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Title : **Private Sector Participation in the Road Sector in the People's Republic of China**

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Abstract : *Despite the considerable investments in the road sector, the road network in China is still inadequate. Better transport links are necessary to improve economic efficiency and reduce poverty. For this purpose, the Government is embarking on development of the National Trunk Highway System, a network of interprovincial expressways of 35,500 km, during 1991-2010 with the help of external assistance, such as 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 current status of road development in China, and the experience of private sector participation through cooperative joint venture, securitization, revenue bond financing, and BOT schemes. The paper also raises some issues associated with such approaches to road infrastructure financing.*

I. Introduction

Despite the considerable investments in the road sector, the road network in the People's Republic of China (PRC) 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 interregional integration, and reduce poverty. The road network must be developed to facilitate sustainable economic development and the impact of investments reaches poor areas and rural residents in the hinterlands, thus spreading economic and social benefits widely. To finance the 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.

II. Overview of the 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 Table 1 and Map). About 17,900 km, or 51 percent, has been completed as of end 2000. The NTHS will be 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. The Government policies for road development are based on the following principles: (i) constructing expressways to expand the NTHS to link all cities with a population of more than 500,000; (ii) developing secondary roads, particularly those that will help reduce poverty and promote rural markets; and (iii) building roads that will support regional cooperation with neighboring countries in the southwest, northeast, and northwest.

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	Suifenhe – Manzhouli	1,300
GZ25	Dandong-Lhasa	4,600
GZ35	Qingdao-Yinchuan	1,600
GZ45	***Lianyuang-Huoerguosi***	4,400

Route No.	Cities Connected	Distance in km
GZ55	***Shanghai-Chengdu***	2,500
GZ65	Shanghai-Ruili	4,000
GZ75	Hengyang-Kunming	2,000
	Total	**35,500**

Source: Ministry of Communications

Note: The route in bold face is a priority route.

The 10th Five-Year Plan (10FYP, 2001-2005) calls for (i) accelerating the construction of the backbone network of highways and national roads, with focus on five north-south and seven east-west expressways included in the NTHS, and achieving full opening of three north-south and two east-west expressways; (ii) achieving the initial construction of eight new highways in the western region to improve the structure of the highway network and its reach; and (iii) 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 the poor counties with national and provincial highways. The current status of road development in PRC and the target for 2005 are shown in Table 2.

Table 2: Road Development in PRC during 1995-2005

	Road Length (km)	Road Density (km/100 km^2)	Expressway Length (km)	Township with Road Access (%)	Village with Road Access (%)
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

In March 2000, the Government adopted the long-term Western Region Development Strategy for developing the western part[1] 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 (i) facilitating economic development and poverty reduction in the western region, where road density is only

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

less than half of the national average; (ii) linking the western region with the central and eastern regions; (iii) providing access to the trade outlets for the western region at the eastern and southern seaports; and (iv) promoting regional cooperation with the neighboring countries to the west and southwest of the PRC. To achieve these objectives, the eight priority routes[2] were identified by the government.

B. ADB's Assistance

Since 1991, the Asian Development Bank (ADB) has provided 22 loans (see Table 3 and Map) totaling 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's 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 successful, and one was partly successful, mainly due to inadequate safety facilities and enforcement as well as 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 ($ million)	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	147	250	1999	

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

	Development				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 as follows. 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 percent. The economic internal rate of return was recalculated at 14.6 percent. 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 costs of $424 million, which were 31 percent 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 2.0 hours for trucks). The project fully achieved the target with a reestimated economic internal rate of return of 12.5 percent 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 the cost of about Y36 billion, has facilitated the economic development in the northeastern part of PRC. According to the 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 percent reduction for cars and from 45 hours to 25 hours, or 44 percent reduction for trucks. Traffic diversion from the parallel roads to the expressway was significant at a range of 50 to 80 percent. The accident rate reduction was also significant, ranging between 50 percent and 76 percent. During 1996-2000, the average annual GDP growth rate for the four provinces and two municipalities serviced by the corridor was 9.7 percent, 2.6 percentage points higher than the national average of 7.1 percent. The expressway facilitated establishment of five Economic and Technological Development Zones in Changchun.

C. ADB's Future Plans

ADB's operational strategy in the PRC's road sector supports (i) construction of roads that connect major growth centers and promote linkages with hinterland economies; (ii) integration of the network so that the NTHS is supported by a system of local roads, particularly those that provide access to poor areas; (iii) promotion of road safety; (iv) further institutional strengthening to increase the commercial orientation and efficiency of expressway organizations; (v) improvement of highway planning and evaluation techniques; (vi) adoption of appropriate pricing

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

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 PRC, ADB's support for road development will continue in the next four years with a total lending program of $2.4 billion (see Table 4). The lending program is complemented by a technical assistance program, 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 ($ million)
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 ($'000)
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.

III. Private Sector Participation in the Road Sector

A. Background

Investments in private infrastructure projects totaled $44 billion in PRC during 1990-2000, accounting for 6 percent of such investments in emerging markets. Although enormous investments were channeled into the PRC'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 percent 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 the PRC'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 investors, 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 (i) 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 (ii) in developing institutional capacity to promote corporatization, leasing, and securitization to attract private sector participation in the road sector.

C. Experience in PRC

1. Cooperative Joint Venture

The cooperative joint venture has been the most common method of using nongovernment funds in toll road financing in the PRC for several reasons: (i) strong equity investor interest in toll roads; (ii) benefits from the cooperative characteristics of this type of joint venture;[4] (iii) limited lender interest in toll road projects, mainly due to unresolved problems of risk allocation; and (iv) 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 PRC road projects is about 18 percent. ADB facilitated the development of cooperative joint ventures in Guangdong, Hebei, Hunan, and Sichuan provinces by investing through the China Assets Holding Limited, and the DeMat TransAsia Holdings Limited through the Asian Infrastructure Fund (see Table 6).

[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.

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 percent to 40 percent. 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-earning ratio[5] (6 to 17 times in 1999). B share listings on the Shenzhen or Shanghai stock exchanges are slightly more expensive with a price-earning ratio of 10 to 15 times in 1999, which is lower and less volatile than A share listings (with average monthly price earning 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.

Since 1995, 15 listing of PRC expressway companies and infrastructure developers have been made 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 Corporation[9] 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 percent 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. 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 for the Zhuhai Highway Company Limited. The main problem of this financing option is the weak regulatory framework, which results in a difficult and time-consuming procedure for securing the necessary approvals.

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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 PRC stock exchange (Shanghai or Shenzhen) in local and foreign currencies, respectively. The Government has recently allowed Chinese with available foreign currency to buy B shares, which is likely to boost their price.

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

The US dollar rate of return required by investors in an entity-level revenue bond was in the 10-15 percent range for a PRC 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 the PRC, 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 the PRC 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 percent 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 PRC road projects. 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 $122.7 million in equity in seven road projects, mostly in the eastern coast of PRC (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.

Table 6: Investments by Private Sector Funds with ADB Holdings

Investment No., Fund Name	Investee/Projects	Equity ($ million)
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 percent 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. Sichuan Province: 13 percent 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 percent in cooperative joint venture with the Xiangtan Municipal Government to operate an existing bridge and build a new one.	71.28
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.

D. Key Issues in Private Sector Participation[11]

1. Regulatory Framework

The Government has made a substantial progress in issuing a series of laws, regulations, notices, circulars relevant and critical to private participation in infrastructure, such as the Bidding Law, unified Contract Law, Security Law, and 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, 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 roads[12] appear to have inconsistencies and contradictions among them.

The 1995 BOT Circular is considered to be a major breakthrough to clarify some of 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: (i) to tighten existing laws and procedures without passing specific legislation on private sector participation; (ii) to pass the BOT Circular into law; and (iii) 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 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 be left for negotiations between the granting authority and the investors. (i.e., the BOT Circular prohibits domestic 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) Grandfather all existing projects to provide protection and certainty to existing investors; and
(vii) Be consistent with relevant sector laws.

2. Approval Process

Approval process 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 8 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

[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.

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 the infrastructure project with private sector participation. Increasing private participation in infrastructure has put pressure on local governments to strengthen their capacity as granting authorities. Due 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 most time-consuming and challenging task of formulating the project.

F. Alternative Approaches to Road Infrastructure Financing

1. Corporatization

The process of corporatization in PRC is well established and it has happened, among others, 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.

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 the 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 authorization letter, however, does not guarantee the autonomous operations of the expressway company. There is a need for the PCD and expressway company to make a formal agreement, which would spell out rights and obligations of the PCD and the expressway company. Such agreement will ensure legal autonomy of operations, encourange 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 project[13] in Shaanxi Province in 2001.

Scope of Corporatization

The scope of many of the corporatizations is currently too limited. Larger corporations - moving away from one road, one corporation to one route, one corporation or even multi provincial corporations should become the norm. As the corporate units aim to enter the

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

securitization market, it will become ever more important for them to offer a package of assets that limit risk and offer 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.

Founders

A share limited company needs a minimum of five founders. The PCD and the Ministry of Communications (MOC) have traditionally owned the expressway corporations as a single shareholder. The tendency is to try to find 5 founders who are controlled by the PCD or by MOC. Normally the PCD likes to keep as much of the ownership as possible because most of the money has been provided through the PCD/MOC and because the 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.

The PCD also tries to maximise its shares. In some corporatizations the PCD retains more than 90% 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 organisations of at least 20% with PCD retaining not more than 80%.

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 PRC 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 PRC 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% return on blended capital. This means a high rate - usually over 30% 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.

Land Use Certificate

Land acquisition ultimately involves the local governments in the toll road development. Often the decision of 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% 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.

Traffic Volume and Tolls

The most serious issue facing future private investment in toll roads in PRC 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 PRC 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.

The 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 Chinese society where earnings are still far below developed world averages, this means that the real cost of tolls in PRC is very high. The current process of setting tolls does not aim to maximise 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.

Approval Process

Leasing can take up to 4 to 5 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 in the process of approval.

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 my 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 clearly specify under what conditions and with what steps, firms may choose to enter the securities market in PRC. 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 PRC.

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 PRC’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%. 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% 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 securitised. New investors are interested in buying into a financially sound business, not one where the assets carry an inflated value.

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. 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 PRC economy.

IV. Conclusion

The increasing infrastructure financing needs in the PRC 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 the PRC 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.

V. Acknowledgements

The views expressed in this paper are those of the author and do not necessarily reflect those of ADB.


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