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URBAN INFRASTRUCTURE FINANCE FROM PRIVATE OPERATORS:

WHAT HAVE WE LEARNED FROM RECENT EXPERIENCE?

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1. Introduction

Ever since the mid-1990s, no discussion of urban infrastructure finance could be complete without discussing private participation in infrastructure[2] (PPI). This development represented a significant shift in attitude. For most of the period following World War II, much of network infrastructure was operated and financed by the state, both in developed and developing countries[3]. The economic contribution of these services, their linkage with broad public interest, and concerns about the potential abuse of private market power in activities that offered limited, if any, scope for competition, led governments to take a dominant role in their provision. The fall of the Soviet Union marked the acceleration of a trend that had started earlier in the decade, as reservations about private involvement in infrastructure were reconsidered and the scope for productive involvement of the state in any economic activity was fundamentally questioned, although evidence to confirm the superiority of private involvement in network infrastructure was scant given the preponderance of the government in infrastructure provision. New approaches were attempted in developed countries first, most notably in the UK, propelled in part by technical changes in such sectors as telecommunications and electric power that offered scope for efficiency improvements that could best be seized by private operators and financiers. (Joonash: 2005) These technical changes also offered more scope for competition in certain segments such as electricity generation[4]. In the case of the UK, privatization of infrastructure also was part of a much broader withdrawal of the state from economic activity and privatization of assets held in an array of productive sectors, such as airlines, automobile production, and coal mining. While the budgetary payoffs of divestiture were significant at certain points in time, fiscal pressure did not play a dominant role. (Parker: 2004)

In many developing countries, the fiscal pressures were more intense, and the prospect of shifting investment responsibility to private infrastructure providers played a more significant role in the increased acceptance of private sector involvement in infrastructure. In Latin America, many countries adapted to the need for fiscal retrenchment by cutting infrastructure investment. (Fay and Morrison: 2005) PPI held out the hope of expanding and improving services without further burdening the fiscal, while sale of assets brought welcome revenues. In East Asia, rapid economic growth, urbanization, and demands for more and better infrastructure, urban rapid transport in Thailand, highways in China, and power generation in the Philippines, to name a few, led to a spate of transactions in the early 1990s.

[2] When we refer to finance through PPI, we are referring to a bundled transaction that brings in private entities as operators that finance, or mobilize finance, for infrastructure. Mobilizing private finance for publicly operated infrastructure, for example, through municipal bond issues, or tapping private savings through the intermediation system, is a different type of financing strategy, which countries such as the United States, among others, have very successfully pursued, and is not treated in this paper.

[3] Private infrastructure operations were common in Latin America in the late 19th and early 20th Centuries but most were nationalized by the end of the Second World War.

[4] Note, however, that the evidence on the impacts of private ownership in power in developed countries is still ambiguous. See Kwoka(1996) and Joonash (2005)

Concurrent with the trend toward greater PPI, decentralization expanded rapidly in the 1990s, touching all regions, albeit in different forms specific to each country. Decentralization added to the fiscal pressures to find alternative sources of finance for urban infrastructure. A common occurrence in the early phase of decentralization has been to delegate functional responsibilities to local governments without shifting tax or other revenue bases, leaving a vertical imbalance to be managed with transfers[5]. Many cities were faced with rapidly expanding infrastructure demands. Newly elected local governments were under pressure to expand and improve services, and were open to reaping the fiscal benefits of shifting some investment responsibilities to private operators. Dissatisfaction with the quality and reliability of service and the inefficiencies and even corruption of public sector operators made private sector participation attractive. Thus, the two concerns, fiscal and operational merged in developing countries in way they did not in developed countries. The expectations that PPI would play an important role in addressing these concerns were high. (See for example an analysis for India in Expert Group on the Commercialization of Infrastructure Projects (1996).)

In this regard, however, PPI has disappointed—playing a far less significant role in financing infrastructure in cities than was hoped for, and which might be expected given the attention it has received and continues to receive in strategies to mobilize financing for infrastructure. This paper seeks to understand better the experience in developing countries thus far, and understand some of the reasons behind these outcomes. The experience examined here is a specific subset of the broader PPI trends across all infrastructure sectors, whose successes and shortcomings have been documented at length elsewhere. (See for example, Kessides 2004 and Harris 2003.) Also our focus is on the role of PPI in mobilizing finance. Other benefits of bringing in private operators, such as more efficient operations, are not explicitly examined here.

In this review, we find that, in terms of the numbers, PPI for urban infrastructure has mobilized little private finance. Examining experience in more detail, we also find that there are good reasons; practical, political, economic and institutional, for these disappointments. Recommending that cities in developing countries try harder is not likely to relieve all these constraints. Indeed, experience shows that there are a number of features that raise the risk profile for of urban infrastructure for private investors, which has meant that the bulk of the transactions that have taken place have been exceptions rather than harbingers of a growing trend. Many of the measures that could reduce the risk profile are outside the control of many cities, others unlikely to change, and yet another group of steps to be taken that would improve prospects for urban service provision, whether in the hands of public or private operators. These findings suggest a more pragmatic and selective approach to the focus on PPI as a source of finance, and more focus on the array of some of the fundamental steps required to make urban infrastructure investments viable propositions.

[5] The vertical imbalance facing local governments derives from the advantages enjoyed by central governments in levying relatively easier to administer and less distortionary taxes. See for example (Broadway:2001). Peterson (2005) provides an interesting case study of China illustrating an alternative approach which shifts taxing power to local governments.

2. Trends in PPI in Urban Infrastructure Developing Countries

First, let us consider the trends in urban infrastructure investment in developing countries in the context of overall PPI over the last several years. These data are drawn from the World Bank PPI database. We constructed a database covering urban infrastructure as a subset of all infrastructure by identifying specific transactions in sectors in the database that can reasonably characterized as urban services (water and sanitation and a subset of transport projects). We calculated flows of finance by using the investment figures in the database, and excluded revenues from acquisition of assets. (See Annex 1 for details on the sources and construction of the dataset.) While it is the only source of statistical data on PPI, the database is not without its limitations, particularly for urban infrastructure. Unfortunately, the World Bank PPI database does not cover an important element of urban infrastructure, solid waste management and disposal, which is a potentially significant source of PPI transactions. Moreover, the database covers primarily transactions involving international investors, whereas local private investors could possibly have played a more important role in urban infrastructure sectors.[6]

Table 1 shows both total PPI investment in infrastructure and urban infrastructure for the entire period 1983-2004 over which data have been collected. It shows that urban infrastructure investment has only had a very minor share in total PPI throughout the period, 10 percent in total. Urban infrastructure was slower to take off, with the first transactions captured in the database taking place in 1989. Investments peaked at roughly the same time as total, in the later half of the1990s, just as the optimism for PPI began to take hold.

Table 1:
Total PPI and Urban PPI

[6] The database is being upgraded to include local investors to some extent, however these data were not available at the time of writing of this paper.

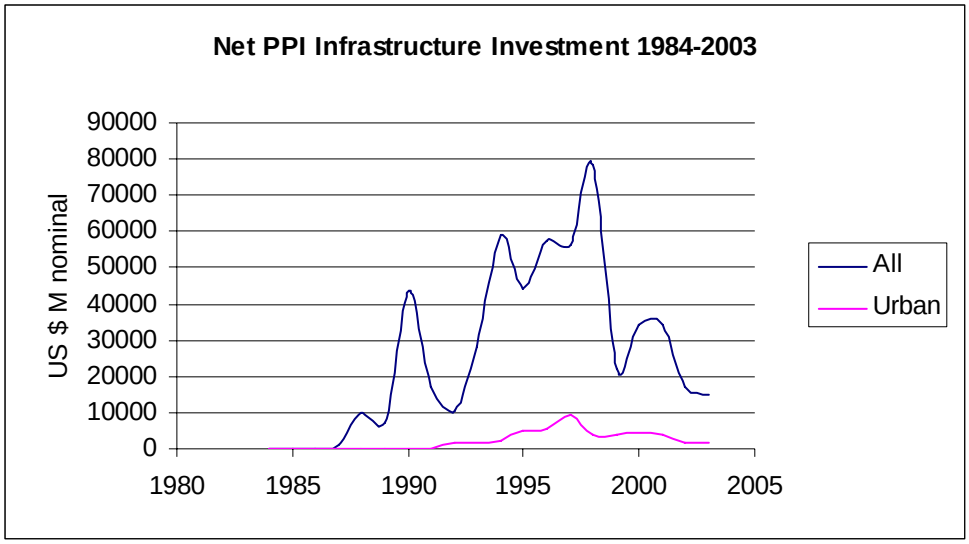


Table 2:
Regional Breakdown of Total PPI and Urban PPI

$ M nominal	EAP	ECA	LAC	MENA	SAR	SSA	Total
All PPI	157,867	77,503	273,678	22,474	37,943	28,469	597,934
% of Total by Region	26%	13%	46%	4%	6%	5%	100%
Urban	26,493	2,796	24,581	5,373	423	1,600	61,266
Urban as a % of Region Total	17%	4%	9%	24%	1%	6%	10%

The regional breakdown of total PPI illustrates what has already been noted elsewhere, that is, the concentration of PPI in two regions, Latin America and East Asia and the Pacific. These two regions also dominate the urban PPI, and to a more significant extent, accounting for 83% of total. The amounts of urban PPI in all other regions are virtually insignificant in relation to the size of their economies, with less than a billion dollars in South Asia, and barely more than that in Sub-Saharan Africa. Urban PPI is quite concentrated in a few countries, with 64% of the total investment flows accounted for by the top five countries. There is much less concentration in the transactions for total PPI, where the top ten countries account for a comparable percentage (67%) of the investment.

Because the database reports all PPI transactions including those that were cancelled, distressed or otherwise compromised, we netted out these problem transaction to get a better, albeit imperfect, measure of actual investment flows from urban PPI[7]. (See

[7] Some transactions may have been cancelled after major investments were made, in which case, our adjusted figures may understate the investment. However, this is not likely to be a material error, given that most problems in water projects, for example, were encountered early in the project cycle (Guasch et alia (2003) and Guasch et alia (2005). On the other hand, the database does not measure the costs the government may have incurred as a result of contract termination. These numbers are not necessarily insignificant; it is estimated that the Mexican toll road bailout, probably one of the largest, cost over 1% of GDP. (World Bank 2005 in Serven and Irwin 2005)

Annex 1 for definitions of these categories.) As shown in Table 3, this netting out has a considerable impact for urban PPI, with 25% of total transactions classified as problem transactions. Here there are also very clear differences between the urban PPI and the total PPI transactions, where the total problem transaction component is only 10%. Water supply and sanitation transactions clearly drive this outcome, with nearly 40% classified as problem projects.

Table 3:
Problem Projects in Urban PPI

Urban PPI $ M Nominal

ProjectStatus	Energy	Transport	WSS	Total
Regular transactions	5,735	18,747	21,532	46,013
Problem transactions	11	1,999	13,243	15,253
Total by sector	5,746	20,745	34,775	61,266
Problem transactions % of Total	0%	10%	38%	25%

Thus, we conclude from this overview of the trends in private participation in infrastructure that investments in urban infrastructure have played a relatively minor role in the overall PPI flows generated even during the peak period in the mid-1990s. PPI for urban infrastructure has been more concentrated in a few countries than overall investment flows, and is often quite insignificant in countries such as Brazil and South Africa, which, within their regions, attracted quite significant flows of PPI overall. This last point suggests that, even for countries that appear to have been well-disposed to PPI in general, attracting significant flows of funds for urban infrastructure PPI turned out to be more difficult. Analysis of problem projects in the database also points to this finding. There were significantly more problem projects in the urban sectors than in the others, with a total of 25% of investment compromised by problem projects as opposed to 10% in total.

3. PPI in Urban and Total Infrastructure Investment

Having examined the overall trends in urban PPI, we now look at them in relation to total urban infrastructure investments, a significant indicator of the potential role of PPI in an investment strategy. This ratio can only be measured roughly, since very few countries specifically measure their urban infrastructure investments separately. It was impossible to prepare such estimations on an aggregated regional or global basis, because the data is so sparse and is rarely comparable across countries. Instead, we examined each of the countries featured at the conference, and sought to obtain the best approximate measure of the significance of PPI for financing urban infrastructure.

Looking first at Brazil, we have some indications from work by Calderon and Serven (2004:29). Using a number of different data sources, they have estimated the share of both public and private investment in the entire infrastructure as a share of GDP

for Brazil. These shares are published for two different periods, 1980-85 and 1996-2001. For the period 1996-2001, the share of PPI in total infrastructure investment is over 57 percent, up from 30 percent in 1980-85. In spite of this dramatic increase in the share of PPI in total investment, PPI in Brazil as a percent of GDP stays roughly the same, declining somewhat from 1.5 percent to 1.4 percent. Thus the increased share of PPI results from a dramatic reduction in public sector spending, declining from 3.6 percent of GDP to 1.0 percent. Thus the increase in the private investment share is largely as a result of the decline in public sector activity, not a major increase in PPI. Turning our focus to urban infrastructure, we note that PPI investment is dominated in both periods by both telecommunications and power, accounting for three quarters of the PPI in the early 1980's and over 90% from 1996-2001. Based on our estimates of urban PPI from 1996-2001 from the PPI database, urban PPI accounts for about 0.07% of GDP or 3 percent of total infrastructure investment. While we have no precise estimate of what the urban infrastructure spending is in relation to total[8], it seems quite likely that 3 percent of total covers only a fraction of urban infrastructure needs. World Bank (2001: ii) cites a government estimate of about R$7 billion per annum for municipal infrastructure investment needs or about $3.5 billion at today's exchange rate. Average annual urban PPI over this period was roughly $465 million per annum, and hence covers only a fraction of these estimated needs. Considering that most of those transactions took place prior to 2001, the potential appears even less promising. Thus, while Brazil mobilized a good deal of PPI, and its share in total infrastructure investment has been significant, in aggregate, PPI did not fully substitute for public spending on infrastructure; instead it only attenuated a dramatic decline. Moreover, the information available indicates that the role of PPI in financing urban infrastructure is even less important, in spite of the considerable financial constraints placed on cities in the wake of the sub-national financing crisis and the implementation of the Fiscal Responsibility Law.

China has experienced trends in infrastructure investment that are quite different from those of Brazil, with rapid increases in infrastructure spending attracting attention worldwide. The indicators of service increases give a flavor of the massive investment flows involved. Between 1991 and 1999, city based domestic water use has increased by over 75%, and municipal waste water treatment capacity by nearly 250%, and city sewer network lengths by nearly 225%.(Bellier and Zhou (2003: 60) Interestingly, however, PPI has not as yet played a major role. According to Bellier and Zhou, between 1992 and 1998, less than 4% of total investment in water supply and sanitation has been financed by PPI. The share of PPI in the total fell from 7.5% to only 3% in 2002. According to the PPI database, the total PPI in urban water and sanitation in China for the entire 25 years covered by the database amounts to about $2 billion, close to about the amount of total annual estimated investment by the state owned enterprises (SOE's) in the water and sanitation sector in 2002. (Asian Development Bank et alia: 2005). The authors of this study note that SOEs account for only a small share of total water investment, since most of this investment is handled by local governments, for which they were not able to locate

[8] Bremacker (1997) cited in World Bank (2001) estimates municipal expenditures on housing and urban at 82% of public expenditures in these sectors. If investment follows the pattern of total spending, then municipalities account for the bulk of urban infrastructure investment. Bremacker's study covers the period prior to the sub-national fiscal contraction, and these ratios may also have changed since that time.

aggregate data. In relation to the projected investment needs for the 10th Five Year Plan from 2001-2005, PPI in WSS from 2001-2003 in China thus far amounts to about 4% of estimated needs (pro-rated because the PPI data covers only 60% of the plan period). Put otherwise, Bellier and Zhou underscore that the planned investments in water alone amounts to over 100 Chengdu BOT water projects, the Chengdu project being the largest PPI on record at the time of writing their paper.

Transportation PPI appears to have fared somewhat better in total investment in China, at least for a period. Bellier and Zhou (2003:47) cite estimates that about 10% of total transport investment (not exclusively urban) has been financed by PPI. However, they also note that a significant share of those investments, around 80%, has been for expansion or rehabilitation of existing expressways. In those projects, the government has already taken most of the construction and traffic risks. It appears that the role of PPI in urban transportation overall has not been so significant. Based on Asian Development Bank et alia (2005) local governments are estimated to have spent over $37 billion on urban transport in 2003. This is about 12 times the amount raised in all urban transport transactions captured in the PPI database covering several years. The trend in urban transport PPI in China is also disturbing. The PPI database indicates no projects concluded since 1999. This coincides with the change in central government policy regarding guaranteed returns in expressway projects. (Bellier and Zhou: 48) Thus, although the sector appears somewhat less problematic than water, the share of PPI in urban transport investment in total remains quite limited. While China has shown itself a world leader in attracting FDI and has concluded a number of PPI transactions, the evidence indicates that PPI remains a minor source of urban infrastructure investment funding.

PPI in India has been limited and disappointing in comparison to the great hopes in the mid-1990s that accompanied economy-wide reforms and worldwide interest in PPI. India accounts for only 5% of total PPI transactions in the World Bank database, and only 1% of total urban infrastructure transactions. PPI has not succeeded in making any significant impact on the low level of infrastructure investment in cities. There is very little data available measuring actual infrastructure investment spending in Indian cities. Nonetheless, it is estimated that total spending in cities has not increased from about 0.5% of GDP over the 15 year period since the 74th Constitutional Amendment Act that started the decentralization process in India. While States and the Centre may spend on urban infrastructure in India, there is little evidence of service improvements to indicate that there has been a significant upsurge in infrastructure investment as the Indian economy has taken off more broadly. In a very influential volume, the Expert Group on the Commercialization of Infrastructure Projects (1996) estimated urban infrastructure investment requirements in India, both to meet the existing service gap and to satisfy incremental needs as the urban population grows. They estimated annual urban infrastructure investment requirements phased over ten years at around Rs. 280 billion (in 1994-95 prices). By contrast, total urban PPI from the World Bank database amounts to about $420 million in total, or about Rs. 19 billion, representing an average of a little over Rs. 2 billion per annum, less than 1% of the total urban infrastructure investment

requirements.[9] Particularly given sense of opportunity perceived in the Indian markets at the time of publication of the Expert Group report, and the capabilities of the private sector and financial sector in India, this outcome is very disappointing.

Poland faces both a tight fiscal constraint as it seeks to meet European Union (EU) fiscal management requirements and a strong demand for urban infrastructure investment to meet EU environmental standards. Nonetheless, the evidence suggests that PPI has made a *de minimus* contribution thus far to meeting investment needs. Noel and Brzeski (2005: 46) cite estimates of investment requirements for urban waste water treatment in Poland amounting to over 6.5 billion Euros. The PPI database indicates that only $16 million, far less than 1% of this estimated requirement has actually been mobilized for waste water investments through PPI. This figure is also quite low in relation to the estimate of total local investment spending in 2003 of about $3.5 billion.

As discussed earlier, South Africa was one of the African countries most successful in attracting PPI. There was significant demand for infrastructure investment over the 1990s as a considerable catching up was needed in terms of improving infrastructure in the newly amalgamated local governments that now included the underserved black townships, and government spending has been quite substantial. Estimated total spending by local governments in South Africa, net of interest payments in 2003/2004 amounts to $11 billion, or about 6% of GDP. By comparison, however, urban PPI in total over the period covered by the database has been quite insignificant at about $80 million, or much less than 1% of one year's local government spending.

Thus, across the wide range of different countries featured in the conference, certain similar patterns emerge. For all of these countries excepting Brazil, PPI for urban infrastructure has not emerged as a major contributor to investment funding, certainly not substituting in a significant fashion, for government funds. Its contribution in Brazil, in percentage terms appears to be the most significant, where urban PPI accounts for about 3% of total infrastructure investment spending and doubtless a larger share of urban investment spending. While in Brazil and the rest of Latin America, policymakers in the 1990s hoped that increased PPI could fill the spending gap created by fiscal discipline, spending declined overall as a share in GDP. Indian cities both have very limited budgets and very pressing needs for infrastructure improvements, but urban PPI has been nearly insignificant there. While Brazil and India faced harsh fiscal constraints, China's government spending was expanding rapidly, as was the economy. Apparently, however, the contribution of PPI to urban infrastructure remains limited, less than 5%. Moreover, it appears that the PPI on urban toll roads was short-lived and disappeared when government guarantees were withdrawn. Poland and South Africa's local governments appear well resourced and many are quite well-managed, but PPI has also made

[9] Dollar amounts from the PPI database were converted at the annual average exchange rate in the year of the transaction closure. Since transactions started in 1996, we counted an eight year period. The figures from the Mohan report are in real terms and the data in the PPI database are in nominal terms. Since all the nominal figures are from years after the base year (1994-1995) for the investment requirements, this low percentage share is biased somewhat upward.

insignificant contributions to the total urban infrastructure financing needs. It is worth mentioning here that the data available in the PPI database overstates to some extent the net investment provided from private sources because the transactions often include government contributions to the investment, amounting to about 10-15 per cent of the total[10].

4. Why Private Participation in Infrastructure Has Provided So Little Urban Infrastructure Finance

This section explores experience in the last several years to understand the reasons why, while a number of transactions took place, and great efforts were made to promote PPI in urban infrastructure, so little finance was actually mobilized across a wide range of countries. A sector like water supply and sanitation (WSS) is largely excludable[11], and user charges can, at least in theory, be used to recover costs. These conditions offer the possibility of attracting private finance, and a number of WSS PPI's were concluded, even if WSS projects represent a small fraction of total PPI. These projects suffered from a number of difficulties, as evidence by the high incidence, 25 percent, of problem projects, indicating considerable risks to both sides that could not be managed within the original contract arrangements.

One reason for this is that, in practice, it has proven much harder to achieve full cost recovery, even in water supply, across a very wide range of countries, and in spite of a decade of serious reform efforts, and in many places, fiscal pressures. Komives et alia (2005) and Foster and Yepes (2005) document in detail the state of cost recovery in the water sector. What is particularly striking about their findings is, notwithstanding substantial reform efforts in many countries, how very widespread subsidies are for the water sector. As shown in Table 4 below, 42 percent of high-income countries are estimated to subsidize operations and maintenance costs of water provision for residential users. While many countries recover more from commercial users and hence improve overall cost recovery from these low levels, that bifurcation of the market introduces complexities and risks for any private sector investor, especially if they are being asked to expand coverage for residential users as part of the investment plan. Luque (2005) notes, for example, that the São Paulo State water utility (SABESP), while recovering costs through a cross-subsidy from commercial users has been losing its commercial customer base.

[10] Ettinger et alia(2005: 8)

[11] Publicly provided services are said to be "excludable" if access to the service can be denied to those who do not pay for it. Piped water can, in principle, be cut off if users do not pay their bills. This contrasts, for example, with public services like national defense, or city streets, where it is impracticable to bill directly those who use the service or prevent those who do not pay from benefiting.

Table 4: Overview of Average Residential Water Tariffs				
		Percentage of utilities whose average tariffs appear to be		
By Income		Too low to cover basic O&M	Enough to cover most O&M	Enough for O&M and partial capital
HIC		8	42	50
UMIC		39	22	39
LMIC		37	41	22
LIC		89	9	3
By Region				
OECD		6	43	51
LAC		13	39	48
MENA		58	25	17
EAP		53	32	16
ECA		100	0	0
SAS		100	0	0

Source: Adapted from Komives et alia (2005:21)

This evidence suggests strongly that, no matter how desirable the objective of full cost recovery may be for water, its practicability is questionable. Adding sanitation to the package of services provided, as many utilities do, although coverage is typically lower in developing countries, makes cost recovery even less feasible or even desirable. The externalities associated with sanitation services imply that some subsidization funded out of general tax revenues is efficient. Clearly the presence of significant subsidies on current operations substantially reduces the prospects for attracting long term private finance for the necessary investments in the expansion of water and sanitation services.

While political will and populist politics have often been cited as reasons for the persistent poor performance in cost recovery, problems of affordability in low income countries may also account for the inertia in reducing subsidies for residential water. The impact will vary from country to country, depending on water and sanitation coverage among the poorest households, which in regions like Africa is quite low, the costs consumers bear to cope with poor service, and the scope, often unexplored, to restructure tariffs to cross subsidize poor consumers. Recent estimates for Delhi indicate that substantial increases in water tariffs may still be affordable for poor households, especially if the coping costs, sometimes two or three times what is paid to the utility, can be reduced.(World Bank: 2006). South Africa has achieved cost recovery, yet subsidizes basic consumption levels for rich and poor alike, with stiff tariff increases[12]. Overall, Komives et alia (2005:171) estimate, based on a review of a number of studies, that subsidies for electricity and water supply and sanitation are equivalent to roughly three to four per cent of household expenditure or income of poor households that receive them. This relatively modest number nonetheless indicates that there is substance to the concern

[12] Although as mentioned above, this has not lead to a high volume of PPI transactions, water charges do offer a revenue stream that can be capitalized to mobilize finance in capital markets.

that lower income groups may suffer should full cost recovery tariffs be adopted, and if tariffs are not restructured to protect poor consumers. Thus, in many developing countries, two significant reforms of tariffs may be needed to achieve cost recovery that is both socially acceptable and makes water operations a viable proposition to private operators. Even with political will, it is likely that many countries will face a lengthy period of transition in which some form of public funding supports provision of these services, especially if coverage is to be extended to those not currently served.

Evidence on Chile's relatively successful privatization efforts in the water sector shows, in some ways, that they are the exception that proves the rule. Fischer and Serra (2004) discuss privatization of electricity, telecommunications, and WSS. Of the three, WSS was the most problematic. Nonetheless, the program registered successes in mobilizing finance for waste water treatment programs, one of the important motivations for privatization. The initial conditions are of interest, however. At the time of the privatization, 98% of the urban population had access to the urban water network, and 89% to sanitation.[13] As part of the program, subsidies were restructured, and government subsidies were re-oriented to the rural sector, doubtless facilitated by the fiscal space freed up by private investments in urban waste water treatment. Some other countries in Latin America sought to mobilize private financing while expanding water system coverage. Experience has been quite mixed, as is well summarized by Kessides (2004). Barja and Urquiola note that in Bolivia, as in the case of Chile, the water privatization program was the most difficult and limited in scope, although the El Alto private water program increased coverage at about the same pace at which it increased in other urban areas. Kessides (2004) also discusses the distinct contrast of experience between the El Alto and Cochamba water privatizations in Bolivia. The experience in Latin America indicates that recovering costs for new water connections adds a substantial layer of complexity to an already difficult transaction. In El Alto, this challenge led to an innovation in standards, while in Argentina the private contract for Buenos Aires had to be renegotiated to soften the impacts on poor neighborhoods, but this renegotiation also lowered the expansion targets. In any case, mobilizing private operators to finance new connections adds a significant level of risk which significantly impedes the flow of capital or raises the costs if borne by the private sector alone.

WSS, and more particularly piped water supply, offer, in many respects some of the most favorable conditions for private entry in urban infrastructure because it has most of the features of a private good, and yet, PPI has not been easy. It has been recognized for some time that municipal solid waste management (MSWM) is very much amenable to private participation. (Cointreau: 1994). The operational efficiencies that private operators can bring lower the cost structure. If proper fees structures are in place, sanitary land fills can be viable investments for private providers. However, in order to assume the significant investment risks involved, private operators need to be able to rely on a steady flow of revenues. This revenue flow in turn relies on the system for charging for garbage collection. These fees are typically managed by the local government, and must address issues of local acceptance by the public and affordability. Cointreau (2005) points out that solid waste management has many aspects of a public good, because it

[13] Fischer and Serra (2004: 76).

involves waste removal from public spaces, safe disposal, not just removal from the neighborhood. Moreover, the tariff structure typically involves some level of cross subsidy, because it is more costly to provide waste removal in poorer more crowded neighborhoods. Local governments that have not addressed these issues and that do not have some flow of general revenues to cover additions to direct service charges will be in a poor position to negotiate with private providers to make major investments.

Urban transport has benefited from a considerable shift away from public provision of services like buses, and this move to private provision brings with it private investment. Nonetheless considerable investment needs remain. Some urban transport infrastructure projects like dedicated expressways have mobilized investment, as the discussion in Section 2 showed. Apparently however, this investment involved very little assumption of market risk by the private sector. Both in China and India, the focus on PPI for expressways has been on improvement and rehabilitation, and in China, the flow of transactions dried up when guaranteed returns were not provided. (Bellier and Zhou: 2003).

An example of a planned urban transport investment in Mumbai, India, illustrates a part of the problem. Buckley (2005) cites a feasibility study for a harbor bridge project in Mumbai. Such a development would have a high value for the local economy, by relieving a tightly binding land constraint. The government is seeking private investors, and has estimated a toll of Rs. 100 to make the project financially attractive to private investors. However, the average daily income in the city in only Rs. 125, and is thus likely to exclude many whose use of the bridge would much increase its overall economic value. Were the government to be in a position to tax the properties on the other side of the bridge in accordance with the increase in value that these properties would experience as a result of the bridge construction, the tolls needed to make the project a viable proposition could be reduced and usage most likely improved. This preferable public finance option could improve the prospect of private finance by lowering both traffic risks and the risks of protests and judicial challenges to the tolls. Thus focusing only on private finance in this case could raise the risk of successful project implementation, raise the cost of the project and hence the finance, while lowering the economic and social returns of the investment. The presence of declining marginal costs per user, low incomes, and weak public finances combine to offer this difficult prospect for a PPI transaction.

These features, while perhaps uniquely acute in Mumbai, are not unique to many of the infrastructure demands in cities. Luque (2005) illustrates the relative difficulties of achieving cost recovery in sectors other than water in Sao Paulo State. Urban rapid transit is seen as a key public service, and helps to reduce congestion, but requires a substantial subsidy[14]. For a variety of reasons, ranging from impracticability of charging to externalities to affordability, much of urban infrastructure, cannot be financed through direct user charges. As such, it will thus not be readily amenable to finance through PPI.

[14] At the time of writing this paper, in the spring of 2006, financing the extension of the Sao Paulo metro is being considered one of the first candidates for using the new law implementing public private partnerships, but no agreement has been successfully concluded.

Published estimates of total investment requirements for urban infrastructure are relatively few, but the Expert Group on Commercialisation of Infrastructure Projects (1996) compiled an assessment of the costs of investment for core urban infrastructure in Indian cities[15]. Based on their estimates of the different types of infrastructure requirements for urban India, and if we assume (somewhat optimistically) that all of water supply, 50% of sewerage, and 25% of urban roads investments can be recouped through user charges, then only about 45% of those investments identified are even likely to have the basic elements to attract the private sector. Thus cities must have a strong public finance base to implement a reasonably balanced infrastructure investment program. Relying on PPI alone would limit very strongly investments in important areas of urban services.

In a historical discussion of municipal franchising in North America in the late 19th and early 20th Century Gómez-Ibáñez (2003: 179-80)[16] provides an interesting example regarding the extent to which full user benefits can be captured in user charges. In discussing the decline of the municipal franchising movement, he explains that those services where the utility provided benefits beyond those captured in the user charges for private beneficiaries tended to be taken over and run by the municipalities. He explains:

> "For example, fighting fires requires considerably larger mains and higher pressures than are needed for normal household consumption. Nineteenth century households were not always willing to pay a fee for a domestic connection that was sufficient to finance a system capable of fighting fires. And the household that chose not to connect would still be connected by the fire hydrants in its neighborhood. The cities might have solved the problem by compelling households to subscribe to the water system by subsidizing the extra costs out of tax revenues. Compulsory subscription or public subsidies seem to have been politically less acceptable as long as the water company remained in private hands. Piped sewage collection systems didn't become widespread until the late 19th century, but the need to compel or subsidize subscriptions to prevent the spread of disease was so obvious that most sewage systems were built by municipalities from the start."

In the case of electricity and gas, the public uses for these services were far less significant, and unlike firefighting for water companies, did not impose unusual technical requirements and costs. Moreover, the rate of technical improvement in municipal infrastructure sectors like water and public transport was slow in relation to gas and electricity supply. In the latter sectors, these technological gains forestalled conflicts between regulators and the private companies because it was possible to reduce costs and prices more frequently. Thus, the companies for electricity and gas more often stayed

[15] Core urban services, in this case, include water supply sewerage, solid waste disposal, drainage, roads and streetlights.

[16] At the turn of the century, the US per capita income was roughly $5,000 in constant $2000. This compares with constant $2000 PPP per capita income in 2004 of $2100 in low income countries and $6200 in middle income countries, indicating a broadly similar level of development to many of the countries now contemplating PPI.

private and regulation, for various reasons, shifted to the state level, while most of the private providers of water and public transport were taken over by municipalities. These features, so decisive in the United States in that period, continue to be relevant in many ways for the core municipal services today.

Many of the features of urban infrastructure sectors make them sensitive politically and socially, as the above discussion has shown. The infrastructure services that cities need to provide are essential to life and livelihood. When existing subsidies are deep, shifting to cost recovery is not a simple matter. Because urban infrastructure involves politically sensitive sectors providing basic services, the risks to government in offering the private sector a role in supply are, in principle significant. Likewise, the risks to private providers are also significant. While this reasoning perhaps became an excuse for avoiding reform of public provision, experience with PPI in the last several years also shows that these risks to both sides of the transaction are not as easy to mitigate as was once hoped in the context of concluding a PPI transaction. As a result, even when it became more acceptable to seek out such transactions, relatively few were concluded, and a relatively high percentage of these transactions unwound.

Some cases from developed countries, where urban PPI ran into difficulties, illustrate the risks of these transactions, and the costs that are incurred when PPI's go wrong. In the U.S., 94 percent of water systems are publicly controlled[17]. Atlanta, Georgia explored a different approach by signing a 20-year water concession with a subsidiary of Suez in 1999, the largest of a wave of concession arrangements made in recent years as municipalities sought to access private capital for the extensive repair and rehabilitation of local water systems. In the case of Atlanta, the concessionaire was to make $800 million in repairs over five years. Three years into the contract, in January, 2003, both parties agreed to cancel the contract. The concessionaire argued that the system's infrastructure was in much worse shape than it had been led to believe on signing, and that they were making losses close to 50% of total annual revenues. Meanwhile city residents and officials complained that service was poor and unresponsive. As a result of the contract cancellation, the municipality has had to resume management of the utility. Because of the contract cancellation, many of the expected financial savings to government did not materialize, in addition to costs borne by the concessionaire.

In 1999, the State Government of Victoria in Australia acted to involve the private sector in provision of urban transport services in Melbourne[18]. The state-owned corporation providing services on an extensive network of trams and trains made substantial annual losses, covered by a recurrent subsidy. In addition, users were dissatisfied with service quality. The service was divided into five franchises, and contracts were awarded through competitive bids. The government did not wish to raise fares, operators were to include the subsidy requirement in their bids, and this would be an important factor in evaluation. Operators were required to maintain minimum equity levels and post performance bonds. The contract did not require the operators to invest in

[17]Discussion of this case is drawn from (Jehl: 2003) cited in Kessides (2004:241)
[18] Discussion of this case is drawn from Irwin and Ehrhardt and (2004) and from Earhardt (2006)

or build significant new infrastructure assets. Bidding was strong and when the contracts were awarded, the government expected savings of A$1.8 billion over the 15 year life of the contract. Within a few years, the franchisees hit financial difficulties. Demand growth, projected at 3.6 percent per annum on average by the successful bidders, as contrasted with the historical average of 1 percent, did not materialize, and costs were not reduced as expected. The financial position of the operators was highly sensitive to this assumption, since the performance bond and equity combined amounted to only one year's losses if demand growth were zero. Two years into the contract, the franchisees requested a negotiation with government. The options open to government by that time were limited. In the intervening two years, the appetite for international franchises had diminished, making re-tendering the contracts a difficult option, and taking a hard line on the contracts would only exacerbate the problem of finding bidders at competitive subsidy rates. Moreover there was considerable concern about the possibility of service disruption. Ultimately, the contracts were mostly restructured, although one operator, who unsuccessfully demanded a cap on future losses, ultimately pulled out, and the government had to operate the franchises through a receiver. The result for the government was, for the system to remain viable, A$1 million would be required over five years, thus negating much of the expected fiscal advantage to government.

This case is interesting and illustrative for municipal PPI in developing countries because, in nearly all respects, it represents a "better than best case" scenario. The investment climate and capacity in the government of Victoria would be the envy of most LDC sub-national governments. The franchising operation involved only operations risks, and did not require any investment finance from operators. Moreover, the contract was well structured on the whole, and the process of awarding the contract competitive. Vulnerabilities were there, but these hinged primarily on two features: first, the sensitivity to demand growth and the optimism embodied in the winning bids; and second, the meager equity and performance bond in relation to the risks. With regard to the latter, while Irwin and Earhardt quite rightly note that assessing just these features *ex ante* is essential to structuring contracts, it is quite probable that the outcome of the bidding would have been less favorable should the equity or performance requirements be increased. The bidders were able to compete using optimistic demand projections, which were apparently (and quite understandably) overlooked with the prospect of large subsidy savings to be realized. Nonetheless, given the importance of the service being tendered and the thinness of the market in the face of a re-tender, the government arguably bore more risk than did the operators should the winning bidder's projection prove to be wrong—as it did. While Victoria may ultimately reduce the subsidy substantially through repeated contracting, the gains likely to be achieved and the risk profile hardly constitute a major source of finance. It is interesting to note that high debt to equity ratios have been typical of urban PPIs to the extent they are documented. For example, Haarmeyer and Mody (1998: 18) show that this was the case in a number of water projects in developed and developing countries[19].

Moving to developing countries, a number of studies show that the concession contracts for water in Latin America in the 1990s proved to be quite fragile. While many

[19] They note the exception of the UK where a debt write down accompanied privatization of the utilities.

of these contracts were negotiated on tight contractual terms, they ended up being particularly subject to contract renegotiation risks.[20] Guasch (2003) shows that water had the highest incidence of renegotiation at 76% of all contracts, on an average of 1.6 years after contract signing. 66 percent of these requests were initiated by the operator. Guasch et alia (2003) show that firm initiated renegotiations are also positively related to contracts that involve private investment funding. Estache et alia (2003) also note that the high renegotiation rate is linked closely to the practice of price cap regulation. Price cap is regulatory arrangement embodied in a private contract and considered better adapted to environments with weak institutions not able to manage the information and analytical requirements of rate of return regulation, because all it requires is a price resetting about once every five years. Price caps turned out to highly vulnerable to contract renegotiations; 88 percent of the price cap water contracts concluded in the Latin America region were renegotiated. Estache et alia (2003) notes too, that a common outcome of these renegotiations under price caps was to agree to decrease the level and pace of investment. 85 percent of the water projects with investment obligations were renegotiated[21]. This experience with price caps illustrates well the limitations of private sector appetite for risk, and the repercussions this may have on finance mobilized through PPI. The price caps were brought in as a means of compensating for the weak institutional capacity to regulate private monopolies to achieve efficiencies, and in this respect, addressed an important need, one that is particularly acute at the municipal level. In the process, however, risks were shifted to the private sector. The high rate of renegotiations illustrated how the limited appetite for private risk taking combined with limited regulatory capacity. The impacts on investment were unfortunate, and suggest caution in using PPI's if expanding finance for investment is the primary objective of such transactions.

These difficulties are to be expected in these risky sectors and risky environments, and do not necessarily nullify benefits of private participation. Many studies have described the benefits of these experiments of private participation. See for example Harris (2003) and Kessides (2004) for particularly comprehensive reviews of this experience. However, there are important lessons from this experience for sub-national governments seeking to use such transactions for ***finance***. The risks to the financing stream derived from the concession arrangements are substantial, and achieving efficiency conflicted with mobilizing investment finance. As Guasch et alia (2003:6) note: "The fact that it [the price cap regulatory regime] induced a higher cost of capital because they tended to pass on to the operators a larger share of the project risks was very seldom considered. Also the fact that the regime was associated with a risk of under-investment (which has happened) was surprisingly seldom addressed in a region in which one of the main reasons to try to reform and privatize was to attract private investment to compensate for reduction in public investment." This Latin American experience, which is the richest among all regions in terms of PPI in water, offers a sobering prospect for PPI for financing urban water around the world.

[20] See for example Guasch (2003), Guasch, Laffont and Straub (2003) and Guasch, Kartacheva and Quesada (2000).
[21] Guasch and Spiller (1999) cited in Estache et alia (2003:15)

Water is a "difficult" sector, and the risks involved for both sides are significant enough to make it difficult to mobilize substantial finance for water supply investments. Estache and Pinglo (2004: 14) analyze returns to equity and volatility in several sectors, including water supply, in relation to the cost of capital in the period following the East Asian crisis (1998-2002). They find that water averaged a small negative return on equity, one of the lowest in the sample covering railways, energy, and ports, in relation to a cost of capital exceeding 10 percent. Moreover, the volatility of the return on equity was the highest in the water sector.

The Malaysian program for private participation in sewerage also illustrates some of the disappointments that can occur when an aggressive private participation plan is put in place to mobilize finance and accelerate investments[22]. After a few successful water and sanitation build, operate, transfer (BOT) projects in Malaysia, the government chose to support a national sewerage project, the Indah Water Konsortium (IWK). This project arose from concerns over local governments' weak technical and financial capability in the face of poorly maintained facilities and rising demands for better sewerage services. An unsolicited proposal was brought to the government, and approved rapidly, in 1994. Investments and the level of service improved dramatically in the immediate term. However, even before the economic crisis in 1997, consumers objected to the tariffs imposed. The tariff structure originally stipulated in the agreements was suspended without compensation for the private contractors, and a new tariff structure was only established in 1997. The economic crisis then prompted further reductions, while the IWK discovered that the rehabilitation needed was more investment than anticipated. As a result, the government felt obliged to provide substantial financial support to IWK, including long term soft loans amounting MYR 450 million.[23] As Mody points out, this transaction could have been designed better in many respects. However, as a transaction designed to mobilize substantial finance for new capacity in a short time, with plenty of incentives to private participants, it is not atypical. The economic crisis multiplied the difficulties tremendously, but the problems had already emerged before devaluation aggravated them. While private participation doubtless brought considerable implementation capacity to the task, they did not resolve the fundamental impediments to making provision of sanitation services a viable financial proposition. The government succeeded in attracting private involvement, but the structure of guarantees provided, and the nature of the risks involved in the project were such that both the capital mobilized and the physical achievements of the projects were much less than originally expected.

The Malaysia example is interesting in that the sanitation program, while providing a core urban infrastructure service, did so through a national program. Many other PPIs for core urban services, especially water concessions in Latin America, have involved municipalities. Experience indicates that working with local, rather than national governments, brings with it an additional layer of risk for the private supplier for a variety of reasons. The first of these may be political alliances and election calendars. Guasch et alia's (2005) evidence for Latin America indicates that changes of government at the local level help to explain the frequency of government-initiated contract

[22] See Mody (2002) for more details on this case.
[23] Malaysian Ringit roughly equivalent to US$180 million at pre-crisis exchange rates.

negotiations in a number of water concession contracts. They also cite several examples of contract renegotiations for water concessions subsequent to a change in elected local government. Likewise Galiani et alia's (2005) analysis indicates that in Argentina, when water companies were either controlled by the federal government or if the local government was the same as the ruling federal party, a privatization transaction was more probable. Private investor/operators thus ran the risk that either local government or federal government political shifts could endanger their contractual arrangements.

A second risk of working with local governments is their limited scope of authority. Kessides (2004:251) and Gómez-Ibáñez (2006) cite numerous examples of confusion across different levels of government in water concessions, leading to a murky relationship with the regulator, or simply bypassing the regulator altogether. Local governments may be subject to various pressures or direct intervention from higher levels of government, and thus less predictable, less capable of making credible commitment than national governments. For similar reasons, regulatory opportunism is less costly for local governments than for a national government, in that the repercussions of arbitrary behavior, especially with foreign private investors, are less costly to local governments than to a national government. The impact on FDI, for example, is likely to be felt nationwide if a major contract is not honored, even if the contractor is only a municipal government. Private investors are likely to view contracts with sub-national governments as particularly risky for this reason.

The experience of the Argentinean water concessions illustrates how different levels of government may interact so as to complicate the relationship between local governments and private concessionaires. As Kessides (2004) has pointed out, a service like water involves a local monopoly with large fixed investments that create long-lived assets that generate rents. The parties to a concession contract are intent on extracting their share of the rents, the private operators to compensate their efforts and risk and the government to ensure that rate payers do not bear an excessive burden. The contracts are typically long term with strong negotiation over adjustment clauses so that rents are properly distributed over time as efficiency improvements and cost shifts come into play .Estache et alia (2003) hypothesize an interesting twist in this relationship in the case of the Argentinean water concessions. While the private water operators were able to achieve substantial efficiency gains, from 3 to 6 per cent per annum under a price cap regime[24], tariff rates did not decline and there were still a number of contract renegotiations. Estache et alia (2003) argue that government captured the rents generated by the more efficient private water operators through indirect tax increases, thereby increasing the tax revenue derived from the privatized infrastructure sectors about four to five times across all levels of government. This fiscal capture of the efficiency gains did not prove sustainable, because it provoked a number of contract renegotiations and rising public discontent with privatization, again understandable because the *quid pro quo* for the higher water rates was far from evident to the public. With a local service like water, the temptation for the

[24] Price cap regimes are an alternative to the more classic rate of return regulation for public service monopolies, used widely in Latin America in the 1990s. Since they require concessionaires to compete on pricing and offer much less leeway for price adjustment, they are considered to provide superior incentives for efficiency gains. See Estache et alia (2003) for further details.

tax authorities at different levels of government to appropriate some of the improving rents is great; the government that is getting the tax benefit is not necessarily the same government, for example a province or municipality, that will be faced with a difficult contract negotiation as a result.

A final point worthy of mention in terms of the risks facing international investors for concessions is the exchange rate risk. Infrastructure projects are especially vulnerable, since providers or core urban services do not typically earn foreign exchange. Unquestionably devaluations during the Asia crisis affected the viability of a number of projects through a variety of channels, as outlined in Baietti (2001) and led to a number of renegotiations. Likewise Guasch Laffont and Straub's analysis (2003) has shown that the timing of renegotiations of PPI contracts in a number of infrastructure sectors was affected by the devaluations in Latin America. As Baietti discusses, the impacts of a major macroeconomic disruption such as the East Asian crisis are not only limited to international investors. A strong devaluation can have a substantial impact on demand and willingness to pay for services as well. Moreover, an increase in the cost imported inputs due to a devaluation or an oil price shock can raise the cost profile for a local utility in an environment where rate increases will be particularly unwelcome. Thus macroeconomic shocks are a threat to urban infrastructure PPIs. On the other hand, local governments do not manage macro policy, and are much less able to offer comfort to a private investor when these difficulties arise. This is one more factor making municipal PPI less attractive than other potential PPI transactions managed nationally such as telecommunications.

The above discussion covers several different factors making assets that provide urban infrastructure services risky financial propositions and thus less attractive to private investors than other uses for their money and capabilities. These factors limit the supply of private funding for owning and operating urban infrastructure, whether or not governments are inclined to seek out this funding. In the 1990s governments did seek out more private participation for a number of reasons. As this strategy evolved, they sought methods to reduce the risk to private parties and to make these investments more attractive. One means of achieving this was through structuring transactions that would securitize revenues such as taxes or user charges. Such methods are helpful, but limited in scope. Ravi (2005) provides a useful illustration for India, listing the wide range of potential structuring instruments that could be used, while recognizing the fundamental limitations imposed by weak urban local government finances. Essentially, while securitization can use the revenue streams available to local governments in ways that are more attractive to private investors, it does not overcome the strong revenue limitations that local governments in countries like India face. Securitizing user charges, for example, cannot make up for a political unwillingness to set and collect them. Moreover, the costs of securitizing revenue streams and structuring risk mitigation measures more generally can come at a high cost in relation to the funds mobilized. This is especially so when the basic revenue base is low or when intergovernmental relations are complex due to low local autonomy. Oftentimes subsidized by donors or governments, these costs are not properly accounted in weighing funding options. Given the confidential nature of transactional arrangements, they are also not reported or widely scrutinized.

Oftentimes the argument made for subsidizing structuring is that, as the market becomes more familiar with the transactions, these costs will go down. This result does not necessarily follow, however, when the structuring is used when the market potential is very limited. Arguably, the municipal bond issues in India, started in the 1990s fit this profile. As World Bank (2003:2) notes:

"In 2002, interest rates on municipal bonds had fallen from the 14.5 percent required for the first bond to 8.5 percent. Yet the total volume of debt issued yearly has never reached the levels achieved in 1998, the year of the first bond issue."

Thus, structuring is a useful tool for improving the prospects of PPI, but given the financial condition of many developing country cities, is, by itself quite limited. Accordingly, the subsidization of transaction structuring should be made more transparent and its impact scrutinized to avoid distorting financing choices for the sole purpose of promoting PPI in markets with limited potential.

In seeking to attract private investors, governments have also sought to lower the operational risk profile of PPI projects. This typically involves assuming some form of contingent liability or guaranteed returns. The literature on PPI offers many examples in which these project contingent liabilities were assumed by government. There are two costs associated with these risk-mitigating measures; they dampen the incentives to private operators to achieve efficiency gains, and they can have a high fiscal cost. Neither cost is easy to measure *ex ante* when the financing decision is made. Perhaps the best known is the Mexican toll road program that, subsequent to a devaluation and macroeconomic crisis, is estimated to have cost the government somewhere between one and two per cent of GDP (Calderon and Serven: 2005). In the case of China, for example, some private water concessions and urban expressway concessions have included rate of return guarantees. Hungary's contingent liabilities for PPI are currently estimated at about two percent of GDP (World Bank: 2005). In assessing PPI as an option for infrastructure finance, it is essential to take into account these contingent liabilities, because they have fiscal impacts.

A disadvantage of these contingent liabilities is that these impacts are far from transparent or predictable. Moreover, if not managed correctly, they will tend to suffer from adverse selection bias. PPI can create fiscal space in the short term, so governments in need are likely to pursue it. These are just the governments that have the least capacity to take on these responsibilities. As noted by Schwarz (2006) and World Bank (2005) the fiscal impacts of contingent liabilities are not as readily or easily scrutinized as are direct budgetary outlays, and there is no agreed methodology for measuring this government assumption of risk. The danger this poses is already significant at the national level. At the sub-national level, ensuring consistent reporting and monitoring liabilities is an even more difficult task.

Experience thus far indicates that the private operators, even during the favorable phase of the market in the 1990s, have tended to limit their risks either by maintaining limited

equity stakes and using special purpose vehicle arrangements to shelter the sponsor's credit rating from project risks or by requesting governments to assume contingent liabilities. (Irwin and Ehrhardt: 2004) Ultimately the need to provide a critical public service leaves the risk with government, and expanding investment through PPI may well take these to unsustainable levels. Of course, under purely public provision, the government and the public share the risks of bad developments through some combination of deteriorating service delivery and fiscal costs, but budget constraints will tend to limit the fiscal impacts. As local governments assess their financing strategies, and national governments set a policy framework for urban finance, they should take into account the relative attractiveness of these different risk profiles.

5. Concluding Remarks: Public and Private Urban Infrastructure Finance—Complements or Substitutes?

This paper has explored the experience with PPI for urban infrastructure finance over the last decade with a view to understanding its potential role in a strategy for expanding infrastructure finance while respecting government budget constraints. The private financing mobilized for urban PPI has been quite limited and undeniably disappointing in relation to the high expectations prevailing in the 1990s. At that time, donors strongly promoted the concept, governments became more open to sharing responsibilities for public service delivery through the private sector, and international providers actively sought to expand their presence in developing countries. But experience shows that financing urban infrastructure through PPI has not proven to be "low hanging fruit". Indeed it appears to be a fairly unpredictable source of finance, given the number of problems encountered with even the relatively limited number of transactions completed. Those local governments strapped for funding and keen to expand their investments would be wise to recognize these limitations. Federal governments encouraging local governments to use PPI to support their investment programs need to recognize that PPI entails important fiscal risks as well. Because the future fiscal obligations taken on by local governments in PPI don't show up in traditional accounting frameworks, federal governments would be well advised to put in place safeguards to ensure that those local governments with fragile finances don't take on more risk than they can bear in the interest of mobilizing funding through PPI in the short run. Finally, PPI is inherently limited in scope for financing urban infrastructure for the wide array of non-commercial infrastructure services cities need. Even for commercial services like water supply, subsidies are prevalent all over the world, and in many of the poorest, most rapidly urbanizing countries, it will be difficult to attract private finance for necessary expansions of the water network while restructuring subsidies to make them financially sustainable and socially acceptable. Local governments need good sources of public finance to fund those services, and some form of government borrowing is needed for major investments in these areas to avoid inter-generational inequities.

Notwithstanding these caveats with respect to the role of PPI in finance, PPI can play a useful, if limited, role in a strategy to improve urban service delivery. Experience thus far suggests that PPI has more potential to improve efficiency than to mobilize new finance. Private suppliers have limited their financial exposure in urban PPI even in financially

strong developed country cities. It is highly unlikely that in developing country cities, they will be willing to put substantial capital or borrowing headroom at risk while also taking operating risk, which is the best means of achieving the efficiencies that are the potential comparative advantage of the private sector. Lowering the risk profile of the private sector to attract their participation involves mobilizing more public finance, be it in user charges or taxes, to give the private sector the assurance they need to get involved in private provision of services. Private finance cannot be a substitute for sound public finance in developing country cities.

Annex 1: Collection of Data on Urban PPI

Unless otherwise noted, figures quoted on investment in infrastructure projects with private participation have been taken from the World Bank's Private Participation in Infrastructure Project Database (http://ppi.worldbank.org/). Investment figures are investment in facilities (as provided in the database) and thus do not include divestiture transactions or any other transfer of assets (all figures are in units us$ M). Figures are gross of government investment contributions. While these are not quantified consistently in the database, some studies indicate the 10-15% of total investment captured in the database is actually provided by the government. (PPIAF:2005:8) Projects are considered to have private participation if a private company or investor bears a share of the project's operating risk.)The information in the database is updated yearly through a comprehensive review of activity in each of the low- and middle-income economies using commercial news databases, specialized and industry publications and internet resources such as web sites of developers, sponsors, and regulatory agencies. If necessary, information is also requested from or verified with project companies, developers and sponsors and regulatory agencies.

Method for Identifying Urban PPI within the PPI database:

We created an urban subset that consisted of all the projects in the PPI database that cover urban infrastructure, viz. water and sanitation, urban transport, municipal solid waste, street lighting, etc. Excluded are sectors such as telecomm and power, which while used widely in urban areas, are not local city-based infrastructure services. Unfortunately, there is no coverage of municipal solid waste in the database, and while this omission could be material, it is beyond the scope of this paper to address it.

We examined sectors such as water and transportation in more detail, because these sectors may include a mix of both urban and other infrastructure. To do this, we obtained detailed descriptions for each project in the water and transport sectors. Within transport, we excluded ports and airports, and focused on the road and rail subsectors. For water projects, we searched for rural projects, and found very few references to rural water, and no self-standing rural projects. Hence all water projects were included as urban. For urban transport, we excluded any projects that appeared to be inter-city or long haul rail. We also excluded inter-city highway projects, and focused only on roads such as expressways and ring roads that served urban areas. We included city bypasses, even when these were managed by a higher level national or provincial authority, on the grounds that these substantively serviced urban traffic, even if inter-city traffic also benefited. When the information was not complete enough to determine whether roads projects fell into one or the other category, we assumed that highway projects with capacity (provided in kilometers) less than 50 kilometers would be classified as urban. Some of the transactions recorded in the database involve two different sectors, such as

power and water. In some of these cases, the primary sector would be power, but water investments would be included. We were able to access these transactions by identifying the water subsector or the transport subsector through a special search by subsector performed by the database managers. Because the database cannot disaggregate the investment by sector in combined projects, we assumed the entire value of the investment was for the respective subsector we are searching. Thus, the "urban" PPI investment is unavoidably overstated.

Investment figures in the database are provided in terms of the estimated total for the entire project at the time when the contract is signed. However, since the contract period for the project can extend for up to 60 years, to annualize the investment figures, we assumed that the bulk of the investment was going to occur over the next 5 years commencing from the year the contract is signed.

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ACRONYMS

BOT	Build, Operate, Transfer
EAP	East Asia & the Pacific
ECA	Europe and Central Asia
EU	European Union
HIC	High Income Countries
IWK	Indah Water Konsortium
LAC	Latin America and the Caribbean
LIC	Low Income Countries
LMIC	Lower Middle Income Countries
MENA	Middle East & North Africa
MSWM	Municipal Solid Waste Management
OECD	Organization for Economic Co-operation and Development
PPI	Private Participation in Infrastructure
SABESP	Companhia de Saneamento Basico do Estado de Sao Paulo (Sao Paulo State water utility)
SAS	South Asia
UMIC	Upper Middle Income Countries
US	United States
WSS	Water Supply and Sanitation