Tax Burden Fairness, "Long Term Charge" is More Fair Than "Paid By Loan".

Compared with the way of collecting taxes, the charging method can achieve more fair and reasonable effect through accurate measurement, which can be realized "who uses, who benefits, who pays" and "does not use, do not pay". But according to the current "Regulations", the toll road is raising funds for highway construction of the "transitional" policy, the final construction and maintenance of all roads will take the single tax to raise funds, this will make the main agricultural vehicles in the city driving private cars, taxis, buses and traveling in rural areas, and between the main driving on the highway of the long-distance passenger and goods transport vehicles, will form a differentiated, equal burden "problem, not only can not guarantee the different road traffic efficiency of highway group equity interests, also unable to respond to the social demands of the public travel differentiated.

On the other hand, according to the "Regulations", the longest period of toll road fees not more than 30 years, the design of this system led the charge period and after the completion of the highway toll road use benefit period does not match, that is to say the toll road built in 30 years, the user must pay the costs for the construction of highway, and 30 years later the user has no need to pay, you can use free of charge, violating the "who benefits, who pays" principle, by "generation" unfair burden.

In this regard, the foreign commonly used long-term pricing model, such as the duration of charging 407 ETR highway project in Canada for 100 years, the British M6 Toll period of toll highway project for 53 years, the United States Dulles Greenway period charges and Pocahontas Parkway highway project respectively for 61 years and 99 years, and even some countries such as Hungary and Turkey no the long-term charge fees. This will not only dilute the cost of the user during the charge period, but also make the payer and the user tend to be unified in the long term, reflecting intergenerational equity.
Analysis of Advantages and Disadvantages of the New Policy Based on "User Pays"

The "Long Term Fee" Policy Can Ease the Huge Debt of Toll Roads and Enhance the Feasibility of Various Financing Methods

The "long term fee" policy can not only improve the utility of Expressway in economics theory, but also objectively change the difficult position of expressway development at present.

In the current policy of toll roads, the reality of most of the highway are far not have 30 years to repay the debt ability, government bonds, and the so-called PPP industry fund is only theoretically feasible financing mode, from the current provinces highway PPP practice evident, in addition to a close relationship with the government or state-owned enterprises the financing platform in PPP, in the field of social capital into the few independent decisions.

If the implementation of the "long fee" policy, to have sustained by the new old freeway capacity, the highway can be in the future through the due debt cash flow to pay, to pay the debts through loans, bonds or transfer etc., the feasibility will be a substantial improvement of government bonds, PPP and industry fund the investment and financing mode, as long as the fee income can maintain toll road custody and the cost of financing and a slight surplus can be reduced continuously built highway debt balance, raise funds to guarantee its sustainable, and can make the new highway has become an important position of social capital investment, to maintain the smooth realization of the planning of highway construction target.

"Long Term Fee" Policy will Reconstruct the "Two Highway System" and Support its Sustainable and Healthy Development.

The "long fee" policy benefits, in view of the current highway development is facing financial difficulties of the rescue act, but the "long fee" far-reaching policy is that it will be for the future, the reconstruction of the "two highway system" and to support the sustained and healthy development.

The original "two highway system" of the content is: through "tax" and "charging" long-term parallel way, construction of non tolling road system of universal service in ordinary highway mainly reflected in the government and to provide efficient service based highway toll road system. But the term "charges" to provide efficient service through the system by the system also extend the charging period, is set up in the "toll" logic, for a single project has yet to get rid of 30 years of domestic demand to pay off the loan principal, charging purpose is still owing on the loan rather than efficiency and emphasize the "long term" at the same time have with "low rate", although the extent to efficiency, but the effect is very limited. The "two highway system" based on "free" and "low rate" is similar to the reform of medical service system, educational system reform and affordable housing policy in china. The current medical service system reform of our country has the effect that, under the conditions of limited resources, low fees not only will inevitably lead to low efficiency, but also leads to the financial burden of the government to increase efficiency, no improper institutional arrangement and excessive welfare, will eventually make the total social welfare decline.

On the other hand, in the foreseeable future, the economic and social development of the highway network requires not only high speed, comfort and safety, analysis and automatic driving technology revolution in the big data under the guidance, to provide high quality travel services for the ultimate purpose of the highway network from the supply side perspective, more efforts should be made to absorb modern collection science and technology, active towards a more efficient, green, wisdom of the direction of development, but subject to the "loan fees" policy funds debt limitation, highway development will likely because of lack of funds and missed the transformation caused by revolution of science and technology upgrading opportunities, often inaccessible. "Long fee" policy
emphasizes the "long term, high efficiency", the highway toll level can be adjusted according to the demand of economic and social service quality level, can provide reliable funding for highway technology and service upgrade.

"Long term fee" policy can not only provide financial guarantee for the development of expressway, but also become an important source of funds for repaying the ordinary highway in the long run. Stanford University economist Toni (Tony Seba) Sebba forecast in the "thinking" to transport the 2020-2030 report: "the next 8 years, the world will no longer sell burning gasoline or diesel cars, buses and trucks, the road transport market will turn to large-scale electrification, people will use automatic driving electric steering the car (EV), because it is 10 times cheaper than diesel, the marginal cost of the battery is approximately zero, and life expectancy will reach 1 million miles". Although this report is academic analysis of the forecast, there must be in 8 years to become a reality to be tested in practice, but the general trend of land transport can clear development is electrified and the transformation direction, not for a long time. Under this background, the two major fiscal funds, the purchase tax and the fuel tax, will be greatly affected in the current highway construction and development in China. In order to encourage the development of new energy vehicles, at present, China implements the purchase of new energy vehicles free car purchase tax policy, the future is uncertain whether it will be levied. The fuel tax will reduce fuel consumption and vehicle with fuel reduction decreased rapidly. Then, the basic highway construction maintenance funds providing basic public services will face severe challenges. "Long fee" policy for ordinary highway expansion funds may be provided, under the section "the establishment of road development fund system, will be part of the highway toll revenues into highway development fund, which plays the role of ordinary highway highway feedback.

Based on the above analysis we can see that the "long fee" policy of the upgraded version of "two highway system" breakthrough", long duration and low rate", "transfer pricing mechanism no time limit, high efficiency", whether it is for the highway upgrade or for the sustainable development of highways provide long-term stable funding.

The "Long-Term Fee" Policy has Failed to Curb the Enthusiasm of Local Government Construction, and will be Seriously Questioned by Public Opinion.

The long term charge policy will revolutionize the development of toll roads and promote the sustainable development of toll roads. But it should be soberly aware that the policy can not effectively curb the enthusiasm of local government investment.

Buchanan's theory of public choice explains the problem of government failure under the condition of market economy according to the analytical model of "economic man". In short, it is because the government is also "economic man", so that their behavior is not actually tend to maximize the public interest, but according to their information obtained and the individual utility maximization principle to decision making. The short term and long term public interests of government officials can not match, and the government is more inclined to choose the decision which has obvious effect in the short term. In addition, officials spend taxpayer money, as Freedman says, "use others' money to do things for others." because of no property rights constraints, all their activities do not have to worry about the cost. Government behavior has no profit meaning, officials from personal gains and losses, for the pursuit of achievements or rent-seeking, resulting in excessive supply of public goods, social welfare costs are too high, resulting in waste of resources.

By the above theory can be seen, the government's investment enthusiasm is not from "long-term fees" policy caused, because the government itself has the attribute of "economic man", and lack of competition, without taking into account the characteristics of profit and other government agencies
and produce, namely "right, no pressure caused by. In fact, this phenomenon in the "toll" policy has appeared excessive expansion of the scale of highway construction fees momentum. "Long fee" system with respect to the longest period of 30 years the "toll" policy has not deteriorated greatly the phenomenon, but it does not relieve or inhibit the government's investment enthusiasm, to the attribute of the government "economic man" to external constraints. The need for tailored unified revenue and expenditure "and" external supervision "and other related systems designed to suppress the government investment enthusiasm, guarantee the" long fee "policy to avoid in government investment impulse flood, execution continues to be" not forget the early heart ".

On the other hand, long road loans, loan fees policy propaganda, on the one hand to promote public understanding and tolerance of highway toll, hand also gradually formed a "public to pay off the loan can be free to use the expected. But this time, part of the highway toll has crossed the most for a long time, when suddenly thrown free point the day and await for it, "long fee" policy, will undoubtedly make public dahushangdang angry feelings, its intensity can also imagine, how to resolve the question, "is the key to long-term credibility for the smooth implementation of the charge policy. In addition to strengthening public awareness, interpretation and guidance of the "long-term charge" policy, the most fundamental solution lies in the establishment of an open and transparent regulatory regime.

Summary

This paper analyzes the current toll road policy has experienced thirty years of practice and development, has entered the depth of policy fatigue, has been unable to meet the requirement of the development of the situation and the new reform, and demonstrates that this high quality highway travel services should adhere to the "polluter pays" principle from the Perspective of economics, to provide long-term by the way of charging. Around the "long fee", this paper discusses the "long fee" policy based on the analysis of advantages and disadvantages, in order to make the "long fee" policy weaknesses, play to maximize the social benefit of the mind, the need to build a set of system design from the pricing mechanism, balance mechanism, management and supervision etc.

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