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The relative efficiency of public and private sector water

by

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1. Introduction

It is widely assumed that the private sector is 'obviously' more efficient than the public sector. It is supposed that private companies have demonstrated their superiority in performance, and that this reflects the theoretically expected superiority of markets over bureaucracies under political control. On the basis of these assumptions, much current debate about policy in infrastructure and services assumes that achieving private sector operation is an objective in itself, and is always a desirable result.

However, the empirical evidence and the theoretical debates do not support this assumption. There is a consistent stream of empirical evidence consistently and repeatedly showing that there is no systematic significant difference between public and private operators in terms of efficiency or other performance measures. The theory behind the assumption of private sector superiority is also being shown to have serious flaws.

This evidence is of great importance for policy discussion. Due to the unsupported assumption, policies have become seriously imbalanced, with various forms of privatisation being introduced, while public sector options which could be much better are being ignored. This is a costly form of policy failure which causes economic, social and political damage.

2. General evidence on public and private efficiency

Surprisingly, the clearest assertion that the evidence does not support a general assumption of superior private sector efficiency has been made by the IMF. A policy paper written in 2004 concerned public private partnerships (PPPs), and was written in consultation with the World Bank¹. The question of private sector efficiency is crucial for justifying any form of PPP because public sector borrowing is invariably cheaper than private sector borrowing, and so the key issue is whether PPPs result in efficiency gains that more than offset the higher borrowing costs. The IMF paper states that: *"It cannot be taken for granted that PPPs are more efficient than public investment and government supply of services..."* and supports this by reference to the arguments and evidence: *"Much of the case for PPPs rests on the relative efficiency of the private sector. While there is an extensive literature on this subject, the theory is ambiguous and the empirical evidence is mixed. ..."*²

This declaration by the IMF followed earlier statements from the World Bank stating a neutral position on public or private operators. In July 2003 the Wall Street Journal ran a story headed 'The World Bank as Privatisation Agnostic',³ quoting senior WB officials on the re-appraisal of their policies on privatisation: *"'There's certainly a lot of soul-searching going on' says Michael Klein, the World Bank's vice president for private-sector development"*: and the article announced that *"World Bank officials have now decided it doesn't matter so much whether infrastructure is in public or private hands"*.

The empirical evidence from various surveys is that there is no systematic difference in efficiency between public and private operators. In 2002 Willner and Parker surveyed the large number of studies on the question of private versus public efficiency, in both developed, developing and transition countries, and observed that there is no consistent conclusion to be drawn: some show greater private sector efficiency, some showing greater public sector efficiency or no difference., and so they conclude that *"it appears from the empirical evidence that a change of ownership from public to private is not necessarily a cure for an under-performing organisation."*⁴

The theoretical justifications for the assumption are also weak. The political theory of public choice assumes both that all public sector workers and managers are motivated solely by economic greed, which is unrealistic, and also that a desire for re-election is the key driving force for political interference and distortion: Willner and Parker observe that if this was true *"public ownership should*

be more efficient in a Soviet-style economy without democratic elections than in, for example, North America or Western Europe and Scandinavia, where politicians more obviously compete for votes. In fact, however, experience suggests that the reverse is true.” Neither does the evidence support a consistent picture of labour extracting rents from the public sector - in some cases public sector pay clearly lags behind the private sector; and where there is monopoly or oligopoly of any kind, which requires public interest regulation if it is privatised: “it is then not certain that the joint effect of privatisation and regulation is higher efficiency than under public ownership. The theory of greater private incentives to cost-cutting applies to shareholders rather than managers, and the question becomes one of the overall set of incentives for managers in either case. Thus the conclusion is the same as from the empirical evidence: “it is not possible to derive any definite conclusions about the superiority of private or public ownership from a completely general model.” An earlier paper by Willner also offered a theoretical model that political intervention may outperform an oligopolistic market: following non-commercial objectives such as maintaining employment does not have to be interpreted as a political distortion, because social welfare objectives might point to the same actions.

A more specific assumption about privatization is that the UK, which pioneered large-scale privatisation under Mrs Thatcher, experienced a significant productivity gain as a result. However, this too is not supported by the evidence, which indicates that there has been no general efficiency gain from the privatisations.

Studies in the early 1990s found that most of the improvements in productivity came before privatisation, not afterwards: and municipal refuse collection services improved as much as privatised ones.⁵ A 1997 study concluded that their empirical material "...provides little evidence that privatisation has caused a significant improvement in performance. Generally the great expectations for privatisation evident in ministerial speeches have not been borne out"⁶.

A comprehensive and exhaustive analysis by Massimo Florio, published in 2004,⁷ reviewed all the privatisations and concluded: “These results confirm the overall conclusion of previous studies that although the business cycle (and restructuring, while the company is under public ownership) has a discernible effect on a company’s performance, privatisation per se has no visible impact. I have been unable too find sufficient statistical macro or micro evidence that output, labour, capital and TFP productivity in the UK increased substantially as a consequence of ownership change at privatisation compared to the long-term trend.” Florio also finds interesting results in respect of employment, namely that 7/8ths of all jobs cut in the industries were cut under public ownership, before privatisation; that pay levels relative to other workers did not change significantly as a result of privatisation, and comments that: “The data I have cited seem to contradict the prediction by orthodox privatisation theories that the change of ownership implies a removal of possible rents attributed to workers. Either these rents did not exist...or alternatively the rents existed and continued to exist under private ownership, despite the weakening of the trade unions”. On the overall costs and benefits, he estimates a large gain to consumers and shareholders, offset by a loss to taxpayers (and possibly workers), concluding that the net welfare impact may be very small, zero, or even negative, and so amounted to “a reshuffling of position of various agents, probably a regressive one”.

3. Relative performance of public and private sector water operators

There are now a number of studies of the relative performance of public and private water utilities in both developed and developing countries. Overall, there is no evidence that public sector operators are intrinsically likely to be less efficient than private operators.

A new World Bank paper by Estache et al in 2005 has summarised the econometric evidence on water efficiency thus:

“Probably the most important lesson is that the econometric evidence on the relevance of ownership suggests that in general, there is no statistically significant difference between the efficiency

performance of public and private operators in this sector....For utilities, it seems that in general ownership often does not matter as much as sometimes argued. Most cross-country papers on utilities find no statistically significant difference in efficiency scores between public and private providers.”⁸

This is especially significant since Estache has co-authored a number of earlier studies which have been used to argue for the superior efficiency of the private sector. An earlier World Bank research paper, widely quoted in support of the view that private water operators are more efficient, was a study by Shirley and Walsh⁹ which claims that out of 24 comparative studies in infrastructure, half found private efficiency superior, 7 no difference, and only 5 found the public sector superior. But in the Shirley/Walsh paper, only 2 of these 24 studies concerned the water industry, both carried out in 1970s: one of them, in the USA alone, with a sample size of 2, is said to have concluded that private was more efficient; the other, with a sample size of 214, found that public sector performance was superior.

The evidence that the public sector is not intrinsically less efficient is now supported by studies on water operators on all continents.

On Latin America, a major paper published by the Brookings Institute in 2004¹⁰ studied the growth in water and sanitation connections in cities in Argentina, Bolivia and Brazil, both in cities which had private sector participation, and in cities which had no private sector involvement. Using household level data, it is the most comprehensive comparative survey of connections under private and public management – other case studies have focussed on private sector operations alone and assumed that any improvements observed were due to private ownership. It concluded that “while connections appear to have generally increased following privatization, the increases appear to be about the same as in cities that retained public ownership of their water systems”.

A 2004 study of about 4000 sanitation operations in Brazil found that there is no significant difference between public and private operators in terms of the total variation in productivity. Regional operators have lower productivity levels than municipalities.¹¹ A study of water utilities in Chile¹² found that private operators had increased investment and labour productivity by more than public companies: though they had also increased their rates by more, and had performed worse in dealing with unaccounted for water.

In Africa, a 2004 study by Kirkpatrick et al, covering 110 African water utilities, including 14 private, found no significant difference between public and private operators in terms of cost.¹³ A much smaller earlier study by Estache and Kouassi of water operators in Africa in 2002 did find that private operators were more efficient, but only included 2 private operators, and institutional quality was a more important factor than private ownership in explaining differences in efficiency.¹⁴

In Asia, a similar mixed picture emerges. In 2004 the Asian Development Bank conducted a survey of 18 cities in Asia, which included two cities with private sector concessions - Manila and Jakarta. These were performing significantly worse than most public sector operators on four indicators of coverage, investment, and leakage:¹⁵

- The percentage of households connected to water supply in Manila and Jakarta is lower than all other cities except one (Ulanbaator);
- the percentage with access to sewerage in Manila and Jakarta is lower than in any of the other cities except one (Vientiane)
- Capital expenditure (US dollars per connection) in Manila and Jakarta is much lower than in cities such as Delhi and Dhaka, even though these latter are in countries with lower per capita income;
- In terms of the levels of non-revenue water (leakage and unpaid consumption) Manila is worst, and Jakarta fourth worst.

On six indicators (unit production costs, percentage of expenses covered by revenue, cost to consumers of constant level of usage per month, 24 hour supply, tariff level, connection fee) their performance is middling, not outstanding. The private cities perform relatively well on two indicators: revenue collection efficiency, and minimizing the number of staff per 1000 connections.

An earlier study by Estache et al¹⁶ on 50 cities in Asia in 1995 has had a double life. The first version, published in 1999, concluded that the results showed “the private operators are more efficient”; but the final report, published in 2002 in the World Bank’s own economics journal, presents a very different conclusion: “The results show that efficiency is **not** significantly different in private companies than in public ones”¹⁷. Estache has explained (pers. comm.) that the difference was due to using ‘better’ econometric filters. A study of towns in Cambodia found that consumer satisfaction and service continuity was higher (however prices were higher and not affordable for all), although the privatised towns had been selected by the operators and so may have been better performing anyway¹⁸

The picture is similar in respect of operators in OECD countries. Most recently, a Brookings Institute paper in 2005 looked at public and private water operators in the USA in terms of regulatory compliance and household expenditure on water.¹⁹ It found that “when controlling for water source, location fixed effects, county income, urbanization, and year, there is little difference between public and private systems.”

4. Conclusion: no evidence for superior private sector efficiency

This evidence points strongly to the conclusion that there is no systematic intrinsic advantage to private sector operation in terms of efficiency. Equally, there is no evidence to assume that a public sector operator is intrinsically less efficient and effective. Policy discussions should therefore be based on a strictly neutral assumption about relative efficiency, and in particular not regard introduction of private sector operation as a desirable or valuable objective. Otherwise policy decisions risk being distorted and leading to costly economic and social consequences.

Although the great majority of urban water supply is provided by public sector operators, research and policy debate continues to focus heavily on various forms of private sector provision. The UK’s DfID, for example, have just completed a 2-year research project into the non-multinational private sector, whose actual role in water supply provision, globally, is negligible. The World Bank Netherlands Water Partnership has financed intensive study on the possibilities of franchising, a form of business organization which was previously virtually unknown in water supply. The World Bank has carried out a study on the possibilities of public sector operations, but two-thirds of their selected cases included some form of private sector participation. This failure to study public sector water supply is especially damaging against the background of the MDGs: if they are to be attained, it will be overwhelmingly through public sector operators.

5. Notes

¹ International Monetary Fund Public-Private Partnerships March 12, 2004

<http://www.imf.org/external/np/fad/2004/pifp/eng/031204.htm>

² Ibid para 25

³ Wall Street journal 21 July 2003 The World Bank as Privatization Agnostic

⁴ Centre on Regulation and Competition, Paper No. 22 The Relative Performance Of Public And Private Enterprise Under Conditions Of Active And Passive Ownership. Johan Willner and David Parker October 2002 <http://www.competition-regulation.org.uk/wpdl149/wp22.pdf>

⁵ Bishop, Kay, Mayer: Privatisation and Economic Performance (OUP 1994); Molyneux, R. and Thompson, D.J. (1987) ‘Nationalised Industry Performance: still third rate?’, *Fiscal Studies*, vol.8, no.1, pp.48-82; Bishop, M. and Thompson, D. (1992) ‘Regulatory Reform and Productivity Growth in the UK’s Public Utilities’, *Applied Economics*, vol.24, pp.1181-1190.

⁶ S. Martin and D. Parker In: *The Impact of Privatisation Ownership and Corporate Performance in the UK*, Routledge, London (1997).

⁷ The Great Divestiture. Massimo Florio. 2004. MiT. A paper covering some of the results is available at

The Missing Shock: The Macroeconomic Impact of British Privatisation Massimo Florio and Mara Grasseni. *Nota di Lavoro* 104.2004 July 2004

http://www.feem.it/Feem/Pub/Publications/WPapers/default.htm?WP_Year=2004&WP_Campi=Author&WP_Keyword=florio&WP_Page=1&FRAMELESS=true&NRNODEGUID=%257b1A870B4D-D3E0-403E-9701-64635CE6C28C%257d

⁸ Infrastructure performance and reform in developing and transition economies: evidence from a survey of productivity measures. A. Estache, S. Perelman, L. Trujillo World Bank Policy Research Working Paper 3514, February 2005.

http://wdsbeta.worldbank.org/external/default/WDSContentServer/TW3P/IB/2005/03/06/000090341_20050306101429/Rendered/PDF/wps3514.pdf

⁹ Shirley, Mary, and Patrick Walsh. 2000. "Public vs. Private Ownership: The Current State of the Debate." *World Bank Policy Research Working Paper 2420*. Washington, D.C.: World Bank.

<http://econ.worldbank.org/files/1175wps2420.pdf>

¹⁰ [Has private participation in water and sewerage improved coverage?: empirical evidence from Latin America.](#) G Clarke, K Kosec, SJ Wallsten Working paper 04-02 AEI-Brookings Joint Centre for Regulatory Studies January 2004 <http://www.aei-brookings.com/admin/authorpdfs/page.php?id=325>

¹¹ R. Seroa da Motta and A.R. Moreira (2004) Efficiency and Regulation in the Sanitation Sector in Brazil. IPEA Discussion Paper No. 1059.

http://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID651884_code347008.pdf?abstractid=651884&mirid=3

¹² Water Services in Chile: Comparing Private and Public Performance Gabriel A. Bitrán and Eduardo P. Valenzuela. *Public Policy for the Private Sector*. No 255 March 2003

<http://rru.worldbank.org/PapersLinks/Open.aspx?id=1998>

¹³ Kirpatrick, C. D. Parker and Y-F. Zhang (2004), "State versus Private Sector Provision of Water Services in Africa: An Empirical Analysis", University of Manchester, Centre on Regulation and Competition, Working Paper Series, Paper No70, June 2004 <http://www.competition-regulation.org.uk/conferences/southafricasep04/kirkpatrick&parker&zhang.pdf>

¹⁴ Estache, A. and Kouassi (2002) 'Sector Organization, Governance, and the Inefficiency of African Water Utilities', *World Bank Research Working Paper 2890*

<http://rru.worldbank.org/Documents/PapersLinks/1453.pdf>

¹⁵ Water in Asian Cities - Utilities Performance and Civil Society Views. ADB. January 2004

http://www.adb.org/Documents/Books/Water_for_All_Series/Water_Asian_Cities/regional_profiles.pdf

¹⁶ Estache, Antonio and M. Rossi, Comparing the Performance of Public and Private Water Companies in Asia and Pacific Region— What a Stochastic Costs Frontier Shows, 1999 .

http://www.worldbank.org/wbi/regulation/pdfs/2152water_asiapacific.pdf . The quote is from the final paragraph.

¹⁷ Antonio Estache and Martín A. Rossi: *How Different Is the Efficiency of Public and Private Water Companies in Asia?* World Bank Econ Rev 2002 16: 139-148 . The quote is from the abstract at

<http://wber.oupjournals.org/cgi/content/abstract/16/1/139> . The reason for the difference is due to the use of better econometric filters (A. Estache pers. comm.)

¹⁸ Should we Bet on Private or Public Water Utilities in Cambodia? Evidence on Incentives and Performance from Seven Provincial Towns Mike Garn Jonathan Isham and Satu Kahkonen (2002) Middlebury College Working Paper Series 0219. <http://ideas.repec.org/p/mdl/mdlpap/0219.html>

¹⁹ "Public or Private Drinking Water? The Effects of Ownership and Benchmark Competition on U.S. Water System Regulatory Compliance and Household Water Expenditures" by Scott Wallsten and Katrina Kosec. Working Paper 05-05. (March 2005) <http://www.aei-brookings.com/publications/abstract.php?pid=919>