

AT ISSUE: INSUFFICIENT IMPROVEMENT IN THE MANAGEMENT OF TOO FEW RESOURCES

Latin American governments massively reduced their infrastructure investments in the nineties. This was due to the combination of fiscal austerity in a number of countries in the region and the emergence of a new paradigm for infrastructure provision. Regulatory and financial innovation made it increasingly possible to delegate the financing and management of infrastructure to the private sector.

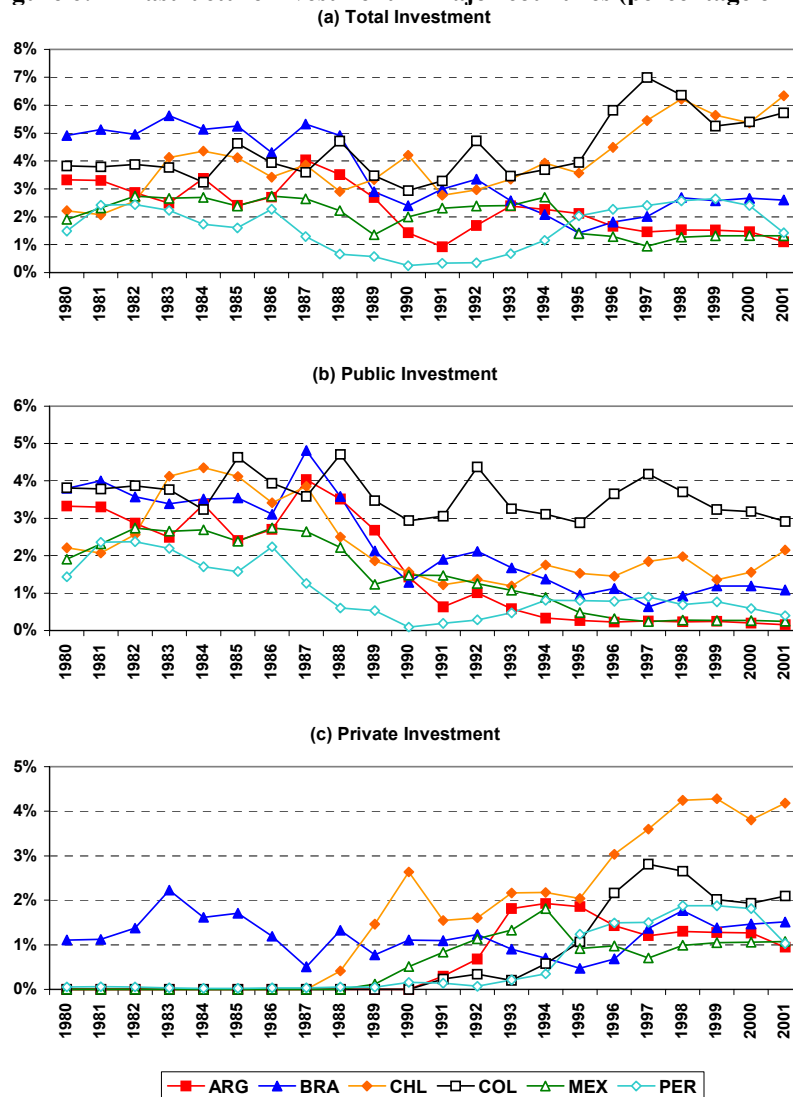
The thought was that the private sector would make up the financing shortfall and improve performance as well, but results fell short of expectations. Some countries and sectors proved much more attractive to the private sector; countries varied about which sectors they opened up to private participation and how this was structured. Cost recovery – essential for private participation without public subsidies – proved elusive. And regulatory and governance hurdles turned out to be larger than expected.

All this has resulted in a perhaps excessive disappointment with PPI. Evaluations show that PPI has in fact generally been beneficial, bringing improved quality and coverage. While prices often increased following privatization or concession, profits of concessionaires were not generally excessive. More importantly, analysis shows that the benefits of privatization are affected by how well it is structured and monitored by Governments. And improvements in performance are critically linked to improvements in the regulatory framework. As for the distributional impact, this is largely determined by governments' decisions on whether pursue a redistribution agenda. The conclusion therefore is that the public sector continues to have an essential role to play both in providing the regulatory environment and in direct provision of infrastructure.

Private entry could not make up for public retrenchment

Public infrastructure investment has borne the brunt of fiscal adjustment. State spending on infrastructure plummeted in all countries considered except Colombia, as a direct result of the fiscal austerity forced by the region's macroeconomic crises over the last 20 years (Figure 6.b). Public investment in infrastructure and the primary deficit have followed remarkably similar paths over the last 25 years. From 1980 to 1998, a contraction in infrastructure investment contributed significantly (i.e. a third the correction or more) to the adjustment in five of eight adjusting economies considered (Table 5). The reduction was particularly sharp in Brazil, where public investment in infrastructure fell by much more than the improvement in the fiscal balance and current expenditures actually increased.

Figure 6: Infrastructure investment in major countries (percentage of GDP)



Source: Calderón and Servén (2004a)

At the same time, Latin America managed to attract half of the developing world's PPI. Half (48%) of the \$786 billion of private participation in developing country infrastructure between 1990 and 2003 went to Latin America.¹² As a result, average annual private infrastructure investment rose significantly in the 1990s in all countries considered except Brazil, where it continued to hover at around 1% of GDP (Figure 6.c). The increase was particularly marked in Bolivia and Chile, where private funding reached respective averages of 4.4% and 3.9% of GDP for 1996-2001.

¹² This can be explained by a combination of factors: the region was a pioneer in opening its infrastructure sector to private sector participation, expected growth was reasonably high, the macroeconomic environment appeared stable and the region was shifting towards greater economic openness (Sirtaine 2005).

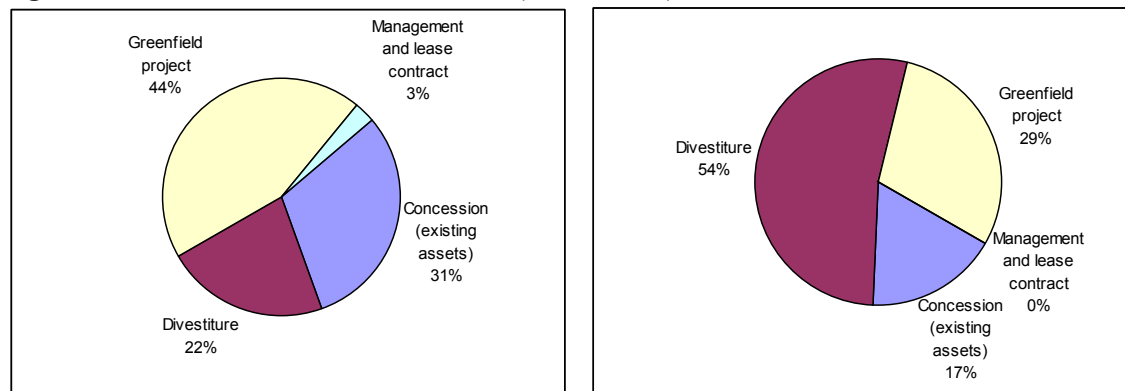
Table 5: The contribution of infrastructure to fiscal adjustment, average 1980-84 vs average 1995-98

	Change in public investment/GDP		Change in primary surplus/GDP	Contribution of investment reduction to fiscal adjustment (%)	
	Total [1]	Infrastructure [2]		Total [1]	Infrastructure [2]
Argentina	-3.97	-2.85	5.31	74.7	53.8
Bolivia	0.91	-3.1	6.15	n.a.	50.3
Brazil	-2.8	-3.08	1.77	158.1	174.3
Chile	-0.94	-1.41	2.39	39.2	58.8
Colombia	-0.45	0.04	4.69	9.6	n.a.
Ecuador	-1.57	0.68	1.81	87.0	n.a.
Mexico	-6.09	-1.98	6.28	97.0	31.5
Peru	-4.1	-1.51	3.11	132.0	48.6
Venezuela	-3.49	-0.41	-1.88	n.a.	n.a.

Source: Calderón, Easterly and Servén (2003)

PPI took many forms, with full privatization accounting for a fifth of transactions but half of financial flows (Figure 7). In the period 1990-2003, concessions accounted for 76% of the region's 999 projects (of these 45% were greenfield projects and 31%, concessions of existing assets), divestitures 22%, and management and lease contracts a mere 3%. In terms of financial flows, divestitures predominated, generating 53% of the \$374 billion total value of projects with PPI, while greenfield projects represented 29% and concessions 17%.

Figure 7: The different forms of PPI in LAC (1990 to 2003)



(a) by project count

(b) by financial flow

Source: World Bank PPI projects database

PPI has transformed infrastructure provision in the last two decades. At the start of 1990, only 3% of telephone and electricity connections in the region were provided by private companies, and almost no water utilities were in private hands. By 2003, private utilities were managing 86% of telecom subscriptions and 60% and 11% respectively for electricity and water connections (Andres, Guasch and Foster 2005).

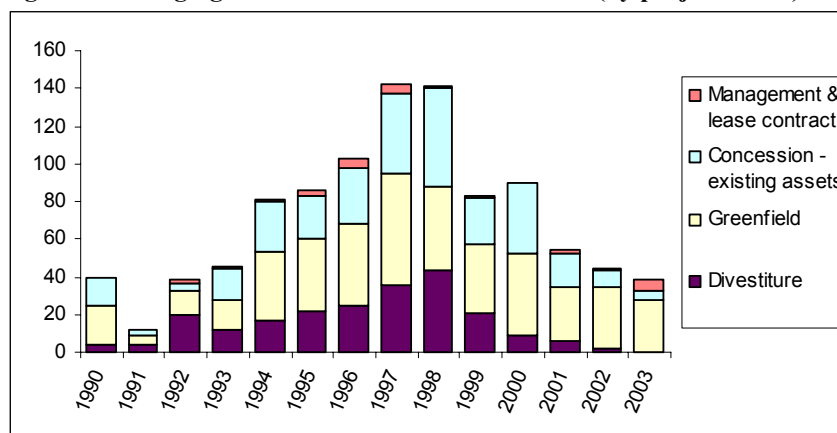
But PPI has been uneven across countries and benefited certain sectors more than others. Six countries (Argentina, Brazil, Chile, Colombia, Peru, and Mexico) absorbed 93% of LAC's PPI. As to sectors, telecommunication absorbed the bulk of regional PPI (46%), followed by

energy (32%) and transport (17%), with water and sanitation taking in only about 5%. This is consistent with Calderón and Servén’s (2004a) finding that total investment in telecoms rose in all seven countries in their sample, while that for transport and power fell in most of them. It also reflects the uneven pace and depth of reform across these sectors (Box 2).

In addition, not all private inflows went into new investments. A third of the region’s PPI transactions represented payments to governments (license fees, canon payments or divestiture revenues), reducing the total value of new investments in facilities to \$255 billion (still 45% of the total for such investments worldwide). In addition, these data represent the total value of projects with private participation, and therefore also include some public investment. As such, the figures overstate the actual flows of private investments to infrastructure in Latin America

PPI has collapsed since 1998 and shows no sign of recovery. Since 1998, private investment levels have collapsed, with the conclusion of major divestiture programs and weaker investor interest. Total investment in infrastructure projects with private participation dropped from \$71 billion in 1998 to \$16 billion in 2003. Forms of PPI have also changed markedly: there were no divestitures in 2003, greenfield projects accounted for 72% of transactions while concessions of existing assets amounted to a mere 13% (Figure 8). There appears to have also been a resurgence of management and lease contracts, with 6 signed in 2003, representing 15% of total deals.

Figure 8: Changing forms of PPI in LAC since 1990 (by project count)



Source: World Bank PPI projects database

Overall, private investment failed to make up for public cutbacks, so total infrastructure investment fell sharply in most of Latin America. While public funding dropped from 3.1% of GDP for 1980-1985 to 0.8% of GDP for 1996-2001 in the seven major Latin American countries considered in Figure 3a, private investments increased on average only from 0.6% to 1.4%. As a result, the overall level fell from a weighted average of 3.7% of GDP in 1980-85 to 2.2% in 1996-2001. Only Colombia and Chile were exceptions, witnessing a substantial expansion over the last decade. By one set of estimates, even at the peak, PPI was nowhere close to satisfying all infrastructure investment needs in Latin America (Fay 2001).

Box 2: The uneven pace of reform across sectors

Privatization has gone furthest in the telecommunications sector. In most countries, state-owned companies operated fixed telephone monopolies in the 1980s. Privatization began with Chile (1986), Jamaica (1989), Argentina (1990) and Mexico (1990) and subsequently spread throughout the region. Only six Latin American countries still have public telecommunications firms: Colombia, Costa Rica, Ecuador, Honduras, Paraguay and Uruguay. Region-wide, around 86% of fixed telecommunications subscribers were served by the private sector in 2003, up from almost zero at the start of 1990 (Andres, Foster and Guasch, 2005). Majority stakes in state companies were sold, with new owners typically bound by commitments to expand networks and meet quality standards. In return, they were granted a period of monopoly operation, lasting five years on average, after which markets were opened to competition from new operators (Andres, Foster and Guasch 2005). In a second major wave of reforms, long-distance services were liberalized from 1994 (Chile) onwards. The cellular sector has been characterized by significant private participation from the outset, and competition has increased gradually. The larger countries of the region all have at least three mobile operators now.

In Latin America and worldwide, reforms in the electricity sector have followed a similar pattern, but are at different stages. Chile was the pioneer, privatizing its major electric utilities between 1986 and 1989. It was followed by Argentina (1992) and then Bolivia, Colombia and Peru. In the late 1990s, Panama, El Salvador, Guatemala, Nicaragua, Honduras and Brazil also undertook reform, including the establishment of regulatory boards to set quality standards, regulate tariffs and monitor the compliance of private operators. More recently, Costa Rica, Ecuador and Venezuela have started restructuring. But a number of countries, including Paraguay and Uruguay, have done little to date. Overall, around 60% of electricity connections were served by private distributors in 2003, up from 3% in 1990 (Andres, Foster and Guasch 2005). Recent reforms have had five common themes (Estache and Rossi 2004): (i) unbundling of generation, transmission and distribution activities; (ii) privatization of the assets (for generation) or of the management of those assets (for transmission and distribution); (iii) promotion of competition *in* the market in generation; (iv) promotion of competition *for* the market in other segments (typically through competitive bidding to operate transmission or distribution on a monopoly basis); and (v) increasing the incentive power of the residual regulation needed.

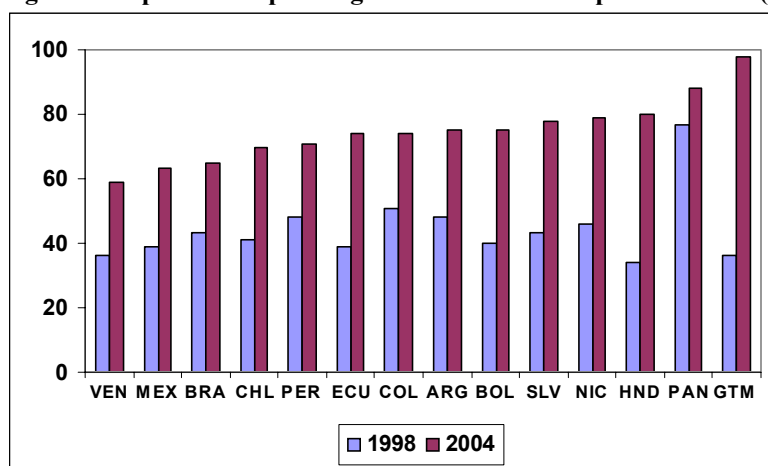
The diversity of the transport sector means private participation has taken many forms, with concessions of existing infrastructure being the most common. Even within sub-sectors, reforms have followed different paths. Among ports, stevedore activities have been outsourced (Colombia, Ecuador), landlord port concessions developed (Argentina, Chile, Panama) and port authorities have even been concessioned (Colombia). In Central America (eg. Costa Rica, El Salvador, Guatemala, Nicaragua), port reforms are still pending and private sector participation remains limited. Private sector participation in urban transportation services (Chile, Colombia) and infrastructure (Chile) has taken many form. In the railroad sector (freight only), concessions have been successfully developed in Argentina, Chile and Mexico. In many LAC countries, the level of competition in road transport services remains low, due to oligopolistic behavior and resistance to regional integration.

Reforms and private participation have been more recent and less common in the water sector. Local governments have generally—and increasingly—managed water and sanitation services in the region, so there has been less scope for sector restructuring on a national level. As a networked industry with high fixed costs, competition is inherently limited in large-scale water or sewerage provision. The fact that safe water is essential for life and health also supports a greater state role in promoting its availability and affordability, while the potential implications for social welfare of any changes in service provision make these more politically sensitive. Some equity sales have taken place in the sector in LAC, starting with Chile's EMOS (later Aguas Andinas SA) and other companies in 1990. But private participation has more often come through concessions or management contracts. Only about 11% of water distribution (by number of connections) in LAC was by private operators in 2003, up from almost none in 1990 (Andres, Foster and Guasch, 2005.) As well as Chile, countries with some private participation include Argentina, Bolivia, Brazil, Colombia, Ecuador, Honduras, Mexico and Trinidad. Those without include Ecuador, Peru and Venezuela.

WHO OR WHAT IS TO BLAME FOR THE GROWING DISENCHANTMENT WITH PPI?

In recent years, public opinion turned against PPI and investors' appetites waned. In November 2000, 36% of Argentines believed that infrastructure services should come back under Government control. Five years later, 78% do.¹³ This reflects a general trend in Latin America: with the exception of Panama, about 40% of the population was expressing discontent with privatization in 1998; today the average is closer to 75% (Figure 9). Public opposition has become a real constraint on PPI in some countries, both politically and operationally. At the same time, the private sector seems to have lost its appetite for infrastructure: 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 (Harris 2003).

Figure 9: Population expressing dissatisfaction with privatizations (percentage)



Source: Latinobarómetro surveys for 1998 and 2004

Note: The 1998 results reflect survey respondents who disagreed or strongly disagreed with the statement, "privatizations of state companies have been beneficial for the country." The 2004 numbers are of those who were less satisfied or much less satisfied with public services after privatization, in terms of price and quality

However, the verdict on PPI is actually rather positive. As discussed below, the impact of PPI on coverage and service quality has generally been good and concessionaires have not had fared: while analysis shows that concessions are capable of generating adequate returns in the long term, they are clearly a risky business (Sirtaine et al 2005). Popular discontent and private sector disaffection may be due to excessive renegotiations and a few well publicized failures as well as to poor management of the political economy of reform. These are discussed in turn below after a review of the impact of PPI.

The impact of PPI has been mixed, but positive overall

PPI has generally boosted coverage and service quality in most companies involved. Most studies have found that the private sector tends to do at least as well, and sometimes better than the public sector in expanding service, customer numbers and coverage areas, and also in

¹³ As reported in El Cronista, April 18 2005 "La mayoría cree que los servicios públicos deben volver al Estado".

enhancing quality. In many cases, the greatest expansion comes through increased investment, which allows companies to meet increasing demand and serve previously unattended consumers (Harris 2003). In La Paz-El Alto, Bolivia, the rate of new connections to water and sanitation services increased by two thirds following the entry of the private sector. 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 participation (Foster and Irusta 2001, cited in Harris op. cit.) Andres, Foster and Guasch (2005) find that private sector entry generated significant improvements in quality in LAC's fixed telecom, electricity and water sectors, from a study of 181 companies. Service expansion accelerated significantly in the telecommunications sector, and to a lesser degree in electricity distribution.

Labor productivity has generally increased with reform and PPI, with the main change coming during the transition to private ownership, amid heavy job losses. Estache and Rossi (2004) find that there were substantial increases in labor productivity, of about 6% a year, in Latin American electricity distributors in the post-reform period (1994-2000), and that private firms used about 30% to 45% less labor to produce a given bundle of outputs than public firms. However, Rossi (2004) qualifies this result by arguing that outsourcing may be biasing these results, as firms' operating and maintenance expenses did not change significantly after the reforms. Andres, Foster and Guasch (2005) find, from a study of privatized firms in the region, that labor productivity increased significantly in electricity distribution, fixed telecommunications and water distribution. Improvements generally took place during the transition, and were due in large part to sharp reductions in the workforce.

Reform and private participation have also boosted both quality and coverage in LAC, although the impact varies considerably between sectors. Andres, Foster and Guasch (op. cit) find that for electricity distribution, output and coverage improved following private entry, but these were driven by the underlying trend. Quality indicators and distributional losses showed significant improvements, mostly during the transition (the period during which enterprises to be privatized were being restructured for the sale). In fixed telecommunications, coverage increased significantly both during and after the transition and after it, over and above the existing positive trend. Quality, as measured by the percentage of completed calls, improved by 42 percent over the whole period considered, with most of the change coming after the transition. In water distribution, there were significant increases in coverage and the number of subscribers, but these were broadly in line with the trend. Quality, reflected in both continuity of service and potability, showed strong improvements. Most of the change in potability came during the transition, while continuity improvements came afterwards.

PPI and recent reforms have had a generally positive effect on the poor.¹⁴ Reforms have sought to promote access and affordability. However, access expansion may be curbed by high connection charges, or regulations that limit the alternatives to conventional utility provision, while affordability may be affected by tariff reforms and the tightening of standards for quality of services. The empirical evidence suggests that the impact of reforms on the poor and other income groups has varied, according to the particular nature of the reforms undertaken. In the case of Argentina, Chisari et al. (1999) and Navajas (2000) showed that the privatization of infrastructure service may have benefited the poor more than others by granting them increased access to services. On the other hand, Estache, Gomez-Lobo and Leipziger (2000) argue that the poorest groups of the population did not have access to many utility services and did not benefit from their expansion prior to the privatization. More recently, McKenzie and Mookherjee (2003)

¹⁴ See Estache, Foster and Wodon (2002) for a more in depth discussion.

review in depth studies on privatization in Argentina, Bolivia, Mexico and Nicaragua and conclude that privatization had overall positive effects on the welfare of all consumers and that except for one case (electricity in Nicaragua), inequality decreased following privatization.

The record on employment is mixed. There were substantial layoffs in the privatized firms – cutbacks ranged from 30% to 75% in the cases reviewed by McKenzie and Mookherjee. But layoffs were small relative to the overall workforce with the exception of Nicaragua where they reached 7% to 9%.¹⁵ And layoffs were generally reversed in the medium run. No clear pattern emerges as to the impact of privatization and the subsequent labor restructuring on wage inequality. McKenzie and Mookherjee conclude that the effect of privatization is likely to be small and dominated by other changes in the economy – a claim supported by others (Martimort and Straub 2005).

Contrary to common perception, concessionaires don't appear to have made excessive profits. Analyzing a representative sample of 34 regional private infrastructure concessions, Sirtaine et al. (2005) find financial returns have in fact been modest (given a high estimated cost of cost of capital). On average, concessions only seem to become profitable after 10 years of operation, probably reflecting high investments made in the early years. However about 40% of projects did not appear to have the potential to generate attractive returns, given the considerable risks involved, with the proportion rising to 50% in the energy and transport sectors. In fact, it is only in telecommunications that, with historical growth maintained, concessions seem inherently profitable. Concessions in the water sector seem to offer the least attractive returns.

However, these results must be treated with caution. The estimated rate of return is very sensitive to the estimated cost of capital as well as the estimated investments. Sirtaine et al. (2005) deal with these two issues as best they can (in particular they use realized investments rather than commitments). In addition, renegotiation can significantly improve the profitability of concessions (indeed this is possibly why concessions become more profitable in the longer term). And regulatory systems often provide the incentive for firms to under-report profits, without including sufficient safeguards to stop them doing this, as is discussed below in the context of regulatory accounting. Overall, however, the limited enthusiasm for infrastructure concessions that currently characterizes the private sector supports Sirtaine et al's findings.

However, there have been too many renegotiations and some well publicized failures

Concessions, whether for existing assets or greenfield projects, have been the main vehicle for PPI in LAC. (See Box 3 for a definition of concessions) While outright privatizations have often been used in LAC for airlines, other transport operators, telecom companies and electricity generators, such sales may be prevented by laws, constitutions or public or political opposition. Government concerns about the performance of infrastructure industries may also lead them to retain ownership. Overall, concessions have been more common than divestitures in LAC, particularly for roads, airports, ports and WSS.

¹⁵ Mc Kenzie and Mookherjee (2003) also report job losses to have been 0.13% in Bolivia, 1% in Mexico and 2% in Argentina. These refer to job losses from privatization in general, not just of infrastructure.

Box 3: Definition of concessions

Concessions give a private investor the right to operate a service over a defined period, usually 15 to 30 years, subject to meeting investment and operating requirements. They are usually awarded on the basis of a competitive bidding process and do not usually transfer ownership of the assets employed. Concessions encompass not only the use of existing assets but also greenfield projects, particularly through build-operate-transfer (BOT) contracts, which have been common for power plants and gas transmission pipelines in LAC, and have also been used in WSS.

Too many concessions have been renegotiated. Some renegotiation is inevitable and even desirable, to improve concession design, promote efficiency and remedy contractual incompleteness. But Guasch (2004)¹⁶ finds that of more than 1,000 infrastructure concessions granted in the LAC region during 1985-2000, 30% were renegotiated. Excluding telecom concessions (of which there are relatively few) raises the incidence to 42%, with rates of 9.7% for the electricity sector, 55% in transportation, and a staggering 74% in WSS. Concessions were usually renegotiated soon after their award, with an average of 2.2 years between the award and renegotiation. Time elapsed was shortest for WSS (1.6 years) and longest for the transportation sector (3.1 years).

Frequent revisions may indicate that either new operators or governments have behaved opportunistically. Concessionaires initiated 61% of renegotiations, often to improve on unrealistically low bids (60% of contracts awarded on the lowest proposed tariffs were renegotiated, against only 11% of those based on the highest.) And higher tariffs have usually resulted (62% of cases), with negative impacts for consumer welfare. But the high sunk costs of infrastructure investments may also tempt governments to expropriate more of the rents from these, in the knowledge that investors cannot withdraw easily (Guasch, Laffont and Straub 2005) Examples include the cancellation of the La Paz and El Alto water concessions in January 2005, but there are many others (Box 4).

Renegotiations may also be due to poorly designed contracts and/or regulatory weakness. Modes of regulation also matter. For example, price caps, which have been common in Latin American concessions are vulnerable to shocks and lead to frequent renegotiations. A strong regulator is also a desirable counterpoint to political opportunism and is particularly important where there is weak governance – its presence reduces renegotiations both government and concessionaire led. Guasch, Laffont and Straub (2003) estimate the rate of concession renegotiation to be 61% in the absence of a regulatory agency is not in place, against 17% when one was.

Whatever the motivations, frequent renegotiations are costly. Renegotiations introduce uncertainty and reduce transparency as new terms are determined by the relative bargaining power of the concessionaires and governments, rather than through competitive processes. As a result there are costs. In particular, it bids up the cost of capital as investors demand a risk premium to offset the potential risk. Guasch and Spiller (1999) estimate this to range from 2 to 6 percentage points depending on the country and sector. In addition, there are other costs, such as widespread disruption of service or failure to meet expansion goals.

¹⁶ The data and discussion on renegotiation in the following paragraphs are also drawn from this source.

Guarantees have exposed governments to enormous contingent liabilities. In many countries, governments provided guarantees of service demand or exchange rate levels in early PPI contracts for power generation plants, toll roads and other projects. Payments under such guarantees, which were often based on overly optimistic projections, have been triggered in a number of cases. In Colombia, for example, potential cumulative payment obligations over the life of PPI contracts has been estimated to represent as much as 4% of one year's GDP. Payment obligations the new Termopaipa and Termobarranquilla generating facilities already amounted to \$1.5 billion in 2003, and were projected to rise to \$3 billion by the 2014 contract expiration (World Bank 2004b). The 1997 Mexican toll-road program bailout cost between US\$7 and US\$12 billion (1% to 1.7% of Mexico's GDP) (Guasch, Laffont and Straub 2005).

A few privatizations have not produced the desired results, but such cases have not been the norm. A case in point is the privatization of the electricity sector in the Dominican Republic where concessionaires' inability to resolve problems in distribution more than offset the gains from increasing private sector investments in generation. The result was the power sector crisis of 2002: in September 2002, over half of the circuits of the main distribution company were out of service. The resulting riots claimed 15 lives (World Bank 2005a). Today, the sector still relies on substantial subsidies from the Government in order to function. And in some cases, mismanagement by authorities is largely responsible – as in the financial collapse of toll road concessions in Mexico mentioned above.

Box 4: Some examples of government-induced concession disputes

As of 2005, most of the concessions awarded in Argentina prior to the 2001 crisis are still undergoing protracted renegotiation processes. Conflict arose as the government converted the dollar-denominated rates to devalued pesos, despite contract clauses that allowed for indexation to the dollar and US inflation, and refused any subsequent significant rate adjustment. Despite 62 firms' suits before the World Bank's International Centre for Settlement of Investment Disputes, Argentina has been very slow in responding to those challenges, arguing the need to protect the interest of the Argentine people. It has also argued that international arbitration decisions should be reviewed by local judicial courts, despite the country's agreement to abide to international arbitration, under bilateral investment treaties signed by the government of Carlos Menem in the 1990s.

Similarly, the Limeira water concession in Brazil was denied the automatic tariff adjustments allowed by the contract. The local mayor argued that the contract, signed by a previous administration, was unfair and compromised the municipality's long term interests. Similar behavior plagued the Tucuman water and sanitation contract in Argentina. In 1995, a new local government took office and sought to limit previously agreed upon tariff increases. This finally led the concessionaire to abandon the concession in 1996. In the toll road concession in Pernambuco, Brazil, the regional government decided to cut the tariffs unilaterally shortly before elections.

Sometimes, lack of commitment shows up at even earlier stages, like in the case of the 1999 Matarani port concession in Peru, where the rules of the tender were changed unilaterally in the awarding period (shortening the duration of the concession from 30 to 15 years in the other one).

Source: Guasch, Laffont and Straub 2005

The process has suffered from macro shocks and poor management of the political economy of reform

Disaffection with emerging markets and setbacks suffered by major investors have curbed private sector interest. In addition to concerns about renegotiations and expropriation, investor interest has suffered from the general disaffection with emerging markets that followed the East Asian, Russian, Brazilian and Argentine crises. Greater perceived risk has led to caution among both infrastructure companies and financial investors. Currency depreciation in Argentina and Brazil, in particular, has made investors less willing to engage in projects in which revenues are in local currency but financing is in foreign currency, as is typically the case for infrastructure projects with PPI. Several of the major players in infrastructure have suffered commercial or share price setbacks of varying degrees (Enron, AES, Suez, Vivendi).¹⁷ Although a number of new entrants, notably from developing countries, have emerged, they are unlikely to fill the gap (Harris 2003).

More generally, PPI is very vulnerable to economic downturns. Recent events illustrate that government-related risk, notably regulatory risk, worsens at times of economic turmoil as low demand makes it harder to pass on costs. Similarly, foreign exchange pass-through becomes unsustainable under high depreciation. The treatment of private contracts in the context of recent events, such as the Argentinean crisis, also damaged private investors' confidence in relying on specific clauses in the project contract to ensure protection against some risks (such as tariff escalation clauses linked to the exchange rate, and compensation clauses in case of regulatory changes) (Sirtaine 2005). Nevertheless, shocks cannot be blamed for all the setbacks suffered by PPI. Instead, they mostly revealed weaknesses in regulatory frameworks and only exacerbated an already difficult cost recovery goal as discussed in the next section.

Macro downturns also worsen public attitudes towards market mechanisms. In a detailed analysis of factors affecting the public perception of privatization, Boix (2005) finds that privatizations have been associated in the public mind with poor economic performance. His argument is that the public operates with limited information about the mechanisms that lead to growth and therefore imputes economic performance to the highly symbolic decisions around which governments build their economic policies. Thus, as economic performance worsens, so do public views about privatization and similar market mechanisms.

Public perceptions of privatization are also colored by whether the deals are seen as fair (Boix 2003, Martimort and Straub 2005). This may be a rational evaluation of the process, or it may be affected by views about the transparency of the process and corruption in public affairs. It may well be a reaction to the fact that, in many cases, Government used the proceeds of privatization for general budgetary processes, rather than to compensate losers (e.g. individuals who lost jobs as a result of the process) or fund well targeted subsidy schemes to offset needed tariff increases.¹⁸ Box 5 looks in more detail at the possible reasons for the social discontent with privatization.

¹⁷ As Harris (2003) points out, AES, which has been one of the largest PPI players in Latin America, saw its stock price fall from over \$70 per share in October 2002 to around \$1.4 in late 2001. (While it has improved it never fully recovered – as of May 2005, it was about \$14.6.) Similarly Vivendi and Suez saw their shares decline by half from their peak level.

¹⁸ Although privatization may have overall beneficial effects, perception will be determined by individual gains and losses that are likely to differ across groups. In addition, as with trade liberalization, gains are

Behind the disappointment lie unrealistic expectations.¹⁹ Governments sometimes used privatization to help finance needed investments in services that were under-priced or to offload the responsibility for sector reform to the private sector. The example of electricity privatization in the Dominican Republic mentioned earlier is a case in point where the distribution companies were left to carry the burden of reducing losses and improve collection without adequate support from the authorities.

But privatization does not alter the fact that someone has to pay for the services (taxpayers or users) or assets will be depleted. This was overlooked by a number of governments, who assumed that the efficiency gains brought about by the private sector would be sufficient to offset the need for cost increases. Others may have over-estimated their ability to weather the political fall-out from price increases. As for private investors, they too may have overestimated the ability or determination of governments to abide by their commitments.

likely to be dispersed (across individuals and over time), while losses are likely to be concentrated (amongst individuals and in the present – as in the cases of job losses due to privatization or price increases).

¹⁹ See Harris 2003, on which this paragraph is based, for a more in depth discussion.

Box 5: Hidden failures and perception management: explanations for social discontent about privatization

There is a remarkable contrast between generally positive evaluations of privatization and the extreme public disaffection of it. Martimort and Straub (2005) in a paper commissioned for this report, review the literature for possible explanations for this paradox. This review leads them to the conclusion that either important failures have gone unreported (although clearly not unnoticed by those who suffered) or there has been a major problem with perceptions (and therefore a massive communication failure):

Hidden failures

While estimates of impact on service coverage and quality, and redistribution are generally positive, it is possible that some negative aspects were under-reported. First, the evidence on quality improvement is partial, and it is conceivable that quality may have deteriorated or at least failed to improve as much as expected. Some cases have reported dissatisfaction with quality (Mexico; electricity in Brazil and Chile). In addition, there are cases where quality improvements were insufficient to compensate for price increases.

Second, the re-distributional impact of price increases may not have been sufficiently mitigated by subsidies (which are often inefficiently administered). The modality and speed of price adjustments have also generated criticisms. Third, the record on job losses is clearly negative although the argument is that losses tended to be reversed in the medium term. It is possible however, that for all but the most skilled, the job transition resulted in lower quality of employment. There is indeed some evidence that stable or increased wages were the consequences of longer hours worked.

Perceptions and the political economy of privatizations

Negative public perception of privatization may be due to the downturn in the economic cycle as Boix (2005) documents. In particular, it is not clear how the public distinguishes job losses due to recessions from those due to the privatization process as they may all be lumped together in a source of discontent. Second, perception may have suffered from a gap between actual and expected performance. Many of the points about hidden failures can be rephrased from that point of view, as public discontent may be linked to a disappointment with outcomes that did not match initial expectations. Third, it is unclear what the public perception of frequent renegotiations and (rare but well publicized) cancellations have been – but they must have been significant.

Fourth, the perceived transparency of the privatization process is likely to be crucial in shaping public perceptions. Boix (2005) confirms the Lora and Panizza (2002) finding that negative opinions on privatization are stronger where corruption is perceived as more common. Corruption has a destructive effect on privatization as it affects competitive bidding and results in the allocation of rent towards a specific group. Corrupt deals may also be used to maintain monopoly power and impede the introduction of competition in privatized sectors – in which case post-privatization profits may be the result of monopoly rent rather than efficiency gains. Manzetti (2000) argues this was the case in telecoms in Argentina and in the electricity sector in Chile. Overall, it is unclear whether corruption has in fact increased or decreased as a result of the privatization process. One argument is that petty corruption is easier in public utilities, but that privatization offers the opportunity for grand-level corruption.

Fifth, privatizations have often been perceived as unfair – rightly or wrongly. Game theory's ultimatum game shows that individuals would rather gain nothing at all rather than agree to a deal in which they feel they gain less than their fair share. This seemingly irrational result, combined with a frequent perception that concessionaires or governments may have benefited disproportionately may be a key part of the privatization paradox (Shirley 2004),

More generally, it is very difficult to determine the gains and losses from any given privatization as neither the population nor researchers have a proper counterfactual against which to judge performance. The implication then for governments is that perceptions of fairness must be carefully managed. That means not only that transactions must be transparent and above board, but that the use made of the proceeds of privatization must be used in a way to offset the possible sense of injustice. In many cases where transactions were in fact clean, governments directed the proceeds of privatization to the general fiscal account, making them “disappear” rather than using them for direct and visible redistribution.

Sources: Adapted from Martimort and Straub (2005) with additional information from Boix (2005).

The critical issues: cost recovery and governments' regulatory and redistributive functions

Critical to the success of PPI are the regulatory regime and cost recovery, or, when cost recovery is either impossible or inappropriate, well designed subsidy policies. At the heart of the problem (insufficient improvement in management of too scarce resources) lies a government failure in its regulatory and re-distributive role. This is a central (and not too original) argument of this report. Fundamentally, the problems remain very similar whether the private or the public sector are delivering a service: if cost recovery is not possible from users, tax payers will have to pay or else assets will be depleted; a natural monopoly requires regulation, whether public or private; re-distributive goals are set by governments regardless of how they are then implemented and funded (again either by tax-payers or by users through cross subsidies.)

PPI sometimes occurred amid incomplete reforms and immature regulatory frameworks

Introducing private participation required sweeping changes in the region's institutional, legal and regulatory frameworks. Alterations were needed both to allow and accommodate private investment, and transform the government's role in many sectors from owner-operator to facilitator, overseer and regulator. Infrastructure services typically satisfy basic needs of the population or are natural monopolies. Because of both these characteristics –the main justifications for government provision in the first place– effective regulation is required to discipline private participants and protect consumers. Regulation is also essential to protect investors from arbitrary or politically motivated intervention from governments, the risk of which is increased by the high sunk costs of many infrastructure projects (which make investors unwilling to withdraw, even if conditions deteriorate).

Reforms typically sought to establish a clear separation of the functions of policymaker, regulator and service provider. Policy making functions usually remain in the appropriate ministry, but new systems of regulatory oversight have been set up. State companies have typically been set on a more independent and commercial footing, with many utilities incorporated as public enterprises (“corporatization”), prior to private participation. Within many sectors, horizontal or vertical unbundling has also occurred, to separate out those activities most suitable for private involvement and to promote competition where feasible. However, in networked industries, the possibilities for competition are limited, and may be restricted to competing for the right to operate a monopoly. Most reform programs have sought to promote efficiency and service quality and reduce costs, in addition to bringing private investment. However, the pattern of change has varied considerably among sectors and countries.

With the benefit of hindsight, it appears that analysts and reformers were overly optimistic regarding their ability to structure the sectors, structure regulation, and set up concessions. Moreover, it was not sufficiently anticipated that regulation could not provide complete insulation from political influence. To function effectively, regulation must be part of a comprehensive package that also includes proper industry structure, technical support, incentives, and well-designed community participation.

There may have been a tendency to adopt models developed for other setting. Thus, the independent water regulator model adopted in Argentina was similar to the British one developed for mature infrastructure network in developed countries. Similarly, many of the regulatory and

pricing models had been developed in situations where the objective was to reduce cost and prices, rather than expand coverage.

The first generation of reforms did not always set up the institutions or policy frameworks needed. Regulatory agencies often lack autonomy, financial, operational and political. Many countries do not even have independent regulators. And ministries may lack capacity for policymaking. Sector laws or overall strategies, while not essential, can be helpful for establishing coherent policies and allocating responsibilities and functions. More critical is a national policy framework for tariffs and subsidies. For example, tariffs for infrastructure services in Mexico are set by a large array of federal, state and municipal stakeholders. In the absence of a national policy framework for tariffs and cost recovery, there is wide variation in tariff levels, tariff structures and cost recovery among sectors and regions.

Insufficient competition policy and the lack of good antitrust agencies are in part to blame for the lack of better results in infrastructure reforms. It is true that some segments of infrastructure sectors are natural monopolies, but most of these sectors have segments that support competition. However, privatized companies have often been left enjoying a dominant position, with insufficient efforts made to level the playing field for new entrants. Furthermore, conflict between sector regulators and competition agencies has become a serious issue. There have been many cases where private firms have tried to merge and the sector regulator and competition agency dispute who should rule for or against these mergers. The lack of dialogue and political pressure has allowed the re-bundling of many services, with a clear impact on actual and potential competition. (This is discussed in the context of the transport sector by Estache and Serebrisky 2004 and telecommunication by Andres, Foster and Guasch (2005).²⁰)

Fiscal and political decentralization has presented challenges for reform and private participation in infrastructure, particularly in WSS. In most countries, the provision of not just WSS, but also public lighting, waste management and, to a lesser extent, public transportation and regional highways, is the responsibility of sub-national governments. While decentralization can increase the effectiveness of infrastructure programs, through better planning and accountability, in practice it has often created further difficulties for private infrastructure investment. The atomization of the industry involved can prevent coherent policymaking across the country (as with WSS). Municipal authorities may lack the technical and legal expertise needed to manage private participation. They usually also have limited access to capital markets, which makes infrastructure financing difficult. Overlapping and conflicting jurisdictions of different levels of government may exacerbate the lack of clear and consistent regulation that exists in many countries, even on the national level. And even where a centralized regulator is in place, its supervisory reach over hundreds of decentralized firms scattered across the country is likely to be limited. Private operators may also face greater payment risk, when dependent (as they usually are) on local governments for revenues. Political and regulatory risks are also likely to be higher (Beato and Vives 2003).

Investors also complain of weak law enforcement and non-payment for services. Major Spanish investors in Latin American infrastructure identify non-payment by customers as a serious problem, particularly for water and electricity services (Analistas Financieros Internacionales 2004). In many countries there appears to be a “culture of non-payment” for services, and distributors may face legal and political difficulties in demanding overdue payments

²⁰ Analyzing the interaction between change in ownership and competition for the fixed telecommunication market, Andres, Foster and Guasch (2005) find that privatization is the determining factor behind most performance improvements. However, competition significantly affects prices.

or cutting supply. Furthermore, illegal connections are common, and local police forces may do little to stop this. In many countries, well-established intermediaries offer illegal connections. Because state utilities often tolerated high levels of non-payment, clampdowns by new operators may be a further factor behind public opposition to PPI. But cost recovery is a chronic problem with utilities (although not for telecom) as discussed below.

Cost recovery has proved elusive²¹

The transition toward cost recovery pricing for water and electricity has been much more challenging than expected. During the 1990s, most Latin American countries passed legislation committing to raising water and electricity tariffs toward cost recovery levels, to reduce the fiscal burden of public services and attract private participation. Ten years on, the goal of cost recovery remains elusive. Inflation and currency depreciation eroded the real gains from tariff hikes, as discussed below, while public perceptions of high tariffs contributed to social discontent. The direct evidence on progress is limited. But a recent survey by regulatory agencies in Latin America concluded that residential water tariffs in 10 large cities on average fall short of full cost recovery by around 30%, while industrial tariffs may exceed cost recovery levels by around 20% (ADERASA data).

Water and electricity tariffs have risen significantly, especially for residential services, but price inflation and currency depreciation have largely offset this. Tariff data from around 15 water utilities serving the region's larger cities²² for the period 1997 to 2003 showed that nominal residential tariffs jumped by an annual average of 8%, while for industrial customers, the annual average increase was 4%. But real residential tariffs climbed by less than 1% per year on average, while industrial ones declined 3% per year. Results are similar for a sample of 13 Latin American electric utilities: average annual tariff hikes for residential service were 22% in nominal terms, but less than 2% in real terms over 1990-2002; nominal increases of 18% for industrial customers translated into an average annual real decline of 1% over the period.

Water and electricity tariffs have risen significantly, especially for residential services, but inflation and currency depreciation have reduced these gains. Tariff data from around 15 water utilities serving the region's larger cities²³ for the period 1997 to 2003 showed that nominal residential (industrial) tariffs jumped by an annual average of 8% (4%). But expressed in US dollars, residential tariffs increased by less than 1% per year on average and industrial ones declined 3% per year. Results are similar for a sample of 13 Latin American electric utilities: average annual tariff hikes for residential service were 22% in nominal terms, but less than 2% in dollars over 1990-2002; nominal increases of 18% for industrial customers translated into an average annual decline of 1% in dollars over the period.²⁴ On the other hand, Andres, Foster and Guasch (2005) find substantial price increases among privatized utilities (although most of the increase occurred in the five years prior to privatization): about 60% for electricity and 116% for water.²⁵

²¹ This section is drawn largely from Foster and Yepes (2005), supplemented with data on the price impacts of private involvement, from Andres, Guasch and Foster (2005).

²² Or nationwide, in the cases of Uruguay and Costa Rica.

²³ Or nationwide, in the cases of Uruguay and Costa Rica.

²⁴ Note that period of analysis include the Argentinean and Brazilian devaluations that may drive the drop of prices in dollars at the end of this period.

²⁵ More precisely, they found that real average prices for electricity distribution for the year of the privatization were more than 45% higher than 5 years previous. However, five years after that the total

Latin America's water and electricity tariffs are the highest of the developing world, and are above the average for upper middle-income countries. Latin America's median water tariffs are twice as high as those in East Asia, Eastern Europe, and the Middle East, and more than six times as high as those in South Asia (see Table 6 below.) And electricity tariffs are about 50% higher than in other developing regions, where the range for typical tariffs is US\$0.04-0.06 per kilowatt-hour. However, average residential water tariffs in Latin America, at US\$0.41 per cubic meter, are still barely 40% of OECD levels, while average electricity tariffs, at US\$0.09 per kilowatt-hour, are around 75% of OECD levels.

Recent falls (in dollar terms) make residential water tariffs unlikely to meet any capital costs in nearly half the sample, but all may cover operation and maintenance. Data is not available to estimate each utility's cost of service. Instead, Foster and Yepes (2005) rely on expert estimates of costs set in US dollars as the basis for determining the extent of cost recovery – admittedly a crude proxy, yet one that can at least inform us regarding cost recovery trends. They find that the real decrease in tariffs from 1997 to 2003 meant that the share of utilities within the indicative range for some degree of capital cost recovery declined from 8 out of 13 to 6, while the number that only could hope to cover O&M, if only partially, increased from 4 to 7. These results are reasonably similar to those available for the wider sample of utilities depicted in Table 6 (but for which data was only available in 2003).

Progress has been much greater in the power sector, where the percentage of utilities whose residential tariffs make a significant contribution to capital costs has almost doubled since the early 1990s, and is now nearly two thirds of the total. The average residential electricity tariff in 19 Latin American countries rose from US\$0.07 to US\$0.10 per kilowatt-hour between 1990 and 1996, falling back down to US\$0.09 per kilowatt-hour by 2002.²⁶ Keeping in mind the limitation of the methodology, this suggests that the share of countries recovering some degree of capital costs rose from one third to about two thirds between 1990 and 2002 and the share of countries with residential electricity service at tariffs below operating and maintenance cost declined from 16% to none over the whole period. Industrial tariffs follow a similar pattern of improvements.

increases of real prices were 10%. In the case of water distribution, these changes were approximately 60% and 35%, respectively.

²⁶ Unweighted average across countries.

Table 6: Overview of average residential water tariffs

	Mean (US\$/m ³)	Median (US\$/m ³)	Percentage of firms with degrees of cost recovery		
			Nil	Partial O&M	Partial capital
Global	0.53	0.35	39	30	30
By income					
HIC	1.00	0.96	8	42	50
UMIC	0.34	0.35	39	22	39
LMIC	0.31	0.22	37	41	22
LIC	0.11	0.09	89	9	3
By region or group					
OECD	1.04	1.00	6	43	51
LAC	0.41	0.39	13	39	48
MENA	0.37	0.15	58	25	17
EAP	0.25	0.20	53	32	16
ECA	0.13	0.16	100	0	0
SAS	0.09	0.06	100	0	0

Source: Foster and Yepes (2004) based on original data from ADB 2001; ADERASA 2003; GWI 2004; NIUA, 1999.

Notes: Average tariffs are based on residential consumption of 15 cubic meters. Data drawn from utilities serving 132 major cities worldwide, broken down as follows: OECD (47), SAS (24), LAC (23), EAP (19), MENA (12), and ECA (6).

Overall, Latin America has the strongest record on cost recovery through residential water charges of any developing region. Its performance is also much better than that of the group of upper middle income countries as a whole (Table 6) In general, there is a strong relationship between cost recovery and the income level of the country: average tariffs rise from around US\$0.10 per cubic meter in low income countries, to US\$0.30 in middle income ones and US\$1.00 per cubic meter in the high income group. The percentage of utilities whose tariffs could make a significant contribution to capital costs rises correspondingly, from less than 5%, to around 30% and 50% in the respective income categories.

Latin America's performance is close to that of the OECD, where cost recovery for water services have also proven elusive. Average residential water tariffs in OECD countries currently stand at US\$1.04 per cubic meter. However, even there, only around half of water utilities have tariffs high enough to make a substantial contribution to capital costs. And the higher costs of service provision in OECD nations means the proportion of utilities whose tariffs can contribute to capital costs is close to Latin America's.

Table 7: Overview of average residential electricity tariffs

	Mean (US\$/Kwh)	Median (Kwh)	Percentage of firms with degrees of cost recovery Nil		
			Partial O&M	Partial capital	
Global	0.08	0.07	15	44	41
By income					
HIC	0.12	0.11	0	17	83
UMIC	0.07	0.06	0	71	29
LMIC	0.06	0.05	27	50	23
LIC	0.05	0.05	31	44	25
By region					
OECD	0.12	0.11	0	17	83
LAC	0.09	0.09	0	47	53
ECA	0.06	0.04	31	38	31
EAP	0.05	0.05	29	65	6
SSA	0.05	0.06	29	71	0
SAS	0.04	0.04	33	67	0

Source: Foster and Yepes (2005).

Notes: Data drawn from 84 countries worldwide, broken down as follows OECD (23), LAC (19), ECA (18), SSA (13), EAP (8), SAS (3)

Electricity tariffs are also closer to cost recovery levels in Latin America than in its developing or upper middle income peers. However, at \$0.09 per kilowatt-hour, residential tariffs are still well below the OECD average of \$0.12 per kilowatt-hour, and cost recovery lags the OECD, where more than 80% of countries have residential tariffs high enough to make a significant contribution toward capital costs. As with water, there is a strong relationship between cost recovery and the income level of the country, although the range of tariffs is much narrower and the absolute extent of cost recovery is far higher for electricity services across the income spectrum. Average residential tariffs for electricity in high income countries are around twice low income ones, against a corresponding ratio of around nine times for water. Average tariffs rise from around \$0.05 per kilowatt-hour in low income countries, to \$0.06-0.07 per kilowatt-hour in middle income countries and \$0.12 per kilowatt-hour in high income countries. The percentage of utilities whose tariffs make some contribution to covering capital costs rises correspondingly from around 25% in low income countries to around 30% in middle income countries, and 80% in high income countries.

Poorly designed social tariffs hinder cost recovery and do too little for the poor²⁷

Cost recovery depends critically on well designed social tariffs. The acceptability and feasibility of raising tariffs high enough to approach cost recovery depends on the existence of social tariff schemes to protect poor consumers. Indeed, social tariff schemes are widespread for water and electricity in Latin America. Note however that even well designed social tariffs are no silver bullets: first, they still leave out the unconnected poor; second, uptake rates for new connections are always much lower for poor households even when connections are subsidized.

Increasing block tariff (IBT) structures are the most common form of social tariffs. However, the effectiveness of IBT is conditional on a close relation between income and consumption. While this is generally true for electricity, it isn't for water, where there is a limited relation between income and quantity consumed. Under IBTs, consumers pay a concessionary rate for the first block of consumption, and increasing marginal rates for additional blocks. In theory, the IBT offers an implicit social safety net as the first block should provide all families

²⁷ This section is drawn largely from Foster and Yepes (2005)

with access to a subsistence level of service at below the full economic cost. It should also still allow utilities to recover the full costs of service provision by charging above cost on higher blocks of consumption.

In the water sector, social tariffs, mostly IBTs, are often badly designed and subsidize ineffectively. Foster and Yepes (2005) found that IBTs were almost universal among 17 Latin American water utilities surveyed in eight Latin American countries. The programs considered also displayed several specific flaws. First, subsistence blocks were generally set too high, at an average of 25 cubic meters per month, at which level most residential consumers benefit from these concessionary ‘subsistence’ rates.²⁸ Second, tariff structures were generally very flat, so that the average tariff only covers full average costs at extremely high rates of consumption. Indeed, in 53% of the utilities considered, the average tariff never rises to the cost recovery benchmark level, so IBTs effectively subsidize all residential water use. Third, fixed charges and high minimum consumption thresholds raise average tariffs for lighter consumers. Of the water utilities surveyed, 94% have fixed charges, averaging US\$2.66 per month, and 40% apply minimum consumption thresholds.

Social tariff programs with socio-economic screening perform somewhat better for water. Three-quarters of utilities in the sample also offered a separate social tariff scheme for customers meeting certain poverty criteria based either on neighborhood or individual characteristics. In most cases, this simply takes the form of a parallel IBT structure offering even more concessionary terms and financed internally by each utility through cross-subsidy arrangements. These social tariff schemes offer an average discount of 67% on what would be paid under the normal residential tariff, but they often do not target well. In Chile, Colombia, Argentina and Paraguay more sophisticated social tariff schemes have developed. However, the estimated error of inclusion ranges from 26% in the Paraguayan project to 51% in Colombia. And the error of exclusion of the poor runs from 13% in Colombia to 96% in Chile.²⁹

There is a much greater variety of tariff structures in use in the electricity sector. While eight countries surveyed use IBT structures, six others rely primarily on linear tariff schedules for residential customers.³⁰ The three utilities serving Buenos Aires are the only ones to offer a declining block structure. Residential tariff structures are almost always based solely on volumetric considerations, with Chile and Uruguay being the only countries that apply time sensitive and load based charging systems to residential customers.

²⁸ Average residential consumption is around 20 cubic meters per month in most of these cities, while benchmark levels of subsistence consumption are 8-16 cubic meters per month. Robles (2001) shows that the IBT structure based on a 15 cubic meter threshold for Paraguay delivers only 20% of subsidy resources to the poor, but that this percentage would rise to 60% if the subsistence threshold was reduced to 5 cubic meters.

²⁹ Or 1% in Colombia and 89% in Chile, if just the connected poor are considered. Errors of inclusion means mistakenly including deserving people, while errors of exclusion means mistakenly excluding deserving people.

³⁰ In these 14 countries, 44 major electric utilities were considered (CIER 2003).

Box 6: Colombia's experience with raising residential water tariffs

In 1994, Colombia passed the Public Services Law, which required reference utility tariffs to raise to full cost recovery levels. The law also limited the extent of cross-subsidies between customers, so that poor households should always pay at least half the full cost of the service, while better-off households should pay no more than 20% above the full cost of service, to finance cross-subsidies to poor households. A two-year deadline was set for the completion of this tariff rebalancing.

However, the tariff increases required to meet these legal goals were extremely large and, moreover, regressively distributed. An increase of 50% was required to bring the reference tariff in line with full cost recovery. Furthermore, as cross-subsidies had historically been much larger than prescribed by law, the tariffs of the poorest households would have had to rise by 400% in real terms.

Given the social and political difficulties entailed, the legal deadline was twice extended, first by five years (from 1996 to 2001 by Law 286/96) and then by a further four years (from 2001 to 2005 by Law 632/01). In the meantime, the requirement for poor households to pay at least 50% of the full cost of service provision was reduced to 30%.

Ten years after the reform law, reference tariffs have now reached cost recovery levels. However, higher-income consumers continue to pay surcharges of 30-60% on their bills, to compensate for the large subsidies still applied to lower income groups. And the broad definition of low income groups used in the Colombian tariff system makes 80% of residential customers qualify to benefit from cross-subsidies. Thus, notwithstanding the progress made towards the tariff objectives established in the 1994 Public Services Law, the water sector continues to make substantial fiscal demands. The Colombian government transferred an average of US\$240 million per year to municipally operated water utilities over the period 1998/01, which accounted for 80% of the resources available for investment in the sector.

Source: Adapted from Foster and Yepes, 2005

Tariffs are generally better designed in the electricity sector. In general, IBT tariffs in electricity have smaller subsistence blocks, with an average value of around 90 kilowatt-hours per month. (Subsistence is usually put at around 40 kilowatt-hours in rural areas or 120 kilowatt-hours in urban zones.) They also tend to have steeper gradients: in nearly half the cases, the average tariff reaches cost recovery levels well within the typical consumption range of a residential household. Finally, electric IBT tariffs tend to have lower and fewer fixed charges and minimum consumption thresholds. Of the electric utilities surveyed, 68% have fixed charges, which average only US\$0.66 per month, while just 11% apply minimum consumption thresholds.

But targeting is still not always effective, even where parallel social tariffs exist. Nine of the countries in the sample offer parallel social tariff schemes, mostly based on IBT structures, even when the main residential tariff is linear (see, for example, Brazil and Colombia). Eligibility for social tariffs is usually confined to households consuming below a certain limit, about 200 kilowatt-hours on average.³¹ But some of these thresholds are set too high, rendering the subsidy programs highly regressive. For example, two social tariff schemes in Guatemala and Honduras include a consumption threshold of 300 kilowatt-hours, nearly three times average household electricity consumption.³² Thus 95% of Guatemalan households and 85% of Honduran households are eligible for the social tariff, so that 60-65% of subsidy beneficiaries are not poor, and 80-90% of subsidy resources are captured by the non-poor. Moreover, only around 50% of

³¹ In a handful of cases additional eligibility criteria are applied based on household characteristics (some Argentine provinces), neighborhood characteristics (Colombia), or whether the family is a beneficiary of other welfare programs (Brazil.)

³² Average household consumption is 102 kilowatt-hours per month in Guatemala and 108 kilowatt-hours per month in Honduras.

poor households in Guatemala and Honduras have an electricity connection, and consequently 55-60% of the poor fail to benefit from the social tariff. However, lower errors of inclusion and a less regressive distributional impact are evident in social tariff programs that employ additional eligibility criteria, such as the socio-economic characteristics of the household (e.g. Argentine provincial social tariff schemes) or its neighborhood (e.g. Colombian cross-subsidy scheme.)

Badly designed cross-subsidization and other social tariffs that cover too many people imply more public support of utilities. This is indeed the case for Colombia (Box 6). In that country, 80% of residential water customers qualify to benefit from cross-subsidies. Thus, despite the progress made towards the cost recovery tariff objectives established in the 1994 Public Services Law, the water sector continues to make substantial fiscal demands. The Colombian government transferred an average of US\$240 million per year to municipally operated water utilities over the period 1998/01, which accounted for 80% of the resources available for investment in the sector. More generally, a narrow base of cross-subsidizers who are over-taxed results in an erosion of the revenue base as the cross-subsidizers opt for self-service (auto-generation or own wells). This is particularly true in the case of water where only about 10% to 15% of the client base is industrial users (as opposed to about 50% in electricity).