

RAISE YOUR GLASSES

PRODUCTIVITY IN PRIVATISED WATER COMPANIES

After the sale of British Telecom, British Gas and BAA in the mid-1980s, the UK (Conservative) Government embarked on the much more controversial flotation of the electricity and water networks in England and Wales. Regulators were empowered to promote “economy and efficiency” in the privatised companies and cap retail prices, but debate continued as to whether their grip was tight enough – and the current (Labour) opposition is now officially committed to renationalisation. So what does the record show? This chapter examines the water industry, and concludes that its performance under private ownership has been much better than is often supposed.

By the time Frontier was founded in 1999, the English and Welsh water industry had been out of public hands for a decade. A number of the economists who joined us were familiar with the issues that had arisen in its regulation. This had come to be criticised as “too loose”, allowing the water companies to make “excessive” profits, and in 1997, the incoming Labour government had responded by imposing a windfall tax, raising about £5 billion. But the fact of private ownership was no longer a matter of political controversy.

Since then, however, the mood of the Labour Party has changed. Renationalisation would be hugely controversial and (unless property rights were flagrantly ignored) expensive. But the water companies are having to work harder to make the argument that privatisation has been good for the economy in general and the water user in particular. They are having to do so, moreover, in a world where Britain remains the outlier: it is virtually the only European country to have privatised its water industry (although a number of European institutions have invested in English water companies).

In most countries water and sewerage services have remained municipal services, although some countries, France especially, have made extensive use of private concession contracts for the operation and maintenance of these networks. Even in the UK, the networks have remained in public hands in Scotland and Northern Ireland, and in 2001 Welsh Water was transformed and transferred from a public limited company into an independent not-for-profit.

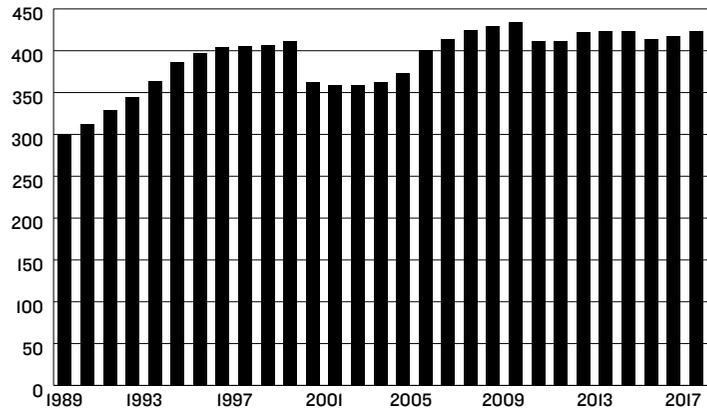
A DIRTY WORD...

Political attacks on privatisation often amount to broad-brush objections to private companies “profiting” from the provision of a public service. Criticism is understandable of profit levels that, in the early days, permitted some new water companies to embark on ill-judged diversification strategies. But the fundamentalist attacks ignore the role that shareholders play in the financing of investment. One of the primary reasons for water privatisation was as a response to significant under-investment and neglect that had occurred in the previous 20 years.

Anybody who knows the history of the industry from the 1960s to the 1980s can testify that it was a story of low investment and failing assets, with scant attention paid to environmental issues. There were serious endemic problems of river and beach pollution.

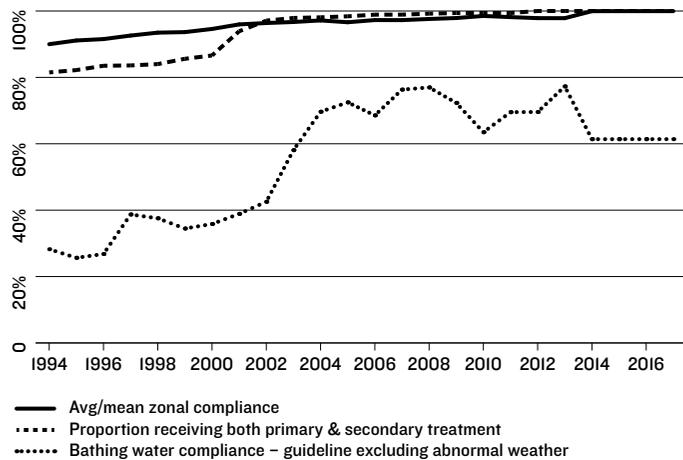
Privatisation facilitated a huge influx of capital into the sector to finance the renovation of a crumbling infrastructure and to protect the environment. The post-privatisation period has seen a significant upturn in investment, with resulting improvements in service and environmental standards.

FIGURE 5.1: EVOLUTION OF AVERAGE HOUSEHOLD WATER BILLS



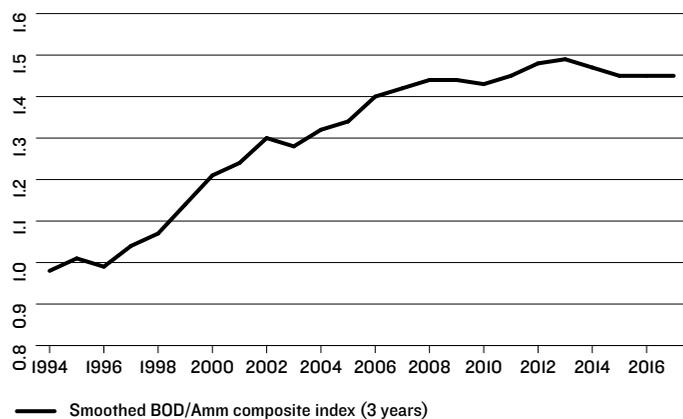
Source: Ofwat, various reports.

FIGURE 5.2: DRINKING WATER QUALITY, 1994–2017



Source: Frontier Economics.

FIGURE 5.3: RIVER WATER QUALITY INDEX, 1994 – 2017



Source: Frontier Economics.

Note: Based on equal weighting to Ammoniacal Nitrogen and Biological Oxygen Demand.

PRICE QUESTIONS

More targeted criticisms have however been made of the extent to which water user charges have risen since privatisation. The figure usually cited is an increase of 40% in real terms. Whether this represents a good or bad performance, over what period, and whether regulators have “failed” or “succeeded” in their objectives, however, are questions that require careful analysis.

As Figure 5.1 shows, there has indeed been a 40% real-terms increase in average household bills, but almost all of this took place in the first seven years after privatisation. In the past ten years, prices have been almost flat; and looking forward, with new price controls due to come into force in 2020, water companies are typically proposing material real-terms price reductions over the following five years. To renationalise to check price rises would, therefore, seem like using a sledgehammer to crack a nut – indeed, a nut which, actually, was taken off the table two decades ago.

In any case, it would be foolish to take a view on prices without looking at what the water user is getting for their money. Assessing productivity and price performance needs to start with an analysis of what has been happening to the quality of output.

Water is naturally seen as a commodity: i.e. as long as it is “clean”, there is no other important quality variable. In fact, there are at least two more – pressure and reliability. Pressure matters if you want to fill your bath quickly, or not to have to stand under a dribbling shower. Reliability is also a key measure of quality. Interruptions to water supply (whether planned or unplanned) are hardly welcome. And all that is even before you start pricing in the environmental “externalities”, as the water companies are increasingly required to do, or assessing environmental improvements as part of output quality.

Water and sewerage companies play a key part in maintaining (or destroying) the quality of our rivers and beaches. Standards required for the discharge of treated waste water back into the environment have risen enormously over the last 30 years, not least because of multiple directives from the European Union.

A further environmental complication is that drawing too much water out of the environment damages natural habitats and so needs to be discouraged. For this reason, “more” – in terms of more water delivered to customers – is not necessarily better, just as increased electricity use is not necessarily “better” at a time of increasing concern about the impact of energy generation on climate. If conservation implies producing less, at a higher cost, this may look like waste and inefficiency while being exactly the opposite.

For the trade body of the UK water industry, Water UK, Frontier (assisted by David Saal and Tom Weyman-Jones from Loughborough University) recently completed an analysis of the evolution of productivity in the water industry in the years since privatisation. This was challenging, because the quality of the service being offered by the industry is itself constantly evolving. The “output” of the sector cannot simply be measured in terms of the volume of clean water delivered to customers, or the volume of waste water taken away and treated.

The aspects of quality mentioned above have all to be taken into account, for both water delivery and sewerage services. Moreover, productivity performance can only properly be assessed by comparison with other sectors of the economy, particularly at a time (after the global financial crisis) when it has been coming to a halt or even falling in almost all of them.

The charts on page 83 illustrate the huge improvements recorded in key quality measures, benefiting both consumers and the environment. In drinking water quality, the reach of primary and secondary sewage treatment, bathing water and river water quality, the trend has clearly been upwards. And although there has been some flattening out, these improvements, unlike the price increases, were by no means restricted to the early phase of privatisation. This suggests that the effects of the post-privatisation wave of investment are still working their way through the industry.

LOOKING AROUND

Our approach to measuring the productivity of the UK water industry uses sophisticated Törnqvist indices to measure the total factor productivity of the industry. TFP weights multiple inputs and outputs – the factors of which we gave examples above – to arrive at an overall measure of how productivity has evolved over time.

In addition, we developed quality-adjusted measures of outputs, to make an estimate of the true change in productivity, making allowance for increases in quality. In arriving at these measures, however, we took a deliberately conservative view of the extent to which quality has improved.

This work built on the analysis in “Productivity and Price Performance in the Privatized Water and Sewerage Companies of England and Wales”, authored by Messrs Saal and Parker in 2001. Without making any adjustment for quality, our analysis suggested that productivity in the water sector has improved by an average of 1% a year since privatisation. However, even allowing for only a conservative estimate of improvements in output, this rises to 2.1% a year when quality is taken into account.

Figure 5.5 shows that cumulative productivity over the whole period has increased by 64%, but also very graphically illustrates the importance of quality adjustments in our assessment. Without making these adjustments it would be possible to think productivity had improved by only one-third of this figure over the period.

We found that productivity growth was particularly high during the immediate post-privatisation period. This was followed by a period of moderate growth in productivity in the first five years after the millennium, slowing still further after the global financial crisis (GFC).

The results of this analysis provide compelling evidence that the productivity performance of the UK water sector has improved significantly under private management, despite claims to the contrary, resulting in substantial cost savings, and possibly even greater benefits in terms of consumer value, once quality is taken into consideration.

In pure cost terms, we estimate that annual costs incurred by the water industry (covering both operating costs and the use of capital) were roughly £2.7 billion (27%) lower in 2017 than they would have been but for the productivity improvement achieved. It is likely that the value created for consumers has increased by substantially more than that, once quality improvements are also taken into account. However, the changing pattern of productivity over time requires further examination.

Results showing the boost to productivity that occurred soon after privatisation in 1989 very much conform to expectation. But interestingly, we found that the peak years for quality improvement (as opposed to an increase in underlying productivity) were not in the period immediately following privatisation, but occurred from 1997 to 2002. This may reflect the natural lag between the point at which increased investment began to kick in, and the moment at which its effects were realised. Such lags are to be expected in respect to environmental changes: damage to the natural environment often persists for years after the factors causing the damage have been arrested.

The latest estimates – for the period since 2015 – need to be viewed with caution: they are affected by some data inconsistencies caused by reporting changes. Moreover, lags in the production of some data on quality have obliged us to be particularly conservative about this element in our calculations.

This still leaves unexplained the years of slower productivity growth in the years running up to 2015. But when set in a wider context, this still looks a comparatively strong performance.

To achieve this perspective, we needed to match the water sector's advance against the productivity performance of other sectors of the economy, and not only in the UK. To do this, we drew on the EU KLEMS database.

For the KLEMS project (standing for capital, labour, energy, materials and services), data for economic growth, productivity, employment creation, capital formation and technological change at the industry level have been collected from all EU member states from 1970. The intention was to provide a resource for policy evaluation, in the areas of competitiveness and economic growth in particular.

While the KLEMS database does not contain specific data for the water industry, it does contain data compiled from across the combined electricity, gas and water supply sectors grouped together. But to give a still broader context, we looked at more than ten related sectors including construction, the manufacture of various types of equipment and machinery, transport and other “pipes and wires” industries, including telecoms. Although these all have something in common with water and waste water services, the similarities were not sufficiently exact to permit the compilation of a “composite benchmark”. But the data still allow for some very instructive comparisons.

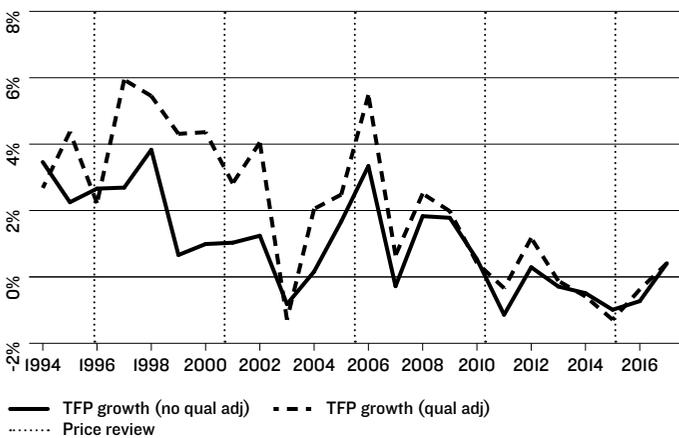
Importantly, the KLEMS database also, in effect, presents quality-adjusted measures of productivity in all the sectors it covers, owing to the way in which price deflators have been calculated. For this reason it provides a good like-for-like comparison with our own quality-adjusted analysis of the water sector.

Across the board, we found a clear break point in productivity performance between the periods before and after the GFC. In 1994–2008, the average annual productivity growth rate achieved in the comparator sectors, across the EU, was 1.7%; the comparable figure for quality-adjusted productivity in the English and Welsh water industry over that period was 3.2%. And this was faster than in any of the individual sectors apart from telecoms, where technological change was of course exceptional (and far greater than in the water industry).

For the period 2009 to 2015, the story is rather different. From the EU KLEMS data, we can see that productivity in the comparator industries actually fell, by an average 0.3% a year. In the English and Welsh water industry, the deterioration in productivity performance was, in absolute terms, even greater. But the number still remained positive: an average quality-adjusted productivity growth of 0.14% a year. In other words, performance was still markedly better than in the comparator industries, despite the relatively modest contribution that could be made in this industry by technological innovation.

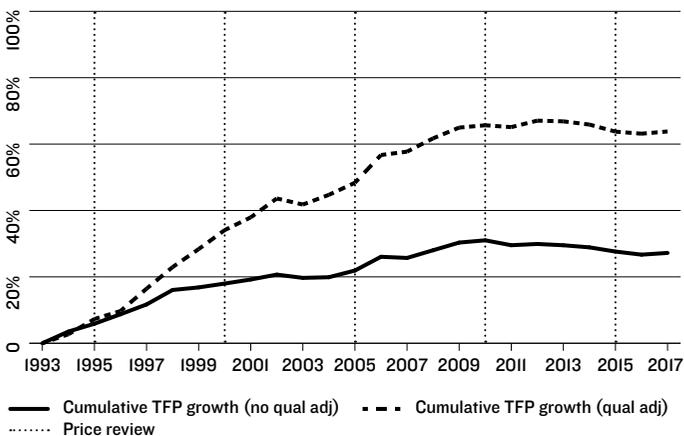
An even more telling comparison, perhaps, is with the narrower group of energy and water networks. Across Europe, their productivity performance fell by as much as 3.4% a year in the post-GFC period. This combined figure will, to be fair, be dominated by the performance of the larger energy sector (the two cannot be separated in the data). Even so, the difference is marked.

FIGURE 5.4: ANNUAL PRODUCTIVITY ESTIMATE, 1994–2017



Source: Frontier Economics.

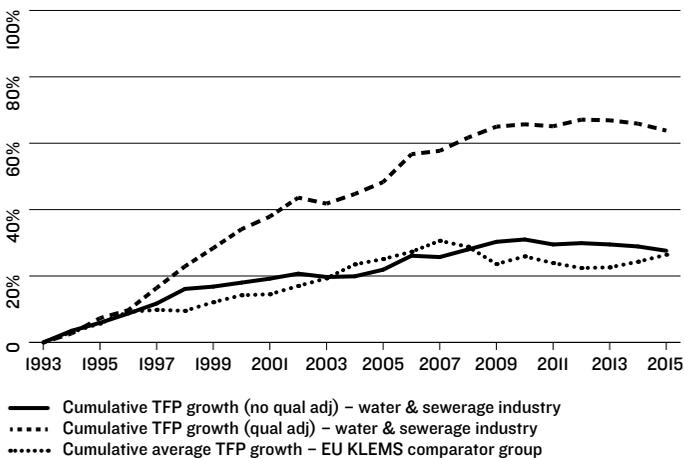
FIGURE 5.5: CUMULATIVE TFP GROWTH, 1993–2017



Source: Frontier Economics.

Note: Relative to TFP in 1993.

FIGURE 5.6: CUMULATIVE TFP GROWTH IN THE WATER & SEWERAGE INDUSTRY AND THE EU KLEMS COMPARATOR GROUP



Source: Frontier Economics, EU KLEMS.

Figure 5.6 compares cumulative TFP growth in the UK water and sewerage industry with cumulative average growth in the comparator sectors selected from the EU KLEMS database. This again shows how substantially the productivity growth in the water sector has outpaced comparator sectors around Europe. It also demonstrates again the importance of properly adjusting for the quality of outputs in our overall productivity assessment, without which the performance of the UK industry would not stand out particularly strongly.

OFF THE BOIL?

There is no general consensus as to why productivity growth has been poor since the GFC, a phenomenon that seems to cross sectors and is not confined to the Western economies. Recessions are normally associated with a fall in productivity, as demand and hence output fall faster than employment – which in the UK, for example, seemed to hold up much better this time than in previous downturns. By the same token, productivity tends to pick up sharply in a recovery. Some therefore point to macro-policies which may have contributed to sluggish recovery, combined with labour market reforms which may have got more people into work, but in doing so swelled the workforce in low-paid sectors where the incentive to replace labour with capital is weaker.

Others consider part of the phenomenon to be an illusion, created by measurement error. In his recent book *Capitalism Without Capital* Jonathan Haskel of Imperial College London considers the growing role of intangible assets, knowledge and information in the wider economy. He argues that mismeasurement of the growth in the value of these intangibles may be leading to some understatement of output, and therefore of productivity growth.

However, it is not immediately obvious why these factors would have a comparable impact on productivity in the utility sectors, in particular in the water industry. In a recession, demand for essential services does not tend to fall as much as for “discretionary purchases”, although industry’s use of energy is obviously affected by a slowdown in output. Moreover, the water industry’s assets are very much of the tangible variety, and not evidently less so since the GFC.

Even so, the coincidence of sluggish economic growth with a greater emphasis on water conservation may well have dampened demand for water, and hence output and productivity growth; indeed it has been an objective of policy to achieve such a slowdown. This, of course, is one of the reasons why we have found it important to try to adjust productivity measures for quality. And since our approach to the task has been deliberately conservative, we may, as a result, have played down the scale of productivity improvement.

So, although the causes of a recent slowdown in productivity in the water sector may differ from those in other sectors of the economy, it is not hard to explain. Nor does it contradict the findings from the analysis, that the performance of the water industry still compares well with other sectors.

CONCLUSION

We have explored the effect of privatisation in other chapters in this book – and broadly concluded that competition tends to be a more powerful driver of performance than ownership itself. But the degree to which competition can be brought into play in the water industry is limited. The British Government's near-unique privatisation of water services in England and Wales has therefore offered an almost equally important opportunity to explore the impact of private ownership, and whether regulatory structures can be devised for non-competitive markets that can mimic the incentives provided by market competition.

The evidence from these productivity comparisons is that private ownership and good regulation can do just that, although it is not entirely possible to disentangle the effects of the two.

The early post-privatisation period, when benchmark regulation was applied to the water companies with the aim of bringing forward quality-enhancing investment, appears to have been very successful in achieving its goals, including an increase in productivity.

The results from more recent phases of regulation are less clear cut. By the 2010s, significant quality improvements had already been secured and further improvements, although important, were inevitably likely to be more incremental. Policy has shifted in this later period towards the introduction of more competition – in particular, creating separate retail businesses to supply services to non-household customers. (Household water supply remains a monopoly activity for the time being.)

The data we have do not suggest that attempts to enhance competition have yet resulted in a further boost in productivity. This is perhaps unsurprising, as the cost structure of the water industry is very different from that of some of the other pipes and wires businesses discussed in this book. In particular, retail activities in water are a much smaller part of the total value chain than they are in, say, telecoms. Meanwhile, economies of scale and environmental regulation limit the opportunity for “upstream” competition between producers, such as can occur in energy markets. However, it is also possible that these new elements of competition in water have simply occurred too recently for their effects to be visible in the data.

In short, our comparisons provide no evidence that a regulated private industry cannot match or even outperform similar industries, many of which remain largely in public hands. The combination of an increase in investment financed by equity capital and comparative competition through benchmark regulation has created an industry where quality-adjusted productivity has continued to rise, even in the period after the GFC, which has seen productivity go into reverse in so many industries.

The extent to which private ownership and/or the form of regulation have driven that performance is still, of course, a question that remains open – not least because of the shortage of other private water company data-points across Europe. But the economic evidence certainly does not support political arguments for renationalisation of the water industry, at least not without great thought being given to how a renationalised industry would be induced to perform efficiently in terms of cost or environmental protection. Overall, the improvement in productivity we have observed can be seen to have delivered significant value to the UK.