

## Chapter III

# Literature Survey

Infrastructure plays a key role in economic growth but it also has a great effect on distribution of income has been established through a study by Calderon *et al* (2004)<sup>14</sup> about the impact of infrastructure development—as measured by larger stocks of infrastructure assets and improved quality of their services—on economic growth and the distribution of income using data for a sample of 121 countries over the period 1960-2000. Their main findings were:

- (i) The volume of infrastructure stocks has a significant positive effect on long-run economic growth.
- (ii) Second, infrastructure quantity and quality have a robust negative impact on income inequality. Regardless of the econometric technique and the inequality measure employed (Gini coefficients or income shares), they also found that inequality declines not only with larger infrastructure stocks but also with an improved quality of infrastructure services.
- (iii) A variety of illustrative experiments show that their empirical findings are significant not only statistically but also economically. For example, were all Latin American countries to catch up with the region's leader in terms of infrastructure quantity and quality, their long-term per capita growth gains would range between 1.1 and 4.8 percent per annum, and their Gini coefficients would decline between 0.02 and 0.10. Catch up with the East Asian median country would involve even larger gains—ranging from 3.2 to 6.3 per cent extra growth and 0.05 to 0.13 lower Gini.

A one percent increase in a country's level of just one type of infrastructure such as telephone lines per worker can increase gross domestic product (GDP) growth by 0.20 percentage points.

---

<sup>14</sup> Calderon, Ceaser and Serven, Luis (2004), "The Effects of Infrastructure Development on Growth and Income Distribution", *World Bank Policy Research Paper No. 3400*, Washington D.C.: World Bank.

(iv) Finally, and perhaps most importantly, the conclusion that infrastructure both raises growth and lowers income inequality implies that infrastructure development may be a key win-win ingredient for poverty reduction. In addition to raising society's overall level of income, it would help raise the income of the poor more than proportionately.

This suggests that infrastructure development should rank at the top of the poverty reduction agenda for any government keen on poverty reduction.

These findings have been further corroborated in Indian context. A study by Economic and Social Commission for Asia and Pacific<sup>15</sup> (ESCAP) in (2007) found that every rupee spent on roads creates seven times greater poverty reduction than a rupee spent on Anti Poverty programmes. A study by World Bank<sup>16</sup> (2002) every rupee spent on roads creates seven rupees in economic benefits.

Harris<sup>17</sup> (2003) traces the historical evolution of Public utilities, which were privatized in the 1980s and 1990s, for example in the UK and parts of Latin America. These were private at the start of the post Second World War period. For much of the post-Second World War period, most governments entrusted delivery of these services to state-owned monopolies. But in many developing countries, the results were disappointing. Public sector monopolies were plagued by inefficiency. Many were strapped for resources because governments succumbed to populist pressures to hold prices below costs. By and large publicly owned utilities failed to expand services to meet rapidly growing demand and did not do a good job of providing service to poor and rural households. Fiscal pressures and the success of the pioneers of the privatization of infrastructure services, provided governments with a new paradigm, many governments sought to involve the private sector in the provision and financing of infrastructure services.

---

<sup>15</sup> Quoted in Mukherjee, Saian and Harish Venkateswaran, (2009), "India: Roads, The road ahead", Mumbai: Nomura Financial Advisory and Securities (India) Private Limited.

<sup>16</sup> Quoted in Mukherjee, Saian and Harish Venkateswaran, (2009), "India: Roads, The road ahead", Mumbai: Nomura Financial Advisory and Securities (India) Private Limited.

<sup>17</sup> Harris, Clive. (2003), "Private Participation in Infrastructure in Developing Countries: Trends, Impacts, and Policy Lessons", *World Bank Working Paper NO.5*, Washington. DC: The World Bank

The shift to the private provision that occurred during the 1990s was much more rapid and widespread than had been anticipated at the start of the decade. By 2001, developing countries had seen over \$755 billion of investment flows in nearly 2500 infrastructure projects. However, these flows peaked in 1997, and have fallen more or less steadily ever since. These declines have been accompanied by high profile cancellations or renegotiations of some projects, a reduction in investor appetite for these activities and, in some parts of the world, a shift in public opinion against the private provision of infrastructure services.

It is not yet clear whether present trends suggest that the wheel has started turning again towards public provision. Services where real competition for consumers has been introduced, such as telecommunications, may well have escaped from the cycle. Effective and credible regulatory frameworks may also break the cycle for services that are natural monopolies.

He argues that legally binding contracts and hard budget constraints replaced the lack of accountability and financial discipline of public enterprises. This brought into the open the problems that had been left unattended during the era of public sector provision. Although governments have sometimes made private participation the scapegoat for price increases, they have also realized that a reversion back to the public model will not solve these problems either. Hence the small number of cancellations thus far, attempts to re-privatize failed projects, and moves to undertake new privatisations even in countries where there have been disappointments and reversals with earlier efforts at privatisations.

Whatever policies countries choose, governments cannot avoid the inescapable realities that infrastructure services have to be paid for, whether provision is public or private. Most of the concerns about the sustainability of private infrastructure really reflect the difficulties governments have in sustaining cost-recovering tariffs and commercial principles in these sectors. This is likely to be a bigger problem when provision is public rather than private; hence we are likely to see less resources flowing to the infrastructure sectors under public provision, everything else being equal.

The real issue is not public infrastructure versus private infrastructure. Put this way, it is simpler: *the argument is about less infrastructures versus more.*

Klein et al<sup>18</sup> (1996) highlighted the role of strong institutional framework for success of PPP projects and its role in reducing large transaction costs associated with these projects. The development of a PPP project requires firms and governments to prepare and evaluate proposals, conduct bidding and negotiate deals, and arrange funding. The costs incurred in these processes are called transaction costs, which include staff costs, placement fees and other financing costs, and advisory fees for investment bankers, lawyers, and consultants. Transaction costs may range from one to two per cent to well over 10 per cent of project cost. Transaction costs seem to have more to do with the characteristics of the policy environment than with the characteristics of the project. Thus, they will naturally fall over time, and decline more where governments adopt better policy and enforce proper conduct.

Some of the key requirements for successful PPP programme with low transaction cost regime would require the following:

(i) A properly drafted concession law clarifying responsibilities and rules for government officials (Chile, Hungary, and the Philippines) or in general government guidelines (the United Kingdom and the State of Victoria in Australia).

(ii) Building the necessary institutional capacity for handling these projects and improving learning from experience. Hiring experienced advisers is crucial. No less crucial is building a competent cadre of officials who understand the intricacies of private projects and project finance because these skills tend to be scarce and sought after.

Absence of these enabling conditions has been the major reason for floundering PPP programmes of several countries.

Gwilliam and Shalizi<sup>19</sup> (1999) based on their study of road funds argue that a dedicated road fund funded substantially by user charges to maintain and upgrade highways in developing

---

<sup>18</sup> Michael, Klein, Jay So and Ben Shin, (1996). "Transaction costs in private infrastructure projects – are they too high?", Public Policy for the Private Sector, Note Number 95, World Bank, Washington D.C

<sup>19</sup> Gwilliam, K. and Shalizi, Z. (1999). "Road funds, user charges, and taxes", *The world Bank Research Observer*, (14:2), pp. 159-186, Washington DC: World Bank.

countries may be essential for growth. Surcharge or high taxes on diesel is not as good a proxy for road damage by trucks, which account for the bulk of road damage. The impact of a heavy truck is 10,000 times as great as that of a Medium auto. It also varies nonlinearly with axle weight. Too high a surcharge would adversely affect the other sectors of economy like in power generation or agriculture. The reliance should therefore be placed on user charges based on potential damage to highway.

The quality of good roads is so essential for the economy can be seen from the fact that for every dollar that road agencies withhold by under funding maintenance, road users must spend about three dollars in additional vehicle operating costs. Therefore, the economy as a whole benefits from timely road maintenance.

Alexander et al<sup>20</sup>(1999) highlighted the importance of role of transport regulators. In the context of Concession contract, it is important that the right level of return/cost of capital be assessed by the regulators. Return is to be influenced by risk level, which is also to be assessed by the regulator. Regulators in the developing countries face a more difficult scenario where a regulated company is unquoted or takes a wide range of activities and even across sectors.

Trujillo et al. 2000<sup>21</sup> argue that bidders of concessions have an incentive to overestimate demand and, thus, to promise low tolls if they count on renegotiations once the contract has been awarded to them. Contracting authorities may be willing to accept too optimistic demand projections, rather than abandoning projects for which there is not enough demand, as this allows them to avoid cancelling expensive and highly visible projects.

They cite the example of most of SE Asia's BOT projects for toll roads which were based on very optimistic growth assumptions pre-dating the fallout at the end of the 1990s. Excess capacity is indeed resulting in a renegotiation of many road contracts in Latin America and East Asia. Whatever the regulatory regime selected, many of the players have a strong incentive to

---

<sup>20</sup> Alexander, Ian. Antonio Estache & Adele Oliveri, (July 1999), "A Few Things Transport Regulators Should Know About Risk and the Cost of Capital", Washington DC: The World Bank.

<sup>21</sup> Trujillo, L., Quinet, E. and Estache, A. (2000). "Forecasting the demand for privatized transport – What economic regulators should know and why". World Bank Policy Research Working Paper No. 2446, Washington DC: World Bank.

play strategically. Politicians will want to look good during their tenure and support policies that maximize short run fiscal payoffs and/or minimize tariffs. They can do so quite consciously and knowing perfectly well that requiring high payments and expenses from the operators while imposing low tariffs are generally not consistent and sustainable. Willingness or ability to pay and hence the real potential value of a business are seldom analyzed very analytically in this context. The political gain for them to announce a new infrastructure is much higher than the political loss of having to increase taxes; furthermore these concerns and the eventual renegotiation of the deal is left to their successors since they generally imply political costs. But it is clear that private operators happily play in this game. For many of the best deals, their main concern is to get the contract signed by the government, knowing quite well that there is generally significant room for renegotiation. Patience in this field is often rewarded once the contract is won.

In case of rare over pessimistic forecast, the main outcome is a lack of transport capacity and hence congestion. This can be quite dramatic in the short run when it is impossible to revise investment plans to adjust quickly to the larger than expected demand. This is a common problem in urban transport modes, metro rides are often underestimated at peak time, urban access roads in many of the largest urban centres witness permanent traffic jams at rush hours and in some cases throughout the day as in Bangkok.

They highlight the critical role of regulators to control strategic behaviour of bidder as well as granting authority. Privatization induces new needs for demand forecasting; it leads to pay more attention to risk than it is the case when investment is publicly financed. The regulator has to be able to judge the traffic study made by the operators, and to find out the strategic behaviour which influences these studies.

Estache<sup>22</sup> (2002) discusses why governments take a decision to privatise a monopoly infrastructure operator. He argues that the main concern for governments was fiscal deficit and how to address it. Fiscal gains can be achieved in three major ways: (i) sale or rental of assets;

---

<sup>22</sup> Estache, Antonio (2002), "Privatisation and Regulation of Transport: Successes... and Bugs to fix for the new Millennium", *Policy Research Working Paper 2248*, Washington. DC: The World Bank.

(ii) passing on the financing costs of operating and investing to the private operators (in many ways this means that the burden is shifted from the taxpayers to the user of the service, which is quite important since many services tended to be under-priced or subsidized under public operations) ; and (iii) subject the private operators to the standard tax demands, rather than formally or informally exempting them, as is often the case for public enterprises.

The first method is the main focus of most reforming governments with serious fiscal constraints. In some cases, governments have recognized that it is also fiscally profitable to privatize services that demand huge amounts of subsidies at high delivery costs, as private operators can often cut these costs quite quickly. Even when subsidies are needed, they can be obtained at a lower fiscal cost. This is the case for many railway services from the U.K. to Argentina.

He argues that in this process both the Private investors and government may be tempted to play games that are not necessarily in the interest of consumers. The government may end up playing along because of its desire to achieve fiscal gains through the sale or rental of assets. This automatically creates a trade-off for the government. Indeed, the higher the retained degree of monopoly passed on by the government, the higher the willingness of private operators to pay for the right to run a service. This means that the initial desire to fully liberalize to achieve efficiency gains may be reduced by the need to meet pressing fiscal needs.

Governments have focused too much on getting deals done, and have generally underestimated the difficulty of taking on their new job as regulators, they did not put enough emphasis on designing the contracts to anticipate conflicts and address unpredictable situations, which increases the risk of arbitrary regulatory ruling. This, in turn, has increased the regulatory and political risks, therefore raising the required expected rate of return for potential investors.

This means that there is a risk that the gains from privatization do not reach the people simply because the governments are ignoring the importance of their role to ensure the fair distribution of the long-run gains through the early creation of independent and accountable regulatory institutions that work closely with effective competition agencies. Learning to regulate

fairly and effectively at arm's length may be the main challenge for governments in the next millennium.

Guasch's<sup>23</sup> (2004) study of about 1000 concession contracts signed during the 1990s in Latin America suggests that problems in PPP have been in the making for a while now. Guasch found that in transport concessions renegotiation<sup>24</sup> are almost a norm rather than an exception. Fifty five per cent of all transport concessions implemented between 1985 and 2000 in the Latin American and the Caribbean region were renegotiated. It is interesting to note that, in the transport sector, in 57 per cent of the cases the renegotiation was requested by the operator (vs. 61 per cent for all infrastructure contracts) and that the Government was the sole initiator in 27 per cent of the cases, the highest rate across sectors.

Guasch highlights the opportunistic behaviour of governments and private enterprises in infrastructure concessions. In this type of concession the private party has to make large investments in the beginning. These high sunk costs may tempt governments to behave opportunistically, taking regulatory actions that expropriate rents once costs are sunk, such as compulsory or unilateral renegotiations of agreed-upon contract terms. A typical scenario is a government seeking to secure popular support during a re-election campaign and deciding to cut tariffs or not honour agreed-upon tariff increases. Another common scenario is a new administration deciding not to honour tariff increases agreed to in a concession contract granted by a previous administration or pursuing different priorities than the previous administration and so requesting a different action plan. Investors, aware of such pitfalls, might avoid investing in the first place unless such issues are properly addressed, or they may require an additional premium (higher tariffs, smaller transfer fees) to account for the risk. Depending on the country and sector, such regulatory risks can add two to six percentage points to the cost of capital. Higher tariffs or lower transfer fees or sale prices are then needed to cover these higher costs.

Governments are not the only parties who may behave opportunistically. Once a private enterprise has been granted a concession in an infrastructure sector, it may be able to "hold up"

<sup>23</sup> Guasch, J. L. (2004). Granting and renegotiating infrastructure concessions. Doing it right, Washington DC: The World Bank.

<sup>24</sup> Guasch defined renegotiation as an event in which a concession contract undergoes a significant amendment in any of the following areas: tariffs, investment plans and levels, exclusivity rights, guarantees, lump-sum payments or annual fees, coverage targets, service standards and concession periods.



the government—for example, by insisting on renegotiating the contract, seeking more favourable terms, or using regulatory capture. An enterprise's extensive information advantages over government (and, in most cases, over other potential operators) and perceived leverage in negotiations can give it strong incentives to renegotiate a contract and secure a better deal than the original bid. The resulting regulatory arrangements may be less effective in protecting customers from monopoly abuses.

Moreover, neutral events not induced by governments or service providers—for example, internal or external macroeconomic shocks such as the sharp devaluations in Mexico in 1994, Brazil in 1999 and Argentina in 2001—can significantly undermine the financial equilibrium of firms, because of currency risks.

The main problems identified by Guasch (2004) include the incompleteness of the contracts, the lack of competitive bidding processes with clear and transparent award processes and the absence of an independent and technically capable regulator.

Estache and Srebrisky<sup>25</sup> (2003) trace the evolution of public-private partnerships (PPPs) in developed and developing countries since the early 1990s. In developed countries, asset sales (most obvious in Australia and continental Northern Europe) and concessions/franchises (in the U.K., Southern Europe and Canada) have been the main instruments of private participation in transport infrastructure, but not the only one. Additional complementary initiatives abound. The best known may be the Private Finance Initiative (PFI) launched by the UK in 1997 to deliver new and modernize infrastructure to public services. The initiative is interesting because it has been adapted in other developed and developing countries for their transport sector.

In developing and transition economies, concessions are the most common form of private sector participation in transport. Concession contracts accounted for 56 per cent of all transport projects between 1990 and 2001. It also shows that while Latin America and East Asia

---

<sup>25</sup> Antonio Estache and Tomás Serebrisky Where Do We Stand on Transport Infrastructure Deregulation And Public-Private Partnership?, World Bank Policy Research Working Paper 3356, July 2004

are the most active in promoting concessions, Greenfield projects have been quite successful in East Asia over the last eleven years or so.

Estache and Serebrisky conclude that PPPs only work for a limited period of time, but often result in complex renegotiation after some time, either due to macroeconomic shocks (such as in Argentina) or because individual projects run into problems. The authors also emphasise the need for strong political commitments to make the PPP reform path sustainable in regions such as Latin America and Central and Eastern Europe. In addition, a high technical competence is required on both sides (public and private) to make PPPs work.

In their view deregulation has generally had different effects in developed and developing economies. Project sizes are larger for developed countries and their relative contribution to the needs is larger as well. The fiscal payoffs have generally been good in the short run but less predictable in the long run, certainly in the case of developing countries, often as a result of contract renegotiations. As for the users, the payoff from reform is somewhat different for passenger and freight transport. The passengers have seen improvements in the quality of services, have more options to choose from and often face relatively low prices, but often because the government has kept a tight control with important fiscal consequences.

Their final and most vital conclusion is that the possibility of the private sector playing a strong role in the transport infrastructure of all countries of the world is rather low.

Queiroz<sup>26</sup> (2005) studied the PPP projects in Highways sector in Transition Economies of Hungary, Czech Republic, Poland, Slovenia, Croatia, Romania and Serbia over a period of 10-15 years. Most of these projects resulted in renegotiation. Main risks in PPP in highways are those affecting gross revenue. Both predictability of future traffic volumes and the willingness of road user to pay tolls, together with the possibility that expected land use may not materialise.

---

<sup>26</sup> Queiroz, Cesar. (2005), "Launching Public Private Partnerships for Highways in Transition Economies", *The World Bank Transport Papers 33910*, Washington DC: The World Bank.

It cites the need to have Concession law and transparency in award of projects. The paper highlights the need to disclose the concession agreement once the same is signed. This greatly helps the taxpayer to believe that entire process is above board and creates favourable public opinion about PPPs.

Queiroz also analysed the positive role played by World Bank in PPP projects by providing guarantees to cover government performance risks that the market is not able to absorb or mitigate. The WB guarantees have helped reduce the risk for concessionaire thereby enabled them to mobilise new sources of finance at reduced costs and extended maturities. These guarantees amounting to \$ 1.2 billion led to \$12 billion of investment in projects covered by guarantees.

Brenck<sup>27</sup> et al also studied projects in Hungary, Poland, Croatia, and the Czech Republic based on approach and results of PPP infrastructure financing between 1993 and 2005. The focus of their study was highways sector. International experience in Highway sector – especially from the United Kingdom – seemed to indicate substantial efficiency gains of PPPs. Also the highway sectors PPPs are generally perceived to be technically simple: the technology is well known, fairly straightforward, and not prone to rapid change (in contrast to telecommunications, for instance), therefore posing low technical risks.

Their survey of the highway sectors in Hungary, Poland, Croatia, and the Czech Republic has shown that 13 projects have been seriously considered as PPPs since the early 1990s. Of those, six have eventually been carried out as PPPs, of which two have been significantly restructured and another two have been renationalised in the meantime.

They found that PPPs in the highway sector have scored well in terms of delivering projects on time and within budget. One can thus argue that transferring construction risks to private partners has resulted in appropriate incentives. The PPP mode of procurement seems to be economically efficient.

---

<sup>27</sup> Brenck, Andreas, Thorsten Beckers, Maria Heinrich, and Christian von Hirschhausen, (2005), "Public-Private Partnerships in New EU Member Countries of Central and Eastern Europe: An Economic Analysis with Case Studies from the Highway Sector", *EIB Papers*, Vol. 10, No. 2, 82-112.

Secondly, the exclusive reliance on tolls has proven to be a failure. The evidence supports the theoretical prediction that tolling small stretches of highway networks causes inefficient traffic relocation and seriously affects the profitability of the concessionaires' investments. In the event, renegotiations of remuneration schemes, even the restructuring of entire projects, became necessary in many cases. Availability payments, already introduced in the United Kingdom, are now a salient feature of highway sector PPPs in Poland, Hungary, and the Czech Republic. This should substantially improve the viability of existing and future PPPs.

Thirdly, the contract awarding and renegotiating processes have to be improved drastically. Lack of transparency and unclear awarding criteria curbed competition for PPPs, leading to relatively high construction costs. Renegotiations have led to serious delays in project implementation and additional transaction costs. Moreover, they turned intended fix-price contracts (allocating risk to the private sector) into some kind of cost-plus contracts, pushing back risk to the public sector.

Far too optimistic demand projections provide another explanation for the frequent need to renegotiate contracts. To some extent, overoptimistic demand projections may reflect strategic behaviour of both bidders and contracting authorities.

The final reason for renegotiations was that the public acceptance of tolls turned out to be much lower than expected, thus putting political pressure on governments to renegotiate remuneration schemes with a view to lowering or even abandoning tolls.

The authors conclude that due to the adverse institutional conditions prevailing in the transition period, high transaction costs, and unrealistic demand expectations, PPPs in CEE countries have been less successful than in other countries, and certainly less successful than initially hoped for. In general, they seem to have been less successful than traditional procurement would have been.

Bain and Plantagie<sup>28</sup> (2002) studied traffic forecast in 68 toll roads across countries in 2002 and 2003 on behalf of Standards and Poor. The business case for many project financed toll road, bridges and tunnel transactions rely heavily on projections of traffic and therefore revenue. This places market risk at the forefront of credit analysis. Market risk is commonly greatest at the project opening, so the study focussed on first year's operation. Based on toll facilities for which before and after data were available.

The study found that, there is great degree of optimism in traffic forecast in different countries. Countries with history of tolling have much less smaller error distribution compared to countries new to tolling. In the 68 toll roads the actual traffic to forecast traffic varied from 0.15 to 1.51 with mean of 0.74. Optimism bias is a consistent trend, the mean error was 25per cent over prediction in year one.

Normal (0.74, 0.26), n=68.

The error is much greater in countries without history of tolling, than the countries with toll experience.

Countries with history of tolling: Normal (0.81, 0.24)

Countries with no history of tolling: Normal (0.58, 0.26)

Erhard and Irwin<sup>29</sup> (2004) identified risks in private infrastructure projects and how to minimise them. They argue that many private infrastructure projects combine the following ingredients:

- Regulation that subjects the private company to considerable risk
- A government or regulator that is reluctant to see the company go bankrupt
- High leverage on the part of the company.

This combination is a recipe for trouble. If all goes well, equity holders make a profit, debt holders are repaid, customers pay no more than they expected, and the government is not called upon to bail the company out. If all goes badly enough, however—if demand falls well

---

<sup>28</sup> Bain, Robert and Jan Willem Plantagie, (2002), "Traffic Forecasting Risk: Study Update 2003", Standard & Poor's Infrastructure Finance

<sup>29</sup> Ehrhardt, David and Timothy Irwin. (2004). "Avoiding Customer and Taxpayer Bailouts in Private Infrastructure Projects Policy toward Leverage, Risk Allocation, and Bankruptcy" *World Bank Policy Research working Paper No. 3274*, Washington DC: World Bank.

short of forecasts, say—the prospect of bankruptcy will loom. Unwilling to see the company go bankrupt, however, the regulator will have to permit an unscheduled price increase, or the government will have to inject taxpayers' money into the firm.

Governments and regulators should be concerned about combination of high leverage and high-powered regulation. The combination implies a significant chance of bankruptcy and experience suggests that, when push comes to shove, the government and the regulator will find it very difficult to allow the firm to fail. As a result, customers and taxpayers are probably bearing more of the project's risks than the project documents suggest. Indeed, they may effectively be providing a guarantee of the project's debt, without receiving any explicit compensation.

The best solution to the problem is for the government to make bankruptcy politically acceptable by ensuring that mechanisms are in place to allow it to occur without risk of service disruption. But, if governments cannot commit to allowing bankruptcy, they have to consider restricting leverage, reducing the power of regulation, or both. Neither of these options is costless. Depending on the tax regime and other circumstances, reducing leverage may increase the cost of capital and therefore raise required tariffs. Restrictions on leverage may also be difficult to enforce in practice. On the other hand, by reducing the company's exposure to risks, the government sacrifices some of the benefits of privatization: one of the rationales for privatization is that private firms respond better to the incentives created by exposure to risk than the government does.

They suggest appropriate policy thus depends on the tax system, the feasibility of enforcement, and the benefits of risk transfer, which will differ from case to case. But combining high leverage, high risk-transfer, and a bankruptcy-shy government and regulator is unlikely to be the right answer.

### **Indian Experience in PPP**

In spite of all the problems encountered with PPP projects in highways in both developed and developing countries, the performance of India has been really commendable.

Harris<sup>30</sup> (2008) studied the investment commitments to private sector infrastructure in various regions of the world. South Asia has been getting greater share of investment commitment going to all the developing countries. It has risen from five per cent in the period 1995-2000 to 19 per cent in 2006. Among the sectors Telecom is the biggest recipient with 64 per cent commitment during the period 2001-06.

In 2006 India attracted more investment commitment to infrastructure projects with private participation than any other developing country, commitment to India were nearly twice those of Brazil and well ahead of even China.

Izaguirre and Jett<sup>31</sup> (October 2009) studied the private activity in road projects in developing countries underwent resurgence in the past four years. Investment commitments to road projects with private participation grew from US\$7 billion in 2005 to US\$16.7 billion in 2008, reaching a new peak.

The growth in investment was concentrated in a few countries. Brazil, Mexico, and India saw their share of the total investment rising from around 20 per cent in 2005 to 50 per cent in 2006, 66 per cent in 2007, and more than 80 per cent in 2008. In all three countries new models and frameworks for private participation helped attract investment in road infrastructure.

In India private activity in roads rose steadily from 2002 onwards, with annual investment reaching levels of US\$3.2–4.8 billion in 2006–08, far higher than in previous years. The Indian projects granted in 2008 differ in nature from those in 2006–07. The 75 projects (concessions and BOT contracts) implemented in 2006–07 averaged around US\$100 million in investment size, and around 80 per cent were tendered using the lowest government contribution (lowest government payments or subsidies) as the main bidding criterion. In contrast, the eight projects implemented in 2008 averaged US\$570 million in size, and six used highest transfers to the

<sup>30</sup> Harris, Clive, (Mar. 2008), "India Leads developing nations in private sector investment: but the region needs more investment to meet demands", *Gridlines- Note No. 30*, Washington DC: PPIAF C/O The World Bank.

<sup>31</sup> Izaguirre, Ada Karina and Alexander N. Jett, (October 2009), "Investment in road projects with private participation more than doubled between 2005 and 2008, but was concentrated in a few countries", *Private Participation in Infrastructure Database October 2009*, PPIAF, The World Bank Group.

government (highest price paid to or highest percentage of revenue transfer to government) as the main bidding criterion. These data suggest that most Indian projects awarded in 2008 were expected to generate enough resources to be financially viable, requiring little or no government support.

Izaguirre and FitzGerald<sup>32</sup> (December 2009) highlight the stellar achievement of India in attracting private investment in infrastructure. In south Asia India attracted 84 per cent of regional investment and implemented 28 of the 36 new projects. Investment in the country rose by 21 per cent from 2007, reaching a record US\$27.9 billion.

In transport the region had 13 new projects, all in India and Pakistan, involving investment of US\$5.8 billion. India implemented 11 projects. Eight of these are road projects, involving more than 1,500 kilometres and US\$4.6 billion in investment.

Izaguirre and Jett<sup>33</sup> (December 2009) in their study found that private activity in transport declined in 2008, with the full onset of the financial crisis driving a slowdown in the second half of the year. Yet while investment commitments to transport projects with private participation were down from the peak levels of the previous two years, they remained strong—at the third highest level in 1990–2008.

Total investment in road projects amounted to bringing the total in 2008 to US\$16.8 billion, a level never before seen in roads. The number of projects, however, declined by 58 per cent in 2008 compared with 2007. Activity was concentrated in large projects in a few countries. Of the eight countries signing road contracts, three (Brazil, Mexico, and India) accounted for 76 per cent of projects and 83 per cent of investment.

---

<sup>32</sup> Izaguirre, Ada Karina, and Rossa FitzGerald, (December 2009), "Investment commitments reach a new peak in South Asia while the number of new projects declines" *Private Participation in Infrastructure Database December 2009*, PPIAF, The World Bank Group.

<sup>33</sup> Izaguirre, Ada Karina and Alexander N. Jett, (November 2009), "Private activity in transport down for second consecutive year, but still around peak levels", *Private Participation in Infrastructure Database November 2009*, PPIAF, The World Bank Group.



Harris and Tadimalla<sup>34</sup> (2008), Cherian Thomas (2009) and Gurmeet Kaur (2009) identified the key issues affecting financing of highways.

Harris and Tadimalla point out that most PPPs relied heavily on commercial banks for their debt financing. Long term financing by banks leads to asset liability mismatch for them. The banks pass on the higher interest rates if the rates in economy go up by having shorter reset period. The concession contracts do not have any provision for passing on the higher interest rates to the customer. This raises the need to have a vibrant bond market. On equity side there is very low FDI, even though 100 per cent FDI is allowed under automatic route. The port sector has attracted much higher 51 per cent of FDI in infrastructure compared to 16 per cent for roads.

Cherian<sup>35</sup> (2009) highlights that while projects need long-term funding; the bulk of the financing raised so far has been of a relatively short term nature, with projects taking on the refinancing risk. Even where loans have been given for longer tenures (in some cases even upto 12-15 years), they would carry re-pricing options at shorter intervals of one, three or five years. This would pass on interest rate re-pricing risks to projects. While this has worked so far, given the current financial crisis and the increasing expectations from private financing over the next few years, this cannot be sustained. Passing on the liquidity/ interest-rate risks to projects could, beyond a point, result in a "blowback" - severe credit stresses on banks' portfolios. It has also been argued that banks (even the large players) and NBFCs would soon reach their prudential exposure limits – both on account of credit exposure and maturity mismatches, giving little head room for assuming very significant levels of new exposure in the short-term. It would, therefore, be necessary to bring in players with the ability to provide long-term liquidity at affordable costs into debt financing.

There is also clearly a need to enhance the role of insurance companies and pension funds in financing infrastructure. Specialised agencies like IDFC and IIFCL could provide the needed expertise and help to enable investment decisions. With the savings rate having grown from

---

<sup>34</sup> Harris, C. and Tadimalla, S. K. (Dec 2008), "Financing the boom in public-private partnerships in Indian Infrastructure: Trends and Policy implications", *Gridlines- Note no. 45*, Washington DC: PPIAF C/O The World Bank.

<sup>35</sup> Cherian Thomas, (2009), "Domestic Financing and Special Financial Institutions for PPP Projects", Paper presented at UNESCAP Inter-regional Expert Group Meeting on Public Private Partnerships in Infrastructure Development, Bangkok

levels of a little over 20 per cent of GDP in 1987-88 to 34.8 per cent of GDP in 2006-07, it is important to channelise some of these into appropriate instruments.

Gurmeet Kaur<sup>36</sup> (2009) highlights the limitation of VGF scheme. It is used for the projects where the traffic is low. It bridges the gap between financing costs and actual return from the projects. While VGF would reduce overall project costs and end user tolls, it will not overcome the underlying low demand. The private party would assess the likely demand and if this is insufficient, the project is unlikely to receive financial closure. The cross city Tunnel project in Australia is one such example where demand was incorrectly assessed. The project went into bankruptcy and had to be bailed out.

Tsukada<sup>37</sup> (2005) highlights some of the advantages of the BOT based on his study of NHAI project as ADB expert in India. He cites a major advantage of the BOT scheme that the combined provision of construction and later O&M enables BOT operators to design the facilities in such a manner as to minimize the life cycle costs of the construction and operation of the infrastructure, and thus enhance the operational efficiency of the project. Other benefits would include the efficiency of intervention of the financiers once a problem happens. Usually the private sector financiers have a "step in" clause which enables them to intervene quickly in the management of a company managing a failed project so as to prevent a default. This may prevent disruption of BOT service provision in a more effective manner than intervention by the public sector, which is often slow in decision making and less capable in dealing with managerial issues in the project companies.

Rakshit<sup>38</sup> (2006) argues that a basic problem with NHAI schemes is that there is no benchmark against which estimated project costs of the bidders are judged. In the UK for example projects under Private Finance Initiative (PFI) are compared ex ante with a benchmark called Public Sector Comparator (PSC) and this acts as a check on rampant collusion and guarantees some minimum fair value for money. In NHAI there is no such ex ante evaluation of BOT

---

<sup>36</sup> Kaur, Gurmeet, "PPP: Bridging Infrastructure gap", *Economic Times* 10<sup>th</sup> December 2009.

<sup>37</sup> Tsukada, Shunso (2005), "Global Experiences of Public Private Partnership for Highway Development", ADB

<sup>38</sup> Rakshit, Mihir. "Issues in Infrastructural Investment- National Highway Development Programme", *Money & Finance*, Jan-June 2006.

projects, there is no ex post assessment either of costs and benefits of projects implemented. Choice of optimum form of PPP in Indian context is hindered by the absence of such ex ante and ex post evaluation.

He further argues that in BOT toll some of the risks transferred are the ones concessionaire is least equipped to bear like demand and macroeconomic changes over the concession period, this makes the risk premia in BOT (toll) exceptionally high.

He criticises BOT (annuity) model on the grounds that annuity payments are calculated on the basis of a 15 per cent Internal Rate of Return (IRR) and the length of concession (excluding the construction period of 2 ½ years ) is 15 years, both these figures are ad hoc, not derived through an exercise for ensuring the best value for money.

He argues that for tolled roads government should get the job done through competitive bidding and also hand over maintenance contract with fixed tolls for five years. He argues that this option would be much cheaper in view of lower cost of funding for the government.

Singh and Kalidindi<sup>39</sup> (2006) criticised the BOT (Annuity) model on the grounds that it lacks incentives to project promoters for maximising or improving traffic in the project. NHAI does not have the option to take advantage of the project promoter's techno- managerial efficiency in case NHAI decides to collect tolls from the users.

The private investors perceive the annuity based PPP road projects to be risky in spite of assumption of traffic risk by the granting authority. Annuity quotes received by NHAI in pilot project Panagarh- Palsit were far in excess of estimates prepared by NHAI.

Realisation of greater than estimated traffic during the operational phase could damage the pavement and increase the concessionaire scope of works regarding repair and maintenance of the highway.

---

<sup>39</sup> Singh, L. Boeing & Kalidindi, S. N., "Traffic revenue risk management through Annuity Model of PPP road projects in India", *International Journal of Project Management* 24 (2006, pp 605-613).

The cost of annuity based projects is higher. The cost of capital for private investor is higher compared to NHAI. There is need to use PSC used in countries like UK and Australia. The authors argue that in spite of all the shortcomings the annuity based BOT model is important in view of the unreliable traffic estimates and low level of private sector participation in pure BOT concession road projects in India.

Dhameja<sup>40</sup> based on his analysis of NHDP programme has argued that a clear road map and time frame, a well defined institutional structure, proper planning and implementation and strong government support are essential for the success of infrastructure development. He has however highlighted certain concerns which need to be kept in mind for timely completion, profitability of the projects;

- Continuous government support at various stages of the project is essential and any loss of government focus would adversely affect the implementation process.
- Poor financial structure of the government authorities, coupled with the weak state of government finances, could impede the progress of projects, as this would affect actual disbursement of funds for maintenance and development of the projects.
- Shortfall in the availability of funds vis-a-vis the funds requirement, lays additional emphasis on the need to identify sources of additional funds to bridge the gap. Private sector participation and development of bond market could be encouraged by streamlining the finances of state government authorities; securitisation of receivables and other assets, like that for SEBs in power sector, would be another step in this direction.
- There is a need to create sufficient awareness regarding pricing of road service and the need for rational road pricing; as there is general resistance to toll payments. There is urgent need for independent Road Regulatory authority on the lines of TRAI and CERC to regulate toll and availability of service.
- Approach to infrastructure reforms and its development should be an integrated one covering road, road transport, rail network, warehouses and container depots.

---

<sup>40</sup> Dhameja, Nand, "Infrastructure Management and Financing: Emerging Issues", *Nagarlok Vol. XXXV, April-June 2003*.

We can see from the literature surveyed that the PPP projects on transport sector and Highways have been very intensively studied and analysed, but the same is not the case in India. There is very limited project specific data about the highway sector available in public domain in India. Some of the scholars have based their findings on the basis of this limited data. However what comes out clearly from the broader studies about the highways sector in India is that the country has been able to avoid most of the problems which have been faced by East Asian; Central and East European; and Latin American countries while implementing PPP projects in Highways sector. One reason for the same may be that large scale systematic privatisation in highways sector in India started much later in early 21<sup>st</sup> century, and learning from experience of others, the country has been able to avoid the pitfalls to a large extent.

India has been able to manage large quantum of private investment in highway sector in the previous decade, but there is a need to examine whether the stated gains from privatisation like operational efficiency of private sector, completion of projects in time and within estimates have been achieved, or it has just been used to fill the space vacated by government due to paucity of finances. What is the level of disputes in the contracts leading to renegotiation of contracts if any? Whether the projected traffic has been overestimated like most other countries, or the projections of NHAI are closer to reality. Based on the available data from NHAI and its analysis may be we can find the answers to these vital questions. ↴