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Does the private sector deliver on its promises?

Evidence from a global study in water and electricity

Katharina Gassner, Alexander Popov, and Nataliya Pushak

Is private operation better than public when it comes to utilities? A recent global study funded by the World Bank and PPIAF examines the effect of private sector participation in electricity distribution and water and sanitation services. Using a data set of more than 1,200 utilities in 71 developing and transition economies, the study finds that privately operated utilities convincingly outperform state-run ones in operational performance and labor productivity.

Whether privately managed utilities outperform those run by the state is an old question. What makes it difficult to answer is that utilities such as water and electricity distribution companies do not operate in competitive markets, where a change from public to private management is expected to lead to cost savings and efficiency gains driven by the profit motive. Indeed, studies looking at privatized firms operating in competitive markets have reported increases in labor productivity, output, service quality, and investment.¹

The empirical results in electricity distribution and water and sanitation services are far less clear cut. These services have features traditionally used to justify public involvement rather than a competitive market. They are natural monopolies (when the service is provided through networks), generate externalities, and are (particularly in the case of water services) considered a human right and an important element of social and development policies.² The question whether privately managed utilities outperform publicly run ones is especially difficult to answer in developing countries, where the effect of weak or inappropriate legal and institutional environments must also be taken into account.

Despite the obvious difficulties, understanding the tradeoffs between public and private management is critical for policy makers and their advisors. The private sector has long been advocated as a solution to the service delivery gap faced by developing countries. But the wide range of results observed case by case has led to strong feelings both for and against private involvement in utility services, and any resolution of the debate has often seemed far away.

A global study for robust results

To address the question as rigorously as possible, and distill universally applicable results from the multitude of evidence, the World Bank and PPIAF funded a global study examining the impact of private sector participation (PSP) in water and electricity distribution (Gassner, Popov, and Pushak 2008). The research analyzes a sample of 301 utilities with PSP and 926 state-owned enterprises (SOEs), in 71 developing and transition economies, over more than a decade of operation (table 1). The data set compiled is unique in its coverage, and its size and composition make it possible to address for the first time methodological problems that have plagued empirical research and hampered conclusive results.

Studies on natural monopoly industries have traditionally suffered from small sample size and taken

Katharina Gassner is a senior economist in the World Bank's Sustainable Development Network Vice Presidency, Finance, Economics and Urban Department. Nataliya Pushak is a consultant in the same department.



TABLE 1
The sample: utilities by region and sector

Region	Electricity			Water and sanitation			Both sectors		
	PSP	SOE	Total	PSP	SOE	Total	PSP	SOE	Total
East Asia and Pacific	1	2	3	10	87	97	11	89	100
Europe and Central Asia	35	21	56	29	365	394	64	386	450
Latin America and the Caribbean	111	44	155	94	330	424	205	374	579
Middle East and North Africa	1	2	3	4	29	33	5	31	36
South Asia	3	3	6	0	0	0	3	3	6
Sub-Saharan Africa	9	18	27	4	25	29	13	43	56
Total	160	90	250	141	836	977	301	926	1,227

Source: Authors' calculations.

Note: PSP = utilities with private sector participation. SOE = state-owned enterprises.

The private sector clearly delivers on operational performance

the form of case studies, which cannot produce generalizations. The global study, by contrast, uses a database covering all the electricity distribution and water and sanitation companies that experienced PSP between the beginning of the 1990s and 2002. Moreover, the study compares these PSP firms with a set of sufficiently similar state-owned utilities to establish meaningful—“like with like”—comparisons. Finally, given the long period covered, the study is able to address the question of the counterfactual in a dynamic way, showing how the performance of firms with PSP changed over time and comparing that change with the performance of firms that remained state run.

To achieve robust results and isolate as much as possible the impact of introducing PSP from other external and internal changes that may also affect firms' performance, the study uses a dual estimation strategy. This dual approach controls for the fact that a utility is unlikely to be randomly selected for PSP and the possibility that the analysis might compare PSP cases with fundamentally dissimilar SOEs and thus produce biased results.

The study produces two sets of results: the first using a larger but potentially biased data set including all available SOEs as comparators; the second using a smaller set of SOEs carefully selected for their comparability. There is a tradeoff between the two approaches: the larger data set allows a richer differentiation of results by PSP type and period, while the smaller one provides a more rigorous estimation but at the cost of fewer observations and results. To ensure robust findings, the study reports only results confirmed by both models.

Not all private participation is the same

Much past research has concentrated on “pure privatization”—permanent private control over business assets and associated rights. But because of natural monopoly features and social and political considerations, full divestiture of assets is rare in electricity and especially so in water and sanitation. The study therefore examines the broad range of legal arrangements for involving the private sector—management and lease contracts, concessions, and partial as well as full divestitures—using the transfer of operating rights to determine whether a utility is privately operated.

The results are differentiated by type of contract. The strength of the PSP impact is expected to vary by contract type, and the predominant type differs by sector: divestitures (full and partial) account for most PSP cases in electricity distribution, and concessions for most in water and sanitation (figure 1).

Performance does improve . . .

The results of the study show that the private sector delivers on expectations of higher labor productivity and operational efficiency, convincingly outperforming a set of comparable companies that remained state owned and operated. Comparing average annual values for performance indicators from the pre- and post-PSP periods shows that PSP is associated with:

- A 12 percent increase in residential connections for water utilities
- A 54 percent increase in residential connections per worker for water utilities, and a 29 percent increase for electricity distribution companies
- A 19 percent increase in residential coverage for sanitation services
- A 32 percent increase in electricity sold per worker, and an 18 percent increase in water sold per worker
- A 45 percent increase in bill collection rates in electricity
- An 11 percent reduction in distribution losses for electricity and a 41 percent increase in the number of hours of daily water service.

All these changes, occurring over a period of five years or more, are over and above those recorded for the state-owned companies.

... but staff reductions also occur

The clear improvement in operational performance is encouraging for proponents of PSP. But the results also confirm one reason that introducing the private sector so often provokes fierce political resistance and public hostility: the labor productivity gains are linked to a reduction in staff numbers in both water and electricity (no separate results are available for sanitation), with the strongest effects for divestitures. Following the introduction of PSP, average employment falls by 24 percent in electricity and by 22 percent in water. In other words, on average state-operated utilities use more employees than privately run ones to produce the same level of output.

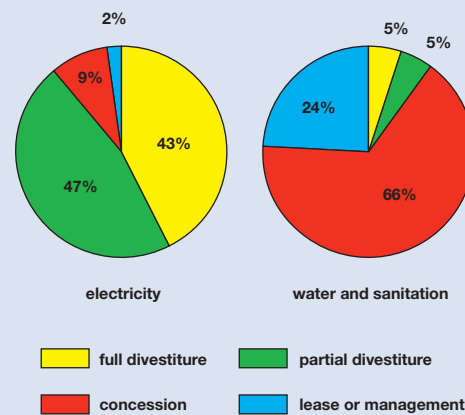
Policy makers need to weigh the tradeoff between an increase in output and service quality and a reduction in staff. But it's worth bearing in mind that while the staff reductions are significant at the level of the utility, they occur over a number of years and are small relative to the national labor force. Only in a few exceptional cases did the reductions in a utility represent more than 2 percent of national unemployment.³ Moreover, the study considers all staff reductions—whether layoffs or natural attrition—to be the same.

What about investment?

Proponents of PSP long hoped—and political leaders sometime rashly promised—that greater private involvement in utility services would lead to vastly greater investment and thus to greater capacity

FIGURE 1

Divestitures dominate in electricity, concessions in water and sanitation



Source: Authors' calculations.

But lack of investment raises concerns about the sustainability of the gains

and coverage. The study finds mixed evidence on this issue and so cannot conclude that investment always increases with PSP (despite the evidence of increases in water connections).

The investment question is best examined at a disaggregated level. For electricity divestitures, as economic theory predicts, investment per worker increases with PSP. For lease and management contracts, particularly relevant for water and sanitation, there is generally no investment obligation for the private party—and the results suggest that the public asset holding company does not increase investment even if PSP brings operational improvements. For concession contracts there is no conclusive evidence that investment increases.

Investment data are notoriously difficult to measure, and the results need to be interpreted with care. Nonetheless, the evidence points to a lack of investment—public or private—in the maintenance and expansion of utility networks as a general rule, even where PSP leads to an increase in operational efficiency. That raises concerns about the long-term sustainability of the operational improvements achieved.

And what about prices?

A final key result relates to tariffs: except for electricity concessions, the study finds no evidence of a systematic change in residential prices as a result of PSP. Yet in developing countries, where

below-cost pricing of essential utility services is well documented,⁴ tariff increases for all but the poorest households are often recommended as part of reform, to give a utility enough resources to address shortfalls in service.

The lack of any substantial difference in tariffs between utilities with PSP and SOEs could have two explanations: tariffs changed in equal measure in both categories, or they did not change significantly in either of them. The second explanation seems more likely in countries where affordability is a real concern for much of the population. The result may point to the economic and political difficulties of aligning tariffs with the costs of service provision. Its implications for revenue streams call into question the sustainability of private involvement unless there are explicit subsidy payments. The result might also explain the lack of public or private investment.

Where do the efficiency gains go?

If the efficiency gains associated with the entry of a private operator do not translate into higher investment or lower prices, where do they go? One possible explanation is that services are initially so underpriced that even significant efficiency gains do not produce a financial equilibrium or justify price reductions. Instead, the efficiency gains translate into better operational performance, such as reductions in distribution losses, and the government spends less subsidizing its utilities.

Another explanation may be that the private operator reaps all the gains through profits. Given the young regulatory environments in developing countries, which often lack sufficient capacity for supervising service contracts, this is a possibility that needs to be considered.

Conclusion

For each electricity or water utility that shifts from public to private operation, the potential for improving performance depends on a host of variables, observable and unobservable. No study can deal with every one

of them in detail. Still, the global study produces clear findings that the private sector delivers on operational performance and labor efficiency.

But the clear practical implications for labor means that governments need to address the employment question seriously. Even though the observed staff reductions improve utilities' productivity and are small relative to national unemployment, measures to mitigate the effects should be put into place early on. The question is one of trading off the social costs of reform against the social costs of inaction.

The two other key findings relate to investment and tariff trends. Though the available data need to be further refined and analyzed, the study points to a worrying lack of investment in utilities by the public or private sector. And it finds no indication of tariffs moving closer to cost-recovery levels. These two findings are probably linked, and the subject deserves further attention from both researchers and reformers.

Notes

1. See, for example, Megginson, Nash, and van Randenborgh (1994); Frydman and others (1999); La Porta and López-de-Silanes (1999); and Brown, Earle, and Telegdy (2006).
2. See Galiani and others (2005) for a discussion of what sets water supply apart from other goods and services.
3. For a detailed discussion of the relative size of staff reductions, see also McKenzie and Mookherjee (2003).
4. For evidence in Latin America, see Foster and Yepes (2006).

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