INVESTMENT AND FINANCING STUDY FOR CHINA'S

EXPRESSWAY CONSTRUCTION

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Abstract: The purpose of the paper is to study the investment and financing methods for expressway construction in China. China is situated in a high-speed developing period, and infrastructure is urgently necessary to support the high growth of Chinese economy. However, shortage of fund in infrastructure construction is an inevitable problem. Through analyzing the current investment and financing system for expressway, and discussing the existing problems, several propositions for perfecting the expressway investment and financing system are put forward. It is indicated that in future, road bond should play an important role in expressway construction. In addition, government should guarantee enough national capital in expressway construction in underdeveloped area, such as west area, in order to stimulate its economic development.

Keywords: expressway construction, economic feature, investment and financing methods

1. EXPRESSWAY CONSTRUCTION IN CHINA

China is situated in a high-speed developing period, and infrastructure is urgently necessary to support the high growth of Chinese economy. National highway system, as a fundamental infrastructure, is playing an important role. In 2002, the highway's share of passenger transport is 91.7%, and the highway's share of freight is 78.3%. The highway's share of person-kilometers is 55.2%, share of ton-kilometers is 13.3%. National highway system, as the basal transportation infrastructure, especially should be planned and constructed preferentially.

Since 1990s', highway, as well as expressway construction is confronted with a high growth period as shown in Fig. 1. In 1949 there were only 80,000 kilometers highway in China, however, by the end of 2003, total length of highway has reached to 1,801,600 kilometers, and 29,769 kilometers expressway has been constructed in China since the first expressway opened to traffic in 1988¹⁾. Although expressway takes only 1.65% of road

network in China, it is playing an important role in Chinese economic development due to its high speed, high capacity and other advantages.

According to "National Expressway Network Planning (draft)"²⁾, the final total length is 85,000 kilometers, among it 68,000 kilometers are arterial lines, and other 17,000 kilometers belong to local loop lines and connection lines. In detail, there are 7 radiating lines originating from Beijing, 9 south-north direction lines, and 18 east-west direction lines. As a phase target, 35,000 kilometers (40% of total length) expressway will be constructed by the end of 2005. By the end of 2007, expressway should be extended to 42,000 kilometers, and 50,000-55,000 kilometers will open to traffic by the end of 2010. Others will be constructed during 2010-2030. It is estimated that at least 700 billion Yuan RMB is required to construct National Arterial Highway System (total length including expressway is 35,000 kilometers) by the end of 2007.



Fig. 1 Total Length of Highway and Expressway

2. INFRASTRUCTURE INVESTMENT AND FINANCING IN CHINA

In China, varieties of infrastructure financing methods are actively implemented. Generally, they can be concluded into 5 financing categories³⁾ as shown in Table 1. At the beginning the government appropriated large sum of money for infrastructure construction. In 1978, National budget was 38.92 billion Yuan, it accounted for 77.7% of annual infrastructure investment. It can be seen from Table 1 that infrastructure investment in China increases very fast in recent years and the constitutional proportion has changed greatly. In 2002 the annual investment was 1633.58 billion Yuan, which is 32 times of that of 1978, and the national financing share was 14.3%, the share of loan from domestic bank was 25.7%, the share of foreign investment was 6%, self-financing share was 45.6%, and others were 8.4%. At present, self-financing has become the primary financing category. It consists of local self-financing,

highway construction bond, domestic stock, and negotiable securities financing. Local self-financing consists of many items, such as road maintenance tax, etc^{4} .

Year	National budget	Domestic loan	Foreign capital	Self-financing	Others	Total
1978	38.92	0.0	2.82	8.36	0.0	50.10
1980	30.00	4.12	5.37	16.39	0.0	55.88
1985	38.12	18.79	7.35	34.00	9.18	107.44
1990	36.36	37.86	22.41	52.99	20.76	170.38
1991	34.85	52.71	24.00	74.61	25.36	211.53
1992	30.79	83.15	33.42	129.29	29.62	306.27
1993	43.18	111.76	45.62	199.13	60.86	460.55
1994	43.46	158.35	91.20	282.05	58.45	633.51
1995	44.02	149.54	100.07	314.01	86.57	694.21
1996	52.11	193.78	123.48	375.23	95.69	840.29
1997	57.45	223.99	135.19	443.22	103.61	963.47
1998	98.58	275.97	131.03	481.79	119.95	1107.32
1999	138.69	281.37	92.79	479.97	137.94	1130.76
2000	148.47	322.17	82.74	517.09	122.01	1192.48
2001	179.80	333.55	88.47	612.39	130.75	1344.96
2002	233.23	419.68	98.55	744.18	137.94	1633.58

Table 1 Amount of Funds Category in Chinese Infrastructure Investment (Billion Yuan)

In the case of financing sources for expressway, there exist following features.

- (1) Central and local governments are leading in the financing process. Central and local governments are attaching importance on highway construction. In 1998, among national precedence projects, national investment is 24.1%; local government's investment is 18.2%, totally 42.3%. Most of them belong to specialized financial funds of central and local government. Immitting of specialized financial funds is actively operating on modulating investment structure, expediting high rank highway's construction, such as national arterial highway (most of them are expressway).
- (2) Large amount of bank loan has eased the financing insufficiency. As shown in Fig. 2, the share of national budget decreased sharply. On the other hand, domestic loan and self-financing increased. In 1998, loan from banks were 84.5 billion Yuan, it occupied 39% of the total highway construction funds. At present, bank loan accounts for half of the expressway construction funds.
- (3) Market mechanism has exerted positive influence on financing sources. Foreign capitals sources, which are supporting the expressway construction, have been broadened. Especially, the loans from international finance organization and foreign government are propitious to expressway construction, since their repayment periods are long, and the

amounts of loans are large.

(4) Toll income of the expressway is refunding the expressway construction expenditure. Toll collection policy is implemented to all expressways in china. Toll income, in turn, helps to finance the expressway construction for next period.



Fig. 2 Constitution of Investment Categories

3. PROBLEM ANALYSIS AND PROPOSITIONS TO FINANCING STRATEGIES

(1) Necessity of Expressway Construction and Shortage of Funds

Although more than 30,000 kilometers expressway lines have been constructed within 15 years, expressway system is still situated in preliminary developing period. Lack of total length and shortage of funds are two serious problems occurring simultaneously.

Lack of total length is the fundamental problem; therefore the construction of expressway should be continued. This is obvious if it is compared with developed countries. The total length of expressway in China ranks No.2 in the world. However, the total length in China is only 1/3 of that of USA, although the ground areas are almost the same. As shown in Fig. 3, Expressway density in China is 0.26km/(million KM²); it is equivalent to 27% of USA, 16% of Japan, and 8% of Germany. In USA, expressway (mainly interstate highway) connects all cities which has 50,000 population or over. In Germany, expressway connects all cities, which has 50,000 population or over and 90% cities which population fewer than 50,000. The interchange can be found within 30 minutes from anywhere. In Japan, expressway system

connects all cities which has 100,000 population or over. Interchange can be found within 1 hour's driving distance for 70% areas. However, in China, expressway system only connects capital cities of each province (except Tibet), and the big cities which population is over 500,000 people. Only 60% cities which population is over 200,000 people can be connected by expressway system. The national economy of China has ascended to topper level in the world, expressway system is still underdeveloped, and expressway construction is urgently necessary.

The necessity of expressway construction can also be explained by comparing economic status and construction period between China and USA. USA started its large-scale expressway construction since 1958, more than 80,000 km freeway network has been constructed during 30 years. The construction of expressway in China began since 1990's, and the GDP per person in 1991 is US\$ 4.500, which is equivalent to the economic level of USA in 1958 (US\$4,473). It can be supposed that another 50,000 km's long expressway is still necessary according to American scale, if China keeps its economic growth rate. However, lack of fund is the most severe problem in infrastructure construction in China. It is clear that financing strategy study is still an important task.



Fig. 3 Comparison of Expressway and Highway Status (Note: Data in the figure are normalized, and P. R. China (1999) is 1.0)

(2) Problems Confronting in Future Expressway Construction

In this study, problems exist in financing systems in China are summarized as following. (a) Indebtedness is becoming an important problem. It is estimated that by the end of 2005, the debt will be added up to 900 billion Yuan RMB. Both road companies and the banks are facing big risk.

- (b) Good payoff expressway lines have been preferentially constructed, it is estimated that among the planned expressway lines, proportion of good payoff lines will be small. This may be an obstacle to future investment.
- (c) Investment from the government is not enough. In fact, the national budget has been decreasing recent years as shown in Fig. 2.
- (d) New policy surrounding for new type financing is not consummated.

(3) Propositions to Financing Strategies for Expressway Construction

China is one of the countries in which varieties of road financing methods are actively conducted. Some leading financing modes currently in effect in China are summarized and analyzed in Table 2. However, it must be recognized that too many financing categories may not bring on much investment. There is no equipollence between them.

Financing mode	Financing difficulty	Financing amount	Financing cost	Financing venture
National bond	Easy	Large amount	Low	Very small
Loan from bank	Common	Large amount	Low	Very small
Enterprise bond	Common	Flexible	Common	Relatively big
Stocks	Relatively difficult	Common	Common	Common
Foreign capitals	Relatively difficult	Flexible	High	High
Project financing	Difficult	Flexible	High	High

Table 2 Evaluations on Financing System⁵⁾

On the basis of the analysis, it is suggested in this paper that:

- (1) In China the government should dominate road financing. The difference of economy and geography between different areas has been a huge obstacle in economy developing process. In Chinese east side, economy scale and population are developing, however west side is underdeveloped. The gap of infrastructure and social development between east side and west side is big. It is difficult for mercantile financing to be the main capital source in those underdeveloped areas. Government should guarantee enough national capital in highway construction, especially for west area in order to accelerate its development.
- (2) Steady source of financing should be formed. Domestic or foreign bank loan, bonds and stocks are proper financing methods in China, however foreign direct financing, project financing will play limited role. This is because that, (a) large amount of capital is necessary in highway construction; (b) the planning and long-term characters require a steady source of financing; (c) present investment circumstance and law circumstance

astrict usage of some financing modes.

- (3) Road bond should play an important role in expressway construction since it has advantages of few difficulty, large amount, and low cost and very small risk. When bank loan reaches the limitation, road bond will become the biggest potential financing mode.
- (4) Relative rule of law should be enacted in order to instruct regular investment, including providing west area with preferential financing policies.

4. CONCLUSION

More than 30,000 kilometers long expressway system has been constructed in China within a short period of 15 years. However, total length is not enough and the expressway network has not been formed. In this study, it is pointed out that expressway system should be constructed to support Chinese economic development and to eliminate the gap between east and west areas. As a result, large amount of investment will be needed in future several years.

In China, various infrastructure-financing methods are actively implemented. However, lack of funds is still an inevitable problem. In this study, it is suggested that in China in order to ensure the smooth expressway construction, the government should dominate road financing in order to guarantee enough national capital in highway construction in underdeveloped areas. In next decade, steady source of financing should be ensured. Road bond should play an important role in expressway construction. Of course, relative rule of law should be enacted in order to instruct regular investment.

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