Reforming China’s Institutional Environment for Urban Infrastructure Provision

Weiping Wu

Summary. Rapid urbanisation in the reform period has resulted in a very high demand for basic urban infrastructure in China. Improving its provision by the public sector is a challenge as problems persist in the form of unmet demand, deficiencies in cost recovery and inadequate maintenance. Institutional hurdles, particularly the lack of organisational and financial autonomy for the providers of urban infrastructure, are in part to blame. Urban construction authorities have yet to rid themselves of political interference and overlapping responsibilities. But measures have been taken to reform the institutional environment. Specifically, increasingly decentralised central-local fiscal relations are allowing municipalities an unprecedented degree of freedom for resource mobilisation through a wide range of mechanisms that greatly expand extra-budgetary revenue. A case study of Shanghai’s reform efforts shows that results can be immediate and promising.

Introduction

Economic reform and subsequent changes in national urban policy have brought about an accelerated urbanisation in China since 1979, manifested in the growing number of cities and expanding population in many cities. Registered urban population has been growing at a rate of 4 per cent annually since 1980, reaching 390 million in 1997—an urbanisation level of about 32 per cent (World Bank, 1999). In addition, an ever-growing number of temporary migrants now reside in cities, estimated by official sources at between 70 and 100 million by the end of 1997. Such rapid urbanisation has resulted in an increasing demand for basic urban infrastructure and the need for new mechanisms of financing.

Many Chinese cities have not kept pace with the new demand, bounded by an institutional structure inherited from the pre-reform period that did not allow much organisational and financial autonomy for providers of urban infrastructure. There have been increasing efforts in recent years to reform this structure, particularly in Shanghai, but the pace of institutional reform is uneven across cities. The intrinsic nature of reform is not well understood by scholars outside China. The topic also has not received sufficient attention in academic research amid a proliferation of studies addressing China’s urban housing and land management reforms (see, for example, Dowall, 1993 and 1994; World Bank, 1993a; Zhu, 1994; Wang and Murie, 1996; Zhong and Hays, 1996; Zhou and Logan, 1996; Yeh and Wu, 1996). However,
several authors including Dowall (1995), Chan (1997 and 1998) and Kumar and others (1997) have begun analysing issues related to urban infrastructure financing.

This research aims to identify the key institutional factors affecting China’s performance in providing urban infrastructure and to assess the potential of reform efforts since 1979 that may lead to improved performance. Urban infrastructure generally includes public utilities (power, piped gas, telecommunications, water supply, sanitation and sewerage, and solid waste management), municipal works (roads and drainage) and transport sectors (public transit, ports and airports) (World Bank, 1994b). In China, as a result of budgetary and administrative categorisation, urban infrastructure (often called ‘urban maintenance and construction’ in Chinese) is under the jurisdiction of urban construction authorities. It includes public utilities (water supply and drainage, residential gas and heating supply, and public transport), municipal works (roads, bridges, tunnels and sewerage), parks, sanitation and waste management, and flood control. Power, telecommunications and other transport sectors (ports, airports and railway) are not counted as a part of urban maintenance and construction in China.

The focus of this paper is urban infrastructure overseen by urban construction authorities in China (not including power, telecommunications and other transport sectors), and the related institutional environment—i.e., the organisational structure for policy-making, financing, implementation and co-ordination. There are five sections in the paper. The first section addresses critical issues of ownership and performance in infrastructure provision, drawing upon experiences beyond China. The second section assesses China’s record of performance after 1979. The third section analyses the existing institutional environment and reform measures from three perspectives: central–local fiscal relations, mechanisms of financing and municipal organisational structure. Section four outlines Shanghai’s leading efforts in institutional reconfiguration. Finally, the paper concludes with comments on some prospects for China’s urban infrastructure provision.

Issues of Ownership and Performance in Infrastructure Provision

Infrastructure has an indispensable, positive role in development. The World Development Report 1994 correlates a 1 per cent increase in gross domestic product with a 1 per cent increase in infrastructure stock across all countries (World Bank, 1994b). Developing countries invest a total of $200 billion a year in new infrastructure, and an average of 4 per cent of their national output or a fifth of their total investment goes to transport, power, telecommunications, water supply, sanitation and irrigation. The result has been a dramatic increase in infrastructure services across regions.

There has been much written about the role of urban infrastructure (see, for example, Azizi, 1995; Ingram and Kessides, 1994; Kessides, 1993; World Bank, 1994b; Wu, 1996). To summarise, besides its function of raising the productivity of labour and capital as an “unpaid factor of production”, infrastructure contributes to the welfare of households (Kessides, 1993, p. 2). Improvements in infrastructure services can have the beneficial effect of increasing households’ real income and quality of life. The provision of urban infrastructure is a lengthy process involving financing, construction and maintenance that may involve a multitude of players. The traditional wisdom has been that urban infrastructure provision should be the responsibility of the public sector, assuming that it involves large externalities and high costs. In reality, governments in developing countries own, operate and finance nearly all infrastructure. But with the tightening of public-sector financing and an often-poor record of public provision, an increasing number of governments have begun handing out responsibilities to the private sector.

There are at least four major options for infrastructure ownership and provision, which of course are not exclusive but are representative (see Table 1). It is clear that
Table 1. Institutional options for infrastructure ownership and operation

<table>
<thead>
<tr>
<th>Public Operation</th>
<th>Private Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Option A</strong></td>
<td>Not a common option</td>
</tr>
<tr>
<td>Examples: Most or all sectors of infrastructure in South Korea and Singapore have shown enviable performance of public provision.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Private Operation</th>
<th><strong>Option B</strong></th>
<th><strong>Option C</strong></th>
</tr>
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<tbody>
<tr>
<td>Example: In recent years, concessions to build and operate infrastructure gave rise to the first toll bridges in China.</td>
<td>Example: Venezuela’s telephone company expanded its network by 35 per cent in the first 2 years after its privatisation.</td>
<td></td>
</tr>
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</table>

**Option D** Community and user provision

Example: Orangi Pilot Project, launched by a local non-governmental organisation in Karachi, Pakistan, organised the population of squatter settlements into communities that in turn constructed sewerage systems at the neighbourhood level. Connection with existing city pipes was provided by the local government.

Sources: Compiled from Ingram and Kessides (1994); World Bank (1994b); United Nations Center for Human Settlements, Habitat II Best Practices.

most still and will involve the public sector. Option A, which involves public ownership and operation, is the most common practice in many developing countries. Increasingly becoming popular is Option B—public ownership and private operation—as it offers the possibility for competition in infrastructure provision without giving up government control. Option D is also gaining popularity in many countries, particularly for local, small-scale infrastructure. There is strong evidence that local community associations in low-income developing countries have been able successfully to finance projects such as roads and sewerage and even health care facilities with no support from any government agency by using systems of informal taxation.

Measuring performance in infrastructure provision or effectiveness of infrastructure investment involves assessments of quality, reliability and quantity. Most of all, supply has to match what is demanded (World Bank, 1994b). Good performance is often marked by a number of characteristics: efficiency of operations—little output is lost in delivery; adequate maintenance of existing capacity; financial efficiency—good record of cost recovery; and responsiveness to user demand. Research has shown that there is no close correlation between a country’s performance in one infrastructure sector and its performance in another. This suggests that the institutional environment, which often varies across sectors, may be more responsible than general conditions of economic growth and development for explaining the performance of infrastructure provision.

For a variety of reasons, the public sector has had a dominant role in infrastructure, although few successful examples of Option A persist because public provision is vulnerable to political changes. Changes in the institutional environment can lead to improved performance of the public sector (World Bank, 1994b; Ingram and Kessides, 1994). The examples of success around the world share some common features. Most importantly, public agencies need to be free from political interference and to be given managerial and financial autonomy. The delivery of services is often better carried out when public organisations are run on commercial principles, subject to normal commercial codes and regulations, and are held accountable by using performance agree-
Table 2. Access to urban infrastructure in China and in Shanghai, 1990 and 1996

<table>
<thead>
<tr>
<th>Indicator</th>
<th>1990</th>
<th>1996</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All cities</td>
<td>Shanghai</td>
</tr>
<tr>
<td>Per capita paved road (sq m)</td>
<td>2.7</td>
<td>2.3</td>
</tr>
<tr>
<td>Public transport (vehicles/10 000 residents)</td>
<td>1.8</td>
<td>8.5</td>
</tr>
<tr>
<td>Access to tap water (percentage)</td>
<td>81.0 a</td>
<td>100.0</td>
</tr>
<tr>
<td>Per capita annual domestic water consumption (tons)</td>
<td>63.7</td>
<td>81.9</td>
</tr>
<tr>
<td>Access to gas (percentage)</td>
<td>8.1</td>
<td>46.1</td>
</tr>
<tr>
<td>Per capita open space (sq m)</td>
<td>—</td>
<td>—</td>
</tr>
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— Not available.

a 1985 figure.

Sources: State Statistical Bureau (1997); Yusuf and Wu (1997).

Assessing China’s Performance

Option A—public ownership and operation—has been the predominant form through which urban infrastructure is provided in China. On an aggregate level, China has made significant progress since 1979 and the pace has speeded up particularly since 1990. Most urban residents have access to tap water, gas and public transport (see Table 2). Water supply coverage has already reached close to 95 per cent in urban China. The most usual source for tap water is surface water drawn from rivers, lakes and reservoirs, which is often processed to a quality good enough for domestic and industrial use, but not for drinking. Per capita paved urban road surface nearly tripled between 1990 and 1996, from 2.7 to 7.6 square metres.

Such impressive achievements are not attributable only to urban construction authorities. Infrastructure provision also has relied on a vast number of state working units, including state enterprises, public agencies and state institutions. These units not only provide employment, but more importantly generate individual and collective welfare facilities. Prior to the economic reform initiated in 1979, the overwhelming majority of the urban population worked for such state working units. Once a state employee obtained a housing unit, s/he automatically gained access to household utilities (water, electricity and sewerage). This mechanism of infrastructure provision remained intact throughout the 1980s and the first half of the 1990s for the state sector, which still counted for over a half of urban employment even as the non-state sector grew steadily.

In spite of China’s record of progress, urban infrastructure provision has suffered from at least three problems: unmet demand, deficiencies in cost recovery and inadequate maintenance. Compared with many major cities in the world, China’s cities rank low in per capita domestic water consumption and waste treatment (Chan, 1997). By 1996, more than 300 cities in China (among a total of 658) were considered by the government to be in water deficit, with daily shortages of about 16 million tons in all. Cities in the north were particularly troubled because of the uneven temporal and spatial distribution of water. Insufficient urban road space led to severe traffic congestion and the average travel speed inside cities was less than 12 km per hour. Only about one-fifth of the cities had the facilities to cope with 50-year floods (Hou, 1998). Inefficient and wasteful infrastructure are also found in many cities.

Unmet demand for waste treatment is particularly high. For instance in 1996, less than
7 per cent of urban wastewater was treated (World Bank, 1997). Municipalities generally have no incentive to invest in sewage and wastewater treatment because they receive little income for handling wastewater discharges. Low sewerage coverage, inadequate treatment facilities and low water discharge fees have resulted in contaminated groundwater and polluted surface water that further aggravate urban water shortages. The Environmental Protection Law clearly states the ‘polluter pays’ principle, which includes two categories of levies: a discharge fee and a non-compliance fee. But quite often the financial penalty is so low that enterprises would prefer paying it rather than renovate their equipment to reduce or stop pollution, or introduce clean technologies for production. In addition, municipal governments have been slow to initiate and implement mandatory recycling programmes. For them, recycling is just an added responsibility and an extra financial burden. What now exists in many cities is an informal sector, largely consisting of rural labourers, that buys limited kinds of solid waste from urban residents (glass bottles, tin cans and newspapers in most cases) and resells them to enterprises for profit.

Deficiencies in cost recovery are perhaps the most serious peril that threatens sustained building and maintenance of urban infrastructure. User charges are very low and returns from many infrastructure sectors are insufficient to fund their proper maintenance. For instance, low water prices have encouraged excessive demand and resulted in financially unsustainable water departments that must be subsidised to remain operational. Low prices for sewerage, wastewater treatment and solid waste management also have contributed to increased effluent and insufficient revenue (World Bank, 1995). As a result, the responsibility for maintaining urban infrastructure has become a heavy burden for many municipal governments because of ageing infrastructure and insufficient funding. The Ministry of Construction estimated that maintenance only accounted for an average of about 23 per cent of infrastructure expenditure in all cities in 1996 and fulfilled only a little over a half of projected need (Hou, 1998).

The reliance on state enterprise welfare funds to provide household utilities to employees is no longer sustainable as 20–40 per cent of state enterprises are now running at losses (Yusuf and Wu, 1997). Since 1979, state working units have been allowed to retain 20 per cent of their after-tax profits as enterprise welfare funds (Hannan, 1995). These funds provided for individual welfare benefits, such as heating and commuting allowances; and collective welfare facilities, including housing, public utilities and cultural and recreational facilities. Nominal charges were levied for using these collective facilities, so large shortfalls had to be made up from enterprise welfare funds. Such social welfare functions have become a financial drain for many state enterprises, particularly for those struggling to stay afloat. The recent devolution of these functions, as a result of new housing reform initiatives calling for the sale of public housing to employees, is leading to a shift of responsibilities to municipal authorities.

**Institutional Environment and Reforms**

Institutional hurdles, in particular the lack of organisational and financial autonomy for the providers of urban infrastructure, may have played a large part in the creation of these problems. But as economic reform progresses in China, increasing efforts have been directed towards streamlining institutions at both the central and local levels. This section will dissect the institutional environment into three components:

1. the devolution of a centralised fiscal system and changing central–local fiscal relations that give local governments increasing freedom for fiscal management;
2. the expansion of previously limited state funds to include a variety of infrastructure financing mechanisms that greatly emphasise extra-budgetary revenue and expenditure; and
The discussion of central–local fiscal relations is essential because reforms in this area have been the preconditions for the diversification of financing mechanisms at the local level.

**Central–Local Fiscal Relations**

Prior to 1979, the central government had direct control over local governments (both provincial and municipal governments) in three main areas: allocation of materials and resources, production planning for key industries, and budgetary control of revenue and expenditure. The role of the central government in the administration of urban infrastructure (considered to be a non-productive activity) was and continues to be limited. The central government, the Ministry of Construction in particular, has the authority to set investment goals, devise development strategies, review long-term plans, approve projects with foreign investment and limit the scope of operation of certain infrastructure facilities. Large infrastructure projects, such as the Beijing, Shanghai and Guangzhou subway systems, still need to be incorporated into provincial plans or plans of the central government. All infrastructure projects of national importance are reviewed by the Ministry of Construction, while those of regional importance are reviewed and approved by provincial Departments of Construction. Projects exceeding 200 million yuan are required to be approved by the State Planning Commission, and those involving foreign capital are approved by both the State Planning Commission and the State Council at the central level. But neither the central nor the provincial government has to fund such projects partially or fully. Most other urban infrastructure projects are approved by municipal authorities.

The paramount importance of the central government has derived from the control of fiscal revenue and expenditure of local governments, and therefore financing and investment for urban construction. Given the three general levels of government (central, provincial and municipal), the lower levels are entirely subordinate to governments of higher rank in fiscal matters (Wong, 1997).

About 20 municipalities are subject to direct central budgetary controls, including the 4 provincial-level cities (Beijing, Shanghai, Tianjin and Chongqing) and 16 independent ‘line-item cities’. These independent ‘line-item cities’ (jihua danlie shi) are singled out only for budgetary purposes, and their revenue and expenditure are not controlled by provincial governments that have other administrative authorities over them.

Prior to the economic reform, China’s fiscal system was characterised by centralised revenue collection and fiscal transfers. All taxes and profits were collected by local governments, remitted to the central government and then transferred back to the provinces and municipalities according to their expenditure needs approved by Beijing. Under this fiscal system, municipal revenues were shared with the central or the provincial government for redistribution. For many years, revenue retention rates for municipal authorities were very low and insufficient to allow significant expansion of infrastructure and adequate maintenance. Capital expenditure funding either in the form of grants or credit was largely unavailable to the service sector and directed mainly to the production sectors (World Bank, 1993b).

Central–local fiscal relations have been altered significantly by decentralisation efforts since 1980, evolving with the economic reform process. The central government introduced a new decentralising fiscal regime that visualised each provincial entity as a ‘separate kitchen’ for fiscal purposes. This, together with subsequent fiscal reform by provinces, allowed many municipalities to retain higher rates of revenue and to allocate funding more freely. In 1980, a new system of fiscal contract was introduced, which designated separate types of taxes or revenue. Under this arrangement, participating provinces and municipalities were allowed a
share of revenues. They retained all income collected in excess of this share. In exchange for being given a bigger slice of revenue, they also were required to accept responsibility for most items of expenditure.

The concept of revenue-sharing introduced in 1980 was somewhat murky as the principles underlying the assigning of the tax power were not explicitly stated in the Constitution. Although the central government controlled all legislative power in this area, tax assignment and revenue-sharing arrangements often had to be negotiated with local governments, typically those at the provincial level. The normal practice was that the central government would designate revenue from certain taxes as central fixed revenue, and a portion of revenue from other taxes as local fixed revenue, with the remainder going into a pool of shared revenue (Tseng et al., 1994). The task of defining the share formula proved difficult, and several schemes were tried. Some large provinces and municipalities, to their advantage, have negotiated lump-sum revenue remission schemes as exemplified by the experience of Shanghai discussed later.

The central government would offer financial assistance to local governments through three types of grant:

1. quota grants under fiscal contracts—unconditional transfers to provinces to finance their budget deficits;
2. special-purpose grants—used to finance specific tasks in local governments’ budgets; and
3. final accounts or settlement grants—compensatory transfers arising from revenue-sharing contracts (Tseng et al., 1994).

This allows the central government to redistribute a part of fiscal resources from surplus to deficit provinces and municipalities. A good example of such a transfer is the central government’s offer of 2.4 billion yuan or about $400 million to Lhasa, Tibet, for infrastructure projects in July 1994, the largest infusion of state investment in local history (Far Eastern Economic Review, 22 June 1995, pp. 76–80).

A new set of reform measures was introduced at the beginning of 1994 to streamline further central–local fiscal relations. Three areas of concern were addressed: providing adequate revenues for government, particularly the central government; building a more transparent tax structure; and improving central–local revenue-sharing arrangements (Wong, 1997). Taxes were reassigned between the central and local governments. For the first time, local governments were assigned some taxes with significant revenue-generation capacity as local taxes. Related to urban construction, an urban land-use tax, a real estate tax and an urban maintenance and construction tax are now among the local taxes. Another positive element in the new system is a mandate to reduce government involvement in microeconomic management. Although its effects are yet to be assessed and some measures are encountering strong local opposition in their implementation, the 1994 reform represents a significant step towards building balanced power-sharing agreements between the central and local governments.

Mechanisms of Financing Urban Infrastructure

Prior to the reform, the central government controlled urban maintenance and construction revenue, mainly through central budgetary allocation, supplementary project funding and the public utility surcharge levied on enterprises and commercial users. There were no earmarked taxes or funds for urban construction, and user charges were minimal. As a result, there was no guaranteed steady flow of funds to urban construction from year to year. Indeed, central funding for the urban sector dried up during the decades of the 1950s to 1970s as Beijing focused on building inland defence facilities. As a result of the rigid central–local fiscal relations, municipalities also did not have the municipal finance systems necessary to support the construction and maintenance of infrastructure projects (Dowall, 1993).
The infrastructure sector was a low priority when funds were allocated through municipal budgets. Because of the bias towards industrial production, capital outlays for urban construction were very limited, often not exceeding one-tenth of total municipal expenditure. Compared to industrial authorities, those in charge of urban construction had little influence in the municipal decision-making circle. Take the example of urban bus systems. Since public transport was considered a form of welfare, all bus services were non-profitable and relied on government subsidies. Municipal authorities would set aside a small fixed portion of the municipal annual budget for maintaining and operating public transport, apportioning funds by a population account based on a system of household registration.

The attitude towards urban infrastructure, however, has changed significantly during the reform era. In particular, the provision of urban infrastructure is critical in attracting foreign investment to the Special Economic Zones, coastal open cities and beyond. A major selling tool many cities use to attract foreign investment is the availability of land already equipped with infrastructure. The importance of infrastructure-led development is becoming even more apparent after the 1988 urban land reform. Urban infrastructure is considered to be a good form of government investment because it can increase revenue from land leases.

A new, earmarked tax—the urban maintenance and construction tax—was launched nationwide in 1985, to be collected by municipal governments. This was the only tax that approximated a local tax before the 1994 nationwide fiscal reform. It has replaced an urban construction levy that was introduced to 47 cities in 1979 and then extended to a total of 150 cities in 1984 (Chan, 1998). It is now the only earmarked tax within China’s taxation system and a legally stipulated mechanism of financing for urban construction. Since 1985, it has become an important and stable source of funding. This and the public utility surcharge are called the ‘two-item funds’ in the Chinese budgetary system. But there are also problems in the collection of the urban maintenance and construction tax. The tax base and rate are set by the central government, and the rate is low relative to the financing needs of many cities. It is collected as a surcharge on the consolidated industrial and commercial tax levied on the output of industrial and commercial enterprises and incomes of enterprises in transport, hotel, catering and other service sectors. Therefore, it fluctuates with the output levels of these enterprises and does not apply to public institutions (or shiye danwei). As a result, this tax has accounted for a declining share of urban maintenance and construction revenue, from about 36.7 per cent in 1985 to 18.6 per cent in 1996 (Hou, 1998).

As central–local fiscal relations continue to be reformed, mechanisms for infrastructure financing are broadening, particularly through non-state channels (see Table 3), to include not only cash and deposits but also treasury and other financial bonds, and equities. Bank credit is also emerging as a major source of financing. China increasingly resembles market economies in which surpluses generated in the domestic sector are loaned to the enterprise sector to finance a large portion of investment. However, in the current semi-reformed state of China’s economy, a large proportion of loan financing is channelled through the state banking system, which is still subject to a high degree of government control. The control is exercised in part through the earmarking of loanable funds for specific purposes (Yusuf and Wu, 1997).

The emergence of new financing mechanisms has resulted in the increasing importance of extra-budgetary funds, which are still in the public sector but are not subject to central or provincial budgetary control. Examples include water use surcharges, domestic loans, foreign capital, enterprise self-raised funds and other funds. A higher degree of municipal fiscal independence also derives from funds collected through private channels. Municipal authorities now rely on four key financing mechanisms:
Table 3. Urban maintenance and construction revenue in China (percentages), 1990–96

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<tbody>
<tr>
<td>Maintenance and construction tax</td>
<td>30.9</td>
<td>26.2</td>
<td>19.8</td>
<td>16.9</td>
<td>16.1</td>
<td>16.1</td>
<td>18.6</td>
</tr>
<tr>
<td>Public utility surcharge</td>
<td>10.7</td>
<td>10.1</td>
<td>7.9</td>
<td>5.7</td>
<td>5.7</td>
<td>5.7</td>
<td>6.6</td>
</tr>
<tr>
<td>Central budgetary allocation</td>
<td>4.7</td>
<td>2.6</td>
<td>2.3</td>
<td>3.9</td>
<td>2.5</td>
<td>2.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Central supplementary funding</td>
<td>0.5</td>
<td>1.2</td>
<td>1.1</td>
<td>0.7</td>
<td>0.5</td>
<td>0.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Local budgetary allocation</td>
<td>9.4</td>
<td>10.4</td>
<td>14.7</td>
<td>10.2</td>
<td>8.3</td>
<td>8.3</td>
<td>10.2</td>
</tr>
<tr>
<td>Water use surcharge</td>
<td>1.3</td>
<td>1.3</td>
<td>1.1</td>
<td>0.8</td>
<td>0.7</td>
<td>0.6</td>
<td>0.7</td>
</tr>
<tr>
<td>Domestic loans</td>
<td>4.2</td>
<td>8.6</td>
<td>8.2</td>
<td>7.7</td>
<td>5.7</td>
<td>5.4</td>
<td>11.3</td>
</tr>
<tr>
<td>Foreign capital</td>
<td>1.2</td>
<td>4.0</td>
<td>1.9</td>
<td>2.4</td>
<td>2.5</td>
<td>2.9</td>
<td>6.6</td>
</tr>
<tr>
<td>Enterprise self-raised funds</td>
<td>12.3</td>
<td>11.3</td>
<td>9.4</td>
<td>7.9</td>
<td>14.1</td>
<td>19.6</td>
<td>14.1</td>
</tr>
<tr>
<td>Other funds</td>
<td>24.8</td>
<td>24.3</td>
<td>33.7</td>
<td>43.8</td>
<td>43.8</td>
<td>39.6</td>
<td>30.7</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>


(1) ‘two-item funds’—the urban maintenance and construction tax and public utility surcharge;

(2) allocation and transfers from the central government;

(3) municipal budgetary allocation; and

(4) extra-budgetary revenue.

As shown in Figure 1, the importance of central funding has diminished, and extra-budgetary revenue now accounts for the bulk of investment in urban construction.

Municipal governments have displayed ingenuity in generating extra-budgetary revenue over which they have more effective control. For instance, authorities in some cities have created ‘revolving funds’ used for small-scale investments. These funds have transformed ordinary fiscal grants into repayable loans. Repayment of principal as well as interest is channelled back to the revolving fund, gradually building available resources. Loans are made at interest rates equal to or below bank interest rates, typically for periods of around one year. Such funds are operated in a legal grey area, and often opposed by officials of the banking system (Yusuf and Wu, 1997). In Dongguan, Guangdong province, local authorities have experimented with another new method to raise funds. This involves the creation of an energy and communications company that may raise money from state, collective and private sources for the construction of roads and power plants. The company pays interest on these funds and will repay the capital by collecting user fees and tolls (Harral, 1992).

A new and increasingly important mechanism of financing is the collection of infrastructure connection fees (similar to the North American concept of impact fees) for both on-site and off-site improvements. Several cities began imposing such fees in 1979 as a part of the overall reform in infrastructure financing. The rationale was to enable municipal authorities to collect funds available to different enterprises and institutions for construction purposes (within their own budgets) and to use them in a co-ordinated manner. The endorsement of the State Council in 1986 at the Fourth Work Conference on Urban Construction led to the widespread use of this practice by more than 300 cities (Hou, 1998). By 1995, infrastructure connection fees counted for around 8 per cent of the total urban maintenance and construction revenue in the country (as a part of other funds in Table 3). A positive aspect of this practice is that it may facilitate the enforcement of quality standards in infrastructure provision, avoid duplicated capacity and improve efficiency through economies of scale. On the other hand, only new developments are subject to such fees and bear the costs that used to be shouldered by municipalities at large. A more serious problem lies in the wide range of fee scale and fee items. Some municipal authorities have included a multi-
tude of infrastructure services in the fee collection and often have asked for exorbitant amounts of money. Similar to infrastructure connection fees, some cities have also begun to collect fees from temporary migrants residing in cities for using urban infrastructure services (Chan, 1998).

Revenue from asset sales—including land-use rights and public housing—has become another important mechanism for municipalities to finance infrastructure provision. Together with infrastructure connection fees, they are the main items embedded in ‘other funds’ listed under extra-budgetary revenue. About 68 per cent of land-lease revenue can be retained by municipal governments for urban construction and development as stipulated in national regulations passed in 1988. Even the other 32 per cent that is required to be remitted to the central government is to be used for similar purposes (World Bank, 1992). Recent experience from cities including Shenzhen, Shanghai and Guangzhou suggests that sale of land-use rights is a promising source of funding. But much depends on the rate at which land-use fees expand and what proportion of land revenue can actually be held back by municipal governments. Sold land-use rights and public housing also represent foregone sources of rent income. Therefore, it is unlikely that China’s cities can count on revenue from asset sales as a major, lasting source of funding to expand infrastructure construction and maintenance.

Foreign capital also has begun to play an increasing role in financing urban infrastructure. When China started to open infrastructure to overseas investment in the late 1980s, foreign companies responded enthusiastically. China has since attracted money for truly commercial projects, such as joint-ventures to build and operate roads and bridges. Costs are expected to be recovered through toll collection. The central government is now offering a series of incentives to prospective investors in infrastructure projects, including tax advantages, customs duty exemptions, a wider variety of permitted activities and relative operational autonomy. International financial institutions in particular have been quick to finance infrastructure construction in China. For instance, the Asian Infrastructure Fund invested US$50 million in port development projects in the cities of Xiamen and Nanjing (Business China, 3 April 1995, pp. 10–11). The World Bank has been instrumental in providing funding and technical assistance to urban transport and sewerage systems in large cities such as Shanghai.

Municipal Organisational Structure

The prevailing model that is still in practice today is a two-tier organisational structure: the Urban Construction Commission as the main local institution overseeing and co-ordinating urban construction matters, and a number of municipal bureaux with oper-
ational and/or advisory functions (see Table 4). Financing for urban infrastructure is co-ordinated by the Economic Planning Commission. This structure applies to the four provincial-level cities, all provincial capital cities, cities with a population of over 1 million, and the 16 independent ‘line-item cities’ (Wu et al., 1997). In some cities, the Public Utility and Municipal Works Bureaus are combined into a single bureau, often called the Urban Construction Bureau. A second model of organisational structure has only one level of administration and applies to small and medium-sized cities. There, either the Urban Construction Commission or Urban Construction Bureau exercises all responsibility.

Decision-making in the prevailing organisational structure involves a multitude of actors. The Public Utility and Municipal Works Bureaus, which are in charge of the actual construction and maintenance of most urban infrastructure services, develop plans for specific projects and submit them to the Urban Planning Bureau and subsequently to the Urban Construction Commission for approval. Because of its wide range of responsibilities, the Public Utility Bureau often has several subordinate entities that are in charge of water supply and drainage, residential gas and heating supply, and public transport. In addition, state enterprises and institutions also may construct utilities and infrastructure within their own units. For instance, industrial enterprises in many large cities have built their own industrial wastewater treatment plants. During the past several years, a few cities in the south-east provinces have begun to allow private companies to build bridges, tunnels and highways. The development of these projects is nevertheless overseen by the municipal authorities.

Environmental analyses are required for all projects with significant external impacts such as waste disposal facilities and sewage treatment plants, often in the form of environmental impact assessments at the project feasibility study stage, which are conducted by the Environmental Protection Bureau. As part of project proposals, such studies are then approved by the Urban Construction Commission. Industrial enterprises that build waste treatment facilities for themselves may be required to provide such studies directly to the Environmental Protection Bureau.

In most cities, municipal budgetary authorities have the control of infrastructure financing. Once projects are approved by the Urban Construction Commission and incorporated into municipal annual plans, they are sent to the Municipal Economic Planning Commission for allocation of funding. Only the largest projects are actually listed in the plans. Otherwise annual plans list only overall targets for infrastructure investment. A planned project may be delayed or dropped altogether when circumstances force cutbacks or reallocation of resources. The central Ministry of Construction has instructed urban construction authorities to place the highest priority on developing and overseeing the building of future trunk infrastructure, such as main collector roads, water mains and sewerage systems (World Bank, 1993a). Based on a five-year capital programme consistent with the municipal development plan, investments are planned at the municipal or district level and annual allocations are sanctioned by the Municipal Economic Planning Commission within annual budget limits established by the Finance Bureau. The Finance Bureau generally has separate budgets for the construction and the maintenance of urban infrastructure.

The outline of this process by which most urban infrastructure projects are formulated and approved is reasonably straightforward, but there are variations in real practice because of the overlapping administrative functions between municipal governments and local units of central ministries. For instance, a local state working unit belonging to a central ministry can use separate funding allocated by the ministry, therefore bypassing municipal authorities, to build its own water supply and heating system. Meanwhile, it still uses services provided by the municipal government, sometimes causing duplicated capacity.
<table>
<thead>
<tr>
<th>Co-ordinating body</th>
<th>Organisation</th>
<th>Main responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Construction Commission</td>
<td>Urban Planning Bureau</td>
<td>Drafting comprehensive plans and issuing construction licences</td>
</tr>
<tr>
<td></td>
<td>Municipal Works Bureau</td>
<td>Roads, bridges, tunnels and sewerage</td>
</tr>
<tr>
<td></td>
<td>Public Utility Bureau</td>
<td>Water supply and drainage, residential gas and heating supply and public transport</td>
</tr>
<tr>
<td></td>
<td>Environmental Sanitation Bureau</td>
<td>Sanitation and waste management</td>
</tr>
<tr>
<td></td>
<td>Parks Bureau</td>
<td>Parks and green areas</td>
</tr>
<tr>
<td></td>
<td>Land Administration Bureau</td>
<td>Land-use decisions</td>
</tr>
<tr>
<td></td>
<td>Environmental Protection Bureau</td>
<td>Environmental analyses and services</td>
</tr>
<tr>
<td></td>
<td>Public Security Bureau</td>
<td>Traffic control and management</td>
</tr>
<tr>
<td>Economic Planning Commission</td>
<td>Price Bureau</td>
<td>Price control</td>
</tr>
<tr>
<td></td>
<td>Finance Bureau</td>
<td>Budgetary approval</td>
</tr>
</tbody>
</table>
The presence of these working units, which are somewhat independent of the urban construction authorities, also causes difficulty in enforcing quality standards in infrastructure provision. Often a unit with a large number of employees and hence a large budget can build and maintain utilities with higher quality. Some of the largest units in Beijing such as the Capital Iron Corporation and Tsinghua University, for instance, have their own power and water supply plants. When the city experiences water shortages from time to time, such units may use their own supply capacity. On the other hand, smaller units, especially those relying on municipal governments to provide housing for their employees, often cannot afford to maintain properly the existing facilities. Differences are also apparent among cities, as large cities in the same province tend to be better-off than small ones in most infrastructure services (Chan, 1997). Cities in eastern provinces also are ahead of those in western provinces. In 1996, the nine western provinces that counted for 21.1 per cent of the total urban population only spent about 12 per cent of the total urban maintenance and construction revenue (Hou, 1998).

A major problem with this prevailing organisational structure has been the interweaving and overlapping of responsibilities and functions among different municipal bureaus. Those in charge of the actual construction, operation and maintenance of infrastructure services—in most cases the Municipal Works and Public Utility Bureaus and their subordinates—often do not have the managerial autonomy to make timely decisions and are subject to political interference by other municipal authorities. Such interference often adversely affects operational decisions on pricing and investment. Take the example of public transit fares. Since urban public transit services are considered an important form of social welfare, fares have been kept so low that most urban bus systems have been running under huge losses and cannot survive without government subsidies. In 1994, with the sanction of the Ministry of Construction, urban construction authorities in many cities began proposing fare increases. But few of them were able to obtain consensus with the Price and Finance Bureaus, and consequently had to abort the effort (Wu et al., 1997). Because the level of public transit prices is an important component of the consumer price index, the Price Bureau was concerned with the impact of the fare increases. The Finance Bureau, on the other hand, worried about the possibility of increased subsidies if fare increases did not materialise.

Another serious handicap of this organisational structure has been the lack of financial autonomy for the actual providers of urban infrastructure. A long tradition of municipal affairs in China has been the separation of budgetary power from administrative power. The Finance Bureau generally has the authority to control the annual budget of the Urban Construction Commission and its subordinate bureaus, and to approve projects they propose. This form of budgetary control extends to the spending of earmarked special infrastructure funds and user charges. Because infrastructure had long been considered a non-productive sector, it was not a priority for budgetary authorities in many cities. The lack of financial autonomy also gave the urban construction authorities little incentive for financial mobilisation. Since the late 1980s, however, several cities including Shanghai and Qingdao have begun to reform this structure. They have created a foundation or company, which is subordinate to the Urban Construction Commission but independent of the Finance Bureau, to take charge of infrastructure financing. Shanghai’s experience so far, as analysed in the following case study, has shown great promise.

Lack of attention to the environment has characterised urban construction authorities in many cities, and organisational bureaucracy tends to compound the problem. Responsibilities for environmental monitoring and testing are entrusted to the Environmental Protection Bureau, but the Bureau’s role is generally consultative and advisory. Staff in the Environmental Protection Bureau are
more qualified, technically, to oversee environmental issues and services; but their concerns often are not well received or considered by other agencies that make decisions about urban development and infrastructure projects. Consequences often include insufficient provision of environmental infrastructure, such as water and sewage treatment plants, and waste disposal facilities. The correction of this problem, therefore, requires both an increased sensitivity to the environment and the delegation of functional authority to the Environmental Protection Bureau.

**A Case Study of Shanghai**

Starved of capital throughout the Maoist era, Shanghai’s infrastructure was debilitated when China’s economic reform commenced in 1979. Urban services, such as water, heating and sewers, lagged far behind requirements. Per capita paved road surface was well below the urban average (Yusuf and Wu, 1997). Designed for an age of pedestrians and rickshaws, the graceful tree-lined boulevards were now jammed with cars, buses, bicycles and pedestrians, causing extended delays at almost any hour of the day. But what Shanghai has done during the past 10 years or so to renew the city’s infrastructure is no less than amazing and offers an indication of the potential of reforms in other cities.

**Managing Intergovernmental Fiscal Relations**

Between 1949 and 1980, roughly 86 per cent of Shanghai’s revenue was remitted to the central government. The only discretionary income under the control of municipal authorities was derived from user fees on public services and various surcharges. Because of its strategic role as an industrial centre and its significant contribution to national revenue, Shanghai was largely bypassed during the early fiscal reforms in the late 1970s. After several rounds of hard-pressed negotiation, Shanghai finally was allowed a higher ratio of revenue retention (about 25 per cent) in 1983, which permitted the city to take the first few steps towards improving urban infrastructure (Lin, 1994).

A more favourable fiscal arrangement negotiated by Shanghai with the central government in 1988 gave the city more autonomy in revenue collection and municipal expenditure. The city entered into a revised arrangement with terms broadly similar to those enjoyed by Guangdong since the early 1980s. These terms entailed remitting a fixed annual sum of 10.5 billion yuan to Beijing during 1988–90. In 1991 and 1992, Shanghai was required to remit this base amount and half of all revenues collected in excess of 16.5 billion yuan. This arrangement was buttressed by subsequent actions to mobilise funds through such measures as increasing user charges and levying land-lease fees.

Shanghai initiated its own district-level fiscal decentralisation in 1990. Typically, the formula used has been to allow district finance bureaus to retain revenues collected above a base value. The rationale is that revenue retention encourages greater tax collection, some of which may feed the municipality’s budget, while improving the allocation of resources for self-determined expenditure. Since July 1997, the districts also have taken over responsibilities for constructing and maintaining minor infrastructure services such as local streets through a contract system (Shanghai Academy of Social Sciences, 1998).

**Organisational Streamlining**

The most significant step Shanghai has taken is to offer financial autonomy to urban construction authorities. In 1988, the Shanghai Construction Commission proposed to the municipal government that a foundation be formed under its auspices and put in charge of infrastructure financing. As part of Shanghai’s reform to unify financial and administrative responsibilities for municipal bureaus, the Shanghai Urban Construction Foundation was formed shortly afterwards to mobilise,
allocate and manage funds for urban construction. The foundation was transformed into the Shanghai Urban Construction Investment and Development Company in 1992. In addition to financial mobilisation, this state-owned company has the authority to allocate funding for different infrastructure sectors and relevant bureaus. This organisational reform has finally ended the long bureaucratic tradition in which the Finance Bureau has had the power of financing and budget allocation over the actual providers of infrastructure services.

Another important element of Shanghai’s institutional reform is the strengthening of the managerial autonomy of public utility agencies. To the extent feasible, municipal service departments are given full responsibility for planning, investment, operations and maintenance. These departments also are adopting an independent cost-counting system to facilitate sector management and financing. In addition, a sewerage company has been created to maintain the newly constructed sewerage system. A company has been created as well to manage Shanghai’s new subway system. An even bolder effort to allow enterprises serving as contractors to provide selected services (for example, public transport and garbage collection) has been under consideration and some bus services have already been under concession.

New Mechanisms of Financing

Urged by the central government, Shanghai has launched a comprehensive programme of resource mobilisation and expenditure management beginning in 1990, a portion of which is specifically targeted to urban infrastructure services (Yusuf and Wu, 1997). First, municipal authorities have increased user charges for some infrastructure services including bus fares, gas supplies, water, wastewater discharge and municipal sanitation services. Secondly, Shanghai has begun to raise funds by leasing land. Shanghai’s population density, its relative prosperity and the nature of commercial development now underway, mean that real estate in the municipality is extremely valuable and likely to become even more so. Thirdly, the city has set up separate transport and energy funds in municipal revenue collection. This would guarantee, to some extent, the funding level for the two sectors.

Shanghai’s borrowing from the international market commenced on a modest scale in 1986. The central government’s fiscal reforms selectively allowed certain provincial-level entities the right to issue construction bonds domestically, to raise money in international capital markets and to permit enterprises to acquire funds by issuing shares to workers and/or others. The issuing of construction bonds, aimed at capturing the high level of household savings, has been growing steadily as Shanghai acquires experience. The purchase of such bonds is often financed through payroll deductions, and bonds are attractive to Chinese households due to their guaranteed returns. Funding from overseas sources has been instrumental in the building of the city’s new subway system, industrial districts and hotel and other facilities needed to attract large numbers of businessmen and tourists. Foreign capital also finds its way to the city through direct investment (for example, the Yangpu and Nanpu Bridges across the Huangpu River) and build-operate-transfer schemes (such as the east-west elevated throughway).

Shanghai also has experimented with a different financing mechanism in its new Pudong district, which has produced mixed results (Wu, 1999). Unlike Shanghai’s other industrial districts that receive municipal funding for infrastructure construction, Pudong to a large extent has had to raise its own funding through bank loans, foreign capital and other non-state channels. In essence, the zone and its development corporations have been operating in a manner similar to private enterprises. As a result, they are under strong pressure to recover the costs through land leases, often at much higher prices than those available in other parts of the city. So far, the zone has not been very successful in this respect.
Table 5. Improvements in Shanghai’s infrastructure services, 1991 and 1996

<table>
<thead>
<tr>
<th>Service</th>
<th>1991</th>
<th>1996</th>
<th>Percentage change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per capita paved road (sq m)</td>
<td>2.4</td>
<td>4.5</td>
<td>87.5</td>
</tr>
<tr>
<td>Per capita annual domestic water consumption (tons)</td>
<td>71.2</td>
<td>104.6</td>
<td>47.0</td>
</tr>
<tr>
<td>Access to gas (percentage)</td>
<td>62.0</td>
<td>91.5</td>
<td>47.6</td>
</tr>
<tr>
<td>Per capita open space (sq m)</td>
<td>1.1</td>
<td>1.9</td>
<td>79.4</td>
</tr>
<tr>
<td>Wastewater treated (percentage)</td>
<td>7.6</td>
<td>30.2</td>
<td>300.1</td>
</tr>
<tr>
<td>Capacity for treating wastewater (million tons/day)</td>
<td>0.4</td>
<td>1.9</td>
<td>361.0</td>
</tr>
</tbody>
</table>

Sources: Shanghai Statistical Bureau (1997); Shanghai Construction Commission (1997).

The Shanghai Urban Construction Investment and Development Company has displayed an impressive record of achievement in infrastructure financing since its creation. It has employed a wide range of financing mechanisms, particularly through such non-state channels as international capital, bank loans and credits, construction bonds, stock markets and service concessions. It has entered into concessions with profit-making enterprises to operate the three bridges and a tunnel across the Huangpu River. It also has established a number of subordinate entities, mainly in charge of water supply, which are listed on the Shanghai Stock Market. Available official information shows that in 1995 and 1996, funds mobilised by the company accounted for about 76 per cent and 90 per cent, respectively, of Shanghai’s total urban maintenance and construction revenue.

Improved Overall Performance

Shanghai’s reform efforts have begun to show some results. Most of all, unmet demand is shrinking as Shanghai makes progress in virtually every infrastructure service (see Table 5). Improvements are particularly rapid in road construction, park expansion and wastewater treatment. Compared to an average level of about 7 per cent in all Chinese cities, Shanghai now treats 30 per cent of its wastewater. A number of large infrastructure projects have been completed, such as three bridges and a tunnel across the Huangpu River, an inner ring road, elevated north-south and east-west throughways, and a new subway line. The pace has been roughly equivalent to building the Brooklyn and Manhattan Bridges in New York and the Lincoln and Holland Tunnels between New York and New Jersey all in 5 years (New York Times, 1995). Another 200 miles of track on 6 more lines of subway could be built over the next few decades. Once completed, the subway should take some of the pressure off the city’s congested road systems.

Investment in and expenditure for infrastructure services have increased steadily during the 1990s as well (see Table 6). Responsible for the expansion of road and sewerage systems, investment in municipal works has grown most significantly. Now, the infrastructure sector receives the level of attention from the municipal government it deserves and accounts for about one-tenth of Shanghai’s total fixed-asset investment. Such a magnitude of investment also has allowed for increasing spending on maintenance, although the record of progress is unknown. However, Shanghai still has some way to go before it can maintain a stable, positive balance sheet. It barely broke even in 1995; but in 1996 against an expenditure of 15.4 billion yuan, urban maintenance and construction revenue only amounted to 11.2 billion yuan. Lack of information does not allow an assessment of cost recovery for infrastructure services. As a result, it is difficult to know whether some sectors are performing better than others. Overall, it is promising that user charges including service fees (about 20 different types), infrastructure connection fees
Table 6. Investment in Shanghai’s urban infrastructure, 1991–96 (billions of yuan)

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Public utilities</td>
<td>0.92</td>
<td>1.26</td>
<td>3.79</td>
<td>2.68</td>
<td>3.50</td>
<td>4.83</td>
</tr>
<tr>
<td>Water supply</td>
<td>0.23</td>
<td>0.32</td>
<td>0.69</td>
<td>1.15</td>
<td>1.31</td>
<td>2.21</td>
</tr>
<tr>
<td>Residential gas supply</td>
<td>0.45</td>
<td>0.61</td>
<td>1.67</td>
<td>0.78</td>
<td>1.30</td>
<td>1.46</td>
</tr>
<tr>
<td>Public transport</td>
<td>0.23</td>
<td>0.32</td>
<td>1.43</td>
<td>0.75</td>
<td>0.89</td>
<td>1.16</td>
</tr>
<tr>
<td>Parks and green areas</td>
<td>0.02</td>
<td>0.03</td>
<td>0.05</td>
<td>0.24</td>
<td>0.43</td>
<td>0.27</td>
</tr>
<tr>
<td>Environmental sanitation</td>
<td>0.04</td>
<td>0.08</td>
<td>0.11</td>
<td>0.10</td>
<td>0.13</td>
<td>0.11</td>
</tr>
<tr>
<td>Municipal works</td>
<td>1.28</td>
<td>2.85</td>
<td>5.62</td>
<td>9.35</td>
<td>9.62</td>
<td>10.18</td>
</tr>
<tr>
<td>Others</td>
<td>0.00</td>
<td>0.11</td>
<td>0.00</td>
<td>0.02</td>
<td>0.03</td>
<td>0.01</td>
</tr>
<tr>
<td>Total</td>
<td>2.26</td>
<td>4.33</td>
<td>9.57</td>
<td>12.39</td>
<td>13.71</td>
<td>15.40</td>
</tr>
<tr>
<td>Percentage share of total fixed-asset investment</td>
<td>8.7</td>
<td>12.1</td>
<td>14.6</td>
<td>11.0</td>
<td>8.6</td>
<td>7.9</td>
</tr>
</tbody>
</table>

Source: Shanghai Statistical Bureau (1997).

and land-use fees have become larger sources of revenue.

Future Prospects

China is still facing the daunting task of providing its cities with modern infrastructure. Cities with ageing infrastructure bear a substantial amount of risk as the deterioration of roads, bridges, sewerage systems, waste treatment and telephone systems will diminish their ability to enhance economic development (Wu, 1996). Because infrastructure investment tends to be long-term, continuous improvements and adaptation are particularly important in order to avoid problems in the future. China’s institutional environment is still a mixture of antiquated bureaucracies and newly reformed mechanisms. The reformed, largely decentralised fiscal system has mostly worked to the advantage of municipal governments, allowing them better incentives to mobilise local resources. At the municipal level, new mechanisms of financing arising from such fiscal freedom have contributed to significant expansion of infrastructure expenditure.

But organisational handicaps persist in many cities. Specifically, the authorities in charge of infrastructure provision still lack managerial and financial autonomy. Institutional reform is essential to reduce political interference in the making of decisions directly related to the operation and maintenance of infrastructure services (as in the case of public transit fare increases). The goal should be to give providers sufficient autonomy in the collections of fees, price adjustments and service planning so that they have incentives to assume full financial responsibility. Greater autonomy can be the impetus to tackle deficiencies in cost recovery, as without it, public providers are compelled to deliver services below costs and are not held accountable for their actions. Shanghai’s experience shows that reforms in organisational structure can lead to improved performance.

China’s cities also have a long way to go before they can subject public agencies to commercial rules and competition. As in other sectors of the Chinese economy, more competition needs to be introduced into the provision and management of infrastructure. It has been demonstrated that costs can be lowered and demands more effectively met by integrating competition into service delivery (Fox, 1994). Private involvement, which apparently has its limits in China, can be one way of injecting more competition. However, the extent of private involvement depends on the strength of the private sector, the capacity of the government to regulate private suppliers and the performance of public providers
Whatever may be the weakness of the public sector in managing and financing urban infrastructure, the public sector will still play a key role, particularly in the areas of regulation or ‘setting the rules of the game’, improving environmental conditions and co-ordination. It is important to recognise the limitations and failures of the private sector that have led to calls for government intervention in the first place—for such reasons as economies of scale in delivery, external effects and public good characteristics.

Private involvement in infrastructure operation and maintenance can be further encouraged, although there is no sign in the near future that China will adopt a wholesale privatisation programme as in other former socialist economies. A major argument behind such private involvement is that the profit motive and competition in the private sector may ensure a commercial orientation in infrastructure (Azizi, 1995; World Bank, 1994b). But the private sector may be hesitant to incur greater responsibility and risk as investment in infrastructure provision is usually for a significant duration and the period of implementation can affect investment return. In China, permitting majority private shareholders in infrastructure construction or wholly private infrastructure facilities is still unlikely in the foreseeable future unless underwritten in the form of build-operate-transfer schemes. Private interests may be better utilised in the areas of infrastructure operation and maintenance, with public transport being a prime candidate.

While there may be some increased budget allocation for infrastructure investment from both central and local governments, the main source of incremental revenue is now seen as higher user charges, as shown in the case of Shanghai. Research indicates that infrastructure is likely to be more cost-effective and have favourable impacts on the urban environment when it is subject to user charges based on marginal costs of supply and willingness to pay (Kessides, 1993). In order to achieve the greatest benefits from its ability to raise the returns of other factors of production, infrastructure provision should be priced to reflect resource scarcity and investment costs. User charges are necessary to ensure efficient use of infrastructure and to discourage wasteful consumption. The absence of such charges often tends to reduce both the quality and availability of infrastructure facilities.

To remedy the inherent problems of infrastructure connection fees and land-lease fees, it may be advisable for cities to consider imposing real property taxes on all land users instead. Used by municipal authorities in many industrialised and developing countries, property taxes prove to be a stable source of funding and tend to be relatively equitable. The tax-base is geographically wide and not in direct competition with tax-bases of higher levels of government. Obviously, the mixed pattern of property rights in Chinese cities will cause a great deal of difficulty in the collection of property taxes. But repeated calls by the central government for the sale of all public housing may offer prospects for overcoming such difficulties.

Notes

1. According to the United Nations (1993), over three-quarters of urban population growth in China could be accounted for by migration as well as reclassification between 1980 and 1990. The accounting of urban population in China is particularly complicated by changes in the definition of cities and towns. The figures cited here are a rather conservative calculation, against a more liberal estimate that put China’s level of urbanisation at close to 53 per cent by 1990 (see Chan, 1994).

2. Although a very small portion of urban maintenance and construction expenditure is for the maintenance of municipal public housing, the budget for housing construction normally is separated from that for urban maintenance and construction. Therefore, housing is not considered as a part of urban infrastructure in China’s statistical system or in this paper.

3. For small state working units, municipal governments provided housing while collecting financial contributions from the units.
4. The infrastructure sector was not open to foreign investment until the late 1980s.

5. Municipalities have two types of revenue, budgetary and extra-budgetary. Provided mainly through taxes, budgetary revenue on municipal records is controlled by the central government (for the 4 provincial-level cities and 16 independent ‘line-item’ cities) or provincial governments. Municipalities, on the other hand, have full control of the extra-budgetary revenue.

6. In Hong Kong during the 1980s, land transactions contributed 50–80 per cent of the island’s capital revenue, substantially altering municipal budget constraints (see Hong Kong Yearbook, various issues). A World Bank report (1993a) estimated that revenue from land averaged about 15–20 per cent of Hong Kong’s total revenue in the same period.

References


