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## **PPI partnerships versus PPI divorces in LDCs** (or are we switching from PPPI to PPDI?)

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### **Abstract**

Thirty years ago, in 1974, Chile launched the first large-scale privatization in a developing country. About 15 years later, Argentina provided a new model of global infrastructure management. Since then a variety of public private-partnerships in infrastructure have been adopted throughout the developing and transition world. These experiences add up to a large and heterogeneous enough sample of experiences from which some fairly robust conclusions on who benefited from the reforms and who didn't. Because many of these experiences are also turning sour and the "privatization" fad of the 1990s seems to be turning into an "anti-privatization" fad, it seems important to separate facts from emotions. The paper argues that the wide differences in interpretations of the facts can be explained by wide differences in the assessment criteria used by analysts, including the definition of the baseline data chosen to assess the incremental effect of reforms. It is also driven by the sectors, the regions and probably most importantly the actors on which the analysis tends to focus. Once all these factors have been considered, a relatively fair and quantitative assessment of the prospects of the public-private relationship in infrastructure is possible.

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# 1. Introduction

Thirty years have now gone by since Chile launched the first modern large-scale private participation in infrastructure (PPI) program in a developing country as part of a larger scale privatization policy. It took more than another 15 years to see the experience replicated on a similar scale in another country with Argentina's infrastructure reforms launched in 1989 by the Menem administration. At about the same time, some of the most economically aggressive East Asian countries started to rely on creative project finance for many of their large infrastructure projects. Within 20 years of Chile's daring policy experience, it seemed that all developing countries from the poorest countries of Africa to the richest countries of East Asia were at least flirting with the idea of PPI and often wed to it. Between 1984 and 2003, PPI generated investment commitments of about US\$790 billion.

After reaching a peak of US\$131 billion in 1997, PPI commitments have however steadily dropped and reached less than US\$50 billion in 2003.<sup>1</sup> This is a strong indication that many of the relationships have gone sour. In fact, as seen in many experiences in Latin America, Eastern Europe, Asia or Africa, the new millennium seems to bring a high rate of request for separation or divorce from this policy. For Latin America for instance, Guasch (2004) shows that roughly 50% of the concession contracts signed since the mid 1980s ended up being renegotiated. It thus seems useful to try to take stock of what is going wrong with the infrastructure "couples" that were in the limelight of the 1990s to get a sense of what may have triggered the increasing demands for divorce on both sides of the relationship and to assess what can be salvaged and what needs to be fixed.

As always when it comes to divorces, the story is more complex than it seems. Facts tend to be ignored, reinterpreted or rewritten by each partner in the couple and each one gets a wagon of supporters and detractors who tend to be happy to help rewrite history in favor of the side they want to support. Facilitating the subjective and emotional positioning of observers are the many gaps in the common knowledge of crucial basic facts. Indeed, many of the facts are actually unknown simply because many of the fights and "peace treaties" made within the couple are not shared with the outsiders—e.g. who knows about the side deals between governments and private operators or even between host governments and the government of origin of the operators? who knows about the deals between governments and the unions?.

Recognizing that there are common knowledge gaps, this paper tries to provide a fair overview of basic documented facts which could explain why the rejection of PPI seems to be increasing in many countries while at the same time, new marriages still generated close to US\$50 billion in 2003. The main focus of the paper is on the various dimensions of the distributional effects of PPI. The paper draws a lot on my direct personal experiences and research as a witness of reforms and crisis in PPI in a large number of developing countries and does probably not do justice to a lot of the ongoing research in the field.

The paper is organized as follows. Section 2 briefly reviews the historical context that eased the initial flirting of many governments with PPI. Section 3 gives a sense of the actual

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<sup>1</sup> The data is from the World Bank PPI database.

degree to which flirts with PPI have resulted in weddings. Section 4 reviews the many hopes that PPI had generated. Section 5 summarizes the extent to which the hopes have been made reality. Section 6 shows that PPI was not simply about the relationship between the government and the private infrastructure operators but that many more actors were involved. It also shows that the large heterogeneity across sectors and regions matters to the determination of winners and losers in terms of PPI. Section 7 concludes.

## 2. Remembering the initial conditions

To figure out who wants a partnership and who wants a divorce between the public and the private sector in infrastructure, it is useful to get a sense of who the winners and losers of reforms are. This, in turn, requires some historical baseline from which changes resulting from reform can be compared and their consistency with the promises made assessed.

In this section, I first propose to provide as a baseline a snapshot of the situation at the time at which PPI became attractive to many governments. This baseline takes place around the mid-1980s. Many voters had become tired of the increasing rationing of many essential public services resulting from a long succession of fiscal crisis. These crisis had slowed down the cash flows needed to operate and maintain the public enterprises and clearly reduced the opportunities to increase access rates at higher rates than population growth. Quality was also a source of frustration for many users. Indeed, poor service quality and service deterioration were the norm in many of the countries (WDR 1994).

At the time, for many countries, sector reforms, including public-private partnerships in infrastructure (PPPI), were seen as a way out of an apparently inescapable downward spiral. PPI was expected to reduce power outages, speed up phone connections, improve the quality of water, and increase the safety of transportation systems among many other things. PPI then seemed as a good alternative to a long history of public sector failures.

If access and quality were obvious problems, it is probably fair to say that average tariff levels were quite acceptable to users, in particular residential, with access to the services (except probably for telecoms services). Indeed, *effective* tariff levels (taking into account large shares of unpaid bills) appeared to be low while, power outages and water shortages were the expected norm in many regions of these countries.

The reverse of the low tariff medal was low levels of cost recovery and the resulting fiscal costs. The taxpayers were covering the gaps between average costs and average effective tariffs. Subsidy levels were quite significant in most infrastructure sectors. Most users did not realize or care that the subsidies were also quite regressive. One of the first well documented case is Colombia. Velez (1996) shows that in 1992 found that 80% of the 1.4% of GNP spent on subsidies for utility services benefited mostly middle income households. For Latin America, studies have shown that as much as 60-80 percent of the historical cross-subsidies have gone to households well above the poverty threshold, while as many as 80 percent of poor households failed to benefit.<sup>2</sup> In other words, it was unlikely that the middle class would have been too enthusiastic for reform if quality had been reasonable.

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<sup>2</sup> For a review of these studies, see Estache, Foster and Wodon (2002)

Until quality became a real issue for the middle and upper income classes, the most vocal unhappy user group tended to be the non-residential users. Not only did they not get the quality they needed to be competitive but in addition they were often subject to higher average and marginal tariff rates than residential users. Indeed, cross subsidies tended to be common—favoring mostly the middle class rather than the poor-- and generated significant economic inefficiencies since average tariff levels were increasing with decreasing production costs.

The poorest segment of the population were also quite unhappy because they were largely excluded from the delivery of public services by public enterprises, relying instead on alternative (often high costs) small and medium private providers. However, they had, and still have, little political clout. In a forthcoming study of the evolution of public service delivery in Africa, Estache (2004), reviewing the evidence, shows that for a large sample of African countries, the bottom two deciles of the population are essentially not connected and rely on alternative sources of energy and water. In other words, unless the reforms could generate affordable new access, the poor were not really concerned by the utility privatization wave. In fact, many were already dealing with private small scale providers in rural areas and secondary cities and there was no hope for a bigger public participation in the financing of their private provision.

Individually the various unhappy groups had little leverage on policymakers. Overtime, however, the inclusion in the coalition of the supporters of reform of the middle class--unhappy with the deterioration of service or increasingly demanding—made the demands for reform viable. Collectively, although with very different motivations, a fairly wide accumulation of frustrations of these heterogeneous groups of interests managed to provide the political support needed for reforms. A 1995 UN financed survey suggested that about 75% of the Latin American population actually supported privatization policies then.<sup>3</sup> The main residual vocal group against the reform were the public sector workers (and their families) who lost jobs, and often associated privileges. They were not too concerned either that their jobs were financed by taxes paid by the contemporary population, or bonds to be repaid by the following generation.

To conclude this quick overview of the baseline situation, it may be useful to point out that all of these reforms were taking place in an environment in which the cost of private funds was at an historical low levels. Indeed, there was an unusually high excess supply of funds on the international capital markets favoring FDI and other forms of international of capital flows. This eased PPPI in politically committed countries. The necessary commitment was in fact relatively easy to obtain because the 1990s also saw a wave of ideological changes favoring market oriented reforms among leaders of all political sides. Many of the leaders elected on left leaning platforms (e.g. Menem in Argentina, Cardozo in Brazil or Wade in Senegal) during the 1990s were in fact among the strongest supporters of these reforms.

It may also be useful to point out that in almost all countries, privatization and infrastructure reforms were actually part of a wider reform agenda and that when some of the reforms did not work out as planned, many of the successful ones saw their effectiveness eroded. For instance, Benitez et al. (2003) provide a test of the relative impact of PPPI and of financial markets reforms on the macroeconomic performance. They show for Argentina that

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<sup>3</sup> UN (1999)

credit market restrictions resulting from the failed banking reforms are a much more convincing explanation for the increase in unemployment observed since the East Asia crisis. The test suggests that PPPI was actually associated with increases in the jobs number after the initial adjustment, thereby questioning a standard myth associated with the costs of public service privatization.

### 3. How widespread is PPPI now?

Before reviewing the extent to which the reforms have delivered, it may be useful to say a few words about the extent to which the reforms have been implemented around the world, that is how many countries actually tried to depart from the baseline situation. Table 1 provides a snapshot for 2002 of the extent to which private capital had actually become a significant source of financing of telecoms and energy. The most obvious observation is that private capital seems to be mostly attracted by rich countries. Among developing countries, Latin America clearly stands out--which explains why a lot of the evidence available on the impact of reforms tends to come from that region. For the other regions, there seems to be a certain degree of “specialization” in PPI. East Asian countries have been major players in the electricity generation business with many IPPs signed over the years in roughly two thirds of the countries, nearly as high a share as in Latin America. For telecoms, it is Eastern Europe who is second to Latin America. The most surprising facts to many observers may be that PPI in electricity distribution has been much less common than often assumed by less quantitative assessments of privatization.

<b>Table 1: Countries with Private Capital as of 2002 (% of sample)</b>			
<b>Number of countries in sample</b>	<b>155</b>	<b>155</b>	<b>164</b>
	<b>Electricity Generation</b>	<b>Electricity Distribution</b>	<b>Telecoms</b>
<b>By Income Level:</b>			
Low Income developing	33%	26%	37%
Lower-Middle Income developing	39%	31%	51%
Upper-Middle Income developing	58%	39%	66%
High Income (Developed)	70%	43%	83%
<b>By World Bank-Region classification:</b>			
Sub-Saharan Africa	33%	24%	41%
East Asia and Pacific	60%	20%	38%
Europe & Central Asia	41%	37%	58%
Latin America & Caribbean	68%	57%	67%
Middle East & North Africa	7%	6%	23%
South Asia	38%	13%	50%
High Income (Developed)	70%	43%	83%
Total	46%	32%	55%

Source: Author compilation from various sources

This story is not unique to electricity and telecoms. In transport, the road sector is the one in which the largest number of private sector deals have been signed. While there is no official statistics available, it is safe to argue that private capital has been concentrated on high traffic parts of the road system and that the public sector continues to be the main source of financing and often O&M for the rest of the network. Something similar could be argued

for the airport or port sectors where many countries have tried but few have succeeded outside of Latin America in getting the private sector to take over the business or at least part of it— e.g. container handling, stevedoring or warehousing. As for railways, according to Jane’s World Railways (2004), as of 2003, out of the 131 countries with a railways system only about 25% have some type of private participation in major operations or management.<sup>4</sup> The variance is however high varying from over 50% of African and Latin American countries to less than 5 % in Eastern Europe.<sup>5</sup> As for OECD countries, the usual differences between anglo-saxon and non anglo-saxon countries prevail, with the first group dominated by private operation while the public sector continues to run the trains in the second one.

The assessment of the water sector is more complex. In many countries, this activity is often decentralized and municipalities have the main responsibility for its provision. Historically, large utilities have tended to concentrate on the needs of the largest cities— cream skinning also takes place in the public sector-- and have left the local governments to address their needs and to find local solution with or without technical support from the national government. In that context, there is plenty of evidence that the private sector has been involved for quite long through small service contracts in rural areas and in secondary areas where public and private utilities, have often not managed or wanted to go.<sup>6</sup> As for its role in larger utilities, it is distributed between management contracts, affermages and concessions.

Ultimately, the factual evidence suggests that the flirting with PPPI has led to fewer wedding bells than often argued or assumed. PPPI has worked for the higher income groups across sectors but even there, many governments have been reluctant to tie the knot. More troublesome is the fact that PPPI has been much less effective than often believed in the poorest LDCs. Only one in three or four countries of the poorest countries have been successful in getting the private sector interested in participating in the financing of the developments of their infrastructure needs. This means that for the vast majority of the countries the government has continued to be the main actor in the sector. Moreover, the unmet hope for more PPI has probably left a bigger financing gap than often appreciated.

## 4. The promises of PPPI

Many very diverse, often inconsistent, promises have been made in the context of reforms leading to PPPI. The most common ones can be summarized as follows:

- Contribution to fiscal stabilization
- Increased investments
- Improved efficiency from a more competitive environment
- Contribution to growth
- Better access and affordability for residential users
- Improved governance

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<sup>4</sup> Based on country specific descriptions from Jane’ World Railways Yearbook (2003-2004), available (for a fee!) at [http://catalog.janes.com/catalog/public/index.cfm?fuseaction=home.ProductInfoBrief&product\\_id=115](http://catalog.janes.com/catalog/public/index.cfm?fuseaction=home.ProductInfoBrief&product_id=115)

<sup>5</sup> For a recent overview of progress in the transport sector, see Estache and Serebrisky (2004)

<sup>6</sup> Collignon and Vezina (2000)

The relative importance of the expected outcomes is probably not necessarily in that order for all governments and stakeholders but this ranking is probably not too far off for many countries.

The fiscal impact of the reform was indeed probably the main expected payoff of the reforms in many countries, at least in the short run. The gains were expected to come from three sources: (i) income from the sale, lease or rental of assets; (ii) the reductions in public sector operational and capital expenditures (OPEX and CAPEX) resulting from the transfer of responsibilities for the sectors to private operators and (iii) the net increased tax and non tax revenue.

This last component has often been underestimated in policy discussions and yet it can be quite important. In many countries, infrastructure services add up to a fairly large share of the economy—typically 10-15% of GDP-- and any expansion in the “taxable” part thanks to its “privatization” is likely to make a difference if implemented with that concern in mind. To get a sense of the potential payoff in steady state—i.e. ignoring the one time payoff from the PPI transaction itself--consider the following estimation. Very roughly if the sector generated 10% of GDP and 60 to 75% of this value added was public and largely non-taxed before the reforms, at an average corporate income tax rate of 33%, this could generate 2-2.5% of GDP in additional income from direct taxes. Just as important is the potential that can be derived from indirect taxation by all government levels. It is thus not too surprising to see the support for this kind of policy from Ministers of Finance and many of the donors.

Clearly related is the investment payoff of the reforms. The reformers expected to transfer the responsibility for at least some CAPEX from the public to the private sector but additional investments in infrastructure were also expected to result. Investment needs had indeed grown quite significantly over time with population and economic growth while fiscal constraints and changes in political priorities had resulted in drops in public investment levels in comparison to historical levels. For instance, for the first decade of this new millennium, the approximate new investment needs vary from as high as 4.5% of GDP for low income countries to about 1-2% of GDP for high income developing countries. Adding maintenance requirements, total resources needed ranged from close to 10% for the poorest countries to around 3% in high middle income countries. The developing country total expenditure needs in the sector average around 7.5% of GDP and many hoped to see a large share of these needs to be financed by PPPI.<sup>7</sup>

There was also an expectation that improved competition and regulation in the sector would lead to significant efficiency gains in the sector and hence cost reductions which would contribute to reduce the financing gap in the sector. The most obvious indicator of this hope was the fairly wide adoption of incentive based regimes in the design of regulatory frameworks. In energy, water, telecoms or transport, price caps tended to be the most favored form of regulation adopted by reforming governments. The right incentives were expected to get operators to cut costs and not just by reducing employment. The private sector, freed from many of the political constrained imposed on public sector operators was expected to unleash improvements in technological and technical efficiency and not just labor productivity.

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<sup>7</sup> For details on these estimates, see Briceno et al. (2004)

The promised increased investment and improvements in quality would also generate a better overall investment climate in the reforming economies. The business environment would improve for investors in the sector, making it easier for foreign companies to invest in the revival of infrastructure. Investment would also flow faster and better than before the reforms in sectors needing infrastructure to bloom. This in turn was expected to make a difference in terms of growth prospects.

There was also an implicit promise that the residential users would eventually benefit from the increased investment and the improvements in efficiency. The guarantee was built in the commitment to organize scheduled tariff revision as in the UK to make sure that on a regular basis the expected efficiency gains would be passed on to users in the form of lower average tariffs--this was one of the expected payoff of the commitment to the development of a strong regulatory capacity. As for the poorest, most reforming governments would simply make sure that they would impose universal service obligations (USO) to avoid possible exclusions from any segments of the population. There was however very little discussion or commitment made with respect to the financing of these USO.

A final promise associated with PPPI was that the governance of the sector would improve. In practice this means that corruption would drop in the sector. Infrastructure had indeed been traditionally associated with high levels of corruption at the construction stage as well as at the consumption stage. More transparent processes, more accountability of the operators and of the governments were expected to be instrumental in reducing the problem. The introduction of competition where possible and of independent regulatory institutions would also contribute to the stability of the PPPI experiences.

## **5. To what extent were the promises met?**

The assessment of the fiscal impact of the reforms is currently one of the most hotly debated topic among policymakers. There is indeed a debate on the extent to which the macroeconomic reforms are now rationing the infrastructure sectors—the fiscal space debate. The mere existence of this debate implies that the public sector is far from being a minor actor in the financing of the sector and suggests that the fiscal outcome of the reforms is not what it was expected to be. In assessing the fiscal impact of the reforms, it is fair and useful to distinguish between the short and the medium run effects.

The anecdotal and more formal evidence available suggests that the short run payoffs have been quite significant.<sup>8</sup> As expected, in most countries, short run public savings have been the main outcome of reductions in the role of the public sector. To a large extent this is because infrastructure services were costing more in OPEX and CAPEX subsidies than it was generating in tax and non-tax revenue. Argentina's railways system was costing over a billion dollar per year up to the early 1990s reforms. For most countries, this was a “no-brainer” which suited well the macroeconomic adjustment needs.<sup>9</sup>

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<sup>8</sup> Ugaz and Waddams Price (2003) or Nellis and Birdsall (2004) for instance for a wide range of experiences or Chong and Flores de Silanes (2004) for Latin America.

<sup>9</sup> Privatizing is not always the best choice from a fiscal viewpoint. In the second half of the nineties, Uruguay was one of the countries in which from a strict short term macroeconomic fiscal viewpoint, the optimal policy was not to privatize simply because the revenue generated by the sector was quite significant.

The longer run story is however much more subtle and is at the core of the current debate. In many regions, the concern for affordability of public services is currently so clearly at the top of the politicians' priorities that subsidies for both OPEX and CAPEX tend to last longer than the macroeconomic situation would require or tend to crawl back over time. In Eastern Europe for instance, by the end of the 1990s, average cost recovery in the electricity sector was 63%. Between 2000 and 2002, it improved to 68%, due to an average price increase of 16% across the region. But the combination of high losses, non-payment of bills, and below-cost recovery tariffs added up to a fiscal cost of, on average, 7.5% of GDP at the end of the 1990s. It had dropped to 5.9% by end of 2002 through improvements in cost recovery but it remains high.<sup>10</sup>

Even for regions where the reforms had included major tariff rebalancing and initial subsidy cuts to ensure increase sector autonomy in a fiscally sound environment, the public sector eventually returned to the subsidization of the sectors. According to a recent study of the Latin American experience (Campos et al. (2003)), in that region, the long run effect of reforms is different for utilities and for transport. Utilities' (energy and water and sanitation) privatization tended to be associated with no statistically significant increase in the contemporaneous GDP/capita or contemporaneous gross domestic investment, but tended to be statistically significant associated in the long run with increases in public investment and decreases in recurrent public expenditures. They also find in the long run an increase in the fiscal deficit in comparison with the level obtained from the initial impact of the reform. This implies that all the additional revenue from additional taxes introduced by all government in many countries to recapture some of the efficiency gains achieved by operators have not been enough to offset the additional subsidies requirements. For Transport, they find a statistically significant increase in contemporaneous GDP/capita but no effect on gross domestic investment. As for the fiscal effect, they find the exact opposite to what they found for utilities. In the long run, increased PPI in transport is associated with a statistically significant decline in public investment and a statistically significant increase in recurrent public expenditures. It is also associated with a statistically significant decrease in the contemporaneous deficit.

While these results are clearly specific to this region, they provide more general insights. Transport privatization usually takes place in a much more competitive environment. The public sector exits and the private sector decides what's in and what's out. Intermodal competition is such that many services are often cancelled and inefficient providers exit the market. Small ports and many train stations or services are closed and that's that. The only major problem the public sector has had is the need to increase operational subsidies to passenger rail when governments have not been willing to increase tariffs as agreed upon contractually. Often also, governments have ended up subsidizing freight railways to compensate for their inability to avoid predatory competition from the trucking industry.

In water and energy, the public sector has generally not left it to the private sector to decide the extent to which a service is provided or not. The markets failures are much more brutal and service obligations crucial. The public sector is the provider of last resort for services viewed by most as essential needs. The Latin American experience suggests that cream-skimming has been important in utilities. The long run fiscal consequences for the sector are the result of two factors: (i) the elimination of the cross-regional cross subsidies

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<sup>10</sup> Estache and Gassner (2004)

resulting from cream-skimming for both OPEX and CAPEX and (ii) the high rate of renegotiation in the water sector which has resulted in effective increases in subsidies to CAPEX also in the cream of the business.

The impact of reforms on investment has at least two dimensions that deserve a closer look.<sup>11</sup> The first is the impact on the total level of access to the population and to the non-residential users. The second is the fiscal cost of these increases. On the first point, the evidence suggests quite strongly that the introduction of competition and effective regulation have generated increases in access rates in most sectors in most regions. The evidence is stronger for telecoms than for water and sanitation while the energy sector is in-between. The evidence on the impact of privatization is more ambiguous and certainly much more of a source of conflict and depending on the specification of the models tested.<sup>12</sup> Of particular interest is the finding by Wallsten (2004) on the telecoms sector. He shows that establishing the regulatory agency before PPI has a higher payoff than doing it simultaneously.

On who pays for the investments, the story is somewhat less positive. In the early 1990s, some optimists were forecasting that the private sector would be the main source of financing of the sectors. In retrospect, the increase in private sector participation is not trivial but PPI is not the main source of financing in the sector. The US\$790 billion committed—not spent...—between 1984 and 2003 represents roughly 22% of the investments in infrastructure—70% is public sector and 8% ODA.<sup>13</sup> Moreover, as indicated in the introduction, the flows of private cash have declined since the 1997 East Asia crisis. The fact that Campos et al. (2003) show that the high renegotiations rates documented by Guasch (2004) have been such that Latin American governments have had to increase the support to CAPEX to some industries adds to the sense that the investment story is not as positive as it was made to be 15 years ago.

The effectiveness in meeting the efficiency gains is a less controversial topic. Although there is a tremendous amount of heterogeneity on the academic market as to who the impact of reforms can be measured. Some authors (e.g. Chong and Flores de Silanes (2003)) tend to focus on more financial or partial indicators (sales, profits, technical or service quality, labor productivity ...), others (see Coelli et al. (2002) for a survey) tend to focus on the effects of reforms on various efficiency types (allocative, technical, technological). Others yet have been working on the welfare changes through partial indicators or general equilibrium models (see Estache, Foster and Wodon (2002) for a survey on these approaches). Whatever the approach, the overall message is usually quite positive for electricity, telecoms and most transport privatizations. There are more doubts on water privatization with a wide variety of experiences (for instance, see Estache and Rossi (2002)). Most of these papers however tend to focus on the ownership question. A few papers have now started to look at the impact of regulation on these efficiency measures. For developing countries, Estache and Rossi (2004a) show how the choice between price caps and rate of return matters as expected for efficiency and much more so than ownership in electricity distribution.

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<sup>11</sup> This discussion ignores the essential link of investment decisions with the cost of capital. Estache and Pinglo (2004) show that this cost of capital is particularly high in low income countries, a fact that contributes to explain the low levels of investment in that country group.

<sup>12</sup> See for instance Wallsten (2004) for an overview of the experience in telecoms in developing countries. See

<sup>13</sup> For the original assessment of the financing shares, see DFID (2002)

As for the impact on the investment climate and the associated growth effects, the evidence is also quite strong. The consultation of foreign and domestic investors organized in preparation of the 2004 World Bank World Development Report on the Investment Climate identifies lack of infrastructure as one of the main sources of disincentives to investment. But there are many more ways of looking at the problem. For instance, Easterly and Serven (2003) estimate for Latin America that inadequate investment in infrastructure during the 1990s reduced long-term growth by 1–3 percentage points, depending on the country. To get a sense of the potential payoff, it is useful to compare East Asia where the investment gap has been addressed more effectively (mostly through government financing) with the Latin America. Easterly and Serven (2003) argue that about one-third of the difference in output per worker between Latin America and East Asia is explained by differences in infrastructure investment policies. A similar story holds for Africa. Indeed, Ramirez and Esfahani (2000) find that if Africa had enjoyed growth rates in telecommunications and power generation infrastructure comparable to those in East Asia in the 1980s and 1990s, its annual growth rate would have been 1.3 percentage points higher.

With respect to the promise of improved affordability, the results are also mixed. In most countries, the initial tariff rebalancing was quite good from an efficiency viewpoint but was often quite regressive in many countries. The reformers did often not pay enough attention to the redesign of tariff structures and the efficiency gains were achieved at the cost of an increase in the burden imposed on the lowest income groups connected. Moreover few countries have already organized the much anticipated tariff revisions needed to pass though some of the efficiency gains to the users and few if any of the unscheduled tariff revisions organized in the context of contract renegotiations have managed to do so effectively. This is well documented for Latin America (Estache, Foster and Wodon (2001) or Ugaz and Waddams-Price (2003)) and there is increasing evidence that this was also an issue in the context of reforms in Africa (Estache (2004)) and to some extent in Eastern Europe (Estache and Gassner (2004)). The adjustment adopted by many countries has been the decision to continue or scale up the subsidies to large segments of the population. This in turn feeds back to the fiscal impact of the reforms. This is a clear major problem. From a more social viewpoint, the major issue is that many of the subsidies are still not that progressive. As mentioned earlier, historically subsidies have tended to favor the middle and upper income classes simply because they were connected and the real poor were not. In the poorest regions of the world, including countries which have reformed, this continues to be the case. Increases in access rates hardly keep up with population growth rates.

The last promise of the reforms was the improvement in the governance structure of the sectors. This implied that countries would increase the independence of their regulators and that this, in turn, would allow a more effective regulation of the sector (i.e. it would speed up increases in access rates, reduce costs, improve cost recovery and quality) and reduce the corruption levels of the sector. On the first promise, there is cross sectoral information available. However, Table 2 shows that, for electricity and telecoms, many government have indeed created autonomous regulatory agencies, including governments which have, willingly or unwillingly, not opened up to private capital. In 53% and 60% of the countries, respectively for electricity distribution and telecoms, autonomous agencies have been created. There are 10 times as many countries with agencies in 2002 than there were in 1990. Of course, this does not mean that agencies are really independent, but the signal is in the right

direction.<sup>14</sup> But the signals are not the same across country types or across sectors. Developing countries and developed countries differ in their commitment to autonomous regulation across sectors. Developed countries seem to be much more committed to autonomous agencies for electricity while developing countries seem to be more committed to creating agencies in telecoms. This partially reflects the fact that many of the regulatory issues in telecoms can be dealt with by competition agencies which are common in developed countries but much less so in developing countries—as well as the fact that there were more telecoms deals than energy deals in LDCs during the period covered here.

Table 2 also reveals major differences across regions within developing countries. Latin America is a strong believer in the creation of agencies in both sectors. Eastern Europe has a strong commitment for electricity but not for telecoms. Africa and South Asia actually lead the regions for telecoms although they lag for electricity. The most unexpected information provided by Table 2 may be the rather modest commitment by East Asian countries to the creation of autonomous agencies. Comparing Table 1 and 2 should make it clear that the creation of autonomous agencies is not a sufficient condition to attract private capital in either sector. There is however some partial evidence that for countries with a weak history of governance, it helps.<sup>15</sup>

**Table 2: Countries with Autonomous Regulatory Agency as of 2002 (% of sample)**

	<u>Electricity</u> (155 countries)	<u>Telecoms</u> (204 countries)
<b>By Income Level:</b>		
Low Income LDCs	33%	65%
Lower-Middle Income LDCs	50%	54%
Upper-Middle Income LDCs	63%	67%
Developed	88%	55%
<b>LDCs By Region:</b>		
Sub-Saharan Africa	30%	75%
East Asia and Pacific	36%	19%
Europe & Central Asia	70%	59%
Latin America & Caribbean	73%	73%
Middle East & North Africa	7%	50%
South Asia	25%	75%
<b>Total</b>	<b>53%</b>	<b>60%</b>

Source: Author compilation from various sources (ITU for telecoms and consultation with World Bank, IDB, ADB, EBRD and EEC economists for electricity)

A second indicator is the extent to which corruption has declined with reforms in the sector. Here the story is not as positive. While there is no long term monitoring of corruption in this sector, there is partial information available from various recent surveys of perception by foreign investors summarized in the World Bank Governance database. The database shows that, between 1999 and 2002, for the richest developing countries, corruption has declined but extremely modestly (no change is rated at 4 on a scale of 1 to 7 and that country group was rated at 4.1). The other two country groups (low middle and low income LDCs) have seen corruption increase (the rating is 3.3 and 3.7 respectively). Of course, these are

<sup>14</sup> See for example Stern and Holder (1999) and Stern, J. and J. Cubbin (2003)

<sup>15</sup> See for instance the recent book by Kessides (2004) for an overview of the debate.

very subjective results and they need to be complemented by a more formal analysis of the interactions between corruption and the reforms, including the creation of autonomous regulatory institutions in each sector and privatization.

For instance, Estache, Goicoechea and Manacorda (2004) show for the telecoms sector that: (i) both privatization and the existence of an independent regulatory agency (IRA) tend to be associated with higher access rates and the effect of privatization is stronger than the effect of regulation but there is no significant differences across income groups of this impact;<sup>16</sup> (ii) in terms of the effect on prices, the existence of a regulatory agency has no significant effect in the lowest income group but it is associated with higher prices in middle and upper middle income developing countries—reflecting the usual tariff rebalancing that takes place with reform; (iii) there is no difference in the effects of privatization on prices associated with differences in income levels. Of direct relevance to the discussion here is first the observation that the existence of an IRA and privatization both reduce the effects of corruption and investment risks on access but there is no effect of the interaction with government stability. With respect to prices, the existence of an agency increases the increase in prices associated with investment risk but offsets the impact of government instability. Corruption and investment risks reduce the gains from privatization in terms of access while they somewhat reduce the price increases that result from privatization. The regression yields other interesting results on the role of corruption and other environmental variables in the sector but they go beyond the scope of this paper.

The main overall conclusion is that the record is quite mixed. While in general, the efficiency levels, quality and access rates have benefited from the reforms, these gains have been achieved at significantly higher fiscal costs and distributional costs than expected. There are thus plausible reasons for tensions between governments, operators and users which may contribute to some of the divorces or at least some of the questioning of the relationships. Indeed, the PPPI relationship meets the expectations of the sector specialists concern with efficiency but probably not the standards of macroeconomists concern with the fiscal costs of the sector and with the interest groups committed to ensure that the interests of the poor are at the top of the short run agenda and not just on the long run agenda.

## **6. So... who wants a wedding and who wants a divorce?**

Section 5 showed the appropriate assessment of what works and what doesn't in the PPPI couple is a multidimensional problem. This is likely to be strongly correlated with the winners and the losers of reform. This problem may be looked at from three main viewpoints. At the more global level, it is useful to check the extent to which the levels and factors of success of PPPI vary across regions or country types and the extent to which they vary across sectors.

Table 3 provides a snapshot of how much each region has received in terms of private sector commitments in infrastructure. It shows the total level, the number of projects and the investment commitment per capita for the period 1984-2002. Latin America is clearly the

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<sup>16</sup> This is in contrast to what Wallsten (1999) finds. His model covering the 1984-1997 period (i.e. pre East Asia crisis) finds that Privatization alone was associated with few benefits but combined with IRA made an impact. He also had a competition variable which was strongly correlated with access rates.

winner of the global flirting with PPI during the 1990s. It leads in all categories. Particularly impressive is the per capita figure. East Asia has done quite well in terms of total investment levels and number of projects but per capita, the numbers are clearly not as impressive. As expected, South Asia and Sub-Saharan Africa, the two globally poorest regions have been the main losers. Although the Middle East appears to be at the bottom of the distribution of the investment payoffs of reform, its per capita payoff is twice as large as for Africa and two and a half times larger than for South Asia. Eastern Europe has done somewhat surprisingly well per capita.

Table 3: Selected Indicators of Regional distribution of PPPI

	Total investment commitment (US\$ billion)	Number of Projects	Average Project Size (in US\$ million)	Accumulated Investment commitment per capita as of 2002 (in US\$)
East Asia	182	687	265	99
Eastern Europe	100	589	169	211
Latin & Central America	368	978	376	694
Middle East	24	64	312	79
South Asia	42	195	213	29
Sub-Saharan Africa	26	213	122	38
Total	741	2726	272	141

Source: Author Calculations from World Bank PPI database and World Development Indicators

Looking at sectors the story of the winners and losers is also quite clear as can be seen from Table 4. In terms of investment commitments and average project size, the telecoms sector is the clear winner of the PPPI experience so far. In terms of the number of projects, however, telecoms lag both the energy and the transport sector. The clear loser of the experience is the water and sewerage sector. Things did not work out as planned. Its investment figures are very significantly lower than for any other sector. It represents only 5% of the total investment commitments generated between 1984 and 2002, in spite of the huge needs identified in the context of the Millennium Development Goals debate.

Table 4: Sectoral Distribution of PPPI (1984-2002)

	Energy	Telecoms	Transport	Water and Sewerage	Total
Total Investment Levels (US\$ billion)	242	332	129	39	741
Total Number of Projects	1071	680	730	245	2726
Average Project Size (US\$ million)	226	448	176	159	272

Source: Author Calculations from World Bank PPI database

The most interesting assessment may be in terms of the payoffs to the actors. The list of actors in the PPI game is relatively long and longer than recognized by casual observers. Most typically looked at are the users, the taxpayers, the workers and the operators. It is however useful to add the bankers, one of the driving forces behind most of the transactions. It is also useful to isolate the owners from the operators and within that group to distinguish between foreign and local owners. In view of their importance in the decision to reform and in

the implementation of the reforms, it would be unwise to ignore the role of politicians. For a similar reason, it is useful to look at the role of donors in the effectiveness of the PPPI experience.

Starting with the users, the overall story is probably globally positive in the long run at least. Access rates and quality have improved but many services may be less affordable than they use to be because of tariff rebalancing and improved costs recovery rates. In many countries this has had unhappy distributional implications which have largely contributed to the dislike of the PPPI experience. For the poorest of the poor, the story is really a longer run story, the speed at which access rates have improved has been such that many have not yet been included in the investment plans of the utilities. The imposition of universal service obligation will eventually payoff but it may take a while. Moreover, cream-skimming in the design of reforms has often left rural and suburban areas out of the service obligations. In other words, these are at best indifferent to the reforms and at worse irritated because they feel excluded. This is why in so many countries alternative institutional arrangements are emerging. The initial successes of rural energy and water programs look very promising for many of the poor users indeed.

The taxpayers should have been happy in the short run, assuming that the fiscal consequences of the reforms are clear to them—and this may be a strong assumption in view of the poor marketing of the reforms. The short run fiscal payoff has indeed been in general positive. However, the high renegotiation rates have revealed many problems. Taxpayers are increasingly hurt since they often end up being pulled back in the sector to support PPPI. This is contributing in a non-trivial way to the reform fatigue observed in Latin America and Africa at least.

The workers have generally lost in the short run since many of the reformed public enterprises used to be overstaffed. Unions are thus very likely to be vocal against PPPI. The longer run evidence is however more complex again. Chong and Lopez de Silanes (2003) show that, for a large range of experiences (including infrastructure but covering many more sectors), accounting for the increased long run demand that results from lower costs, employment increased in the reformed sectors within a few years.

The operators are quite a hybrid group. They can be highly specialized as in energy, railways or telecoms or they may be made of teams of specialists combining construction specialist for heavy works and sector specialist operators as in water and roads. They can be local, foreigner or a combination of both. The evidence suggests that in the long run, they are fine with PPPI if the rate of return on their operations is higher than the cost of capital they are facing.

For many operators, PPI has been a challenge since the East Asia crisis, particularly for foreign operators (see Estache and Pinglo (2004)). But many of the operators, in the short run, making enough cash to cover operational expenditures, and ideally the short term debt service obligation, tends to be enough. This was of course easier for local operators who pay dividends in local currency and it was easier for operator with low leveraging in foreign currency since they do not have to deal with debt service in hard currency. The fact that so many of the foreign operators stayed in the main East Asian countries after the 1997 crisis and that so few of the foreign operators have actually left Argentina since 2002 serve as evidence to this short term view of the interests. The road sector also reveals that the interests of the

different partners can differ quite quickly. The road sector is one of the sectors with the highest renegotiation rates (Guasch 2004) but in the process of renegotiation—which often took place after the biggest public works had been concluded—, there is a split in the position taken by the various members of consortia. The construction companies tend to pull out because they have already got what they wanted from the deal and the operating companies tend to stay because they have a long run interest in the business.

The heterogeneity of operators explains their mixed messages on their assessment of the success of their partnerships with the public sector. Clearly, operators with dominating short term concerns and operators with little investment commitments and more of a management interest will tend to favor it. Those with long run concerns, including the need to slowly amortize heavy investments, are now much more likely to have cooled off to PPPI. For the operators interested in continuing the relationship, cream-skimming is likely to be much more common from now on. Operators will not pass on obviously great opportunities but it is likely to take a few years before the commitment levels recover in any significant way as risk aversion in the business seems to have increased significantly. As for salvaging the existing partnerships, renegotiations will lead to much lower risk levels internalized by operators and this means much less private investment associated with PPPI. Management contracts or similar arrangements are likely to become a much more common form of PPPI. Demand and costs uncertainty—in particular exchange rate risks—have become too tough to handle for foreign operators under most common regulatory arrangements. This has opened the door to the development of the local private and to an increase in the recognition of the small scale operators who have a long history of delivering where utilities did not deliver. PPPI will probably thus continue but not in the same form.

Of particular relevance to the future of PPPI are the actors who tend to stay more in the shadow. First there are the bankers. Their role is generally underestimated in public debates on PPPI yet they are central actors and operators could not deliver much of their investment commitments with these bankers. Indeed, operators have basically three main financing options: equity, loans from national development banks at concessionary rates or commercial money—retained earnings will help in the long run but obviously not in the short run. The main financing problem for operators in LDCs is that they can only very seldom rely on local banks to provide long term financing—the longest term available tend to be 12-15 months. They thus need to rely on international banks with the ability to “mimick” long run financing for investment in assets with economic life ranging from 20 to 50 years.<sup>17</sup> In other words, when an operator signs a 30 year contract, chances are that the bankers will become a crucial partner in the PPI relationship.

What is less appreciated is that the bankers can benefit from the transaction whether the relationship is a happy one or an unhappy one. Indeed, when things go sour and a renegotiation is needed, as was the case in East Asia at the end of the 1990s or in Latin America more recently, the more active players are the financial advisors helping in the financial restructuring of the business. Every restructuring, just like any initial placement of bonds, has its plethora of transaction fees which are often much more profitable than any

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<sup>17</sup> For large international groups such as the large energy or water companies, it is relatively easy to borrow on international markets for the long run which is one of the underestimated payoff of PPI but for smaller operators and clearly for small local operators, borrowing to do business is much more complex.

lending activity per se for these companies. It is thus natural to expect that this group of actors will tend to be in favor of a long lasting PPPI and will be there, rain or shine.

The second group in the shadow, but increasingly often in the limelight, is the group made of the official and unofficial donors. International aid agencies have indeed been key players in these reforms as well, both as advisors in their implementation and often also as financiers of the restructuring needed to facilitate these transactions. It turns out that this is also a fairly heterogeneous group. The multilateral international organizations have generally been seen as strong supporters of the relationship and often been blamed or credited—depending on where you stand-- for being its promoter. The bilateral aid agencies have probably been just as supportive of the relationship—simply look at their websites to get a sense of their position-- but have attracted much less attention. This is to some extent because in many countries, their job is often to support the international transactions of national operators. Then there are the NGOs. They can be considered as unofficial donors and are increasingly becoming a player in the public debate. Their position is often much more critical of PPPI.

The final players deserving an explicit recognition in the debate on whether there is a PPPI or a PPDI are the politicians. Ideology changes and the wheel of “ownership preferences” seems to have now done a full turn since it was launched in the late-1980s. The withdrawal of large companies from the developing world such as Hydroquebec or Enron is providing an opportunity for the governments to get a sense of how to manage infrastructure as a public enterprise again and the feeling must be quite positive because many politicians consider that using the public services privatization experiences as a scapegoat for all government failures of the 1990s is a viable political position. The unhappiness of the electorate as users fuels the politicians’ formal change of heart, and the politicians’ zoom on this part of the reform agenda fuels the anti-privatization emotions of the users. The documented corruption among several of the public administrators responsible for the reforms ease the politicians’ case for a change in government relying on a promise that the PPPI couples will not be maintained at the expense of users and taxpayers. As the paper has shown, facts reveal a much more complex reality but these facts do not seem to drive the political agenda on this specific topic. Some policies are fads, many voters tend to have short memories (and high discount rates: they want it all right and right now) and counterfactuals are hard to establish (would things have been better if the public sector had continued to be in charge?).<sup>18</sup>

In sum, as of the end of 2004, the coalition of the supporters of a continuation of the relationship seems to be dominated by the bankers, some of the operators and mostly non-residential users. The coalition of the supporters of a divorce is led by politicians and NGOs and supported by unions, taxpayers, residential users and includes some of the operators dissatisfied with the experience so far. Most of these actors have a fair claim for their position but there is no clear cut case for one or the other position. Multilaterals tend to have a much more pragmatic view of PPPI. Too many effectiveness criteria are in the balance and the optimal choice will differ across sectors and across regions to be able to get a straight answer. Ultimately it has to be a matter of preference by the voting majorities but these majorities

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<sup>18</sup> A more cynical interpretation of the political changes of heart may be that the privatization cow has been milked as much as possible and it is time to move on to the next cow.

need to be provided with a fair knowledge of the trade-off between fiscal, efficiency, equity and governance goals and need to have a clear sense of how these trade-off evolve from the short to the long run. If the commitment to transparency and education on the reforms of the 1990s is an indication of things to come, the chances are that the voters and opinion makers will remain insufficiently informed.

## **7. Concluding comments**

Whether countries want to pursue the PPI experience or try something else, the 1990s have provided a number of useful lessons of relevance when considering the alternatives to PPI.

First, ignoring distributional weights, the reforms of the 1990s have generated relatively well documented welfare gains in most sectors as compared to the pre-reform situation. Any alternative policy will have to be able to add to or improve upon these welfare gains (defined in terms of efficiency).

Second, considering distributional effects, the evidence suggests that, in many countries and sectors—although not all-- reforms failed many of the poorest, ignoring them in the short run, or failing to rely on instruments that could deliver both efficiency and equity improvements in comparison to what prevailed before the reforms. This need not be so. It should be easy to improve on the poverty payoff of PPI but it is likely to come at a fiscal cost or will require some degree of cross-subsidization.

Third, the public sector is likely to continue to be a major actor in the sector as provider, as financier, but also as regulator; governments and politicians seem to be quite aware of the importance of the first two roles but much less aware, or much less keen, on the regulatory role. Yet regulation is how the incentive to ensure service delivery at lowest cost is built in reforms and how the cost savings from the incentives are shared with the users. Whatever the new arrangements, regulation will have to be done much more effectively and fairly than the reformers of the 1990s managed to do. Effective regulation requires effective regulatory tools and effective skills. The adoption of these tools and skills depends on the commitment of the politicians as well as on the recognition of its importance by the international community—and this includes multilateral as well as bilateral donors--providing technical assistance for the implementation of the reforms.

Fourth, there are many ways of splitting the responsibilities between the public and the private partners. A lot of the emphasis has been on the investment side but there are plenty of opportunities to also get the private sector to take responsibility for minimizing the operation and maintenance cost even if it is not interested in taking on any investments risks.

Fifth, the sector is very sensitive to the macroeconomic shocks that drive demand as well as the cost of the sector. The reforms of the 1990s have not been very effective at addressing exchange rates shocks or more general financial market shocks. The next wave of reforms needs to address the weaknesses of the capital markets and demand shocks much more explicitly.

Sixth, corruption continues to be a plague in the sector and the only way out is a much stronger commitment to transparency in the transactions with the private sector but also the

transactions within the public sector. The unwillingness of many public and private actors to generate the basic policy relevant information in sectors catering to some of the most basic needs of the poorest populations of the poorest countries of the world and in which monopolies— and hence unilateral control of socially relevant information--tend to prevail is simply outrageous. The adoption of new international accounting standards scheduled for 2006 should address this need increased transparency but it will require a commitment of the international community to their strict enforcement in developing countries by all operators, local as well as foreign. In an ideal world, it would also lead to the adoption of decent regulatory accounting principles for regulated infrastructure services.

Ultimately, the internalization of these lessons will generate the accountability needed to get good weddings going and bad flirts abandoned. How many of the good flirts end up in weddings and how many in divorces will depend on how well these lessons are internalized.

## References

- Benitez, D., O. Chisari and A. Estache (2003), "Can the gains from Argentina's utilities reform offset credit shocks?", in Ugaz, C. and C. Waddams Price, ed.,
- Briceno, C., A. Estache and N. Shafik (2004), "Infrastructure Services In Developing Countries: Access, Quality, Costs and Policy Reform", The World Bank, (forthcoming)
- Calderon, C. W. Easterly and L. Serven. (2003). "Infrastructure Compression and Public Sector Solvency in Latin America", in Easterly, W. and L. Serven.
- Campos, J., A. Estache, N. Martin and L. Trujillo. (2003). "Macroeconomic Effects of Private Sector Participation in Infrastructure", in Easterly, W. and L. Serven,
- Chisari, O., A. Estache and C. Romero (1999) "Winners and Losers from the Privatization and Regulation of Utilities: Lessons from a General Equilibrium Model of Argentina", **The World Bank Economic Review**, Vol. 13, No 2., pp. 357-378
- Chong, Alberto and Florencio Lopez-de-Silanes. 2003. "The Truth about Privatization in Latin America", Inter-American Development Bank Working Paper, October
- Coelli, T., A. Estache, S. Perelman and L. Trujillo (2003), **A Primer on Efficiency Measurement for Utilities and Transport Regulators**, World Bank Institute Publications, Studies in Development Series
- Collignon, B and M. Vezina (2000), **Independent Water and Sanitation Providers in African Cities: Full Report of a Ten-Country Study**, Water and Sanitation Program. UNDP-World Bank. April 2000.
- DFID (2002), "Making connections: infrastructure for poverty reduction", mimeo, available at [http://62.189.42.51/DFIDstage/FOI/dc/7mar02\\_making\\_connections.pdf](http://62.189.42.51/DFIDstage/FOI/dc/7mar02_making_connections.pdf)

- Easterly, W. and L. Serven., editors, (2003), **The Limits of Stabilization: Infrastructure, Public Deficits and Growth in Latin America**, Stanford University Press
- Estache, A. (2004), “Utilities reform in Africa: efficiency vs. equity of performance outcomes”, mimeo, The World Bank
- Estache, A. and K. Gassner (2004), “Recent Economic Development in Energy and Water in Eastern Europe”, mimeo, The World Bank.
- Estache, A. , A. Goicoechea and M. Manacorda (2004), ‘The access, quality and price outcomes of telecoms reform and governance’, mimeo, The World Bank
- Estache, A. and M.E. Pinglo (2004), “What happened to the private sector returns in developing countries since the Asian crisis?”, World Bank Policy Research Working Paper, No3373
- Estache, A. and M. Rossi (2004), “*Do Regulation and Ownership Drive the Efficiency of Electricity Distribution? Evidence from Latin America*”, **Economic Letters**, (forthcoming)
- Estache, A. and T. Serebrisky (2004), Where Do We Stand on Transport Infrastructure Deregulation and Public-Private Partnership?”, World Bank Policy Research Working paper No. 3356
- Estache, A, V. Foster, and Q. Wodon (2002) **Accounting for Poverty in Infrastructure Reform**. Washington, D.C. The World Bank Institute of Development Studies
- Estache, A. and M. Rossi. (2002) “*How different is the efficiency of Public and Private Water Companies in Asia*”, **The World Bank Economic Review**, Vol. 16, No1, 139-148
- Guasch, Jose-Luis. (2004) **Granting and Renegotiating Infrastructure Concessions**. Washington, D.C., The World Bank Institute of Development Studies.
- Kessides, I. (2004), Reforming Infrastructure: Privatization, Regulation and Competition, Washington, D.C., World Bank, Policy Research Report Series
- McKenzie, David and Dilip Mookherjee. (2003). “Distributive Impact of Privatization in Latin America: An Overview of Evidence from Four Countries.” *Economia*, vol. 3, no. 2, Spring, pp. 161-218.
- Nellis, J. and N. Birdsall, N. (forthcoming in 2004), **Glass Half Full: Assessing the Distributional Impact of Privatization**, The Center for Global Development, Washington, D.C.
- Stern, J. and J. Cubbin (2003), Regulatory effectiveness: The impact of regulation and regulatory governance arrangements on electricity industry outcomes: a review paper”, mimeo, London Business School, Regulation Imitative Series, December

- Stern, J. and S. Holder (1999), “Regulatory Governance: Criteria for assessing the performance of regulatory systems: an application to infrastructure industries in the developing countries of Asia”, **Utilities Policy**, Vol. 8, pp33-50
- Ugaz, C. and C. Waddams Price (2003), **Utility Privatization and Regulation: A Fair Deal for Consumers?** Edward Elgar, Northampton, MA, USA.
- United Nations. (1999), “Privatization in Latin America in the Early 1990s”, Department of Economic and Social Affairs, ST/ESA/PAD/SER.E/17
- Wallsten, S. (2004), “Of carts and horses: Regulation and Privatization in Telecommunications Reforms”, **Journal of Policy Reform**
- Wallsten, S. (1999) “An Empirical Analysis of Competition, Privatization and Regulation in Africa and Latin America.” Washington, D.C. World Bank Working Paper, WPS 2136.
- World Bank (2004), **World Development Report (Investment Climate)**, Washington, D.C.
- World Bank (1994), **World Development Report (Infrastructure)**, Washington, D.C.