

PRIVATE SECTOR PARTICIPATION IN THE ROAD SECTOR IN CHINA

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ABSTRACT

Transport links are necessary to improve economic efficiency and reduce poverty. For this purpose, the Government of China is embarking on the development of the national trunk highway system, a network of interprovincial expressways of 35,500 km, during the period 1991-2010 with the help of external assistance, such as that of the Asian Development Bank. This is complemented by the development of a secondary and tertiary road network. To finance the road investment, however, a large financing gap needs to be filled. To this end, the Government is creating a framework to encourage private sector participation in financing road investments. This paper discusses the current status of road development in China and the experience of private sector participation through cooperative joint ventures, securitization, revenue bond financing and BOT schemes. The paper also raises some issues associated with such approaches to road infrastructure financing.

INTRODUCTION

Despite considerable investments in the road sector, the road network in China is still inadequate and does not provide efficient transport access to large parts of the country. Better transport links are necessary to improve economic efficiency, foster domestic and international trade, facilitate regional integration and reduce poverty. The road network must be developed to facilitate sustainable economic development and to ensure that the impact of investments reaches poor

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areas and rural residents in the hinterlands, thus spreading economic and social benefits widely. To finance road investment, it is estimated that about \$ 504 billion is needed from 1996 to 2010. Available revenues are estimated at \$ 302 billion from road user charges and \$ 29 billion from toll collections, leaving a financing gap of \$ 173 billion or about \$ 12 billion per year. To fill the large financing gap, the Government is creating a framework to encourage private sector participation in financing road investments.

I. OVERVIEW OF ROAD DEVELOPMENT

A. Government policies and plans

The heart of the road network is the national trunk highway system (NTHS), a network of interprovincial expressways and high-class highways of about 35,500 km, to be constructed over a 20-year period up to 2010 (see map and table 1). About 17,900 km, or 51 per cent, was completed as of end 2000. NTHS will be

Table 1. National trunk highway system

| Route no. | Cities connected | Distance in km |
|------------------------------|------------------------------|----------------|
| North-South direction | | |
| GZ10 | Tonjiang-Sanya | 5 200 |
| GZ20 | Beijing-Fuzhou | 2 500 |
| GZ30 | Beijing-Zhuhai | 2 400 |
| GZ40 | Erlianhaote-Hekou | 3 600 |
| GZ50 | Chongqing-Zhanjiang | 1 400 |
| East-West direction | | |
| GZ15 | Suifenghe-Manzhouli | 1 300 |
| GZ25 | Dandong-Lhasa | 4 600 |
| GZ35 | Qingdao-Yinchuan | 1 600 |
| GZ45 | Lianyungang-Huogersuo | 4 400 |
| GZ55 | Shanghai-Chengdu | 2 500 |
| GZ65 | Shanghai-Ruili | 4 000 |
| GZ75 | Hengyang-Kunming | 2 000 |
| Total | | 35 500 |

Source: Ministry of Communications.

Note: The routes in bold face are priority routes.

complemented by the development of a network of new national, provincial, county and township roads. The Government views road development as a key component of its strategy to improve access to markets and services. In particular, the Government's investment plans for the road sector consider the need to provide infrastructure so as to facilitate economic growth and reduce poverty. Government policies for road development are based on the following principles: (a) constructing expressways to expand NTHS to link all cities with a population of more than 500,000; (b) developing secondary roads, particularly those that will help reduce poverty and promote rural markets; and (c) building roads that will support regional cooperation with neighbouring countries in the south-west, north-east, and north-west.

The tenth Five-Year Plan (2001-2005) calls for (a) accelerating the construction of the backbone network of highways and national roads, with the focus on five north-south and seven east-west expressways included in NTHS, and achieving full opening of three north-south and two east-west expressways; (b) achieving the initial construction of eight new highways in the western region to improve the structure of the highway network and its reach; and (c) by 2005, having approximately 1.6 million km of highways open to traffic, with expressways accounting for 25,000 km. To improve road conditions, the 10FYP will support highway construction in the rural areas and the Government will complete building the roads that link poor counties with national and provincial highways. The current status of road development in China and the target for 2005 are shown in table 2.

In March 2000, the Government adopted the long-term western region development strategy for developing the western part¹ of the country. This strategy, being the key theme of the 10FYP, aims to reduce development disparities between the western region and the coastal region and road development is given highest priority as an effective means to promote economic growth and reduce poverty in the region. In the road sector, the strategy aims at (a) facilitating economic development and poverty reduction in the western region, where road

¹ Consisting of the following 12 provinces: Xingjiang, Qinghai, Gansu, Ningxia, Xizang, Sichuan, Yunnan, Guizhou, Shaanxi, Chongqing, Inner Mongolia, and Guangxi.

Table 2. Road development in China during 1995-2005

| | Road length (km) | Road density (km/100 km ²) | Expressway length (km) | Township with road access (percentage) | Village with road access (percentage) |
|---------------------------------------|---------------------|---|------------------------------|---|---|
| 1995 | 1.16 million | 12.05 | 2 141 | 97.1 | 80 |
| 2000 | 1.40 million | 14.61 | 16 314 | 98.3 | 89 |
| Annual construction (1995-2000) | 48 000 km/year | – | 2 835 km/year | – | – |
| 2005 (target) | 1.60 million | 16.70 | 25 000 | 99.5 | 93 |
| Annual construction (2000-2005) | 40 000 km/year | – | 1 737 km/year | – | – |

Source: Ministry of Communications.

density is only less than half of the national average; (b) linking the western region with the central and eastern regions; (c) providing access to the trade outlets for the western region at the eastern and southern seaports; and (d) promoting regional cooperation with the neighbouring countries to the west and south-west of China. To achieve these objectives, the eight priority routes² were identified by the Government.

B. Asian Development Bank's assistance

Since 1991, the Asian Development Bank (ADB) has provided 22 loans (see table 3 and map) totalling nearly \$ 3.6 billion to finance 3,000 km of highway development, together with the associated 4,484 km local road network. Local roads have been included in the project scope since 1995 to make ADB intervention in the road sector more pro-poor. Of these, 15 have been completed and are open to traffic. Most expressway projects are being implemented ahead of the original construction schedules and within the original costs. The project completion reports of these projects concluded that eight projects were

² These are Altai-Hongqilafu, Xi'ning-Korla, Yinchuan-Wuhan, Arongqi-Behai, Lanzhou-Mohan, Xi'an-Hefei, Chongqing-Changsha, and Chengdu-Zhangmu.



Map of the road sector projects financed by the Asian Development Bank in China

successful and one was partly successful, mainly owing to inadequate safety facilities, enforcement and partial compliance with environmental mitigation measures. Remedial actions have been subsequently taken to address these problems. The post-evaluation reports for four projects concluded that all these projects were successful.

Table 3. Completed or ongoing ADB-financed road projects

| No. | Project | Length (km) | Loan (millions of dollars) | Year of approval | Year of opening |
|--------------|---|----------------|----------------------------------|---------------------|--------------------|
| 1 | Shanghai-Nanpu Bridge | – | 70 | 1991 | 1991 |
| 2 | Shanghai Yangpu Bridge | – | 85 | 1992 | 1993 |
| 3 | Shenyang-Benxi Highway | 75 | 50 | 1992 | 1996 |
| 4 | Hunan Expressway | 52 | 74 | 1993 | 1996 |
| 5 | Jilin Expressway | 133 | 126 | 1993 | 1996 |
| 6 | Heilongjiang Expressway | 350 | 142 | 1994 | 1997 |
| 7 | Yunnan Expressway | 200 | 150 | 1994 | 1998 |
| 8 | Hebei Expressway | 200 | 220 | 1995 | 1999 |
| 9 | Liaoning Expressway | 110 | 100 | 1995 | 1998 |
| 10 | Chongqing Expressway | 89 | 150 | 1996 | 2001 |
| 11 | Shenyang Jinzhou Expressway | 192 | 200 | 1996 | 2000 |
| 12 | Jiangxi Expressway | 134 | 150 | 1996 | 2000 |
| 13 | Hebei Roads Development | 140 | 180 | 1997 | 2000 |
| 14 | Chengdu-Nanchong Expressway | 208 | 250 | 1998 | Ongoing |
| 15 | Changchun-Harbin Expressway (Changchun-Yushu) | 161 | 220 | 1998 | 2002 |
| 16 | Changchun-Harbin Expressway (Harbin-Shuangcheng) | 101 | 170 | 1998 | 2001 |
| 17 | Southern Yunnan Road Development | 147 | 250 | 1999 | Ongoing |
| 18 | Shanxi Road Development | 176 | 250 | 1999 | Ongoing |
| 19 | Chongqing-Guizhou Roads (Leishendian-Chongxihe) | 50 | 120 | 2000 | Ongoing |
| 20 | Chongqing-Guizhou Roads (Chongxihe-Zunyi) | 127 | 200 | 2000 | Ongoing |
| 21 | Shaanxi Roads Development | 176 | 250 | 2001 | Ongoing |
| 22 | Guangxi Roads Development | 179 | 150 | 2001 | Ongoing |
| Total | | 3 000 | 3 557 | | |

Source: ADB estimates.

Key findings of the post-evaluation of completed projects are summarized below. Heilongjiang Expressway project: The 350-km expressway connecting Harbin and Jiamusi was completed in August 1997, one year ahead of schedule, costing \$ 309 million. The quality of the civil works is sound and the riding quality high. The traffic volume was about 3,000 vehicles per day in 2000. Average travel time was reduced from 15 hours to 4.5 hours, and VOC savings were about 40 per cent. The economic internal rate of return was recalculated at 14.6 per cent. The project was rated successful.

Jilin Expressway project: The 133-km expressway connecting Changchun and Siping was opened to traffic in September 1996, one year ahead of schedule, with the cost of \$ 424 million, which was 31 per cent less than the appraisal estimate. The completed facilities were very good following the prescribed design standards. The traffic volume was 5,540 medium truck equivalents per day in 1999. The main project benefits include savings in VOC and time (1.6 hours for cars and 2 hours for trucks). The project fully achieved the target, with a reestimated economic internal rate of return of 12.5 per cent as envisaged during appraisal and was rated as highly successful in 2000.

The Beijing-Tongjiang expressway route (1,867 km), which was recently completed at a cost of about Y36 billion, and has facilitated the economic development in the north-eastern part of China. According to a recent study,³ the major impacts are beginning to emerge. The average travel time reduction for the entire route was from 35 hours to 17 hours, or 51 per cent reduction for cars and from 45 hours to 25 hours, or 44 per cent reduction for trucks. Traffic diversion from parallel roads to the expressway was significant at a range of 50 to 80 per cent. The accident rate reduction was also significant, ranging between 50 per cent and 76 per cent. During the period 1996-2000, the average annual GDP growth rate for the four provinces and two municipalities serviced by the corridor was 9.7 per cent, 2.6 percentage points higher than the national average of 7.1 per cent. The expressway facilitated the establishment of five economic and technological development zones in Changchun.

³ ADB, 2002. *Road Sector Impact Study*. Manila (Draft).

C. ADB future plans

ADB operational strategy in China's road sector supports (a) construction of roads that connect major growth centres and promote linkages with hinterland economies; (b) integration of the network so that NTHS is supported by a system of local roads, particularly those that provide access to poor areas; (c) promotion of road safety; (d) further institutional strengthening to increase the commercial orientation and efficiency of expressway organizations; (e) improvement of highway planning and evaluation techniques; (f) adoption of appropriate pricing policies to ensure optimum use of road transport capacity; and (vii) use of alternative methods of investment financing, including private sector participation. Within the operational strategy for China, ADB support for road development will continue in the next four years with a total lending programme of \$ 2.4 billion (see table 4). The lending programme is complemented by a technical assistance programme, amounting to \$ 10.2 million during the same period (see table 5).

Table 4. ADB's planned road projects during 2002-2005

| Year | Proposed projects | Loan amount (millions of dollars) |
|--------------|--|--------------------------------------|
| 2002 | Shanxi Road Development II (Houma-Yumenkou) | 150 |
| | Western Yunnan Roads Development (Baoshan-Longlin) | 250 |
| | Southern Sichuan Roads Development (Xichang-Panzhihua) | 300 |
| | | |
| 2003 | Xi'an Urban Transport | 200 |
| | Ningxia Roads Development | 250 |
| 2004 | Guangxi Roads Development II | 150 |
| | Hunan Roads Development II | 300 |
| | Chongqing Roads Development | 300 |
| 2005 | Gansu Roads Development | 300 |
| | Sichuan Roads Development | 200 |
| Total | | 2 400 |

Source: ADB estimates.

Table 5. Planned technical assistance during 2002-2005

| Year | Proposed technical assistance | Amount (thousands of dollars) |
|--------------|---|--|
| 2002 | Guangxi Roads Development II | 600 |
| | Hunan Roads Development II | 600 |
| | Xi'an Urban Transport | 750 |
| | Socioeconomic Assessment of Road Projects | 250 |
| 2003 | Chongqing Roads Development | 600 |
| | Gansu Roads Development | 600 |
| | Sichuan Roads Development | 600 |
| | Transport Sector Restructuring | 600 |
| 2004 | Transport Infrastructure Development for Regional Cooperation | 600 |
| | Western Roads I | 600 |
| | Urban Transport | 600 |
| | Rural Road Development Strategy | 500 |
| 2005 | Western Roads II | 700 |
| | Western Roads III | 700 |
| | Urban Transport Development | 700 |
| | Road Safety Improvement | 700 |
| | Rural Transport Services Study | 500 |
| Total | | 10 200 |

Source: ADB estimates.

II. PRIVATE SECTOR PARTICIPATION IN THE ROAD SECTOR

A. Background

Investments in private infrastructure projects totalled \$ 44 billion in China during 1990-2000, accounting for 6 per cent of such investments in emerging markets. Although enormous investments were channelled into China's infrastructure over the past two decades, only in the late 1980s and early 1990s did the Government start to allow private investment. As a result private investment accounted for less than 10 per cent of the funds that flowed into infrastructure over the past

10 years. Most came from foreign investors and little from the domestic private sector.

B. Government initiatives

The Government has taken a number of significant steps to mobilize domestic resources, including developing capital markets and transforming specialized banks into commercial banks. ADB has provided assistance to help develop China's capital markets and contributed to improving governance in the capital markets by supporting the drafting of the 1998 Securities Law. The Government is also seeking a greater role for private sector financing in highways and other infrastructure projects. In addition to increasing the resources available for highway development, the use of foreign direct investment would allow project risks to be spread over a large community of investor and help improve the management efficiency and quality of highway services. The Government is assessing a broad range of financial instruments for mobilizing additional domestic and international funding sources, including the domestic capital markets. ADB provided assistance (a) in preparing a feasibility study of financing a road project using the build-operate-transfer (BOT) scheme, and for capacity-building in relation to BOT processes; and (b) in developing institutional capacity to promote corporatization, leasing and securitization to attract private sector participation in the road sector.

C. Experience in China

1. Cooperative joint venture

The cooperative joint venture has been the most common method of using nongovernmental funds in toll road financing in China for several reasons: (a) strong equity investor interest in toll roads; (b) benefits from the cooperative characteristics of this type of joint venture;⁴ (c) limited lender interest in toll road projects, mainly owing

⁴ In a cooperative joint-venture scheme, the foreign investor receives a percentage of profit higher than its equity share during the early years of operation until its equity investment is fully recovered and less over the following years. Normal equity joint ventures are less attractive because there is no such preference for foreign investments.

to unresolved problems of risk allocation; and (d) the absence of debt service coverage requirements. Its primary disadvantage is its high cost to road users and to the economy. Equity investors require a higher rate of return than lenders and seek to obtain this from road users through higher tolls, reducing the net economic benefits from projects. The current expected rate of return on cooperative joint venture equity for road projects in China is about 18 per cent. ADB facilitated the development of cooperative joint ventures in Guangdong, Hebei, Hunan and Sichuan provinces by investing through China Assets Holding Limited and DeMat TransAsia Holdings Limited through the Asian Infrastructure Fund (see table 6).

2. Securitization

Securitization through an initial public offering (IPO) can benefit from cash flow accruing at the operating entity level as well as at the project level. The share of the toll road entity sold to public investors usually ranges from 20 to 40 per cent. The advantage of this financing option is its low cost. Securitization is undertaken at the operation stage, after certain project risks have been mitigated, such as construction delays, cost overruns and initial traffic levels. An H share listing on the stock exchange in Hong Kong, China is an inexpensive modality with a high price earnings ratio⁵ (6 to 17 times in 1999). B share listings on the Shenzhen or Shanghai stock exchanges are slightly more expensive, with a price earnings ratio of 10 to 15 times in 1999, which is lower and less volatile than A share listings (with average monthly price earnings ratio of about 54 times in 2000).⁶ The greatest disadvantage of this financing modality is the time required to complete the regulatory formalities. In addition, in the Shenzhen and Shanghai stock exchanges, companies must have three profitable years of operation before they can be listed. Because of these issues, this modality is more appropriate as a refinancing instrument.

⁵ Calculated as the stock price divided by the earnings per share.

⁶ An H share listing involves the sale of shares on the stock exchange in Hong Kong, China only in foreign currency. A and B listings involve the sale of shares on a Chinese stock exchange (Shanghai or Shenzhen) in local and foreign currencies.

Table 6. Investments by private sector funds with ADB holdings

| Investment no., fund name | Investee/projects | Equity (millions of dollars) |
|---|--|---|
| 7072, China Assets Holdings Ltd. (CAHL) | Zhongshan Dongfu Road and Bridge Company Construction and operation of a dual Class II highway between Dongfeng town and Fusha town (17 km) in Zhongshan City, Guangdong Province | 9.19 |
| | Zhongshan Nangang Road and Bridge Company Construction and operation of a dual Class II highway between Fusha town and Gangkou town (11 km) in Zhongshan City, Guangdong Province | 6.01 |
| 7101, Asian Infrastructure Fund (AIF) through DeMat TransAsia Holdings Limited | Hebei Province: 15 per cent of the Shijiazhuang- Taiyuan (Shitai) expressway (69 km), jointly owned and managed by five cooperative joint ventures established with the Hebei Provincial Highway Development Company Limited, one of Hebei Provincial Communications Department's wholly-owned subsidiaries | 71.28 |
| | Sichuan Province: 13 per cent in a cooperative joint venture with a company affiliated with the Sichuan Provincial Communications Department to construct, operate, and maintain the Chengdu-Mianyang expressway (90 km) and adjacent Class I and Class II tollways (52 km). Hunan Province: 90 per cent in cooperative joint venture with the Xiangtan Municipal Government to operate an existing bridge and build a new one | — |
| 7115, Asian Infrastructure Development Co. (AIDEC) | Tianjin-Shugang Highway Company: Upgrade and operate a 40 km three-lane dual carriageway between Tianjin City and Tanggu Port under a 25-year build-operate-transfer concession | 36.20 |
| | Total investments | 122.68 |

Source: ADB estimates.

Since 1995, 15 Chinese expressway companies and infrastructure developers have been listed on the stock exchanges in Hong Kong, China; Shanghai and Shenzhen.⁷ Two of these projects were financed by ADB.⁸ After three years of profitable operations, the Jilin Provincial Expressway Corporation⁹ established the Northeast Expressway Co., Ltd.¹⁰ by securitizing the future toll revenues of the expressway. The company went public on 10 August 1999 offering 25 per cent of the total shares on the Shanghai stock exchange as an A share listing. The issue price was Y4.00 per share and the trading prices ranged between Y4.92 and Y6.40 after listing. A price earning ratio of 38 was achieved during 2000. ADB helped review the IPO proposal and revenue projections of the corporation for this transaction. The Hunan Expressway Project was completed in November 1996 and one of the project components, together with other toll roads and bridges, was listed on the Shenzhen stock exchange, B share section, on 28 January 1999. Because of a stock split in May 1999, earnings per share have decreased slightly, while the market capitalization has reached Y2,629 million. The average price earning ratio was 30 in 1999.

3. Revenue bond financing

Revenue bond financing involves the sale of rated notes backed by a pledge of an entity's cash flow sources. This is a relatively new highway financing modality in Asia. In August 1996, Zuhai Municipality in Guangdong Province completed a landmark entity-level revenue bond financing, which raised \$ 200 million from investors in the United States of America for the Zhuhai Highway Company Limited. The main problem of this financing option is the weak regulatory

⁷ These are: Anhui, Jiangsu, Shenzhen, Sichuan, Zhejiang Expressways and Cheung Kong, New World, and Road King Infrastructures, in Hong Kong (H shares); Northeast (Jilin) Expressway in Shanghai (A shares); Ganyue, Guangdong, Hainan, and Hubei Expressways in Shenzhen (A shares); and Hunan and Guangdong Expressways in Shenzhen (B shares).

⁸ Loan 1262-PRC: *Jilin Expressway Project*, for \$ 126 million, approved on 9 November 1993, and Loan 1261-PRC: *Hunan Expressway Project*, for \$ 74 million, approved on 9 November 1993

⁹ Wholly owned subsidiary of the Jilin Provincial Communications Department.

¹⁰ Founded jointly by the Jilin and the Heilongjiang Provincial Expressway Corporations and a subsidiary of MOC.

framework, which results in a difficult and time-consuming procedure for securing the necessary approvals. The United States dollar rate of return required by investors in an entity-level revenue bond was in the 10-15 per cent range for a China issue in 1999.

4. BOT structure

Although the BOT approach has been widely used in the power generation industry, it has met with only limited success in the road sector, except where the project is a natural monopoly, such as a bridge or tunnel. While different financing methods can be applied to BOT projects, it is an important model that differs from traditional government-sponsored structures by transferring risk to the private sector. It relieves the government of funding responsibility, but makes the investment less attractive to private investors in a high-risk environment. In China, the State Development Planning Commission has developed a policy and regulatory framework to facilitate the formulation and award of BOT projects, but this has yet to be formalized through government decree. One of a few road projects in China attractive enough to be developed under a BOT scheme is the Tianjin-Shugang Highway project to upgrade and operate a 40 km three-lane dual expressway between Tianjin City and Tanggu Port, under a 25-year concession. ADB holds an equity stake in the Tianjin-Shugang Highway through the Asian Infrastructure Development Company. Although ADB attempted to help develop the Yangjiang-Dianbai expressway in Guangdong Province on a BOT basis, the feasibility study concluded that the project was not financially viable for this modality because of weak performance criteria and high risks associated with the traffic forecast.

The initial model BOT projects were structured to have 100 per cent foreign financing. The Asian currency turmoil made investors and commercial lenders cautious about infrastructure projects that use foreign currency debt in construction but generate revenues in local currency. Part of ADB's policy dialogue has been to encourage the Government to allow BOT sponsors to arrange some domestic financing should they so wish. Other potential risks for BOT projects are lower-than-expected levels of traffic and revenues in the early years of operation, construction cost overruns, implementation delays and land acquisition problems. The

current lack of legal and regulatory clarity has also increased the perceived risk of the BOT approach, making it unattractive for most road projects in China. The model based on cooperative joint ventures is rather costly and hence feasible only for projects with high financial rates of return.

D. ADB investment in private sector funds

ADB has holdings in several funds that invested about \$ 122.7 million in equity in seven road projects, mostly on the eastern coast of China (see table 6). The projects in which ADB has participated are well established in the market with satisfactory track records and quality assets. As such, most are operating profitably, although traffic flows are generally below those forecast. Future financial returns are expected to improve as the projects mature; most are still in the early stages of operation when revenues have not peaked. In an exception to the generally good performance, revenues are much lower than anticipated in one case because of inadequate toll collection arrangements and a competing road with similar travel distance and time.

E. Key issues in private sector participation¹¹

1. Regulatory framework

The Government has made substantial progress in issuing a series of laws, regulations, notices and circulars relevant and critical to private participation in infrastructure, such as the Bidding Law, Unified Contract Law, Security Law, Project Finance Measures and the BOT Circular. However, much still needs to be done to further strengthen the legal system. Major constraints perceived by investors include lack of transparency in the legal framework in general, inconsistencies among various laws and regulations, inconsistent implementation and enforcement, a lengthy and unpredictable approval process and subsequent regulations.

¹¹ This section is largely drawn from findings of ADB-financed TA 2952-PRC: Corporatization, Leasing, and Securitization in the Road Sector, Consultant's Final Report, December 2001.

The regulatory framework relevant to private participation in infrastructure involves a series of laws, regulations, notices, circulars and implementing rules issued by agencies at the central and local levels. The underdeveloped legal system, however, leaves many important and routine decisions to administrative authorities, often with inconsistent results. For instance, three main regulations granting operating rights for toll roads¹² appear to have inconsistencies and contradictions among them.

The 1995 BOT Circular is considered to be a major breakthrough to clarify some unanswered issues concerning private participation in infrastructure by previous laws, such as concession terms, granting authorities, currency convertibility and procurement. Nevertheless, the Circular was drafted as a limited experiment and requires further refinement. There are various options available for the Government to move forward: (a) to tighten existing laws and procedures without passing specific legislation on private sector participation; (b) to pass the BOT Circular into law; and (c) to pass a new framework law covering a broad range of models and recommend the framework law as the most effective way. The framework law is expected to:

- (i) Establish a framework of laws specifically for projects involving the private sector, clarifying such inconsistencies by not repeating other laws but by referring to them as they develop or by referring to the preferred law;
- (ii) Apply to all projects involving private participation in infrastructure, covering concessions, management and leasing contracts, BOT projects and so on;
- (iii) Emphasize the development and protection of basic contract rights for projects involving private participation in infrastructure;
- (iv) Provide flexibility so that project terms are left for negotiations between the granting authority and the investors. (i.e., the BOT Circular prohibits domestic

¹² The Highway Law, the Notice of Strengthening the Administration of Transfer of Infrastructure Assets, and Measures of Transfer of Operating Right of Highway with Compensation.

financial and non-financial institutions from providing any guarantees for project financing);

- (v) Refer to model contracts to facilitate implementation, but should not oblige parties to use those contract terms;
- (vi) Provide protection and certainty to existing investors;
- (vii) Be consistent with relevant sector laws.

2. Approval processes

The approval processes of projects with private sector participation are cumbersome. The official review and approval process for infrastructure project generally has three stages: project approval stage, project company approval stage and operational approval stage. A basic project approval process for a pilot BOT project requires eight approvals with various agencies, with each step further requiring smaller approvals, consultations, and filings with various agencies. For non-BOT projects or projects initiated by local governments, the approval process is more complex, requiring 12 approvals from various agencies, both central and local. Then, the next step to establish a project company could require additional 18 approvals, followed by more than 10 other approvals at the stage of operational approvals. In short, to prepare an infrastructure project could require up to about 40 approvals altogether. The approval process continues even after the project starts, through site inspections from numerous local government agencies. International experience shows that cumbersome current approval processes can be streamlined with commitment from the highest possible level of the government.

3. Institutional capacity

Capacity-building of local government will be essential for successful formulation of infrastructure projects with private sector participation. Increasing private participation in infrastructure has put pressure on local governments to strengthen their capacity as granting authorities. Owing to the tender approach taken for BOT projects, local government is required to do a substantial amount of preparation work, including preparation of bidding documents, as opposed to the joint

venture approach in which local governments can rely on foreign partners for the most time-consuming and challenging task of formulating the project.

F. Alternative approaches to road infrastructure financing

1. Corporatization

The process of corporatization in China is well established and it has happened, among other places, in 9 out of 13 provinces where ADB is involved in the road sector, i.e., Chongqing, Guizhou, Heilongjiang, Hunan, Jilin, Shanxi, Shaanxi, Sichuan and Yunnan. While the corporatization step is not overly complex, in psychological terms it poses significant questions to the Government which require decisions and compromise and it is to that process of decision and compromise that the following comments are mostly directed.

(a) Legal status

The process of corporatization needs official support – particularly to create a share limited company. Because the Government is allocating assets, a formal permission to proceed allows the corporatization team to allocate shares and define share ownership. Authority to create a new share limited company must come from the provincial communications department (PCD) who also must usually agree to a reduced shareholding in the new company. The official authority to proceed is therefore an important step and commits PCD to the overall process and before any work can be done, this official support must be written as a formal document. The document normally authorizes the corporatization team to begin the process and it also designates members of the Government and others as members of the team.

The issuance of an authorization letter, however, does not guarantee the autonomous operations of the expressway company. There is a need for PCD and the expressway company to make a formal agreement, which would spell out rights and obligations of the PCD and the expressway company. Such an agreement will ensure the legal autonomy of operations, encourage the establishment of road facility

performance indicators and facilitate future refinancing of road sector assets. This approach was adopted for the first time under an ADB-financed road project¹³ in Shaanxi Province in 2001.

(b) *Scope of corporatization*

The scope of corporatization is currently too limited. Larger corporations should move away from the norm of “one road one corporation” to “one route one corporation”. Even multi-provincial corporations should become the norm in the future. As corporate units aim to enter the securitization market, it will become even more important for them to offer a package of assets that limits risk and offers a good cash flow potential. This may mean combining an existing toll road company with a new company into a combined package. It also may mean leaving a well-recognized name behind and choosing a new name for the new corporation.

(c) *Founders*

A share limited company needs a minimum of five founders. PCD and the Ministry of Communications (MOC) have traditionally owned the expressway corporations as a single shareholder. The tendency is to try to find five founders who are controlled by PCD or by MOC. Normally PCD likes to keep as much of the ownership as possible because most of the money has been provided through PCD/MOC and because PCD prefers to keep tight control of the new corporation.

However, they should try to move away from this concept even though it may be difficult to find four other founding shareholders. One option is to capitalize the value of land and resettlement costs and offer shares to the municipalities through which the road passes. Another option is to offer shares to domestic banks in exchange for reduced debt or to major clients such as mines, refineries or shipping companies who may be heavy users of the road.

¹³ Loan 1838-PRC: *Shaanxi Roads Development Project*, for \$ 250 million, approved on 30 August 2001.

PCD also tries to maximize its shares. In some corporatizations PCD retains more than 90 per cent of the shares. In multi-road corporations, it should be possible to reduce the effective PCD ownership. Generally, the share limited company should target a share distribution which results in shares for other organizations of at least 20 per cent, with PCD retaining not more than 80 per cent.

(d) Debt/equity split

This is a decision variable that is part of the corporatization process and leads to a lot of debate on what should be the debt to equity ratio. Because most of the money for current roads comes from the Government in one form or another, the investment by the Government can be considered as equity or debt. It is typical to keep the equity high and the debt low, if at all possible. The tendency in China is to limit debt and to maximize equity. This leads to a low cost of capital operation, little interest obligation and maximized profit. While this may be possible in the short term, in the longer term, a fully private corporation is unlikely to have no debt load. Strong corporations are not heavily in debt but some debt is normal.

Debt financing in China is significantly less expensive than equity financing – if a reasonable return on equity is factored into the securities equation. In developing a debt and equity position new corporations should attempt to structure their sources of finance with the aim of achieving a sustainable debt and equity balance. Outside investors are looking for a minimum of 20 per cent return on blended capital. This means a high rate – usually over 30 per cent return on equity.

2. Leasing

While some leasing has occurred mainly through joint ventures, the concept of competitive leasing is virtually precluded by the approval process which requires that the corporate structure and details of the lease be fixed before approval for the lease is given by higher authorities. The end result of this process leads inevitably to a joint venture type of organization and does not allow for international competitive bidding for leases.

(a) *Land use certificate*

Land acquisition ultimately involves the local governments in the toll road development. Often the decision on how to allocate the payment for the land is left until after the road has been completed. This means that land acquisition may either be paid in cash or in shares in the new road depending on the interest of the local governments. The key is to ensure fairness in the payment for land and for resettlement of existing residents of the land. Up to 20 per cent of the shares may be allocated against the value of the land and resettlement costs.

Current government procedures based on the Land Administration Law govern the resettlement process. If the private sector is involved in the development of the road, these procedures may not be adequate – particularly if resettlement payments are not being made at full market value.

Obtaining the land use certificate is a potential factor in the delay of projects. Generally it may take over one or two years to obtain the land use certificate. While it is against the law to proceed before the land has been acquired, many roads are completed under a permit to use the land, rather than under a formal land use certificate. This is where the process of corporatization, leasing and securitization can be accelerated.

(b) *Traffic volume and tolls*

The most serious issue facing future private investment in toll roads in China is low traffic volumes. Until traffic reaches 20,000 to 30,000 vehicles per day, it is hard to justify outside investment. Many of the candidate roads for leasing in China have volumes which are too low to support the investment.

This leads to two conclusions – first, the original estimates of traffic used to justify the investments was overly optimistic; and second, the tolls charged may be stifling demand. It is clear that in some cases traffic estimates have been inflated. It is critical that the decision to invest in toll roads be made with clear eyes that include low case scenarios. In a period of massive toll road expansion it is easy to

become overly optimistic. This means that independent evaluation of toll road investment viability is critical.

Traffic is still toll sensitive. In areas where parallel non tolled roads are available, traffic levels are dramatically affected. This is the result of a number of perceptions. First, delay cost is not factored into the operating cost of most companies. It is often cheaper to pay for extra wages for a driver and extra fuel than it is to pay the toll on a faster and more convenient highway. Partly this is a reflection of poor cost accounting and partly a general perception that toll rates are expensive.

Toll rates are close to average levels of industrial countries. In a society where earnings are still far below developed world averages, this means that the real cost of tolls in China is very high. The current process of setting tolls does not aim to maximize revenue. Demand management is still not a priority of most toll road companies. More flexibility in setting tolls and creating a climate of toll acceptance will help to increase low traffic levels.

(c) *Approval process*

Leasing can take up to four to five years, depending on the level of approvals needed. The process needs to be made less complicated and more user friendly. Each level can demand changes in the agreement negotiated by the proponents. Ultimately, the final result may not reflect the original agreement at all.

One option would be to limit different levels to different roles. Municipalities only review those aspects which relate to municipal authority – traffic, safety, environmental quality for instance. Provinces review issues with provincial impact – network linkage, design standards, toll levels or land use certification. National level only focus on national issues – national security, ownership, or foreign exchange transactions.

The current approval process does not encourage investment, rather it impedes it. If the Government wishes to increase domestic and foreign participation in the road sector, a different approach is needed – one which fosters investment and facilitates the process of approval.

(d) *Joint venture versus open lease*

Provincial governments are reluctant to open leasing to the domestic or overseas market through open tender. Joint venture (JV) agreements are preferred, mainly because the JV partners come to the provinces directly and propose deals based on negotiations. Further, the current approval process requires that the terms of the business plan, the allocation of profit share, the ownership of the company and the details of the parties to the agreement be presented prior to the approval for leasing being obtained. This virtually precludes approval in principal leasing whereby a provincial government could specify all the terms of the deal in advance and then select the best bidder based on a published set of leasing terms. The final terms are not available until the final approval is given. This means that better deals may often be available through open bidding and with a wider audience but the process will need to be changed to allow this to happen.

3. Securitization

While securitization is really the tertiary step in the private finance spectrum, in some ways it is the best understood and most clearly defined. This is largely because the securities regulations have been designed to specify clearly under what conditions and with what steps firms may choose to enter the securities market in China. The first part of the securitization process is corporatization and the comments and recommendations made earlier regarding corporatization apply equally to securitization. There are areas for improvement in the securitization preparation by toll road companies in China.

(a) *Asset valuation*

Roads are built for a number of reasons – mainly falling into the categories of economic or financial. Economic benefits such as regional development can not normally be factored into the “commercial” value of a road. The process of commercial leasing automatically values the assets based on their commercial objective, not their economic objective. For most of China’s toll road companies, the sunk cost of the construction and the value of the land are used to determine the asset value. Using this measure, the return on assets is very low – 5 or

6 per cent. But in some companies, the fixed asset value is reassessed to set a “use value” to determine what value the assets have compared to other productive assets. On this basis a threshold return level (say 20 per cent return on capital) is set and the assets are reassessed based on the actual earnings needed to generate that threshold level. This usually leads to a significant downward value for the assets. This process is only useful if the assets are to be sold or if the project is to be securitized. New investors are interested in buying into a financially sound business, not one where the assets carry an inflated value.

(b) Profitability of corporations

Keeping profitability realistic is important. It is possible to manipulate the profit by changing the debt to equity ratio. The suggestion to maintain a debt to equity ratio of up to 2 will ensure that the toll operation is carrying a modest amount of debt. Some earlier securitizations have aimed at a price earning ratio of over 30. The current target level is 22. However, in the longer term, using manipulated profit to justify a very high price earning ratio is dangerous. The long-term price earning ratio for toll roads likely to be less than 15 as the operation begins to reflect the true linkage to the longer term development of the Chinese economy.

CONCLUSION

The increasing infrastructure financing needs in China require a shift from the conventional financing modes such as commercial bank loans, international or bilateral loans, government grants and export credits toward private sector participation. Initial public offerings of expressway companies on the stock exchange have demonstrated that such investments can be financially attractive under certain circumstances. Bond issues are another suitable tool for infrastructure projects owing to the long-term and stable earnings stream of such projects. Revenue bond issues by a public agency that owns the asset have an advantage, as the public owns the facilities, but the private investors finance it. However, any capital market instrument requires an adequate registration process and public disclosure and a strong credit standing, and the legal and regulatory framework in China in this matter needs strengthening. Expressway corporations may also consider leasing

schemes, which would have considerable potential if combined with tax incentives for the lessees. This will ultimately improve road sector efficiency and reduce the burden on the government budget.