

Private Participation in Infrastructure in Developing Countries

Trends, Impacts, and Policy Lessons

Clive Harris



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FOREWORD

Over the last decade, governments around the world pursued policies to involve the private sector in the delivery and financing of infrastructure services. The scale of this move away from the hitherto dominant public sector model was far more rapid than had been anticipated at the start of the 1990s. By the end of 2001, developing countries had seen over \$755 billion of investment flows in nearly 2500 private infrastructure projects. But investment flows peaked in 1997 and have since dropped by more than half. Macroeconomic crises have severely tested the robustness of this new paradigm. Problems with individual projects related to cancellation or renegotiation have made the headlines. Critics of the private provision of infrastructure argue that it has made services less affordable, and adversely affected access by the poor to modern infrastructure services. The decline in public opinions of private provision is matched by the reduced enthusiasm of many investors in developing country infrastructure, driven in part by some disappointing experiences.

Many of the problems we have seen relate to difficulties in sustaining cost-covering user fees for these sectors, which have a tradition of pricing below costs. They have also highlighted the challenges involved in the regulation of these sectors. This report aims to distill the experience with the private provision of infrastructure over the last 15 years. It looks at the growth that occurred during the mid 1990s, and the subsequent declines. The main factors driving this are examined. The report assesses the impact that the private provision of infrastructure has had on service delivery, and what the consequences for other important goals have been. Finally, it looks at the main policy lessons that can be drawn, and what governments have to do moving forward if they are to ensure that the supply of infrastructure services does not become a bottleneck to growth.

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ABSTRACT

Governments have long recognized the vital role that modern infrastructure services play in economic growth and poverty alleviation. 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.

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. The current sense of disillusionment stands in stark contrast to what should in retrospect be surprise at the spectacular growth of private infrastructure during the 1990s.

Behind the details of individual projects, much of the disappointment has a common cause. In many cases the expectations of investors and governments were out of step with reality. In particular, both groups underestimated the challenges involved in sustaining reforms in these sectors in order to place them on a commercial footing, most importantly breaking with traditional practices of pricing these services well below costs. Most problems have been encountered in the electricity and water sectors where this under-pricing was most severe. The last decade showed that private participation was not a panacea, but also that it was not the root cause of these problems. The legally binding contracts and hard budget constraints introduced by private participation flushed into the open problems that had been hidden during the era of public provision. While some governments have not been able to deal successfully with these, these problems will not be solved by a reversion to public provision.

The evidence suggests that, where commercial risks are shifted to the private sector, private participation will deliver better results than credible alternatives, such as attempts to strengthen public provision. Whilst many critics would accept that the introduction of the private sector leads to improvements in efficiency and, very often, the quality of service, they argue that the private sector will increase prices and make services unaffordable, and will not be interested in serving the poor. The most detailed studies of private participation have shown substantial welfare gains, and measurable impacts on important social indicators such as child mortality. The evidence suggests that in many cases private participation leads to an expansion in services, and that the poor can benefit from this compared to the situation prevailing under public provision. The improvements in efficiency that occur can also lead to reductions in prices.

But projects and reforms based upon unrealistic policies or expectations will bring disappointment to governments, investors, and consumers. Going forward, if private provision is to be sustainable and to benefit consumers of infrastructure services, governments will have to address many of the problems overlooked in the initial rush towards private participation. They must address the question of how infrastructure services are paid for. This centers on pricing, with the levels and structure being important, the latter particular where affordability and access by the poor are a concern. Governments should also allow for a range of service options to the poor when developing private participation schemes. Competition can help to reduce prices and expand access, and should be used to the maximum extent possible. The quality of regulation matters, and the key

is to develop regulatory frameworks that are credible to investors and viewed as legitimate by consumers. Financing issues in particular related to handling exchange rate risks will remain difficult but have to be addressed. Finally, the politics of all of this matter: technocratic solutions may exist, but building consensus and ensuring trust in and support for these policies will remain challenging.

Does the present disillusionment herald a return to public provision? We have so far seen relatively little renationalization of private participation schemes. However, in particular for power and water, the political economy of pricing will remain complex and difficult, and some countries may fail to successfully establish policies that address this. 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 encountered in sustaining cost-recovering tariffs and commercial principles. The real issue is not public infrastructure versus private infrastructure. It is more simple: the issue is less infrastructure versus more.

Governments that wish to pursue private participation schemes in infrastructure will find markets less receptive than in the 1990s, when even poorly structured deals could attract bidders. This may be the case even if governments implement sound regulatory and policy frameworks. The difficult market circumstances might therefore tempt governments to delay reforms, or to opt for more limited models of private participation. However, strengthening project cash flows where user fees may not be sufficient, for example through targeted subsidies, and the mitigation of political and regulatory risks by appropriate instruments will provide continued opportunities for leveraging private financing.

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INTRODUCTION

The 1990s saw a rapid and widespread move by governments round the world to involve the private sector in the provision and financing of infrastructure. Seeking private funds and managerial expertise to meet rapidly growing demands for modern energy, telecommunications, water and transport, developing countries saw investment of nearly \$755 billion in nearly 2,500 private infrastructure projects over the period 1990 to 2001.

But annual investment flows peaked in 1997, and have since dropped by more than half. Headlines from the world's financial press suggest pervasive problems with private infrastructure. There have been high profile renegotiations of projects in many developing countries, including some that were lauded at their inception as "best practice". Some projects have been cancelled or re-nationalized, at times exposing governments to significant compensation claims. Several of the countries that have been in the lead of these reforms have encountered problems. The macro-economic crisis in Argentina, one of the pioneers of the private provision of infrastructure, is providing a severe test of the sustainability of the new model. Brazil's ambitious power reform program has struggled to attract investment in new generation. Some investors are actively seeking to sell the distribution companies they acquired during that country's privatization program. More widely, many traditional investors and operators seem less interested or able to pursue infrastructure projects in developing countries. And there are signs of public discontent towards the private provision of infrastructure services, particularly electricity and water.

Nor have the problems been restricted to developing countries. The California power crisis was followed by investigations into manipulation of that market and more widely into the new business of power trading. The telecommunications industry in Europe and the US is struggling under a mountain of debt and has seen the bankruptcy of leading players. One privatized British infrastructure company, Railtrack, went into receivership, and a second, British Energy, has avoided this fate only through a government bailout.

The current sense of disillusionment stands in stark contrast to what in retrospect should be surprise at the spectacular growth of private infrastructure in developing countries in the 1990s. In

the early 1990s, it was expected that private investment in infrastructure would grow, but not dramatically, and might possibly double its share of total investment by the year 2000 to some \$30 (World Bank, 1994). This proved a major underestimate, as the move away from public provision occurred more quickly and deeply than expected. Annual investment in private infrastructure projects grew on average by over 30% a year from 1990 to 1997, increasing from \$18 billion to \$128 billion. Despite the recent declines, flows were still \$57 billion in 2001. But the prevailing mood is now more pessimistic, driven by the recent apparent reversals and some disappointing outcomes. Is the current mood a short-term phenomenon that will quickly be succeeded by increased optimism and a rapid recovery? Or does it herald a major reversal, where the public sector model returns to the ascendancy?

In this review we argue that we will not see a quick rebound in activity in private infrastructure. But the problems we have seen brought to the fore in many private schemes will not be solved by a reversion to public ownership either. These problems, which stem from the fundamental challenges inherent in infrastructure, whether public or private, received inadequate attention in the initial rush towards private participation. Moving forward, governments will have to adopt policies that more fully address these if they are to improve and expand the provision of infrastructure services in their countries. Well-designed and implemented private infrastructure schemes have made a considerable difference in helping countries meet their citizens' basic infrastructure needs. However, the politics of reform is challenging, and some countries may see a longer-term reversal to public provision, like that which occurred in many countries in the mid-twentieth century.

This review is in four parts. We look first at the trends in private participation in infrastructure in developing countries and the factors influencing this. Although the time that has elapsed since private participation was introduced is relatively short, we nonetheless examine whether infrastructure provision has benefited from private sector participation. We assess the impact it has had on the delivery of infrastructure services, and whether there been negative consequences for other important social goals, such as equity. We next look at the lessons that can be learned from the last decade or more of private infrastructure. Finally, we examine the key areas requiring attention if private participation is to make a sustainable contribution towards the provision of infrastructure services, particularly for poor people.

THE RISE—AND THE FALL?— OF PRIVATE INFRASTRUCTURE

Governments have long recognized the vital role that modern energy, telecommunications, transport and water services play in economic growth and poverty alleviation. But providing infrastructure services is inherently challenging. Investments are large and lumpy, and often in sunk assets. There are concerns about monopoly power, and their nature as essentials means their provision is highly politicized. For much of the post-Second World War period, most governments entrusted service delivery to state-owned monopolies. But in developing countries, particularly where the quality of institutions overseeing these monopolies was poor, the results were disappointing (Box 1).

The Move Away from Public Provision

Public sector monopolies tended to be plagued by inefficiency and failed to expand services to meet rapidly growing demand. Many were strapped for resources because governments succumbed to populist pressures to hold prices below costs, notwithstanding that the beneficiaries of these subsidies were usually not the poor.¹ Overstaffing and mismanagement, including the diversion of revenues by employees of these utilities, were common, and indeed still remains so under public provision. With the exception of Eastern Europe, publicly owned utilities failed to provide service to poor and rural households (Clarke and Wallsten, 2002). Consumers were often in the position of having to cope with shortages and lack of access by self-provision or buying expensive inferior substitutes to network access. The inability of public utilities to meet demand created black markets for connections, and the opportunity for employees and government officials to solicit bribes to move customers to the head of the queue. Even relatively affluent countries saw poor service. In Argentina, the waiting time for a telephone connection was 8 years, it took on average 23 days for phones to be repaired, and 6 days for water connections to be repaired (Estache, 2002).

¹ For example, subsidies to the water and sanitation sectors benefited the rich more than the poor in Argentina, Costa Rica, Chile, the Dominican Republic, Hungary and Uruguay during the 1980s (World Bank (1994)).

Box 1: THE PUBLIC PROVISION OF INFRASTRUCTURE—THEN AND NOW

Although the performance of individual publicly-owned utilities varied, some governments had failed by the 1990s in their attempts to provide critical infrastructure services to their citizens. Chronic inefficiency, poor pricing policies, and corruption meant that these companies could not provide adequate services to existing consumers, let alone consider expanding services.

A 1993 report on the Nigerian electricity sector characterized the state-owned power utility in the following terms: "All of the major, government-owned domestic energy facilities . . . are incurring huge financial losses . . . causing major losses to the economy as a whole through frequent supply interruptions. At the core of the poor performance of these enterprises are inappropriate investment strategies. . . politically motivated interference by the government in enterprise management; grossly inadequate, regulated prices for outputs . . . ; poor enterprise management; lack of maintenance and poor operational practices; inadequate compensation levels for mid-level staff; and government-mandated, gross over-staffing." (Source: ESMAP (1993))

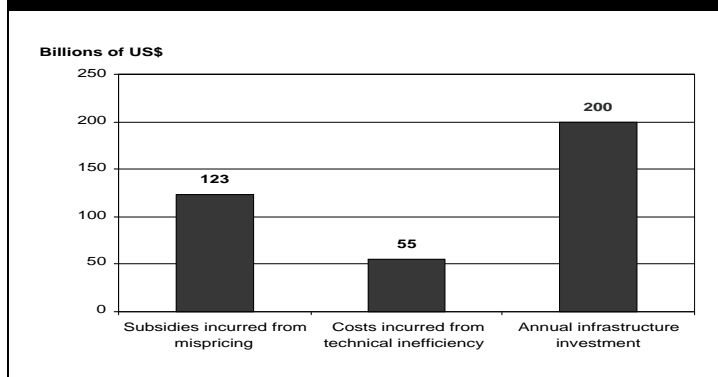
Since the early 1990s, when the wave of private participation began, the performance of many public enterprises has continued to deteriorate. For example, although the Indian power suffers from massive subsidies to the farming sector, it is also badly affected by widespread and high levels of theft and leakage. Technical and commercial losses amount to 40–50% of electricity generated, and the financial losses of the sector amount to some \$1.3 billion or around 1.5% of national GDP. The chronic financial situation means that utilities cannot effectively serve existing consumers or expand to meet increased demand. (Government of India 2001)

By the early 1990s, the annual losses from inefficiencies and unsustainable pricing policies were estimated to be nearly equal to annual investment in infrastructure (Figure 1). Unsurprisingly, public utilities found themselves unable to meet increasing demand and extend services to the poor.

Many governments attempted to improve the performance of public sector monopolies through corporatization and, in some cases, through the introduction of more formal arrangements

such as performance contracts. These were largely unsuccessful. Governments found it difficult to both impose financial discipline on, and give financial autonomy to, public enterprises, and they continued to give multiple policy objectives to managers of these companies. Even where formal performance contracts were used, the results were disappointing.³ Governments were not able to credibly enforce rewards or punishments for good or bad performance, and targets set were frequently readjusted. Multilateral agen-

FIGURE 1: INFRASTRUCTURE PROVISION UNDER THE PUBLIC SECTOR IN THE EARLY 1990s—THE ANNUAL COSTS OF MIS-PRICING AND INEFFICIENCY²



Source: World Bank (1994).

² Estimates for subsidies incurred from mispricing and costs incurred from inefficiencies cover only water, railways, roads and power.

³ World Bank (1995). Of 12 public enterprises from 6 countries subjected to performance contracts that were studied, only 3 saw improved performance; 3 enterprises actually performed worse than before the contract was introduced, and 6 saw performance unchanged.

cies, including the World Bank, which were major financiers of these enterprises, repeatedly attempted to introduce commercial discipline through covenants associated with loans funding public utilities, but the experience showed that financial targets were rarely met or enforced.⁴

Governments, although frustrated with continuing poor performance, were for the most part forced to act by worsening fiscal situations which meant they could no longer support these loss-making public enterprises. Private participation in infrastructure was sought as a way of reducing the drain that the provision of infrastructure resources was making on government budgets. Private provision was expected to lead to greater efficiency in service provision through the profit motive of the private sector, and because it would provide utilities with clear objectives rather than the multiple, and often conflicting, goals imposed by government. It was also expected to force more credible commitment by governments to rational pricing approaches. And the separation of policy and regulation from provision would provide accountability through the arms-length relationship that was missing under public provision.

The 1990s saw a revolution as governments in developing countries adopted the new paradigm of private provision of infrastructure services. The nature and scope of private involvement varied, from simple management contracts through to the outright sale of existing assets. The extent of benefits was similarly expected to vary with the extent of risks and obligations taken by the private sector (see Box 2).

Towards the Boom

In 1990, investment in private infrastructure projects in developing countries was only around \$18 billion.⁵ Annual investment grew rapidly, reaching a peak in 1997 of nearly \$130 billion. In Latin America, the privatization of telecommunications and power utilities in Argentina in the early

⁴ A 1996 OED report on lending for electric power in sub-Saharan Africa concluded that the “degree of compliance with financial covenants was especially weak—for the collection of accounts receivable, the approval of tariff increases, and the financial return on fixed assets.” It also concluded that generously subsidized tariffs favored existing consumers rather than new ones, and hindered expansion (OED, 1996). An earlier OED report reviewing Bank group lending for water and sanitation projects over 1967–1989 found that 78% of countries which received loans had failed to live up to financial covenants intended to improve the commercial standing of the sector (OED, 1992). Over the period 1979–1989, rates for electricity fell by 1.5% on average after IDB loan approvals in the sector, compared to an average increase of 7.2% before loan approval (Savedoff and Spiller, 1999).

⁵ This, and other figures quoted on investment in infrastructure projects with private participation, are taken from the World Bank’s Private Participation in Infrastructure Project Database. All numbers are expressed in 2001 US dollars using the US CPI Index. These figures include all investment in these projects, from public and private sources. The relative proportion of private financing varies between sectors and regions, but is estimated to be between 85–90% of total flows averaged over sectors and regions.

Box 2: MAIN FORMS AND POTENTIAL BENEFITS OF PRIVATE INFRASTRUCTURE

	MANAGEMENT CONTRACTS	LEASES	CONCESSIONS/ BOTS	DIVESTITURE
(1) Management expertise	Yes	Yes	Yes	Yes
(2) Tariff	No	Yes but limited to operations and maintenance costs	Yes	Yes
(3) Access to private capital	No	Yes, but limited to working capital	Yes	Yes

1990s, and later in Brazil drove this boom. In East Asia, much of the investment was in independent power plants (IPPs).⁶ There was almost a “gold rush” mentality towards certain sectors and regions, ranging from IPPs in countries such as Indonesia and Thailand, to toll-roads in Mexico, mobile phone licenses in India, and power distribution companies in Brazil. With hindsight, some of the forecasts of investments offered by trade magazines proved to be wildly optimistic.⁷

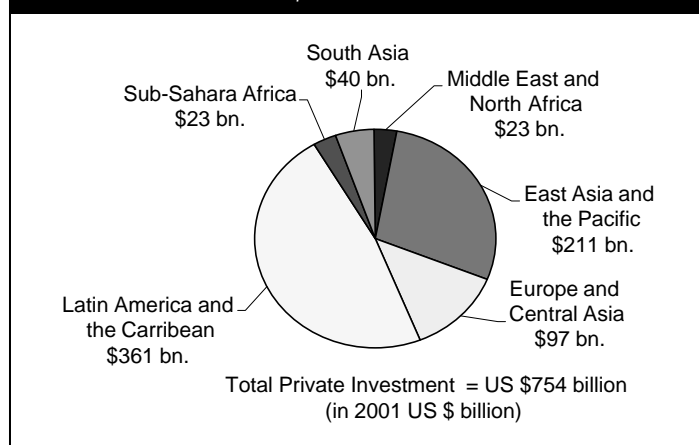
Taken overall, the investment flows achieved over the period to 2001 were impressive. Annual investment in infrastructure projects with private participation averaged \$60 billion. By the end of this period, developing countries had seen investment of over \$755 billion in more than 2,500 private infrastructure projects. And although in the early years of the move to private infrastructure, investments were concentrated in a few countries, the broadening of this trend meant that by 2001 over 132 developing countries had undertaken private infrastructure projects in one or more sectors. Investment was concentrated in Latin America, where investments were largely associated with the sale or concessioning of existing assets, and East Asia, which saw a far higher proportion of investment in green-field projects (Figure 2). However, all regions saw substantial flows of investment in private infrastructure projects.

The bulk of this was in the power and telecommunications sector, but other sectors also saw substantial levels of private participation. Water and transport saw investment of over \$40 billion and \$135 billion respectively in private infrastructure projects (Figure 3).

And the Bust?

The optimism of the mid-1990s has now been replaced by widespread pessimism. Annual investment flows to private infrastructure projects in developing countries are down. Projects have been

FIGURE 2: INVESTMENT IN INFRASTRUCTURE PROJECTS WITH PRIVATE PARTICIPATION IN DEVELOPING COUNTRIES, 1990–2001



Source: World Bank PPI Projects Database.

renegotiated and some have been re-nationalized or cancelled. Investor interest in private infrastructure projects in developing countries is also subdued, while there are signs of popular discontent. Are these indicators of fundamental problems with the new paradigm?

Declining Investment Flows

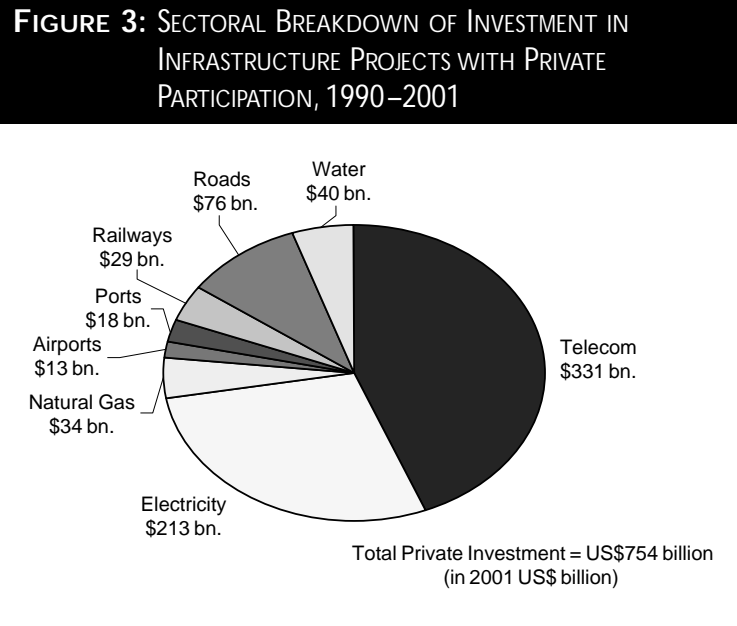
Annual investment flows began to decline after 1997 in the wake of the East Asian financial crisis, and by 2001 were only 44% of the levels seen at their peak, albeit still three times the levels seen in the early 1990s (Figure 4). The number of new private infrastructure projects

⁶ Around \$50 billion was invested in independent power projects in East Asia alone over the period 1990–98. This amounted to almost 10% of total investment in infrastructure projects with private participation in developing countries over this period.

⁷ Infrastructure Finance (May 1996) reported surveys indicating that as many as 500 GW of independent power projects had been announced in Asia over the 5 years to 1996. In fact, less than 67 GW were financed over the period to 1998.

was also down by around half. To some extent, the strong flows seen in 1997 and 1998 reflect large one-off privatizations in electricity and telecoms in Brazil, and would have been difficult to sustain even in the most benign environment.⁸ But the overall decline since the peaks represent a broader reduction over and above this, and they also contrast with trends in developed countries, where project finance commitments to infrastructure projects did not begin to turn down until 2002.⁹

The reduction has not been uniform across sectors. Telecommunications, though down from peaks seen in

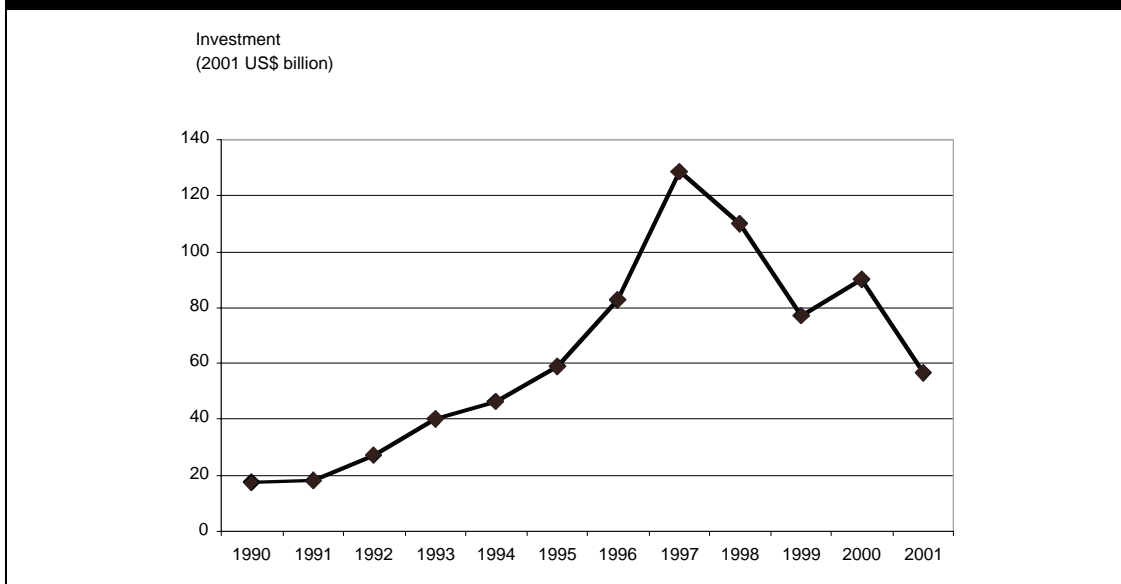


Source: World Bank PPI Projects Database.

⁸ In the years 1997 and 1998, investment flows to Brazil accounted for 21% and 46% of the respective total investment flows to infrastructure projects with private participation in developing countries.

⁹ Source: Project Finance International.

FIGURE 4: INVESTMENT IN INFRASTRUCTURE PROJECTS WITH PRIVATE PARTICIPATION, 1990–2001



Source: World Bank PPI Projects Database.

1998, has seen less of a reduction than power, which has seen the largest decrease from its peaks.¹⁰ The decline has also not been uniform across regions. While flows to Latin American and East Asia were less than half of their peaks by 2001, flows to Sub-Saharan Africa and South Asia have shown much less of a decline. More generally, investment flows to low-income countries have remained broadly stable since 1998 (Figure 5).

Part of this reflects the fact that the initial wave of private participation in infrastructure occurred in high and medium-income countries. But despite the overall pessimism surrounding private infrastructure in developing countries, many low-income countries have continued to push forward, with countries including Cameroon, Togo, Azerbaijan, Niger and India completing significant transactions since the end of 2000. Indeed, investment in private infrastructure projects in IDA-only countries reached its highest levels yet in 2001 (Figure 6).¹¹

Renegotiation of Contracts

Renegotiations of private infrastructure projects have made headlines. According to one study, as many as 74% of transport concessions and 55% of water concessions in Latin America were renegotiated during the 1990s.¹² These renegotiations tended to occur early in the life of a concession, on average just over 2 years after the award.

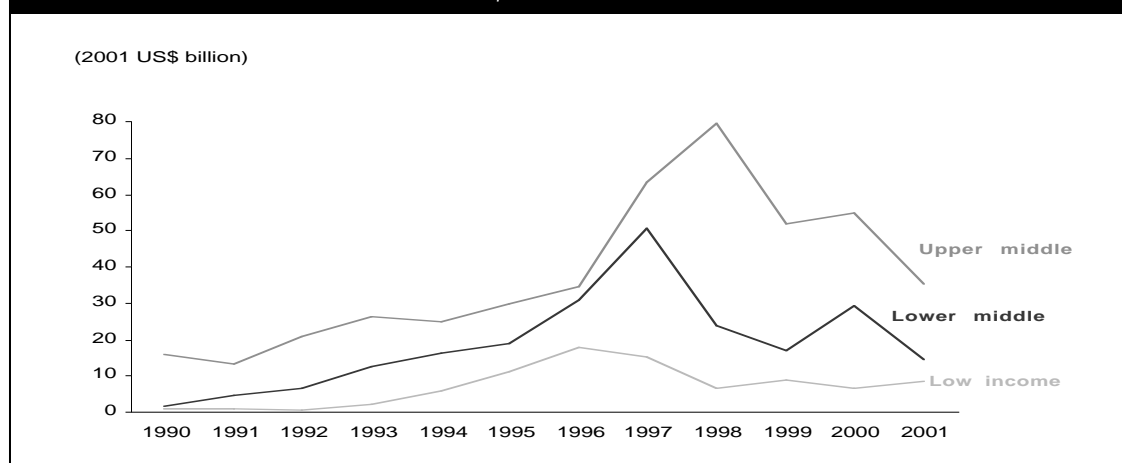
Some commentators point to the many renegotiations of private infrastructure projects as symptomatic of major flaws in the new model. Renegotiations are not necessarily an indicator of systemic problems or of failure of individual projects. Contracts for private infrastructure projects

¹⁰ In 2001 telecommunications accounted for over 55% of total investment in private infrastructure projects, above the average of 43% over the entire period. In contrast, power accounted for only 18% of total flows in 2001 against its average of 28% over the entire period.

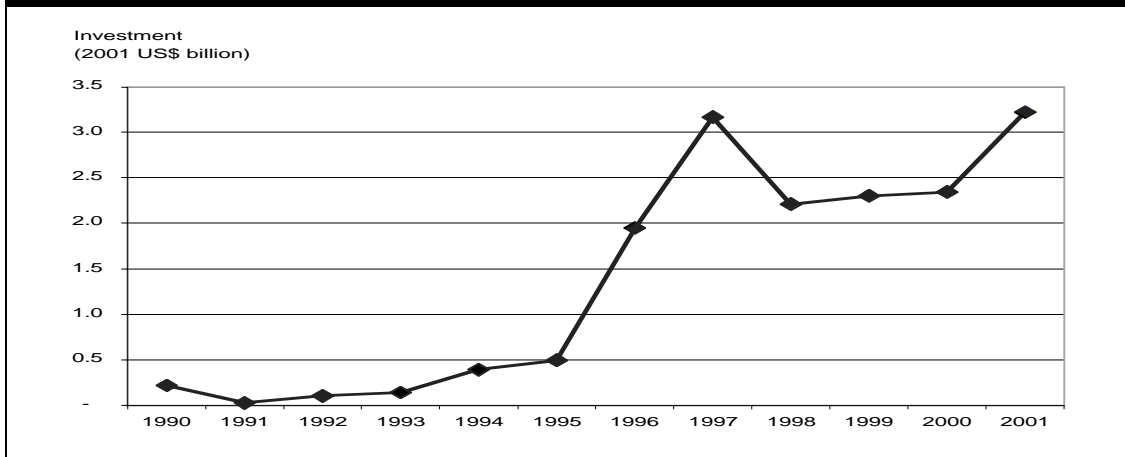
¹¹ Of the 81 IDA countries, 66 countries are classified as IDA-only of which 37 are in Sub-Saharan Africa, 11 in East Asia and Pacific, 6 in Europe and Central Asia, 6 in South Asia, 4 in Latin America and the Caribbean, and 2 in Middle East and North Africa. The remaining 16 IDA countries belong to the 'blend' category, which is used to classify countries that are eligible for IDA resources on the basis of per capita income but also have limited creditworthiness to borrow from IBRD.

¹² See Guasch (2003). The sample consists of 942 concessions awarded in 17 Latin American countries over the period to 2000. A renegotiation was defined as a significant amendment to the concession contract.

FIGURE 5: INVESTMENT IN INFRASTRUCTURE PROJECTS WITH PRIVATE PARTICIPATION IN DEVELOPING COUNTRIES BY INCOME LEVEL, 1990–2001



Source: World Bank PPI Projects Database.

FIGURE 6: INVESTMENT IN PRIVATE INFRASTRUCTURE PROJECTS IN IDA ONLY COUNTRIES, 1990–2001

Source: World Bank PPI Projects Database

often extend for 20 or more years, during which time many unforeseen developments may occur. Recognizing this, regulatory systems put in place in most developed countries include mechanisms for regularly reviewing tariffs and other key parameters at least every 3–5 years. In contrast, possibly in an effort to limit regulatory discretion, many of the early arrangements put in place in developing countries sought to rely on tightly specified contracts, thus requiring any adjustment to be made via renegotiation. Indeed, the same study showed that the creation of an independent regulatory agency reduced the incidence of renegotiation. High levels of renegotiation in developing countries may also have arisen because the poor quality of information about the condition of existing assets, and because of macro-economic crises such as in East Asia and more recently, Argentina, which affected all sectors of the economy.

Renegotiations can however create the potential for opportunistic behavior by both governments and investors. The sunk costs of infrastructure investment and the politicized nature of pricing make investors vulnerable to governments or regulators renegeing on commitments once investments have been made (Vernon, 1972; Levy and Spiller, 1993). For their part, the private sector may attempt to renegotiate the terms of an agreement once they are in situ. Investors might “low ball” bids in the hope of successfully renegotiating more advantageous terms once they had been awarded the contract. Acceding to renegotiations that absolve investors of commercial risks will weaken incentives for efficiency, and there are concerns that governments are often not well equipped for these renegotiations.

It is certainly the case that more risks are placed on private providers of infrastructure than was the case for public providers. Performance contracts with public enterprises failed because of poor incentives for the government and enterprise managers, and a lack of commitment to enforcing them on the part of the government. These performance contracts were often renegotiated—in Ghana for example one third of the targets were changed each year (World Bank, 1995; Shirley and Xu, 1997). In contrast, some private investors and operators have lost money on private infrastructure projects in developing countries, showing that the risks—commercial and political—are real.

Cancellations and Re-Nationalizations

Although cancellations and re-nationalizations of private infrastructure projects attract headlines, they have thus far been relatively uncommon. Only 48 private infrastructure projects were re-

nationalized or cancelled over the period 1990–2001¹³, less than 2%, of the nearly 2,500 private infrastructure projects concluded in that period (see Box 3). This contrasts with failure rates in the US economy for firms operating in competitive industries are around 30% on average over a 3-year period (Bizmier National US Market Vitality Research Profile, 2002). A number of these projects are being re-privatized, and more may be re-privatized in the future. This suggests that the governments in question have not turned decisively away from private participation. The small number of cancellations indicates the incentives that both the private sector and government have in remaining in these projects: most problems are therefore resolved by adjustments through renegotiations or other mechanisms. Governments may want to avoid cancellation because of the fear that services will be disrupted if the private sector exits. However, the evidence from the 48 projects where such exit has occurred is that there has not been evidence of a disruption in service.

Subdued Investor Interest

There is evidence that many of the leading investors are now more hesitant to pursue infrastructure projects in developing countries. For example, the average number of bidders for power distribution privatizations in Latin America fell from over four in 1998 to less than two in 2000 and 2001. And a recent survey of 65 investors active in the power sector found that over half were either hoping to retreat from these markets or were less interested than before in pursuing new opportunities (Lamech and Saeed, 2002).

The more subdued level of interest can be explained by several factors. Some investors have made money, but concerns over re-nationalizations, renegotiations, or disappointing returns from some projects have surely affected the sentiments of others. So too has pessimism about emerging markets in general, following the East Asian, Russian and, more recently, Argentine crises (Figure 7). Declines in developed country stock markets mean that some of the leading investors in developed country infrastructure have either become bankrupt or seen dramatic falls in their stock prices.¹⁴ For example, many global telecommunications companies are saddled with debt mainly as a result of the strategies they pursued in developed countries, and the bankruptcy of Enron was triggered by events mostly unrelated to its developing country investments.

¹³ The set of projects considered are those which reached financial closure, and were included in the World Bank's PPI database.

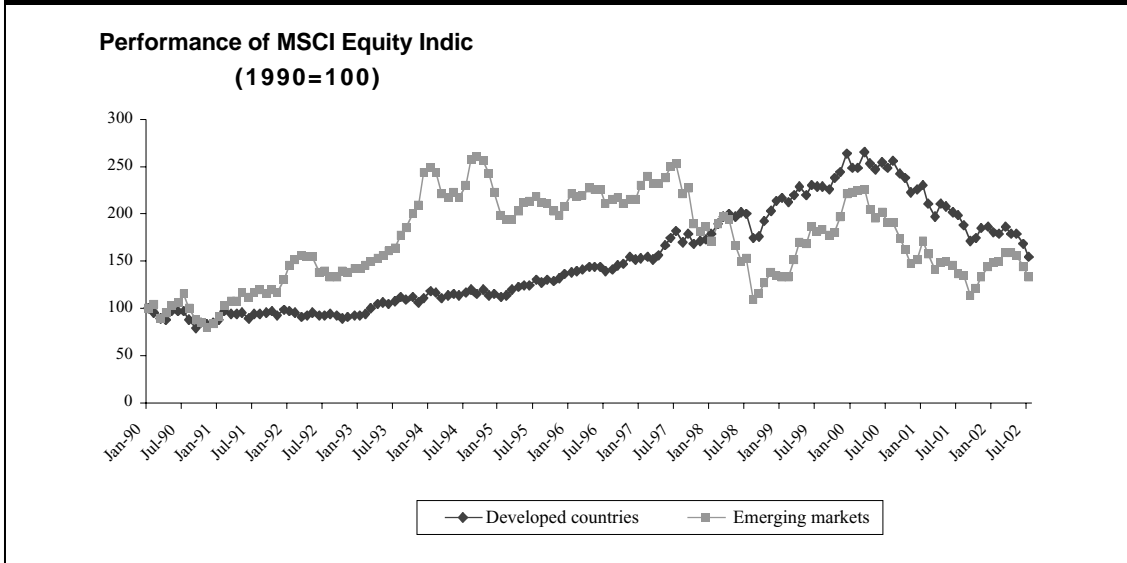
¹⁴ AES, one of the leading players in developed country power markets has seen its stock fall from over \$70 per share in October 2000 to around \$1.40 in late 2001. Vivendi Environment and Suez, leading water companies, saw shares roughly halve in value from their peaks.

Box 3: CANCELLED PRIVATE INFRASTRUCTURE PROJECTS—AN OVERVIEW

A total of 48 private infrastructure projects were cancelled over the period 1990–2001, comprising total investment commitments of US\$24 billion. This compares to nearly \$750 billion of investment in almost 2500 projects concluded over this same period, meaning cancelled projects represented 1.9% by number and 3.2% by investment. More than a third of the cancelled projects were from the Mexican toll road program. Without this program, projects cancelled over 1990–2001 would only have represented 1.0% by number and 1.9% by investment commitments of the totals. Unsurprisingly the highest incidence of cancellations by sector was in toll-roads, where 5.8% of projects were cancelled, water and sanitation, where 3.5% of projects have seen the exit of the private sector, and in power projects involving distribution and retail responsibilities, where 1.8% were cancelled. Cancellation rates were lower for telecommunications, ports/airports, and rail projects.

Source: Harris et al (2003).

FIGURE 7: MARKET SENTIMENT: EMERGING VERSUS DEVELOPED COUNTRY STOCK MARKETS

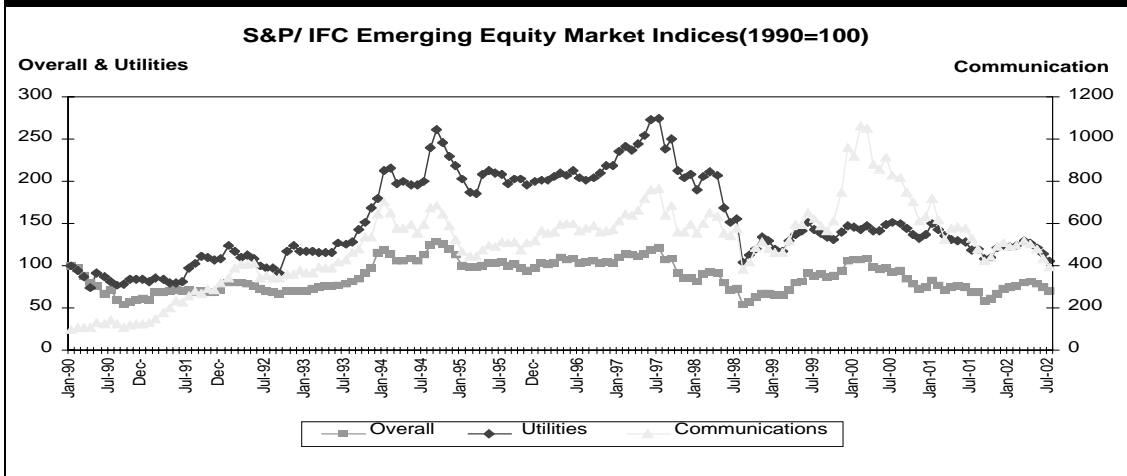


Source: Morgan Stanley Capital International.

We have also seen recent declines in indexes for emerging market utilities and telecommunications companies, following earlier large increases in the mid-1990s. Declines for utilities are broadly in line with trends in overall emerging market equities, with telecommunications more closely moving with developed country telecommunications indices (see Figure 8).¹⁵

¹⁵ S&P/IFC indexes of equities. Figure 8 compares trends for emerging markets as a whole against utility stocks in emerging markets. S&P Emerging Utility Index incorporates 75 companies in Electricity, Gas and Water Sanitation from 19 countries. Of these, 24 companies are from Latin America, and 29 from East Asia Pacific. The majority are from the energy sector.

FIGURE 8: MARKET SENTIMENT IN EMERGING MARKETS



Source: S&P/IFC Index.

Box 4: NEW ENTRANTS INTO DEVELOPING COUNTRY POWER AND WATER MARKETS

With the retreat of some companies from emerging market infrastructure companies, a significant gap has emerged. Could emerging regional and/or niche players fill this? To some degree, it is already happening. In Southern Africa, innovative companies like NetGroup (South Africa) and Electricity Distribution Management (Namibia) are seeking to leverage experience gained in low-cost, commercially oriented rural electrification into broader investment and management opportunities in southern and eastern Africa. NetGroup's won the TANESCO (Tanzania) management contract, against stiff competition. The Aga Khan Foundation, through its IPS Power subsidiary, has closed a deal in Tajikistan and is pursuing another in Uganda. Barmek Holdings, a private Turkish mini-conglomerate, has entered into long-term electricity distribution concessions in both Baku (Azerbaijan) and Ankara (Turkey). Success in Baku in particular could produce opportunities elsewhere in Central Asia. In India, BSES and Tata Power, two long-time private distribution companies in India, have made acquisitions elsewhere in the country and may yet be seen outside their home market. In the water sector, new players include Aquamundo of Germany, Acea (the newly privatized power and water utility of Rome), Aguas de Bilbao, Aguas de Portugal and municipal water utilities from Germany and France.

But, there are a growing number of new entrants into the market for developing country infrastructure, some of who are regional specialists, and are beginning to compete with the global players (see Box 4). We have also seen the emergence of private companies not presently operating in the utilities sector, but which team up with companies experienced in the management of utilities to bid on privatizations and provide the necessary financial resources and expertise. The emergence of these new players does not compensate for the withdrawal, temporary or otherwise, of the established investors. However, governments and their transactions advisors should recognize the emergence of these new players when taking offerings to the market.

Signs of Popular Discontent Against Private Participation in Infrastructure

The discontent of investors seems in some countries to be matched by that of the general public. There has been resistance to new initiatives, with some recent private infrastructure projects—for example the planned sale of two generating plant in Peru in 2002, and the Cochabamba water concession in Bolivia—having been the focus of violent demonstrations. Resistance to private participation initiatives is not new, and many previous privatizations, including those that have turned out to be successful, encountered opposition during their implementation, often from the vested interests that stand to lose from reforms.

But there is evidence that in some countries there is less support now for privatization amongst the population as a whole. A recent Latinbarometer survey found that in 2001, 63% of those surveyed in 17 countries in the region felt privatization had not been beneficial, higher than in 1998, when only 45% felt this way (Lora and Panizza, 2002). Some of this may reflect more general discontent related to movements in economic cycles and a reaction to broader economic reforms, in which privatization was usually a key element. Whatever the reasons, the current mood provides less support to governments that are trying to undertake and sustain difficult policy reforms. But survey evidence (see Box 5) suggests that private schemes that brought good outcomes and were implemented in a transparent fashion with accountability would be viewed more favorably.

What Lies Behind the Current Malaise?

At one level, the current pessimistic mood might be explained by a series of problems associated with particular projects, national policies, or individual investors. But behind these detailed stories lies a common theme. In many cases, the expectations of investors and governments were simply out of step with reality.

Box 5: WHAT DO VOTERS EXPECT OF PRIVATIZATION?

In June 2002 the Peruvian government postponed the sale of two generating companies to Tractabel in the face of popular opposition, including riots. An opinion poll conducted in Peru at the time found that, although 21% of those surveyed were in favor of privatization in general, their opinions would be more favorable if good outcomes were expected. As many as 69% indicated they would be in favor if the privatized company invested to expand services, and 65% agreed that prices could be increased if it has the approval of a regulatory body. Transparency also matters: 59% of those surveyed said privatization would be acceptable if it was done in a transparent matter.

Source: Apoyo (2002).

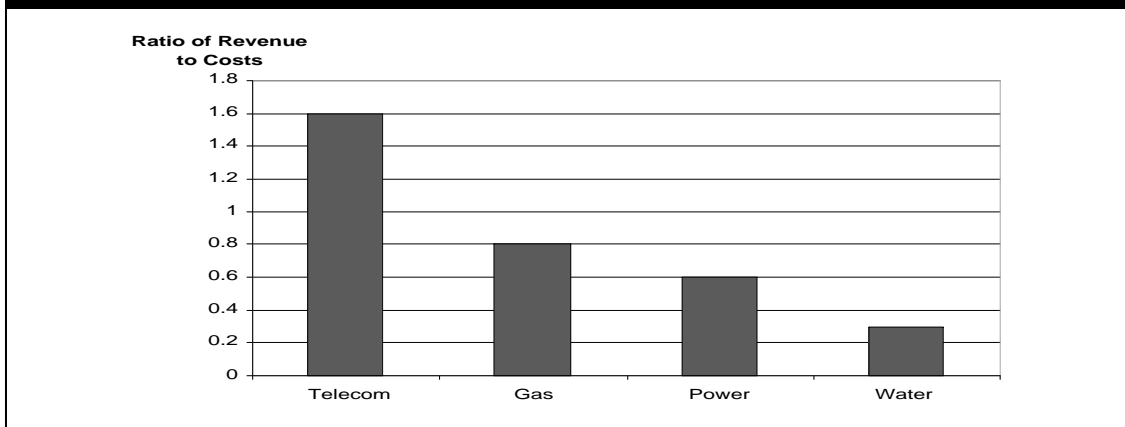
At the heart of the problem lie the key challenges inherent in infrastructure provision, and in particular the political economy of infrastructure pricing. Because infrastructure services are consumed widely in society, and are often considered essential, governments in developing countries had a long tradition of holding prices below their economic costs (Figure 9). At the beginning of the 1990s, this gap was greatest for electricity and water, where on average, revenues recovered as little as 60% and 30% of costs respectively. Under public ownership, these deficits were either made up by transfers from public finances, or by the deterioration of assets through inadequate maintenance.

Regardless of who owns the assets, in the end infrastructure services must be paid for either by users or taxpayers—there are no other options. The introduction of private participation does not alter this fundamental equation.

Some governments overlooked this. They brought the private sector in as a way to help finance infrastructure investments once the public sector had run out of money. In some cases, reductions in cost brought about by private participation through improved efficiency could mean that price levels that were not sustainable under public provision could now cover costs. But in situations where prices were a long way below costs, efficiency improvements could not negate the need in many situations for price increases, at least in the absence of continued subsidization by taxpayers.

In some cases governments may have understood that price increases were required, but over-estimated their ability to manage the politics of reform. Sensitivities over foreign investment, significant reductions in staffing levels, and substantial investment obligations which put

FIGURE 9: COST RECOVERY BY PUBLIC UTILITIES IN DEVELOPING COUNTRIES: THE EARLY 1990S



Source: World Bank (1994).

further pressures on prices, made these reforms all the harder to sustain. There may also have been cases where governments behaved opportunistically, promising rational tariff and other policies to attract investors but then hoped to renege on these commitments once investments were made.

For their part, some investors over-estimated the ability of governments to manage the reform process and hence honor their tariff, and other, commitments. In some cases, such as in Indonesia and Argentina, this extended to judgments about the ability of the government to sustain stable macro-economic policies. Pricing policies implied by pass-through clauses and indexation, introduced to handle the risks of devaluation, were not politically sustainable in practice. These problems were compounded by falling demand for infrastructure services as real incomes contracted following large exchange rate devaluations. As well as leading to renegotiations of many projects, these shocks lead to major re-evaluations by investors of the risks of emerging markets.

Investment flows to low-income countries (Figures 5 and 6) have held up better. Investors were more realistic about the momentum for reform and the level of risks they were facing, and projects were structured accordingly, with lower investment obligations on the part of the private sector, and more efforts to mitigate risks.

Problems related to implementing and sustaining reform tend to be more acute in some sectors than others. In telecommunications, where prices were often on average high, and ports, airports and rail freight, which are frequently export-oriented and do not serve the general public, there has been less of a boom-bust phenomenon.¹⁶ Electricity and water, which on average need-

¹⁶ In telecommunications, the impacts of bubbles in developed country markets have however reduced the ability of some companies to actively invest in developing countries.

BOX 6: ADJUSTING TO REALITY: FAILED PRIVATE INFRASTRUCTURE SCHEMES

Some of the higher profile private infrastructure schemes that have encountered difficulties show the impact of failing to match the financial realities of the project with the political economy of the sector. Many hoped that independent power projects (IPPs) would seed reform. The expectation was that the financial cost of the IPPs often averaging above prevailing tariffs, would assist reform dynamics and ultimately place the sectors on a sustainable financial footing. In East Asia, large exchange rate devaluations revealed that the cost of capital was much higher than was incorporated into tariffs, and sudden and large tariff adjustments to redress this in the midst of a broader economic crisis proved to be impossible. In Indonesia, before the crisis unit costs of independent power projects ranged between 5.4–8.5 c/kWh compared to average retail tariffs of 7 c/kWh. When the rupiah collapsed in value, even following steep electricity price hikes in early 1998, retail tariffs were under 3 c/kWh and the situation was much worse. In countries such as India and Pakistan, there was insufficient momentum for reform to lead to increases in prices to cost-covering levels, or to improve the rate of collections. More broadly, we have seen many renegotiations, and some cancellations of IPPs, reflecting difficulties in implementing and sustaining reforms in pricing and collections.

Sometimes, private schemes have encountered difficulties because of poor design and management of the reform process. The Cochabamba water concession operated from October 1999 to April 2000, when it was terminated by the government following violent political protests. Steep initial tariff increases, to cover the cost of an expensive bulk water scheme selected by governments in preference to a lower cost option, were introduced at the outset. These were unanticipated by consumers, and there seems to have been a lack of transparency about the planned tariff increases and financial terms of the concession. Although some of the circumstances were different, the concession for water and sewerage services in the province of Tucuman in Argentina also ran into difficulty following high initial price increases, required in part to finance a large investment program of around \$260 million.

ed to make the largest adjustments, have seen the most problems and also attracted the largest amount of criticism, including from international NGOs.

Investor actions were also influenced by their expectations about future government support for the projects. In some cases investors believed that should the project go wrong, the government would step in and bail them out. Some commentators have suggested that this was the case with the Mexican toll-road program, for example. But when such guarantees exist—whether implicit or explicit—investors pay less attention to project fundamentals and even ill considered projects can get financed. This reduces the performance risk borne by the private sector, and in turn the benefits of private participation, and can expose taxpayers to significant liabilities. For example, the costs to Mexican taxpayers of meeting the debt obligations of failing privately financed toll roads was, alone, more than \$7 billion.

In retrospect, it is also clear that in some cases the private sector's inflated expectations were part of a more classic bubble—over-bidding for radio spectrum for telecommunications in many developed and developing countries being an example. It has also arguably been present in sectors such as electricity in larger countries, where the pressure to obtain a strategic position in what were seen as huge markets led firms to over-bid for assets.

The last decade has demonstrated clearly that private participation in infrastructure is not a panacea, but it has also demonstrated that it is not the root cause of many of the problems we have seen. With the new institutional arrangements brought in by private provision, it became much more difficult to sweep difficulties such as unsustainable pricing policies under the carpet. Legally binding contracts and hard budget constraints replaced the lack of accountability and financial discipline of public enterprises. This flushed 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 thus far seem to have 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 privatizations even in countries where there have been disappointments and reversals with earlier private projects.

It is likely that, given the political challenges involved in sustaining reforms, concerns about emerging markets and the global economy, and the difficulties that many of the leading investors are in, we are likely to see the situation get worse before it gets better. Initial estimates of investment flows to private infrastructure projects in 2002 suggest they are in the range of 70–80% of the levels seen in 2001.¹⁷ And we will in all likelihood see an increase in the number of cancelled private projects, as investors reorient corporate strategies and are unable to sustain loss-making projects, and as some governments fail to correct unsustainable sectoral policies.

¹⁷ Project finance commitments for infrastructure showed a 50% reduction in both developed and developing economies in the first half of 2002 compared to the previous year's figures (Source: Project Financial International).

HAS INFRASTRUCTURE PROVISION BENEFITED FROM PRIVATE SECTOR PARTICIPATION?

Governments turned to the private sector, hoping that private expertise and finance would meet rapidly growing demands for infrastructure services. In this section, we assess whether private provision led to improvements in the delivery of infrastructure services. Critics of privatization would argue that, regardless of the answer to this question, private provision has had adverse effects on other important goals, such as access by the poor to modern infrastructure services, the environmental impacts from infrastructure, and reducing corruption.

Impacts on the Delivery of Infrastructure Services

The most thorough studies of the impacts of privatization have shown that well designed schemes can bring about substantial increases in overall welfare. Private participation in water and sanitation lead to overall domestic welfare benefits of \$1.4 billion in Buenos Aires and \$23 million in Guinea (Shirley, 2002). Six cases of private participation studied in detail in the telecoms, power and ports sectors also showed substantial welfare gains to the government, consumers, investors and, often, workers (Galal, et al., 1994; Newbery and Pollitt, 1997). These studies have found that the main sources of benefits were increased investment to bring service to new consumers, lower prices, and improved productivity and efficiency. Of these factors, there is less argument over the technical and operational efficiency of the private sector. Critics generally voice more concern that price increases will make services unaffordable, and that the private sector will not be interested in expanding services to poorer consumers.

Impacts on Service Expansion

As far as service expansion is concerned, the evidence suggests that in many cases the private sector does as well, or better, than public provision. The private sector's technical and managerial competence, combined with more sustainable pricing policies and better financial discipline, provide more resources for investing in expansion and relax the investment constraints which prevailed under public provision. In many cases the biggest gains from private provision come

through increased investments to meet increasing demand and serve previously unattended consumers.

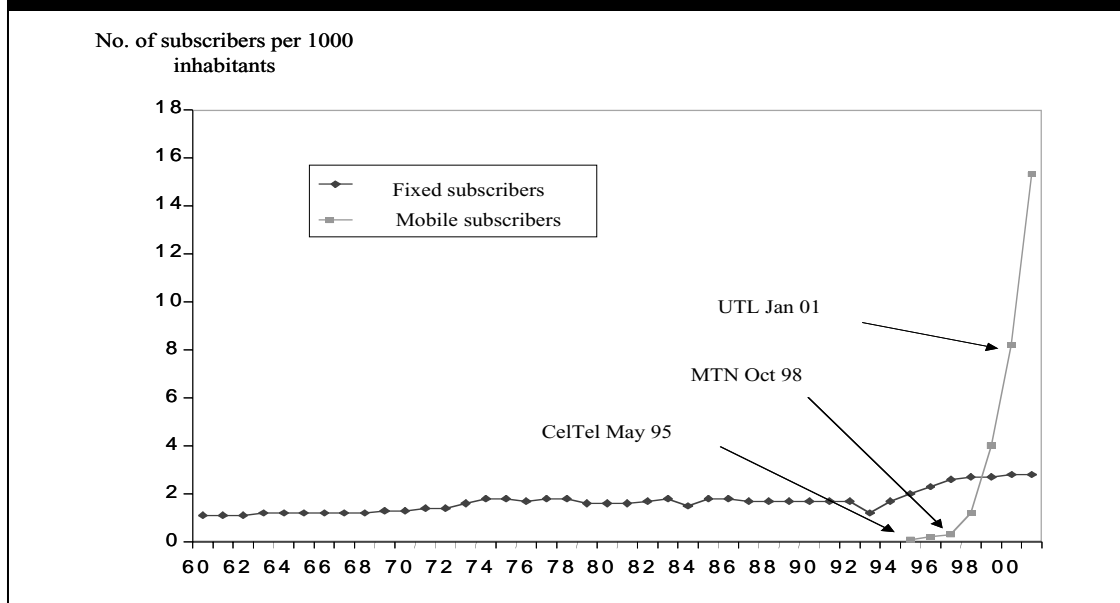
The results have been particularly impressive in telecommunications, especially where competitive regimes have been established. Evidence from Latin America suggests that expansion of networks has been far slower where competition has not been allowed following privatization—but even private monopolies have expanded more quickly than public ones (Wellenius, 1997a; see also Ranamurti, 1996; Ros, 1999). The results can be spectacular where the starting point is an undeveloped network. In Uganda, the entry of private mobile companies lead to a major increase in the number of connections, and they soon dwarfed the fixed-line incumbent (Figure 10).

Well-designed private water and electricity schemes have also seen impressive results in terms of service expansion. Evidence from a number of private water projects indicates that access increased after private provision was introduced, for water (Figure 11) and for sanitation (Figure 12).

The rate of new connections to water and sanitation services in La Paz-El Alto, Bolivia, increased by two thirds following the introduction of the private sector through a long-term concession. In El Alto, the coverage of sewerage services had been unchanged for a decade under public ownership, but increased by 30% in the first three years of private provision (Foster and Irusta, 2001). Overall, access to water in the concession area increased significantly faster than in other major cities in Bolivia (McKenzie and Mookherjee, 2002). Increases in sewerage coverage in both cities were more than 50% higher than that in urban areas in Bolivia that did not bring in the private sector (Barja and Urquiola, 2001).

In Gabon, where the same private operator runs water and electricity services under a concession, targets for increasing coverage for both services have been met or exceeded (World Bank/PPIAF, 2002). The privatization of electricity in Lima, the capital of Peru, has led to near universal coverage

FIGURE 10: INCREASE IN TELEPHONE CONNECTIONS IN UGANDA FOLLOWING PRIVATE SECTOR ENTRY

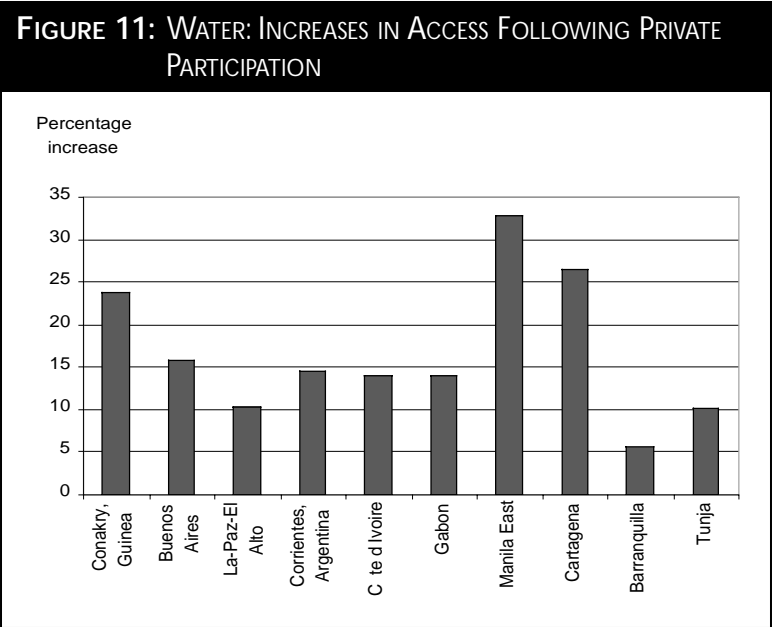


Source: ITU (2002).¹⁸

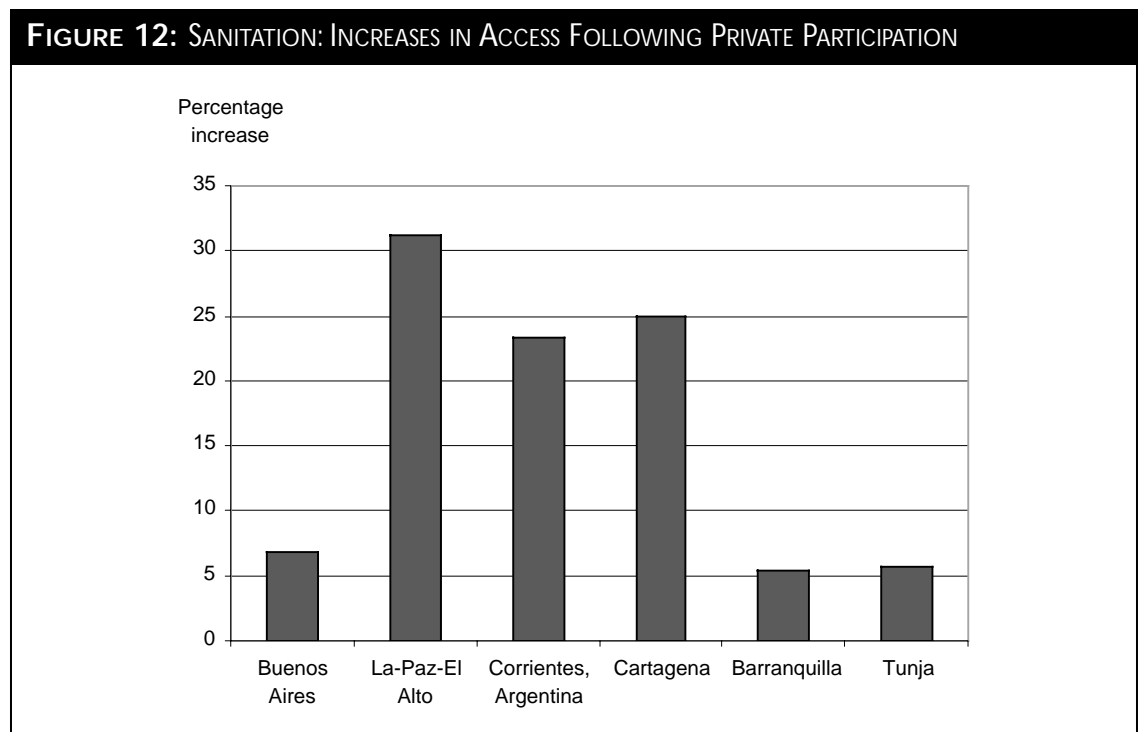
¹⁸ CelTel and MTN are private companies providing mobile services. UTL is the former government-owned monopoly, partially privatized in February 2000 and which launched mobile service in January 2001.

for both of the private companies now providing services (see Figure 13) (Torero and Pasco-Font, 2001). Coverage of electricity has increased in Chile since privatization, with the biggest increases being seen for those with lowest income (Estache, et al., 2000).

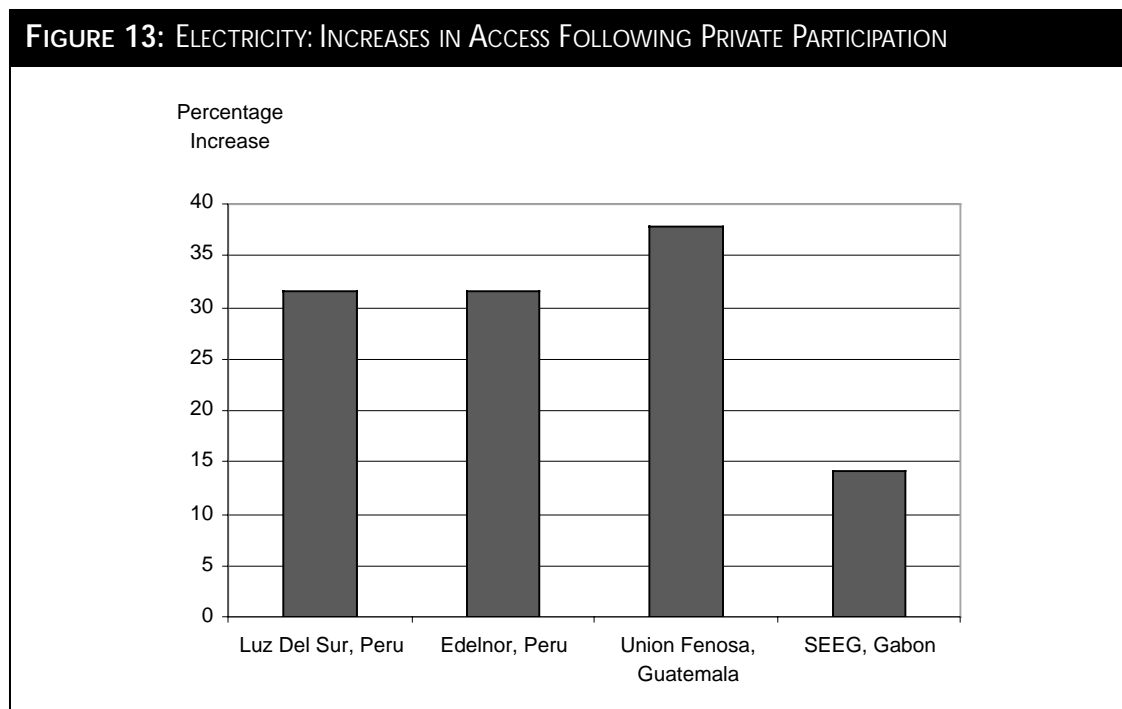
Incentives to expand the system can be done through binding obligations and targets to increase access, such as those used in the La Paz/El Alto concession can help to make cross-subsidy schemes more effective in terms of increasing access. The returns from serving new consumers are also critical, and prices will have to reflect the costs of expansion, rather than just serving new consumers, if investment capital is to be provided by the private sector. Where revenues from con-



Source: Barja and Urquiola (2001), Shirley (2002), World Bank/PPIAF (2002a), World Bank (2001), Rivera (2002).



Source: Barja and Urquiola (2001), Shirley (2002), World Bank (2001).



Source: Torero and Pasco-Font (2001), World Bank/PPIAF (2002a), World Bank/PPIAF (2002a).

sumers are not sufficient, and where there are affordability concerns, subsidy schemes have been effectively employed by governments to supplement user fees and extend infrastructure services to rural areas and to ensure that the poor can afford essential services (Wellenius, 1997b; Cannock, 2001; Harris, 2002; Gomez-Lobo, 2001).

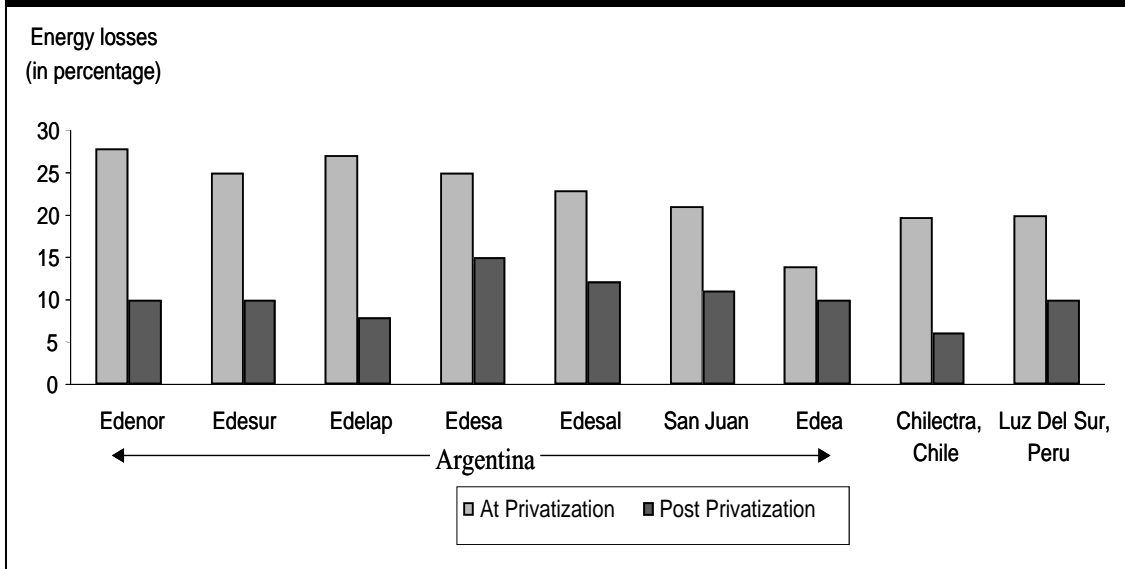
Impacts on Efficiency

Government's inability to effectively manage public enterprises, and their tendency to use them for non-commercial objectives, meant that many utilities providing infrastructure services were over-staffed, badly managed, and often saw the diversion by employees of revenues collected from consumers. Taxpayers ended up footing the bill as governments incurred substantial fiscal deficits supporting these utilities.

Private participation has been able to improve efficiency through the introduction of incentives to reduce wasteful costs and collect revenues. Some of the largest gains have been seen in the telecommunications sectors,¹⁹ where the major driver for improved efficiency seems has been competition (Ros, 1999). Yet, private participation in less competitive sectors can also lead to substantial improvements in efficiency.²⁰ In countries where corruption in meter reading and billing was very prevalent, one of the main benefits from private participation is a reduction of these leakages. Improvements in collections have often been rapid in electricity companies with private participation (Figure 14). Losses in the electricity sector in Chile have more than halved over the levels when the sector was publicly owned (Estache and Rodriguez-Pardina, 1998). Northern Electric, a private company which managed power distribution in northern Namibia for

¹⁹ Bortolotti et al (2001) found that 31 privatized telecommunications companies in 25 developed and developing countries saw significant improvements in operating efficiency.

²⁰ Estache and Kouassi (2002) find that private water companies in Africa are more efficient than public ones.

FIGURE 14: LATIN AMERICA: REDUCTIONS IN ENERGY LOSSES FOLLOWING DISTRIBUTION PRIVATIZATION

Source: Feler (1999). Losses include both technical and non-technical losses.

5 years from 1997–2002, managed to reduce losses from 49% at the start of the contract to under 7% by 1999 (World Bank/PPIAF, 2002).

The private sector can improve collection performance even in very difficult situations. In Georgia, the privatized utility serving the capital Tbilisi, has seen losses fall and collections, as well as bills paid in cash, rise since privatization. At the same time, the collection performance of the remaining publicly operated utilities has continued to decline (World Bank, 2002). In Moldova, the privately owned distribution companies succeeded in dramatically increasing collections and reducing system losses (Krishnaswamy and Stuggins, 2002).

Many public utilities were overstaffed, and private participation has often led to reductions in the numbers of employees as labor forces are rationalized to more efficient levels. Detailed studies have shown that in some cases workers benefit from private participation schemes through increased wages for higher productivity, and participation in share schemes in these companies.²¹ Some sectors have seen increases in jobs even when individual companies operating in them have seen reductions. The telecommunications sector has seen increases in employment particularly where the introduction of competition has helped to spur increases in demand for services (Petrazinni, 1996). However, some private participation projects have seen large numbers of redundancies, and even if other job opportunities arise in the sector, these may not go to those who have been laid off.²² This makes it important that governments develop schemes to compensate workers who lose their jobs as a result of private participation. The overall gains seen mean those workers who are laid off can be compensated whilst still leaving substantial benefits for consumers, investors and the government. The gains can also help fund other activities, such as retraining or programs to help laid-off workers set themselves up in business.

²¹ Galal et al (1994) documents this for electricity, telecommunications and ports reforms. Shirley (2002). documents this for the Buenos Aires water concession.

²² Private participation in railways lead to reductions in the workforces amounting to 80,000 in Argentina and 18,000 in Brazil Kikeri (1998).

Impacts on the Quality of Service

Improvements in financial performance have allowed companies to invest to provide a better quality of service to consumers. Tbilisi, the capital of Georgia and served by a utility presently under private management, now has a reliable year-round supply of power with much-reduced blackouts (World Bank, 2002). In contrast, consumers served by publicly owned utilities in Georgia suffer from frequent blackouts in the winter. Consumers in Cartagena, Barranquilla, Tunja, La Paz/El Alto and Buenos Aires all saw improvements in the availability of water, in some cases receiving 24-hour service for the first time (World Bank, 2001; OED, 2002; Shirley, 2002).

Improvements in service reliability and continuity can have major benefits to consumers, although most assessments of the welfare benefits of private participation do not factor these in. Improving the quality of service reduces the need for them to spend resources on back-up facilities, such as emergency generators and storage for water. Intermittent supplies of water through mains can lead to back-siphonage and contamination, exposing consumers to water-borne diseases. Those who lack connections to the network may also have to rely on unsafe water sources. In some cases the health benefits can be considerable (see Box 7).

There are concerns, however, that the private sector may be tempted to cut expenditures on measures related to safety or security of supply, to boost profit margins. There have been examples of disruptions to supply under private infrastructure projects. In 1995, a major outage occurred on Edesur's network in Buenos Aires, lasting 11 days and affecting 150,000 consumers. In response, ENRE, the sector regulator, imposed a fine of \$51 million (Feler, 2001). Such a response would have been difficult to imagine under the public sector and shows that by separating oversight from ownership, an arms-length relationship can be introduced, along with real punishments and incentives for compliance. However, the regulatory frameworks governing private participation schemes will have to include appropriate standards, incentives and penalties to ensure compliance with safety and security of supply targets. Regulatory frameworks that provide good overall incentives for investments will also likely lead to better outcomes on these two aspects of utility performance.

Fiscal Impacts

Private infrastructure schemes can have positive fiscal impacts in a number of ways. Improving the financial self-sustainability of utilities can stem previously large government subsidies. In Argentina, prior to privatization, Ferrocarriles Argentinos, which provided rail passenger services, required an annual subsidy of US\$1500 mn from the government. After the services were concessioned, the government had a greatly reduced outlay of \$100mn in some investments, and received \$10 mn per year in tax payments from the concessionaires. Argentina's largest electric utility, SEGBA, made

Box 7: THE IMPACT OF PRIVATE PARTICIPATION IN WATER SUPPLY IN ARGENTINA ON CHILD MORTALITY

It is estimated that, worldwide, 1.1 billion lack access to safe water, 2.4 billion lack access to improved sanitation, and 3 million children die each year from water-borne diseases. Addressing this will be critical to poverty reduction and to reaching the Millennium Development Goals. Private provision can, under sustainable sector policies, help to expand access to safe water, and thereby reduce child deaths through water borne diseases. During the 1990s, 138, or approximately 30%, of Argentina's municipalities privatized their water services. Following privatization, investments were made to expand access and to improve the quality of service—increasing pressure, hours of supply, and reducing leakages. A recent study has found that improvements in water services associated due to private provision lead to a reduction of 5–9% in deaths of children due to these types of illnesses. The impact of this was greatest in the poorest areas, which had the worst levels of service prior to privatization, where the reduction in mortality was estimated to be as much as 25% (Galiani et al (2002)).

cumulative losses of \$1.69 billion in its last 4 years under government control. Net proceeds from the sale were \$110 mn, and SEGBA began paying income tax for the first time (Shaikh, et al., 1996). By passing responsibility for financing from taxpayers to users, governments can reorient their own expenditure towards the social sectors.²³ Many governments in Latin America in the 1990s did this, increasing spending on health and education (Figure 15), although some have argued that public expenditure on infrastructure fell too rapidly over this period (Calderon, et al., 2002).

Private provision also provides the opportunity for governments to raise revenues through divestiture proceeds, and license or concession fees. Although this can allow governments to finance much-needed social programs, it is a double-edged sword. Revenues extracted in this fashion, implicitly taxing the sector, inevitably reduce the amount left for investing in expanding and improving services. Governments may also be tempted to artificially boost these revenues for example through reducing competition in the market.

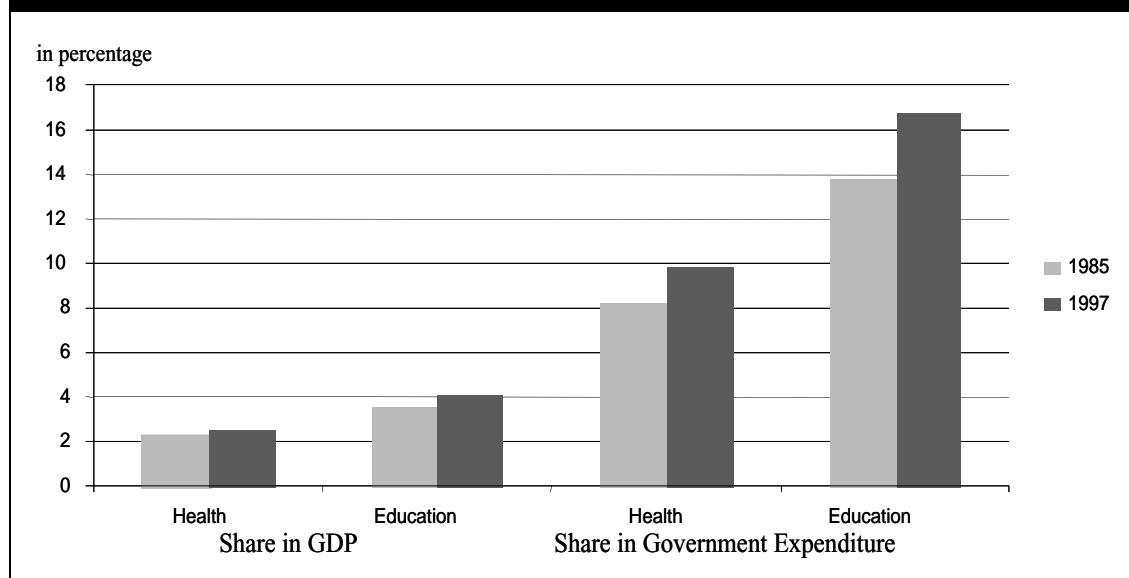
There are however concerns that these revenues may allow governments to delay much-needed fiscal adjustments. A recent study by the IMF indicates that on the whole privatization has not had a damaging effect on fiscal discipline (Barnett, 2000). It found that, in a sample of non-transition developing countries, privatization does not lead to increased spending, increased deficits or lower tax revenues. Privatization broadly seems to substitute for either domestic or international financing—either through paying off existing debt or reducing the need for new borrowing. However, it is argued that some countries, such as Brazil (Macedo, 2000) and Argentina, did succumb to temptation and use revenues from privatization to maintain an unsustainable fiscal position.

Impacts on Prices

Many critics of the privatization of infrastructure services argue that they inevitably lead to price increases. This is not necessarily true, either in theory or in practice. The impact private participation

²³ However, governments have in some cases levied increasing indirect taxes on infrastructure services, such as telecommunications, which have led to increases in the prices (Estache (2002)).

FIGURE 15: LATIN AMERICA: GOVERNMENT SPENDING ON HEALTH AND EDUCATION: PRE AND POST PRIVATIZATION



Source: Estache, Gomez-Lobo and Leipziger (2000).

has on prices will depend on the extent to which the private sector can introduce efficiency improvements which lead to reduced costs, how far prices were below cost-covering levels, and whether the higher cost of private finance will require price increases.

Studies of efficiency improvements brought about by private provision suggest that on average private provision reduces costs in the order of 10–30%.²⁴ Therefore, if prices were not much below costs, private participation might be able to negate the need for price increases. In some cases, where prices reflected an inefficient level of costs, we have actually seen substantial reductions in prices. One study, which examined 10 cases in Latin America, found that in half, prices decreased following the introduction of private participation (McKenzie and Mookherjee, 2002). In the electricity sector in Argentina prices fell by 40% in the five years following privatization, and prices in Chile in the same sector fell by 25% between 1988 and 1998 (Estache, Gomez-Lobo and Leipziger, 2000). Even following renegotiations to increase user fees, prices for the Buenos Aires water concession were before the recent crisis still 14% lower than before privatization (Shirley, 2002). Productivity gains associated with private schemes in water and power in the Cote d'Ivoire were also passed on to consumers (Plane, 1999). In Manila, water tariffs fell when the system was privatized through a concession in 1997, and only in 2001 exceeded their level under the public sector (Rivera, 2002). Unless provision was very efficient, or prices were close to costs, then private provision may require an increase in prices towards cost-covering levels. Therefore, price increases that reflect a move towards covering costs are not necessarily bad.

However, changes in pricing structure may mean that, even when average prices fall, those to certain consumers do not. In Argentina, strict policies on cost-reflective pricing meant that low consumption residential users for electricity saw only a slight decline in prices between 1991 and 1998, whereas high consumption residential users saw prices fall by two thirds (Dubash, 2002). Since in many countries consumption of electricity and water by residential users is cross subsidized, then rebalancing to set tariffs in line with costs would see their prices rise.

Where existing assets are concerned, prices embodied in regulatory frameworks may not always reflect the costs of serving incremental consumers, and hence price reductions seen when private participation is introduced may be temporary. Concessions awarded on the basis of the lowest price for serving consumers see taxpayers providing assets to the concessionaire at zero cost. This subsidy from taxpayers means that prices may not reflect long run marginal costs, and hence the price levels required to fund and sustain investment to bring service to new consumers. Increasing connections will require either adjustments in prices, or more subsidies. But the need to raise resources from user fees, in the absence of subsidies, is true under both public and private provision. Many of the price increases we have seen related to private provision schemes reflect this reality.

It is also argued that the cost of private finance is higher than public finance, and that prices will have to increase to reflect this difference. Although the nominal cost of private finance is indeed higher than that for public finance, this is because government borrowing costs do not price in the risks borne by taxpayers (Box 8).

Public versus Private—What Really Matters?

The preceding evidence shows that well-designed private participation schemes can produce real improvements in the quality and quantity of infrastructure services, as well as major benefits for the efficiency of provision. This is not to say that we should automatically expect the introduction of the private sector to bring about major improvements. Private infrastructure schemes that fail to see commercial risk shifted to the private sector will bring fewer benefits, if any. Risks have to be shifted to the private sector, either through competition for customers, or through effective regulatory frameworks.

Private participation has had overwhelmingly positive impacts in cases where meaningful competition for service provision is introduced, in particular telecommunications. In the absence of

²⁴ Hodge (2000) reviews studies examining the cost reductions brought about by private provision.

Box 8: DOES PRIVATE FINANCE COST MORE THAN PUBLIC FINANCE?

It is often argued that the high profits and returns sought by private investors will inevitably increase prices for infrastructure services. The nominal cost of capital faced by private firms is indeed higher than that governments face. However, the lower cost of borrowing by governments does not reflect superior capabilities to choose or manage projects. It reflects instead the recourse that governments have to taxpayers who de facto provide an open-ended credit insurance to the government. In general, the difference between the public and private costs of capital reflects the contingent liabilities that taxpayers bear, although taxpayers are not remunerated for bearing these risks. A priori therefore there is no reason to expect the social costs of private finance to be any higher than the social costs of public finance (Klein (1996)). Indeed, were governments genuinely to face a lower cost of capital than the private sector, it would be beneficial for the public sector to extend finance to all sectors of the economy, not just in infrastructure.

competition, on the other hand, private participation can produce poor results. The Philippines Long Distance Telephone Company (PLDT), the private phone company in the Philippines, was during the 1980s one of the worst performing companies in Asia. Following the introduction of competition in the 1990s, its performance improved dramatically. An assessment of the privatization of telecommunications companies in Africa suggests that privatization per se does not lead to increases in coverage but that it does when combined with an effective regulatory regime, or competition (Wallsten, 1999, 2002).

Where service provision largely remains monopolistic, the evidence suggests that where the private sector bears commercial risks, private participation will deliver better results than credible alternatives, such as attempts to strengthen public provision. There may not always be sufficient risk shifting to the private sector. The renegotiation of some infrastructure projects has probably shifted risk away from private operators and investors, and some private infrastructure projects, such as many of the independent power projects pursued in Asia, never saw commercial risk shifted to the private sector. The quality of regulation will be important in determining the extent to which pressures for efficiency are introduced. Although regulation may be difficult in countries with limited capacities, it should be remembered that the regulatory function—setting prices and quality standards, and monitoring and enforcing compliance with these—exists whether companies are in public or private hands. Experience has shown us that fundamental conflicts of interest mean that governments generally do a poor job of combining regulation with ownership of service provision. Therefore, we should expect on the whole more effective regulation when provision is from the private sector.

It would be incorrect to say that improvements can only be made through private participation. A small number of countries have seen improvements in the performance of public utilities in the 1990s, for example water utilities in Santiago, Chile and Lima, Peru.²⁵ But though improvements can be made through the public sector, there seems to be little evidence of the type of rapid improvements that have been documented following private participation in many inefficient and poorly performing utilities, and it seems by and large that these improvements in performance are not sustainable. The scope for major changes is much greater under well-structured private participation schemes. The importance of this, and the impacts it has on consumers, is borne out for example by a comparison between the water concessions in La Paz/El Alto and Cochabamba, both in Bolivia (Box 9).

²⁵ Shirley (2002). The study estimated that welfare gains in Lima would have been much higher had effective private participation been introduced, and were achieved under the threat of more substantial reform in the shape of a private concession. Santiago already had a well performing utility largely run on commercial grounds, although private participation has subsequently been introduced.

Box 9: A TALE OF TWO WATER CONCESSIONS: LA PAZ/EL ALTO AND COCHABAMBA

Although experience varies case by case, the difference in service improvements that can be realized through a private concession can be large. A comparison of the fate and performance of two concessions in Bolivia bears this out. In 1997 a 30 year concession was awarded for water and sanitation services in the adjoining cities of La Paz and El Alto. Two years later, a concession was awarded for the provision of water and sanitation services in Cochabamba. While La Paz and El Alto have seen improvements in service quality and increased connections, the Cochabamba concession was cancelled following violent demonstrations less than six months after the private concessionaire assumed services (see Box 4).

Consumers in La Paz have seen an increase in water availability from 19 to 22.5 hours per day. The private concessionaire, Aguas del Tunari, has managed to increase connections to the water and sanitation networks in La Paz and El Alto. The latter saw an increase in coverage of around 20% over the period 1997–2000. In contrast, service has languished in Cochabamba, first under public provision, then following the cancellation of the concession in 2000. Water is available there for only 4 hours per day. The proportion of households connected to the water network fell—from 70% in 1989 to 60% in 1999—at the same time as connections were increasing in La Paz and El Alto. But the prices paid by consumers for water were much higher in Cochabamba over the period from 1997 to 1999, and still remain comparable.

The failure to design and implement a workable private participation model for Cochabamba would seem to be a major missed opportunity for residents of that province. One independent study on the Cochabamba concession has concluded that “The rapid demise of the Cochabamba concession has been heralded as . . . a major popular victory in the struggle against the forces of globalization. This analysis suggests such an interpretation is mistaken. The evidence suggests that the lowest five deciles of the urban population stood to gain most from the successful implementation of the contract.” (Nickson and Vargas (2002)). The study estimates that in the long run the gains would have come from expansion of the network, which is viewed to be extremely unlikely under public provision. In contrast, much of the increase in connections in La Paz and El Alto represents an extension of service to poorer consumers.

Source: OED (2002), Foster and Irusta (2001), Barja and Urquiola (2001).

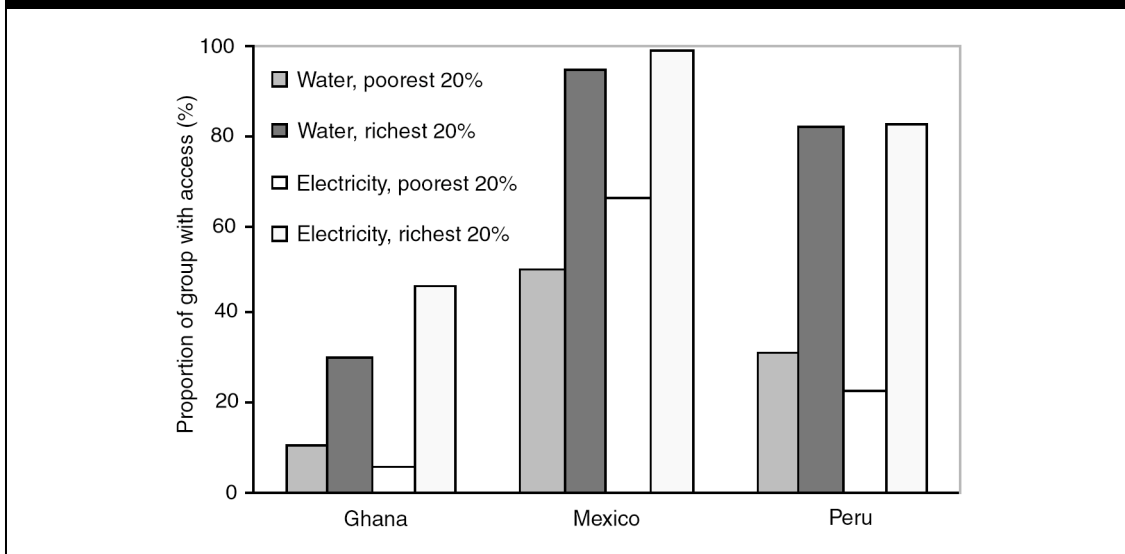
Have There Been Negative Consequences Beyond Service Delivery?

Some critics acknowledge the potential benefits that private participation can bring to the delivery of infrastructure services, but question if this comes at the cost of other important social goals. Key among these concerns is that private participation disadvantages the poor, worsens impacts on the environment, and increases opportunities for corruption.

Have the Poor Suffered?

Governments have defended public provision of infrastructure on the grounds that it provides services to the poor that the private sector will not. There is little evidence to suggest that this has actually been the case. By the early 1990s, it was clear that public utilities had done a poor job of reaching the poor (Figure 16). A review of private and public provision of water in Africa finds no evidence that public utilities are more likely to serve the poor: in fact, the reverse seems true, with established private participation schemes seeing higher coverage of poor households (Clarke and Wallsten, 2002).

Has the situation changed with the introduction of private provision? In some cases, the answer seems to be yes. In Chile, during the first 10 years of private operation access to power services increased greatly for low income groups (Estache, et al., 2000). In La Paz, following the privatization of all utility services, the poorest 20% of the population saw increases in access rates for all three services, following little increase in coverage during public provision in the previous 5 years. El Alto, the poorer neighbor city of La Paz, saw even larger gains in access to water and sanitation services (Foster and Irusta, 2001). In the Colombian cities of Cartagena, Barranquilla

FIGURE 16: POPULATION WITH ACCESS TO WATER AND ELECTRICITY, BY INCOME QUINTILE

Note: The figure shows the proportion of each income group having access to each service.
Source: World Bank (1994).

and Tunja, all with private participation, between 60-80% of new connections have gone to the poorer tercile. These private utilities have connected more of the poorest consumers than has been the case for utilities in major cities where no private participation was introduced.²⁶ Following the introduction of private participation in the provision of water in Dhakar, Senegal, coverage of low-income households increased by 3.2% per year; this privately managed utility did better at connecting the poor than the 8 publicly-managed utilities in Africa for which data was available (Clarke and Wallsten, 2002). A study of Latin America found that in 9 of 10 cases studied, private participation in the provision of utility services either reduced poverty or had no effect (McKenzie and Mookherjee, 2002).

The extension of network electricity and water services to the poor represents a major reduction in the prices they pay for these services. Urban households in developing countries without network access pay per unit around 10-30 times the piped water price to buy water from informal vendors.²⁷ Households without access to electricity also rely on more expensive forms of energy—for example, paraffin can cost 10 times as much as electricity for lighting, and a dry cell battery to power a radio costs about 1,000 times as much per unit of energy as does mains electricity.

Some concessions have seen more rapid increases in coverage because the regulatory frameworks allow flexibility in the way households are served. In Manila, service coverage targets for the water concessions can be met through third parties who on-sell water to households. In El Alto,

²⁶ For the consumers in the lowest income group, connections increased over the period from 1995-99 by between 30-50% for the utilities with private participation (Cartagena, Barranquilla and Tunja). For those which were still publicly operated (Bogota, Medellin and Manizales), connections to this group increased by 10-30%. In contrast, the public utilities saw a larger increase in connections for the richest consumers than was the case for the privately run utilities (World Bank (2001)).

²⁷ For example, the cost of water from vendors ranged between 10-34 times that for piped water in four cities in Latin America (Gran, cited in Tynan, 2000).

the private concessionaire has introduced the lower cost condominium sewer system to increase uptake of connections to the sanitation network. Governments have to pay attention to the detailed design of regulatory frameworks, both to provide incentives for expansion and to allow the use of these intermediate solutions. This will include in addition the extent to which the charges levied for connection to the network are affordable by the poor.

However, the poor who already have network connections may suffer when prices increase as private participation is introduced, or may not benefit to the same extent as larger users when the efficiency improvements lead to reductions in prices. Since the poor tend to spend a higher proportion of their income on essentials such as energy, water and transport services, price increases can have a significant and negative impact on them. Governments do have options to try to mitigate the impact on the poor of required price increases. This might include subsidies for expansion of the network to poor areas to defray connection costs, or consumption subsidies such as lifeline tariffs, which subsidize low levels of consumption. Many lifeline schemes have seen generous provisions that benefit many consumers other than the poor, and often fail to provide benefits for a substantial number of the poor.²⁸

Has the Environment Suffered?

One recent study of electricity reforms in six countries has argued that, in five of these cases, reforms failed to meet important environmental goals, for example that incentives related to energy efficiency were not adequately reflected in regulatory frameworks.²⁹ Given the many difficult policy issues involved in introducing private participation, it may not be surprising that in some cases policy-makers placed less emphasis on environmental goals. And there is now greater recognition of the importance of these issues.

But this is not the same as saying that private participation will worsen the environmental impacts of the production and delivery of infrastructure services compared to public provision. In fact, there are several reasons to believe that these may be better addressed with private provision.

First, under public ownership environmental norms governing the delivery of infrastructure services were often not clearly articulated. Introducing private participation creates a need to clarify those norms so that investors understand their rights and obligations. Where governments set the standards will depend on many factors: there is no reason in principle why they would choose lower standards because the private sector is involved, especially given the high level of political attention given to such transactions.

Second, even when environmental regulations were articulated, enforcement was often poor under public ownership. There is strong evidence to suggest that the enforcement of environmental norms is more effective, and compliance better, with private companies.³⁰ Fundamental conflicts of interest meant that governments had weak incentives to sue another part of government, and enterprises and their managers did not have their own investment at risk through fines and penalties levied

²⁸ Programs to subsidize the consumption of electricity in many countries frequently cover levels of consumption well above that used by poor households. For example, in Honduras, the bulk of the \$17mn annual subsidy goes to households consuming between 100 and 300 kWh per month, very few of whom are poor (Estache et al (2002)). The subsidy program for utility services in Colombia reaches nearly all poor households, but with a substantial cost: around 80% of the program beneficiaries are the non-poor. In contrast, the targeted subsidy program used in the water sector in Chile is designed so that relatively few, around 30%, of the non-poor are beneficiaries. However, it excludes relatively large numbers of the poor (Gomez-Lobo and Contreras in Estache, et al., 2002).

²⁹ Dubash (2002). The case studies cover Argentina, India, Indonesia, Bulgaria, Ghana and South Africa. The study argued that only in South Africa were issues related to sustainable development goals incorporated into over-all reforms.

³⁰ Private plants (whether foreign or domestically owned) in Bangladesh, India, Indonesia and Thailand were found to make greater efforts to reduce pollution than their public counterparts. In Indonesia, private plants were found to be less polluting than public plants, even after age and technology were controlled for (World Bank, 1995).

for non-compliance. This is probably because of the arm's-length relationship between the regulators and the regulated, and that the owners of private companies feel the pain of financial penalties (Dasgupta and Wheeler, 1997; Hartman, Huq and Wheeler, 1997; Wang and Wheeler, 1996).

Third, the private sector may bring in resources to finance environmental mitigation measures, although this will only happen if revenues support this (Lovei and Gentry, 2002). Competition and new technologies can also help: in both the UK and Argentina, liberalization of the power sector led to the entry of new gas-fired generating capacity that improved thermal efficiencies and reduced production of CO₂. Finally, the move to cost reflective prices can help curb wasted uses of scarce resources like water, and reduce the excessive consumption of energy that may also have damaging effects on the environment. Therefore the impact on the environment could well improve following the introduction of private participation. However, there do not appear as yet to be any comprehensive studies on this issue.

Have Corruption Concerns Been Exacerbated?

There are also concerns that private participation in infrastructure may increase opportunities for corruption. Privatization does present the possibility of having lucrative companies taken over by cronies or relatives of those in government. It also opens up the possibility of bribes related to the award of concessions or leases. While allegations of corruption are easier to make than to substantiate, there are instances where this has occurred in the move to the private provision of infrastructure.

However, it would be naïve to believe that infrastructure was immune from these concerns under public ownership. Corruption possibilities in equipment supply and construction contracts are probably at least as large as those related to the award of concessions, for example. Other forms of corruption have been documented in public utilities, including offering jobs based on political connections or payments, and widespread graft by employees who extract informal payments from customers in exchange for reduced utility bills or shorter waits for scarce connections. Some publicly-operated power companies in South Asia see revenues collected for less than 50% of the power generated, with highly organized systems involved (Lovei and McKechnie, 2000). Private participation in infrastructure can reduce the extent of this corruption, as has been seen in utilities in Latin America, for example. The private sector more generally faces stronger incentives to minimize costs and reduce leakages than their public sector counterparts.

Governments committed to reducing corruption can adopt a range of measures to enhance the transparency of the award and the regulation of transactions. The capitalization program run in Bolivia saw the use of a number of measures to increase transparency, including the opening of bids for companies live on television.

LESSONS OF EXPERIENCE

Private infrastructure schemes that are well designed can bring real benefits. But projects and reforms based upon unrealistic policies or expectations will bring disappointment to governments, investors, and consumers. What are the main lessons from 20 years of privatization and liberalization of infrastructure? First, there are no free lunches. Governments must address the question of how infrastructure services are paid for, which centers on pricing. Second, particularly where services to the poor are concerned, governments should allow for a range of service options when developing private participation schemes. Third, competition can help to reduce prices and expand access, and should be used to the maximum extent possible. Fourth, the quality of regulation matters. Infrastructure is complex, and the key is to develop regulatory frameworks that are credible to investors and viewed as legitimate by consumers. Fifth, financing issues in particular related to handling exchange rate risks will remain difficult but have to be addressed. Finally, the politics of all of this matter. Technocratic solutions may exist, but building consensus and ensuring trust in and support for these policies will remain challenging.

Pricing and the Fundamentals

Succumbing to populist pressures, most governments set prices for infrastructure services below the levels required to finance investments in meeting demand, and in some cases even below that required to serve existing consumers. Utilities were also not pressured to collect bills for services delivered. Going forward, governments will have to explicitly recognize that only consumers or taxpayers pay for infrastructure services. Unless tax revenues can provide sufficient levels of subsidies, revenues from user fees will have to rise, through price increases and improved efficiency in collections.

Some difficult and expensive lessons have already been learned in the rush towards private participation. The last decade has shown that green-field bulk supply schemes such as independent power projects can have cost-covering prices for their output embedded in their contracts, but

that this may count for nothing if overall sector revenues are inadequate. But governments need to appreciate that the contractual commitments made in private infrastructure projects such as these are binding and if violated can lead to substantial liabilities. Governments have been sued for breach of contract for IPPs in Indonesia and water projects in Latin America. This is the source of discipline on pricing that was often lacking under public ownership. But it does require governments to make a serious assessment of the obligations they are entering into, and to understand their costs and consequences.

In increasing prices towards cost covering levels, and in pursuing social objectives, such as rolling networks out in high cost areas or serving poor consumers, subsidies can be effectively employed. A number of recent approaches have used output-based aid approaches, where the payment of the subsidy is made conditional on the private operator actually having delivered the specified output or performance measure (see Box 10).

Promoting Different Routes to Serving Consumers

Under public provision, governments often decided to set high quality standards and engineering approaches imported from developed countries. This tradition has often been maintained when private participation is introduced, meaning that services can be costly and unaffordable for lower income consumers (Baker and Tremolet, 2002a and 2002b).

When introducing reforms, governments can help poorer or unserved consumers receive service by allowing for a range of alternatives in service provision to the standard type of connection through the incumbent network operator. This has been done for the Manila water concessions, and arguably has helped extend the supply of water to poorer households (see Box 11). The private concessionaire in La Paz/El Alto has also used lower cost technology in expanding sanitation services to poorer areas.

Sector reforms can encourage free entry into areas unserved, or poorly served, by the main network provider. Where this is allowed, domestically owned and financed small scale providers spring up, such as in the water sector in Paraguay where over 400 aguateros compete to supply urban fringe communities, and in the power sector in Cambodia where around 600 entrepreneurs run small systems powered by diesel generators and supply 5% of national electricity consumption.

Box 10: SUBSIDIZING SERVICE EXPANSION THROUGH OUTPUT-BASED AID

Many governments have been concerned that the private sector may not invest in expanding networks to thinly-populated rural areas. To address this, some governments have designed schemes which deliver public subsidies, but are designed so that performance risk is on the private sector, and subsidies are only paid when services are delivered.

Peru has developed such a scheme for supporting the provision of payphones in rural areas following privatization of the telecommunications sector. Under this arrangement, a “least subsidy” approach is adopted where operators bid for the minimum subsidy required to provide pay phones in targeted rural areas. The bulk of this subsidy is paid in semiannual installments for 5 years following installation of the payphone, contingent on compliance with performance standards.

Guatemala is also implementing an output-based aid scheme in the expansion of the country’s electricity network in rural areas. Under this scheme, a total of 280,000 new residential connections will be undertaken by the private owners of the companies which distribute electricity in rural areas. The companies are reimbursed for this through a fixed payment of \$650 per connection, the bulk of which is made available once the connection has been made.

Source: Cannock (2001), Harris (2002).

Box 11: SERVICE OPTIONS UNDER THE MANILA WATER CONCESSIONS

Manila's water and sanitation network was privatized in 1997 under two separate concessions. Both concessions include an obligation to expand services, backed by financial penalties for non-compliance. To ensure there is a balanced program of expansion, targets are set for individual municipal areas. However, the contract allows considerable freedom in how the connection targets are met. Firstly, they do not specify the input requirements for concessions. Secondly, the contracts do not define coverage as those with a standard household connection. Instead, coverage targets can also be met by alternative providers within the concession zone. This has helped the expansion of services to poorer households.

In response to this, the two companies, Maynilad and the Manila Water Company (MWC), have engaged on a program of system expansion, and the number of residential consumers increased from 740,000 in 1997 to more than 900,000 in mid-2001. Both companies operate programs whereby in poorer neighborhoods, the costs of construction and affordability issues are reduced through cheaper small diameter pipes. Many consumers are also getting water sold in bulk by the companies to third parties, who are local firms. Inpart Engineering, the largest alternative provider of piped water services in Manila, purchases bulk water from MWC and uses plastic hoses and small pipes to supply customers. This strategy has allowed MWC to supply these consumers who, under the increasing block tariff in place under the contract, would be unprofitable to serve by direct connections with the company itself.

Source: Rosenthal (2002).

Competition

For much of the post-Second World War period, infrastructure was viewed as a natural monopoly. But advances in technology and economic thinking created new opportunities³¹ for introducing competition for consumers of infrastructure services. In some cases, this represents competition between different networks—for example between long distance networks, rail freight versus trucks. In other cases, it involves competition over the same network, with access to bottleneck facilities being a critical determinant of how effective competition.

Competition has proven a powerful force for reducing costs, driving innovation and expanding services in the telecommunications sector. It is more difficult, but possible, to introduce competition in other sectors such as electricity and natural gas. In the electricity sector, although much quoted, the problems California encountered in introducing bulk power markets are in good part due to design problems (Box 12). There are likely to be size thresholds in establishing workable competition, meaning that small markets that cannot accommodate a sufficient number of players may be better off seeing some form of regulated competition, as has been introduced in power markets in Argentina, Chile and Peru, for example. Competition may be difficult to introduce in very small markets, as the size of the market might lead to conditions of natural monopoly.

Regulatory Frameworks

Many infrastructure services will be natural monopolies,³² whether in public or private hands. Hence, the regulatory function exists whether or not private provision is involved. As argued earlier, fundamental conflicts of interest mean that governments generally do a poor job of combining regulation with ownership of service provision.

³¹ One study reported gains from deregulation in the US in the period to 1990 to be \$9–14 billion for airlines, over \$1.5 billion for telecommunications, and \$7–10 billion for freight rail (Winston, 1993).

³² In the case of a single product, economies of scale mean that the average cost of production decreases as output expands. Since the cost of production may see economies or diseconomies of scale at different levels of production, then the existence of natural monopoly will be driven by the range of economies of scale relative to market demand (see Train, 1994).

Box 12: DEVELOPING COMPETITIVE POWER MARKETS

The California power crisis has led many to question the wisdom of liberalizing and reforming electricity markets. But many of California's problems relate to errors in market and regulatory design—for example not allowing companies to hedge the costs of power purchases in contracts, and preventing them from passing on costs over which they had no control, in this case purchases from the spot market, to final consumers. However, the experience in California does raise two fundamental issues with regard to power market design. The first of these relates to the susceptibility of power markets to strategic behavior of participants exploiting market power. The second relates to how markets allocate risk in the event of shocks, such as the reduction in the availability of hydroelectric generation, and adjust to equate demand and supply.

In the event, California's market seems to have been susceptible to strategic behavior, though the opportunities for doing this were increased by the lack of long term contracting which would have reduced generators interests in seeing higher spot market prices. Another bid-based pool in England and Wales also suffered from strategic behavior. Following the transition to a bilateral contracting market, prices for base load power have fallen as much as 20%, reflecting excess capacity, although some of this may be related to divestments by major market players which occurred prior to the change in market design. Most bulk markets in Latin America, for example in Chile, opted for different approaches, with half-yearly cost-based bidding being used for the dispatch of plant, with an administered capacity payment. This may be more suitable particularly for smaller markets that may be more prone to the exercise of market power.

Imbalances between demand and supply can lead to major price increases, as seen in California, which can in turn impact the sustainability of reforms, and the mechanisms markets use to equate demand and supply in these situations will be critical. Finally, many power sectors in developing countries still have un-creditworthy participants. Introducing a bulk power market in a situation where companies are unable or unwilling to pay for services received is unlikely to produce good results, as happened in the Ukraine.

Source: Borenstein (2001).

In countries with relatively little capacity, many of the technical functions of regulation can be contracted out. Highly specified contracts may provide comfort to investors, but adjustments will have to be made via renegotiations, which can involve significant transactions costs. Increasing the discretion in regulatory systems can facilitate adjustment to new events, but exposes investors to political and regulatory risks. In the end, however, there will be an unavoidable need for some form of discretion, which cannot so readily be contracted out. These discretionary decisions are probably best handled by agencies that are technically competent and insulated to some degree from short-term political pressures.³³ Around 200 such agencies have been created in developing countries over the last decade. A number of initiatives are presently supported by the Bank Group to build capacities in these agencies (see Box 13).

The last decade has thrown up good and bad experiences with regulatory agencies and the regulatory frameworks they implement. Issues of legitimacy have important implications for the details of the regulatory framework, in particular how they allocate risks and rewards. High-powered incentive regimes such as price caps were advocated because, by placing more risks on the private sector, they would provide strong incentives for reducing costs. This would be beneficial to consumers over time since regulators could pass on these cost savings to consumers in future regulatory reviews. But these raise issues of political legitimacy: the efficiency savings only arise if companies made substantial profits that can then later be passed on as lower costs. The presence of these profits may undermine public confidence in the regulatory system.

³³ Smith (1997). There is also evidence from Latin America that increased independence of regulatory bodies increases levels of private investment (Pargal, 2002).

Box 13: SUPPORTING NEW REGULATORS

When introducing private participation in the provision of infrastructure, governments also looked to build up their capabilities as regulators of services to be delivered by private firms. In many cases they sought to do this by creating autonomous regulatory bodies, of which there are now around 200 in developing countries worldwide.

The World Bank complemented assistance provided at the country level with the development of broader capacity building programs which created learning networks and initiatives for regulators. In 1996 the Bank established the International Forum for Utility Regulation (IFUR), whose twice-yearly training program, delivered in cooperation with the University of Florida has been attended by more than 1000 regulators from 115 countries. This initiative has been complemented by two regional capacity-building efforts, the South Asia Forum for Infrastructure Regulation (SAFIR) and more recently the African Forum for Utility Regulation (AFUR). Both of these promote the dissemination of experiences within regions, and seek to promote the exchange of ideas between regulators from different countries that are facing similar problems. The World Bank has also been active in developing programs which support regulators in Latin America and China in collaboration with local universities, as well as programs targeted at transport regulators.

The use of more traditional cost-of-service tariff regulation can provide investors with more certainty over key variables and, since it involves less forecasting in information-deficient and possibly volatile environments, may be more appropriate in countries with limited experience in regulation (Newbery, 2000). Yet, this approach provides lower incentives for efficiency than, for example, price-cap regulation, and means that consumers end up bearing more of the risks. In Latin America, concessions that have rate-of-return regulation seem less likely to be renegotiated than those that have price caps, most likely because of this reason (Guasch, 2003). In practice, most schemes have tended to be hybrids, with the goal being to ensure that as far as possible the regulated company is rewarded for factors under its control, and not penalized for those, which are out of its control (Alexander and Harris, 2001).

Concerns over renegotiations may also raise questions of how well regulatory regimes can be enforced in the face of strategic behavior by investors (Guasch, Laffont, and Straub, 2002). Companies may seek to shift risk towards consumers or taxpayers by renegotiating key elements of the regulatory framework. If risk shifting is to genuinely happen, however, companies have to be allowed to fail. Governments are worried about disruptions to service in the event that the private company exits. A review of projects that have been cancelled suggests that these concerns are often exaggerated. Performance bonds can help to ensure that the private operator stays around long enough for alternative management measures to be introduced, so that service disruptions are minimized. Governments also need to decide whether the regulatory framework represents sensible and realistic goals. In some cases, the best approach will be for governments to stick to their guns, in particular where there are no external circumstances affecting the financial viability of the project and where the private sector seems as if it engaged in opportunistic behavior in bidding for the project.³⁴ Provincial governments in Argentina did precisely this with two projects, Rosario Port and the Buenos Aires Province water concession, both situations where winning bidders paid well over the odds in concession fees and attempted to renegotiate this once in place. But deciding when this should happen in practice is difficult, particularly assessing whether problems have arisen because of external factors or those under the company's control.

³⁴ For example, in cases where a concession is bid out on the basis of the lowest tariff or the highest annual concession fee, companies may bid strategically, offering low tariffs or high payments, and hope to renegotiate this once in situ.

Financing and Exchange Rate Risks

Many private infrastructure projects have been badly affected by the series of recent macro-economic shocks in emerging markets. Part of the impacts relate to falling demand for services as real incomes contract. The other part relates to increases in the cost of financing in local currency terms, as much of the funding for these projects was denominated in dollars or other foreign currencies. Setting cash flows at the levels to support private investments will require the correct estimation of the cost of capital, and currency risk will have to be reflected in this. This is not a risk specific to the private sector. Public infrastructure projects would also face disruption, not only through reduced demand but because governments and public enterprises will often have borrowed in foreign currencies.

The problems of dealing with these risks in private infrastructure projects are not new. It was a persistent difficulty for investors in Latin American utilities in the period 1930s–50s with governments then also reluctant to allow full indexation. The Brazilian Traction, Light and Power company, which served Sao Paulo and Rio de Janeiro originally had a “gold clause” to protect rates against devaluation of the real, but this was repudiated by the government in 1933. The lack of exchange rate indexation was particularly acute because by and large regulatory statutes also specified that assets had to be valued at historical costs (Gomez-Ibañez, 1999).

Approaches during the project finance boom in the 1990s centered on the validation of financing decisions, with indexation to cover devaluation risks. When substantial devaluations did occur, governments were unable to increase user charges during the midst of a crisis, in turn making it difficult for them to honor commitments on indexation in these contracts. As a result, this approach has less credibility now.

The long run solution to the currency mismatch problem would be to develop local capital markets so that long term local currency financing and hedging opportunities are available. There has been some recent increase in the use of local currency bonds for infrastructure financing, and raising funds from domestic pension funds can help to raise local currency financing. But this is still restricted to a few countries.³⁵ In the absence of longer term financing, some private projects have used shorter-term local currency financing, as was the case for many projects in the Mexican toll roads program. Although this reduced the risks from currency mismatch, it exposed them to big increases in financing costs when interest rates rose following the devaluation of the peso.

Going forward, until long-term capital markets are fully developed, the best approaches may be to rely on measures that use self-hedging where project prices are linked to domestic inflation. This can be achieved through a number of sources. One approach might be to focus on smaller projects that stand a better chance of being financed through local capital markets. The second might be through using less debt, which would provide more of a cushion in difficult times. A third approach might be to develop credit enhancement structures that provide backstops in the event that project revenues fall below critical thresholds. The financing for the Tiete project in Brazil used such an approach, with project prices are indexed to local inflation with liquidity mechanisms to tide the project over during the period when local inflation catches up with exchange rate devaluations.³⁶ In the end, if projects cannot be financed on this basis, then support provided by taxpayers to mitigate exchange rate risks will represent a subsidy for the project concerned.

³⁵ Chile, Mexico, Brazil, Peru and Bolivian in Latin America and Malaysia, Thailand and South Korea in East Asia are countries which have seen substantial use of domestic currency markets to fund infrastructure.

³⁶ OPIC provided cover for the project in the eventuality that project revenues fell below pre-specified levels required to make debt payment covenants and meet other critical operating costs (*Infrastructure Journal*, February 2002 Special Issue).

The Politics Matter

Introducing the private provision of infrastructure is clearly politically challenging. Prices often have to be rebalanced, increasing prices for some consumers, or increased where subsidies were high. Overstaffing of public enterprises may imply substantial job losses, and the companies may be taken over by foreign multinationals. The potential profits involved mean that inevitably there will be suspicions of corruption. To succeed, governments will have to manage the politics of reform. Building consensus for reforms through public education and consultative mechanisms is important. Stakeholders that may be adversely affected by reforms such as labor also need to be treated fairly. The welfare gains present in most reforms should allow the government to compensate those who are adversely affected, for example workers laid off during labor force rationalization.

More broadly, ensuring transparency in the award and oversight of private infrastructure schemes will play an important role in reducing concerns over corruption or impropriety. Indeed, there is scope for governments to go much further here (see Box 14).

The politics of reform are not just about introducing change, but also maintaining the conditions that will allow investment to take place to meet growing demands and connect new consumers. Prices for infrastructure services have been politically sensitive, and will remain so until competition can be introduced at a sufficient level to provide consumers with choice and reduce the need for regulation. Of the utility services, only telecommunications has seen sufficient competition thus far to begin to reduce the need for tariff regulation in most countries. Power and water pricing will remain politically charged. Part of the difficulty lies in the fact that viewpoints and expectations change and that consumers cannot see the counterfactual, that is, what would happen were resources not to be mobilized through price increases. Perspectives also change as consumers take for granted levels of service that the public sector could never deliver. Maintaining good policy frameworks will be an ongoing task.

Box 14: ENHANCING TRANSPARENCY IN PRIVATE INFRASTRUCTURE SCHEMES

Suspicious of impropriety about private participation schemes seem to arise more often when these projects have not been competitively bid, and where the public cannot access information or verify key parameters of the regulatory frameworks, such as promised price increases, and anticipated rates of return. Placing licenses and concession contracts relating to monopoly services fully in the public domain, and having these easily accessible by consumers, could substantially increase transparency in the oversight of private infrastructure schemes. Concession contracts and licenses rarely contain any information of genuine commercial confidentiality. Placing them in the public domain would allow consumers to see what is expected to happen to prices, and quality of service, as well as understand better their rights and obligations. Competitive bids for private infrastructure projects, and clear mechanisms for dealing with unsolicited proposals, will also enhance public confidence in the integrity of these schemes. And regulatory systems that allow full participation by consumers in the regulatory process will also be more transparent, robust and legitimate.

GOING FORWARD

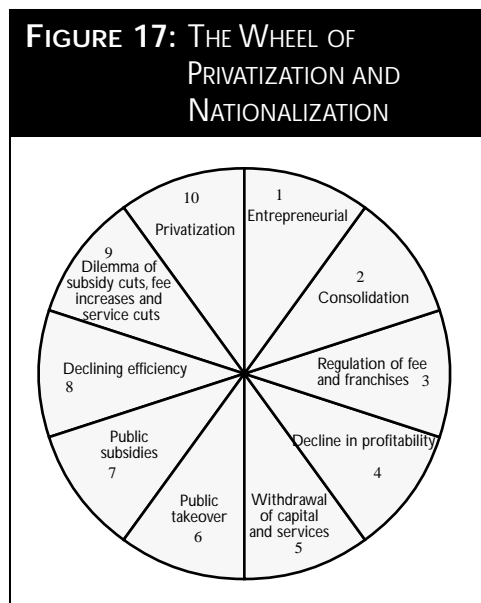
In the present circumstances, what policies should governments pursue to ensure their citizens receive better infrastructure services? Are we likely to see some governments revert to public provision and what implications will this have, in particular for providing modern infrastructure services to those who presently lack them? There are still many governments, encouraged by donors, that are continuing to push forward with plans for the private provision of key infrastructure services. With apparently less interest in these opportunities, should they re-think their strategies, at least for the time being, particularly where private financing is sought?

A Return to Public Provision?

Many of the public utilities that were privatized in the 1980s and 1990s, for example in the UK and parts of Latin America, were private at the start of the post Second World War period. In the cases of Brazil and Argentina, these were nationalized as recently as the 1960s and 1970s.³⁷ Entrepreneurial infrastructure businesses became more tightly regulated over time for various reasons (Klein and Roger, 1995). This led to reduced returns, and then less investment and then a lower quality of service. In many countries this eventually led to a takeover by the public sector. Inefficiencies and more populist pricing reduced resources for investments, and with governments unable to support this from tax revenues prompted a move back to private provision (see Figure 17).

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. However, for these services, such as power and water, the political economy of pricing will remain complex and

³⁷ See Gomez-Ibañez (1999) for a discussion of the nationalization of electric utilities in Latin America in the post Second World War period.



Source: Gomez-Ibañez and Meyer (1993).

difficult, and some countries may fail to successfully establish policies that address this.

But it seems unlikely that governments will be any more successful in the future at providing infrastructure services than they were before. Difficulties in imposing rational pricing policies and accountability on government companies, and the use of these companies for political and self-interested motives, will remain. Governments by and large had to abandon public provision because they lacked the fiscal resources to continue supporting these loss-making and inefficient service providers. With competing, and growing, demands on these resources, for example expenditures on social services, governments find themselves still in this position.

Strategies for Private Participation

But what strategies should governments that are still focused on reform and pursuing private provision follow? One course of action might be to delay for the time being attempts to introduce private partici-

pation. This would allow time for market sentiment to improve, and, according to some, for the performance of very inefficient public enterprises to be improved, making them more attractive to potential bidders. This last approach has been advocated by many who suggest that some of the reversals we have seen have come because governments introduced the private sector too soon, and that commercializing provision under the public sector for some period before deeper reforms will lead to a greater chance of success for private provision.

This course has a number of possible drawbacks, however. Firstly, it has often proven hard to improve the performance of public enterprises, and in particular to turn round highly inefficient ones. The private sector has shown that, even in very difficult environments, for example the power sector in Georgia, it can substantially improve efficiency and the quality of service. Relying on public provision may also reduce pressures to adopt more rational pricing policies, which, coupled with likely difficulties in improving efficiency, will also increase reliance on funding from taxpayers rather than users. This may reduce the resources available to invest to expand services to the poor and those who live in rural areas. This can in turn have implications for poverty reduction and economic growth.

A second response might be that since the private sector is more reluctant to place its capital at risk in developing country infrastructure projects, governments that are considering concessions or divestitures should instead pursue options such as leases and management contracts instead. Management contracts and leases can lead to improvements in operating performance and efficiency, but they have some drawbacks compared to deeper forms of private participation. Management contracts in particular are often short term, and might not lock in improvements in efficiency and productivity.³⁸ It is probably also reasonable to assume that efficiency improvements will, all things being equal, be higher under schemes that have stronger incentives, for example, concessions or divestitures. Finally, since the private sector is not financing investment, approaches such as management contracts provide fewer pressures to commit to cost-covering tariffs. Hence, improvements in internal resource mobilization may be more limited and these approaches will also rely to

³⁸ Northern Electric in Namibia saw a major reduction in losses during a 5 year private management contract. But services have since been taken back by the public sector, and it is not clear that the good commercial performance of the utility will be maintained.

a considerable extent on public financing, which may be limited. Therefore there should be realism about the likely impact and benefits of these types of private participation schemes. Nonetheless, well designed management contracts and leases have produced positive results and lead to improvements in infrastructure provision, and therefore will continue to play a role.

What if governments still wish to undertake deeper forms of private participation, such as concessions and divestitures? During the 1990s, when a growing number of firms began pursuing private infrastructure projects in developing countries, even deals that were not well structured could attract interest from bidders. Under the present market conditions, projects will require sound cash flows, and the mitigation of political and regulatory risks, to attract bidders at all.

Adopting and maintaining the policies discussed in the preceding section, particularly with regard to pricing and reforms in regulation may be sufficient in some countries to achieve this. But in others, this may not be enough to bring investors to the table. Prices may be too low to sustain investment programs, and it may not be possible to increase them rapidly. Some governments may have a relatively short track record in private provision, and the reliability of regulatory institutions and the strength of government commitments to key contractual provisions may not be clear.

If strong cash flows cannot be delivered through cost covering prices, subsidies can make up the gap. Public financing—which would have been required anyway under public provision, management contracts and leases—can be used to supplement user fees and leverage private investment. Making these subsidies payable when pre-defined targets are achieved—such as new connections—places performance risk on the private sector. Therefore, even in situations where public financing is required, output-based subsidy approaches could help to leverage in some private financing—as we have seen in subsidy programs for telecommunications and electricity in Latin America. Experience shows that public funds can help to effectively mobilize private resources, although the scope of this may vary from sector to sector.³⁹ Governments could also consider providing more comfort to investors and operators through guarantees. These would have to focus only on the mitigation of political and regulatory risks: guaranteeing commercial risks will reduce private sector efforts to screen projects, and raise the likelihood of bad projects being undertaken. Areas that could be addressed would be government commitments to pre-defined regulatory frameworks, dispute resolution processes and the payment of contractually obligated subsidies (Gupta, et al., 2002).

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 more simple: the argument is about less infrastructure versus more.

The vast scale of unmet basic infrastructure needs in developing countries makes this a pressing issue to confront. Around 2 billion are estimated to lack an electricity connection, 1.1 billion lack a safe water supply, and 2.4 billion do not have access to improved sanitation. At the end of the day meeting these needs will hinge on how effectively policy and regulatory frameworks mobilize resources. Average annual investment in developing country private infrastructure projects since 1990 has been around \$60 billion per year. Annual global savings were around \$7 trillion in 1999.⁴⁰ Resources for investment are available. Can governments put in place and maintain the regulatory and policy frameworks that will bring in these resources on a sustained basis?

³⁹ The “least subsidy” schemes operated by a number of Latin American countries for the expansion of their telecommunications networks in rural areas have on average leveraged between 2–6 times as much private funds as the level of public subsidy.

⁴⁰ World Bank SIMA database.

REFERENCES

- Alexander, Ian, and Antonio Estache. 2000. "Industry Restructuring and Regulation: Building a Base for Sustainable Growth: Lessons from Latin America." *Development Southern Africa* 2000 17(3).
- Alexander, Ian and Clive Harris. 2001. "Incentive regulation and multi-year price controls: an application to the regulation of power distribution in India." *International Journal of Regulation and Governance Volume 1* Tata Energy Research Institute
- Apoyo Opinion y Mercado. 2002. Survey. Lima, Peru.
- Baker, Bill and Sophie Tremolet. 2002a. "Utility reform - regulating quality standards to improve access for the poor." *World Bank Viewpoint Note No. 219*. Washington, D.C.: World Bank.
- Baker, Bill and Sophie Tremolet. 2002b. "Regulating quality - let competing firms offer a mix of price and quality options" *World Bank Viewpoint Note No. 221*. Washington, D.C.: World Bank.
- Barja, Gover and Miguel Urquiola. 2001. "Capitalization, Regulation and the Poor: Access to Basic Services and the Poor." *World Institute for Development Economics Research (WIDER) Discussion Paper 2001/34*. Helsinki: WIDER.
- Barnett, Steven. 2000. "Evidence on the Fiscal and Macroeconomic Impact of Privatization." *Working Paper No. 130*, Washington, D.C.: IMF.
- Benitez, D., O. Chisari, and A. Estache. 2000. "Measuring the Fiscal-Efficiency-Distribution Tradeoffs in Argentina's Utilities Privatization." World Bank Institute, Washington, D.C., and World Institute for Development Economics Research, Stockholm. Processed.
- Bizmier, 2002. "National US Market Vitality Research Profile." Mimeo.
- Borenstein, Severin. 2001. "The Trouble with Electricity Markets and California's Electricity Restructuring Disaster." Draft. University of California Energy Institute.
- Bortolotti, Bernardo, Juliet D'Souza, Marcella Fantini and William Megginson. 2001. "Sources of Performance Improvement in Privatized Firms: A Clinical Study of the Global Telecommunications Industry." Under journal review.
- Brook, Penelope and Suzanne Smith (editors). 2001. *Contracting for Public Services: Output-based Aid and Its Applications*. Washington, D.C.: World Bank.

- Calderon, C., W. Easterly and L. Serven. 2002. "How did Latin America's Infrastructure Fare in the era of Macro-economic Crises?" *Working Paper No. 185*. Banco Central de Chile.
- Cannock, Geoffrey. 2001. "Telecom subsidies-output-based contracts for rural services in Peru." *World Bank Viewpoint Note No. 105*. Washington, D.C.: World Bank.
- Chisari, Omar., Antonio Estache, and Carlos Romero. 2000. "Winners and losers from utility privatization in Argentina : lessons from a general equilibrium model." *Policy Research Working Paper 1824*. Washington, D.C.: World Bank.
- Clarke, George R.G. and Scott J. Wallsten. 2002. "Universal(ly Bad) Service: Providing Infrastructure Services to Rural and Poor Urban Consumers." Washington, D.C.: World Bank.
- Crampes, C., and A. Estache. 1998. "Regulatory Trade-Offs in Designing Concession Contracts for Infrastructure Networks." *Utilities Policy* 7:1–13.
- Dasgupta, Susmita and David Wheeler. 1997. "Citizen complaints as environmental indicators : evidence from China." *Policy Research Working Paper*. Washington, D.C.: World Bank.
- David, Cristina C. 2000. "MWSS Privatization: Implications on the Price of Water, the Poor, and the Environment." *Discussion Paper Series No.2000-14*, Philippine Institute of Development Studies.
- David, Newbery M. 2000. *Privatization, Restructuring, and Regulation of Network Utilities*. Cambridge, MA: MIT Press.
- Dubash, Navroz K. (editor) 2002. "Power Politics: Equity and Environment in Electricity Reform." Washington, D.C: World Resources Institute.
- ESMAP. 1993. "Nigeria: Issues & Options in the Energy Sector." *Report Number: 11672-UNI*. Washington, D.C.: World Bank.
- Estache, Antonio. 2002. "Argentina's 1990s utilities privatization: a cure or a disease." Draft. World Bank.
- Estache, A., and M. Fay. 1995. "Regional Growth in Argentina and Brazil: Determinants and Policy Options." World Bank. Washington, D. C. Processed.
- Estache, A., and M. Rodriguez-Pardina. 2000. "Light and Lightning at the End of the Public Tunnel." In L. Manzelli, ed., *Regulatory Policy in Latin America: Post-Privatization Realities*, Miami: North-South Center Press, University of Miami.
- Estache, Antonio and Eugene Kouassi. 2002. "Sector Organization, Governance, And The Inefficiency Of African Water Utilities." World Bank Policy Research Working Paper 2890. Washington, D.C.: World Bank.
- Estache, Antonio, Andres Gomez-Lobo, and Danny Leipziger. 2000. "Utility Privatization and the Needs of the Poor in Latin America: Have We Learned Enough To Get it Right?" *Policy Research Working Paper 2407*. Washington, D.C.: World Bank.
- Estache, Antonio and Martin Rodriguez-Pardina. 1998. *Light and Lightning at the End of the Public Tunnel: Reform of the Electricity Sector in the Southern Cone*. Washington, D.C.: WBI, World Bank.
- Estache, Antonio, Vivien Foster, and Quentin Wodon. 2002. "Accounting for Poverty in Infrastructure Reform." World Bank, Washington D.C.
- Fay, M. 2000. "Financing the Future: Infrastructure Needs in Latin America 2000–2005." Policy Research Working Paper No. 2545. World Bank, Latin America and the Caribbean Region, Finance, Private Sector, and Infrastructure Sector Unit, Washington, D.C.
- Feler, Leo. 2001. *Electricity Privatization in Argentina. Mimeo*. Washington, D.C.: World Bank.
- Foster, V., and O. Irueta. 2001. A Tale of Two Cities: Evaluating the Impact of Capitalization Reforms on Poor Households in La Paz and El Alto." World Bank, Public Private Infrastructure Advisory Facility, Washington, D.C. Processed.
- Foster, V., and J. P. Tre. 2000. "Measuring the Impact of Energy Interventions on the Poor: An Illustration from Guatemala." In *Infrastructure for Development: Private Solutions and the Poor*. London: Department for International Development, Private Provision of Infrastructure Advisory Facility; and World Bank.
- Foster, Vivian. and Osvaldo Irueta 2001. "Does Infrastructure Reform Work for the Poor? A Case Study on the Twin Cities of La Paz and El Alto." *PPIAF Background Paper*. Washington, D.C.: World Bank.
- Galal, Ahmed., Leroy Jones, Pankaj Tandon and Ingo Vogelsang. 1994. "Welfare Consequences of Selling Public Enterprises." Oxford: Oxford University Press.

- Galiani, Sebastian, Paul Gertler and Ernesto Schargrotsky. 2002. "Water for Life: The Impact of the Privatization of Water Services on Child Mortality." Draft Report.
- Garn, H.A. 1993. "Pricing and Demand Management: A Theme Paper on Managing Water Resources To Meet Megacity Needs." TWUWS, Washington, D.C.: World Bank.
- Gómez-Ibáñez, Jose. 1999. "The Future of Private Infrastructure: Lessons from the Nationalization of Electric Utilities in Latin America, 1943–1979." *Discussion Paper: Taubman Center for State and Local Government, John F. Kennedy School of Government, Cambridge:Harvard University.*
- Gómez-Ibáñez, José A. and John R. Meyer. 1993. *Going Private: The International Experience with Transport Privatization.* Washington, D.C.: The Brookings Institution.
- Gomez-Lobo, Andres, 2001. "Incentive-based subsidies : designing output-based subsidies for water consumption." *World Bank Viewpoint Note No.232.* Washington, D.C.: World Bank.
- Government of India. 2001. Annual Report on the Working of State Electricity Boards and Electricity Departments, New Delhi.
- Guasch, J. Luis, 2003. "Granting and Renegotiating Infrastructure Concessions—Avoiding the Pitfalls." Draft. World Bank.
- Guasch J. Luis, Jean Jacques Laffont, and Stephane Straub. 2002. "Renegotiation of Concession Contracts in Latin America." Preliminary Version.
- Gupta, Pankaj, Ranjit Lamech, Farida Mazhar and Joseph Wright. 2002. "Mitigating Regulatory Risk for Distribution Privatization—The World Bank Partial Risk Guarantee." *Energy and Mining Sector Board Discussion Paper Series. Paper No. 5.* Washington, D.C.: World Bank.
- Harris, Clive. 2002. "Private rural power—network expansion using an output-based scheme in Guatemala." *World Bank Viewpoint Note No.245.* Washington, D.C.: World Bank.
- Harris, Clive, John Hodges, Michael Schur and Padmesh Shukla. 2003. "Infrastructure Projects: A Review of Canceled Private Projects." *World Bank Viewpoint Note No.252.* Washington, D.C.: World Bank.
- Hartman, Raymond S., Mainul Huq, and David Wheeler. 1997. "Why paper mills clean up: determinants of pollution abatement in four Asian countries." *Policy Research Working Paper 1710.* Washington, D.C.: World Bank.
- Hodge, Graeme. 2000. "*Privatization: An International Review of Performance,*" Theoretical Lenses on Public Policy, Westview Press
- Hoskote Mangesh, Adil Marghub and Steven Ostrover. 2000. " An Analysis of Electricity Distribution Privatization in Developing Countries." *Presentation,* Washington, D.C.: World Bank.
- Hua, Wang and David Wheeler. 1996. "Pricing industrial pollution in China : an econometric analysis of the levy system." *Policy Research Working Paper 1644.* Washington, D.C.: World Bank.
- Klein, Michael. 1996. "Risk, Taxpayers, and the Role of Government in Project Finance." *Policy Research Working Paper 1688.* Washington, D.C.: World Bank.
- Klein, Michael. 1996. "Competition in network industries." *Policy Research Working Paper 1591.* Washington, D.C.: World Bank.
- Klein, Michael, Jae So, and Ben Shin. 1996. "Transactions Costs in Private Infrastructure Projects—Are They Too High." *World Bank Viewpoint Note No. 95.* Washington, D.C.: World Bank.
- Klein, Michael and Neil Roger. 1995. "Back to the Future: The potential in infrastructure privatization." *In Finance and the International Economy, edited by R.O'Brian.* Oxford, G.B: Oxford University Press.
- Kerf, Michael and Warrick Smith. 1996. "Africa Region Series Privatizing Africa's Infrastructure Promise and Challenge." *World Bank Technical Paper No. 337.* Washington, D.C.: World Bank.
- Kikeri, Sunita. 1998. "Privatization and Labor: What Happens to Workers When Governments Divest." *World Bank Technical Paper No. 396.* Washington, D.C.: World Bank.
- Klemperer, Paul. 2001. "What Really Matters in Auction Design." *www.paul Klemperer.org.* Oxford University: England.
- Komives, Kristin. and Penelope J. Brook Cowen. 1998. "Expanding Water and Sanitation Services to Low Income Households: The case of the La Paz-El Alto concession." *World Bank Viewpoint Note No 178.* Washington, D.C.: World Bank.

- Krishnaswamy, V. and Gary Stuggins. 2001. "Private Sector Participation in the Power Sector in ECA Countries: Lessons learnt from the last decade", *Technical Paper*. Washington, D.C.: World Bank.
- Lamech, Ranjit and Kazim Saeed. 2002. "Private Power Investors in Developing Countries: Survey 2002—Preliminary Findings." *Energy Forum*, Washington, D.C.: World Bank
- Levy, Brian and Pablo Spiller 1993. "The Institutional Foundations of Regulatory Commitment" Cambridge: Cambridge University Press.
- Lora, Eduardo and Ugo Panizza 2002. "Structural Reforms in Latin America Under Scrutiny." Washington, D.C.: Inter American Development Bank
- Lovei, Magda and Bradford Gentry S. 2002. *The environmental implications of privatization : lessons for developing countries*. Washington, D.C.: World Bank
- Lovei, Laszlo and Alastair McKechnie. 2000. "The Costs of Corruption for the Poor— The Energy Sector." *World Bank Viewpoint Note No. 207*. Washington, D.C.: World Bank
- Macedo, Robert. 2000. "Privatization and the Distribution of Assets and Income in Brazil." *Working Paper No. 14*. The Carnegie Endowment for International Peace.
- McKenzie, David and Dilip Mookherjee. 2002. "Distributive Impact of Privatization in Latin America: An Overview of Evidence from Four Countries." Mimeo.
- Newberry, David M. 2000. *Privatization, Restructuring, and Regulation of Network Utilities*. Cambridge: MIT Press.
- Newbery, David M. and Michael G. Pollitt. 1997. "The restructuring and privatization of the U.K. electricity supply—was it worth it?" *World Bank Viewpoint Note No. 124*. Washington, D.C.: World Bank.
- Nickson, Andrew, and Claudia Vargas. 2002. "The limitations of water regulation: the failure of the Cochabamba concession in Bolivia." *Bulletin of Latin American Research* No. 1 Vol. 21.
- OED. 1992. "Urban Water Supply and Sanitation." Report Number: 29. Washington, D.C.: World Bank.
- OED. 1996. "Lending for Electric Power in Sub-Saharan Africa." *Report Number: 15780*. Washington, D.C.: World Bank.
- OED. 2002. "Bolivia Water Management: A Tale of Three Cities," *Précis*. Washington, D.C.: World Bank.
- ONDEO & Suez 2002. "Bridging the Water Divide." p. 20. Paris.
- Paredes, Ricardo M. 2001. "Redistributive Impact of Privatization and the Regulation of Utilities in Chile." *World Institute for Development Economics Research (WIDER) Discussion Paper* No. 2001/19. Helsinki: WIDER.
- Pargal, Sheoli. 2002. "Determinants of the Investment climate for infrastructure: Evidence from Latin America on the impact of governance and regulation." *Draft Report* Washington, D.C.: World Bank.
- Petrazzini, Ben. 1996. "Competition in Telecommunications—Implications for Universal Service and Employment." *FPD Note 96*. Washington, D.C.: Finance and Private Sector Development, World Bank.
- Plane, Patrick. 1999. "Privatization, Technical Efficiency and Welfare Consequences: The Case of the Cote d'Ivoire Electricity Company (CIE)." *World Development*, 27, 343–360.
- Ramamurti, Ravi. 1996. "The New Frontier of Privatization." *Privatizing Monopolies: Lessons from the Telecommunications and Transport Sectors in Latin America*. Baltimore: John Hopkins University Press.
- Rivera, Daniel. 1996. *Private Sector Participation in the Water Supply and Wastewater Sector: Lessons from Six Developing Countries*. Washington, D.C.: World Bank.
- Ros, Agustin. 1999. "Does Ownership or Competition Matter? The Effects of Tele-communication Reform on Network Expansion and Efficiency." *Journal of Regulatory Economics*, 15, pp. 65–92.
- Rosenthal, Shane. 2002. "The Design of the Manila Concessions and the Implications for the Poor." Mimeo.
- Savedoff, William and Pablo Spiller (editors). 1999. *Spilled Water: Institutional Commitment in the Provision of Water Services*. Washington, D.C.: The Inter American Development Bank.
- Shaikh, Hafeez. 1996. *Argentina Privatization Program. A Review of Five Cases*. Washington, D.C.: Private Sector Development Program, World Bank.
- Shirley, Mary and M.L. Colin Xu. 1997. "Information, incentives, and commitment : an empirical analysis of contracts between government and state enterprises." *Policy Research Working Paper 1769*. Washington, DC: World Bank.

- Shirley, Mary M. (editor). 2002. *Thirsting for Efficiency: the Economics and Politics of Urban Water System Reform*. Washington, D.C.: World Bank.
- Smith, Warrick. 1997 "Utility Regulators-The Independence Debate." *Viewpoint Note No. 127*. Washington, D.C.: World Bank
- Torero, Maximo and Albert Pasco-Font. 2001. "Social Impact of Privatization and the Regulation of Utilities in Peru." *World Institute for Development Economics Research (WIDER) Discussion Paper 2001/37*. Helsinki: WIDER.
- Train, Kenneth E. 1994. *Optimal Regulation: The Economic Theory of Natural Monopoly*. Cambridge: MIT Press
- Tynan, N. 2000. "Private Participation and the Poor: Water and Sanitation." *Paper presented at the Infrastructure for Development: Private Solutions and the Poor Conference*. London.
- Vernon, R. 1971. *Sovereignty at bay: the multinational spread of US enterprises*. New York: Basic Books.
- Virgilio, Rivera C. 2001. "Regulation from the Perspective of a Regulated Company: The Case of Manila Water Company" presentation at SAFIR Core Training Course on Infrastructure Regulation and Reform (AFIR). Agra, India, Oct. 8–19, 2001.
- Wallsten, Scott. 1999. "An Empirical Analysis of Competition, Privatization and Regulation in Africa and Latin America." *World Bank Policy Research Working Paper 2136*. Washington, D.C.: World Bank.
- Wallsten, Scott. 2002. "Does sequencing matter? regulation and privatization in telecommunications reforms." *Policy Research Working Paper*. Washington, D.C.: World Bank.
- Wang, Hua and David Wheeler. 1996. "Pricing Industrial Pollution in China: An Econometric Analysis of the Levy System," *World Bank Policy Research Department Working Paper No. 1644*. Washington, D.C.: World Bank
- Wellenius, Bjorn. 1997a. "Telecommunications Reform—How to Succeed." *World Bank Viewpoint Note No. 130*. Washington, D.C.: World Bank.
- Wellenius, Bjorn. 1997b. "Extending telecommunications service to rural areas—the Chilean experience: awarding subsidies through competitive bidding." *World Bank Viewpoint Note No. 105*. Washington, D.C.: World Bank.
- Wells Louis T. 1999. "Private Foreign Investment in Infrastructure: Managing Non-Commercial Risk" presented at Private Infrastructure for Development: Confronting Political and Regulatory Risks. Rome.
- Wang, Hua and David Wheeler. 1996. "Pricing industrial pollution in China : an econometric analysis of the levy system." *Policy Research Working Paper No. 1644*. Washington, D.C.: World Bank.
- Winston, Clifford. 1993. "Economic Deregulation: days of Reckoning for Micro economists" *Journal of Economic Literature, Volume 31, Issue 3, 1263–1289*
- World Bank. 1994. *World Development Report: Infrastructure for Development*. New York: Oxford University Press.
- World Bank. 1995. *Bureaucrats in Business: The Economics and Politics of Government Ownership*. World Bank Policy Research Report. New York: Oxford University Press.
- World Bank. 2001. "Colombia: Water Sector Reform Assistance Project." *Project Appraisal Document Report No: 21868 CO*. Washington, D.C.: World Bank.
- World Bank. 2002. ICR. "Georgia: Energy SECAC Project." *Project ID P 064094* Washington, D.C.: World Bank.
- World Bank/PPIAF. 2002a. "Emerging Lessons in Private Provision of Infrastructure Services in Rural Areas: Water and Electricity Services in Gabon." Washington, D.C.: World Bank.
- World Bank/PPIAF. 2002b. "Northern Electric Distribution Service in Northern Namibia : A Case Study in the Private Provision of Rural Infrastructure." Washington, D.C.: World Bank.
- World Bank/PPIAF. 2002c. "Emerging Lessons in Private Provision of Infrastructure Services in Rural Areas: Guatemala." Washington D.C.: World Bank.