
4 Privatization: a sceptical analysis

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Introduction

This contribution criticizes the present international trend to minimize the extent of public ownership. Public ownership is associated with potential benefits, for example if there are externalities or if it is not possible to achieve a sufficient degree of competitiveness. Even if privatization leads to lower production costs (which is not certain), it is not beneficial unless the cost reductions overshadow the lost benefits of public ownership. This sceptical view does not, however, rule out public enterprises being sold, because the state or the local authority might want to transfer its activities from one sector to another. This underlines the role of proper procedures for privatization, which is the topic of other chapters in this volume.

The first section of this chapter deals with the rationale for public ownership and privatization. The following section compares the costs and benefits of public and private ownership. Later sections show that the empirical comparisons of cost efficiency tend to go either way, and offer some explanations of why this is the case. It is sometimes argued that competition, and therefore deregulation, might be more important than the privatization of the incumbent, but some dissenting views on market structure are provided in the argument below. The chapter also addresses the need to transcend the traditional and simplistic behavioural assumptions, and ends with some concluding remarks. Theoretical points will be illustrated throughout the chapter by a simple model of a market with linear demand. While the analysis can often be generalized, its purpose is mainly to provide counter-examples to the belief that it is always economically rational to privatize.

Motives for public ownership

Democracy means that decisions are derived from individual judgments, in general through majority voting. While most decisions on what and how to produce are made in markets where customers vote with their money, some services but also goods are produced by the public sector and hence are subject to direct or indirect political governance.

At best, markets can be efficient in the sense that no individual can be made better off without hurting someone else. But economic decisions, like privatization, typically create winners and losers. A change in social welfare can therefore be defined only in terms of an (imperfect) aggregation of

individual preferences or values, as when a political decision is based on individual votes.

Political intervention can help when markets fail, provided that the cure does not cost more than the disease. Intervention can mean public ownership, for example in the case of pure public goods, natural monopolies and externalities, or when there is a lack of private venture capital. There is also a grey zone in which there will always be disagreement on the need for public sector activity. Few would question public ownership of natural monopolies (see, however, Bradburd, 1995), but private oligopolies might also merit intervention, in particular where there is open or tacit collusion between them. Instead of regulating, the public sector can then own a firm with a mixed oligopoly strategy that forces its competitors to keep prices low (Cremér *et al.*, 1989; De Fraja and Delbono, 1990). Public ownership can also be used for other good or bad reasons, such as regional or macro-economic policy.

However, an allocation is not necessary desirable just because it is Pareto-efficient. The more general concept of a strategic failure means that the policy of a (public or private) firm does not benefit society as a whole, but only its strategic decision makers (Cowling and Sugden, 1998). Pareto-optimality does not rule out, for example, low growth or extreme inequality (see, for example, Hammond, 1990). Even a successful market may work like an election with an uneven distribution of votes, which may reinforce the inequalities.

Right- and left-wing ideologies used to emphasize ownership of the means of production, but practical policy is often based on disagreement on facts rather than values (Ng, 1972). The motives for public ownership have often been pragmatic, with exceptions in France, Portugal and the UK (De Bandt, 1998; Parris, *et al.*, 1987; Willner, 1998; Cook, 1998), and it has sometimes been implemented by non-socialists. The real reasons behind nationalization and privatization can, therefore, often be difficult to establish with certainty.

State enterprises have been part of a policy to benefit consumers through lower prices in Italy and the UK, and have been used for anti-inflationary and/or expansionary purposes in, for example, France, Germany and the UK (Marrelli and Stroffolini, 1998; De Bandt, 1998; Esser, 1998; Cook, 1998). But more often they were established because of a lack of private venture capital, or as a way to accelerate post-war restructuring, as in Austria, Finland, Germany, Italy, Ireland and Sweden (Aiginger, 1998; Willner, 1998; Esser, 1998; Marrelli and Stroffolini, 1998). In the USA, islands of public ownership such as the Tennessee Valley Authority were established, as private investors were not interested in investing, because of riskiness and high costs (Monsen and Walters, 1983; Hausman and Neufeld, 1999).

It is not straightforward to define the boundaries of the state enterprise sector and there are conflicting definitions. However, Austria, Finland, Greece and Portugal had comparatively large state enterprise sectors among the OECD countries (12–26 per cent in terms of value added) before the privatization wave. This should be compared to 4–6 per cent in, for example, Denmark, Italy and the Netherlands, and 1–2 per cent in the USA. Other OECD countries are situated between these extremes (Parker, 1998; World Bank, 1995:263–4).

Why privatization?

The present privatization wave in Europe started with Margaret Thatcher's second government in Britain between 1983 and 1987, despite some early and later abandoned attempts in West Germany in the 1950s and 1960s. The British government was then strongly influenced by think-tanks such as the Adam Smith Institute. While privatization is now often motivated by economic arguments, the policy was not inspired by professional economists, whose comments were in the beginning often cautious or even sceptical.¹ Privatization was not seen as beneficial without competition, which was not always seen as feasible (Vickers and Yarrow, 1988).

The most cited motive for privatization is the belief that state enterprises are inefficient (Ikenberry, 1990), as expressed in the Adam Smith Institute's writings (Pirie, 1988). But the view that the public sector is inherently inefficient and in need of trimming is difficult to distinguish from a purely ideological mistrust, as for example in the following quotation from Thatcher's memoirs:

Just as nationalization was at the heart of the collectivist programme by which Labour sought to remodel British society, so privatization is at the centre of any programme of reclaiming territory for freedom. [. . .] But, of course, the narrower economic arguments for privatization were also overwhelming. The state should not be in business. State ownership effectively removes – or at least radically reduces – the threat of bankruptcy which is a discipline on privately owned firms. (Thatcher, 1993:676–7)

The authorities have referred to private sector cost efficiency in some other countries as well, such as in Austria (Aiginger, 1998; Parker, 1998; Parris *et al.*, 1987), but to a lesser extent than usually believed. As in Britain, privatization partly appeared as a right-wing reaction to previous nationalization in Portugal and France: private ownership and commercial values became ends in themselves (see Parker, 1998). Ideological views were also influential in Sweden, but the crisis in the 1990s prevented large-scale privatization until the Social Democrats returned to power (Willner, 1998).²

A number of other justifications for privatization have been used, but

they are consistent with the economy remaining mixed or can be addressed through other means than divestiture. One such reason has been to reduce the influence of politics in enterprise decision making (Boycko *et al.*, 1996), but Scandinavian experiences suggest that public ownership does not rule out managerial independence. Moreover, independent central banks are not privatized, and state universities are often autonomous. Privatized utilities may on the other hand require so much regulation that they become less independent than some state-owned firms. Also the related motive to fund investments requires privatization only if specific funding constraints have been imposed on the public sector.³

Raising funds for the state, as in Denmark, Finland, France and Germany, is another motive for privatization (Willner, 1998; De Bandt, 1998; Esser, 1998). But some divestiture may even be consistent with an increase in ownership in other industries, and successful state companies can yield dividends, as in Finland (Willner, 1998). Popular capitalism is another motive that does not rule out some state ownership. Moreover, experiences from Austria and Germany in the 1950s and 1960s suggest that privatization can be an inefficient method to expand share ownership (Parris *et al.*, 1987; Aiginger, 1998). Privatizations meant undervalued shares in Britain (where work motivation and Tory support were to be strengthened through a concern about share prices rather than public services), but ownership became less widespread as the new owners sold their shares after subsequent share price increases (Vickers and Yarrow, 1988; Bös, 1993; Lashmar, 1994).

But as privatization became widespread, countries like Denmark and Finland jumped on the bandwagon (Willner, 1998). Public enterprises were few and fairly efficient in the Netherlands, but also the Dutch decision makers chose a conformist approach (Ikenberry, 1990; Hulsink and Schenk, 1998).⁴

If economists favour privatization, they usually refer to cost efficiency. Profit-maximizing owners subject to threats of bankruptcy and takeover are believed to have stronger incentives to reduce costs than politicians or bureaucrats, and will therefore monitor and/or motivate appointed managers more effectively. Wider objectives and complicated chains of command in state-owned activities are also believed to have adverse effects (World Bank, 1995). Public sector inefficiency is often presented as a stylized fact, without empirical discussion (see, for example, Boycko *et al.*, 1996; Bradburd, 1995; Beesley and Littlechild, 1994; Holmström and Honkapohja, 1994).

It has also been argued that dynamic efficiency can be more important than cost reductions. An often cited model by Bös and Peters (1991) predicts that state enterprises will spend less on cost-saving R&D investments; but this happens because the public sector is for some reason assumed to be unable to hire a competent manager and pay her according to performance.

Moreover, there are counter-examples, like the highly innovative former state-owned telecommunications monopoly in Finland (now called Sonera). In addition, there seems to be evidence of a positive rather than negative relationship between economic growth and the size of the public enterprise sector (see Fowler and Richards, 1995).

However, even when production is technically efficient, political failure can cause distortions such as excessive output and/or overmanning for opportunistic reasons (Boycko *et al.*, 1996).⁵ But this is not necessarily a criticism of public ownership as such, because subsidies and other distortions can occur after privatization as well.⁶ Also a criticism of public ownership which emphasizes the need to please voters identifies democracy (the occurrence of elections) as the main culprit, leading to the somewhat controversial prediction that state-owned firms would be more efficient under dictatorship, such as in the Soviet Union, than in a Western democracy.

If privatization leads to imperfect competition in markets, such political failures would imply that private ownership is biased towards too high a price and public ownership towards too low a price, with ambiguous consequences for social welfare. Moreover, a political failure means decisions that are not just mistaken but selfish, and this can be assessed empirically (see below). Only a very strong belief in opportunism among decision makers can make it meaningless to find out how enlightened politicians should intervene.

Extreme critics accuse state enterprises of distorting competition and free trade even without political failures and high costs, because of better access to credit so they cannot go bankrupt. Like Soviet-style socialism, they become a threat to the private sector if their objectives are in addition non-commercial. Investments with sub-normal returns are, for example, seen as inefficient and should be treated as subsidized even when they lead to reduced costs (Monsen and Walters, 1983). In similar way, Ferguson (1988) argues that excessive quality, better working conditions and price systems that are too easy to use and administer are typical distortions caused by public sector managers who want to avoid conflict. But to argue that private firms are superior because public firms do not conform to their quality, rates of return and working conditions comes close to being an ideological statement.

While Monsen and Walters (1983) see public ownership as a danger to US business interests, others doubt its ability to survive. As they argue, non-commercial objectives lead to losses that violate regulations against subsidies (see, for example, Bös, 1993). This happens in some wage bargaining models (see Haskel and Szymanski, 1992),⁷ but other models give opposite or ambiguous results, in particular if there is central bargaining as in Scandinavia (De Fraja, 1993b; Willner, 1999b; Gravelle 1984). Wider objectives may even,

under some conditions, become more viable under international competition (Willner, 1998).

Of the many motives for privatization, we shall focus on cost inefficiency and to some extent distorted objectives because there is an economic case for privatization if these overshadow all benefits from public ownership. Other reasons may have been equally prominent in practice, but they are focused on problems that can be solved without a complete abolition of the public enterprise sector, and may even be consistent with an increased public sector presence in some areas of the economy.

Allocative efficiency, excessive costs and political failure

This section makes the point that excessive costs or biased objectives among public firms are not sufficient reasons for privatization, because allocative efficiency is defined in terms of the pay-off of different stakeholders, such as the consumers, and of the weights that are given to them in the definition of social welfare. Privatization often leads to an oligopoly, and this section analyses by how much costs then have to be reduced before private ownership becomes superior. Later sections of the chapter suggest that such cost reductions cannot be taken for granted.

Privatization means in this section replacing a public monopoly with private oligopolists with different variable or fixed costs. Cost reductions would normally increase welfare, but monopolies have usually been in public ownership because they are required not to maximize profits. Privatization can, under such conditions, improve allocative efficiency only if the post-privatization market failure matters less for social welfare than the cost reduction.

A simple model with linear demand will be used to illustrate a number of points throughout this chapter. The analysis can in many cases be generalized, but linear demand is familiar to most readers and offers the simplest way to show by counter-example that privatization is not always beneficial. Suppose that the inverse demand function is $p = a - x$, where p denotes price, x industry output and a a positive parameter. Marginal costs are c before privatization; their weighted average is $(1 - \mu)c$ afterwards. Public ownership means welfare maximization, which is defined in terms of profits (produce surplus) and consumer surplus. We ignore the employee's pay-off in the definition of welfare until the discussion of internal rent capture.

The usual way to evaluate either imperfect competition or privatization is to analyse the change in the total surplus (consumer surplus + profits); (Harberger, 1954; Cowling and Mueller, 1978; Willner and Ståhl, 1992; Bradburd, 1995; Willner, 1996). This approach is not innocuous, because a given reduction in consumer and employee welfare can be offset by an equal

increase in profits.⁸ We shall, therefore, introduce weights for profits and the consumer surplus. These may affect the sign of the welfare change, which means that our analysis is not restricted to those value judgments that are implied by equal weights.

It is also convenient to define social welfare in terms of a geometric rather than an arithmetic average. This allows for a wider choice of weights for different stakeholders, and requires more compensation if some group becomes worse off. Note that the consumer surplus is $x^2/2$, and let the weights be ρ and $1 - \rho$. Ignore fixed costs and distortions in the objectives of the public firm, because these will be analysed below. The public firm then maximizes:⁹

$$W = \left(\frac{1}{2} x^2 \right)^\rho + [(a - x - c)x]^{1-\rho}. \quad (4.1)$$

This yields the following output:

$$x_G = \frac{(1 + \rho)(a - c)}{2}. \quad (4.2)$$

If the public monopoly is replaced by an n -firm Cournot oligopoly, each firm i maximizes:

$$\pi_i = ax_i - xx_i - c_i. \quad (4.3)$$

The first-order conditions for the oligopolists can now be manipulated so as to yield an industry output in terms of the Herfindahl index of concentration,¹⁰ H , and the weighted average of the marginal costs, as for example in Cowling and Waterson (1976):

$$x_P = \frac{a - (1 - \mu)c}{1 + H}. \quad (4.4)$$

Inserting (4.2) and (4.4) into (4.1) yields expressions for the social welfare as defined above before and after privatization, W_G and W_P . Note that the intercept a can be eliminated using the absolute value of the often known pre-privatization price elasticity of demand (η):

$$\eta = \frac{(1 - \rho)a + (1 + \rho)c}{(1 + \rho)(a - c)}. \quad (4.5)$$

Set $W_P > W_G$, use (4.5) and solve for μ to see by how much marginal costs must decrease if privatization is to improve welfare:

$$\mu > \frac{(1 + H)[(1 + \rho)^{1+\rho}(1 - \rho)^{1-\rho} H^{\rho-1}]^{1/2} - 2}{\eta(1 + \rho) - (1 - \rho)}. \quad (4.6)$$

It follows that the necessary cost increase depends on post-privatization concentration demand elasticity, but also social values as reflected in ρ .

The fact that social welfare is defined in terms of a product means that a zero-profit solution can be optimal only if profits are given no weight. The lowest value of μ is zero, and is reached for $H = (1 - \rho)/(1 + \rho)$, because any value of ρ lower than 1.0 means that there exists a concentration level which would give the same distribution between profits and the consumer surplus as in the public monopoly for a given marginal cost. Thus, $\rho = 0.5$ makes a public monopoly equivalent to a symmetric three-firm oligopoly, but $\rho = 0.75$ would correspond to $H = 0.14$.

If η is, for example, 1.0, equal weights for profits and the consumer surplus would then mean that the condition for privatization to increase welfare is:

$$\mu > 1.140(1 + H)H^{-1/4} - 2. \quad (4.7)$$

If H is 0.2, 0.6 and 0.8, marginal costs would have to be reduced by 23.00 per cent, 7.20 per cent and 16.93 per cent. But if the consumer surplus is given the weight 0.75, the same values of H would require cost reductions of 0.86 per cent, 22.69 per cent and 35.99 per cent, respectively. We would get higher values for low values of η , as is often the case in public utilities.¹¹ Note also that any $\rho < 1$ means that post-privatization concentration may also be too low.

On the other hand, it can be argued that pure profits are always a symptom of market failure in a model like this. Let ρ therefore approach 1.0, and suppose that the price elasticity of demand is 1.0.¹² It then turns out that (4.6) tends to the simple expression $\mu > H$. In other words, if social values emphasize consumers rather than profits, market concentration after privatization requires very large cost reductions, in particular under price-inelastic demand.

However, cost differences may also reflect internal rent capture under public ownership, in the form of, for example, 'excessive' wages, salaries and fringe benefits. Some arguments in favour of privatization emphasize this reason for lower costs (see, for example, Bradburd, 1995). Higher wage costs under public ownership would, of course, imply a social cost in the same way as profits under imperfect competition. But profits themselves are not part of the social cost, because they represent a redistribution, and excess wages should be excluded for the same reason. Higher costs are a redistribution which causes a deadweight loss, but, like profits, excess wages are not in themselves wasteful. To measure social welfare in terms of the sum of the profits and the consumer surplus is then a flawed procedure.¹³

To illustrate the paradoxical significance of internal rent capture when

the total surplus includes excess wages, suppose that public ownership means marginal cost pricing at c . Private owners would be able to lower marginal costs by μc because of lower direct or indirect labour costs. Total surplus before privatization is then

$$W_G = \frac{(a-c)^2}{2} + \mu c(a-c), \quad (4.8)$$

because profits are zero, whereas the post-privatization value is

$$W_P = \frac{(1+2H)[a-(1-\mu)c]^2}{2(1+H)^2}. \quad (4.9)$$

Take the difference between (4.8) and (4.9), express a in terms of the pre-privatization price elasticity of demand $\eta = c/(a-c)$ and rearrange. It then follows that privatization improves allocative efficiency if, and only if, $\mu > H/\eta$. Privatization cannot then increase welfare even if marginal costs are reduced to zero if the pre-privatization elasticity is lower than the post-privatization Herfindahl index, which may be the case in industries like electricity and water.

It may, on the other hand, be misleading to focus on differences in marginal costs in industries where these are very low, while there are fixed costs as a barrier to fragmentation. Suppose therefore that state ownership means that fixed costs are F and that prices are set so that the firm breaks even. This yields the following output:

$$X_G = \frac{a-c + [(a-c)^2 - 4F]^{1/2}}{2}. \quad (4.10)$$

An n -firm oligopoly means $x_G = n(a-c)/(n+1)$. Suppose that n^* firms can break even and that privatization lowers fixed costs by γF in each firm. The fact that we have (approximately) zero profits after privatization as well means that the conventional total surplus changes from $(x_g^2/2) - F$ to $(x_p^2/2) - n^*(1-\gamma)F$ and that we can replace F in (4.10) with

$$F \approx \frac{(a-c)^2}{(1-\gamma)(n^*+1)^2}. \quad (4.11)$$

Comparing total surplus using (4.11) shows that privatization increases welfare only if

$$\gamma > 1 - 1/n^*. \quad (4.12)$$

Note also that privatization reduces welfare if more than $1/(1-\gamma)$ firms can break even, because of the costs of duplication.

Thus, if privatization means a five-firm oligopoly with approximately zero profits, a welfare increase would require fixed costs to be reduced to a fifth of their previous size. The necessary cost reduction approaches 100 per cent as the number of firms that can break even becomes very large.

The public sector decision makers have been benevolent in the examples above, but the model can be generalized to political failure as well. The public firm would then be given a different set of weights than in the true social welfare function. Privatization means a change from one set of distorted objectives to another. Ownership cannot then be evaluated a priori; we would get conditions for privatization to be beneficial in terms of weights and post-privatization concentration. For example, to favour consumers and employees by more than in the true social welfare function may nevertheless provide higher allocative efficiency than an oligopoly (Willner, 2001). The analysis can be extended to different types of strategic failure.

Empirical evidence

Many studies, such as Boardman and Vining (1989) and Dewenter and Malatesta (1997) suggest lower profitability under public ownership, but to compare profitability is unfair because higher profit margins can also reflect market failure. Moreover, excessive labour intensity under public ownership may have to be compared with excessive capital intensity after privatization (Pint, 1991). This section therefore focuses on cost efficiency and total factor productivity, arguing that it is far from certain that privatization improves performance.

Part of the empirical literature compares performance before and after privatization. This research requires a sufficiently long period of private ownership after privatization, as in Britain, so as not to confuse the effects of business cycles and changes in ownership. Other problems of establishing causality arise because of productivity changes in organizations that have remained public or private. In the electricity industry in Britain, costs are lower, but this might have happened without privatization (Newbery and Pollitt, 1997). A comprehensive study of privatized companies in Britain provides examples of both improved and reduced performance, and suggests that ownership as such may not matter. Many of those firms that improved their performance actually became more efficient while still under public ownership (Martin and Parker, 1997).¹⁴

A study of 39 medium-sized firms in Italy by Fraquelli and Erbetta (2000), covering a 10-year period, suggests privatization led to improved labour productivity but no significant increase in total factor productivity. Similar results have been reached in Austria, where profitability increased without any significant improvement in overall efficiency (Schaffhauser-Linzatti and Dockner, 2001). Dewenter and Malatesta (1997), who are cited by Megginson

and Netter (2001) as favouring privatization, report improved profitability but otherwise mixed results on performance from a comparison of 500 public and private firms from different countries. Moreover, in a subsequent contribution they emphasize that most of the accounting measures of profitability were actually lower after privatization than during the last years under public ownership, as often in Britain (Dewenter and Malatesta, 2001). A conclusion that privatization generally improves performance seems, therefore, at best premature.

Another line of research compares similar firms under different ownership. This and earlier overviews, such as Millward (1982), Boyd (1986) and Willner (2001), report conflicting results but overall do not support a negative view of public ownership.¹⁵

It may be helpful to distinguish between services, which are in general labour intensive, and industrial production. For example, seven out of 13 of a series of studies on refuse collection from the 1960s and 1970s in the USA, Canada and Switzerland suggest that private ownership is cheaper (Bennett and Johnson, 1979; Collins and Downes, 1977; Hirsch, 1965; Kemper and Quigley, 1976; Kitchen, 1976; Pier *et al.*, 1974; Pommerehne and Frey, 1977; Savas, 1977; Spann, 1977; Stevens, 1978). But, partly for reasons discussed below, insurance appears as better organized under public ownership (and often under monopoly) (see Epple and Schäfer, 1996; Felder, 1996; Finsinger, 1984; von Ungern-Sternberg, 1996). Comparisons of cost efficiency in transport,¹⁶ hospitals, health and social care provide mixed results. Private ownership is sometimes cheaper than public ownership, which is, on the other hand, better or no worse in more than half of the cases (Willner, 2001).

However, the comparison becomes difficult if higher quality means higher costs, in which case cheap public sector healthcare would not necessarily mean superior performance. Ownership may affect the nature of public transport, broadcasting, hospitals or refuse collection, in particular when public ownership is associated with wider objectives. Moreover, cost differences may reflect differences in wages and working conditions, and the threshold for beneficial privatization is then higher (see the discussion in the previous section of this chapter).

A focus on industrial production of homogeneous goods makes a comparison somewhat easier. For example, studies by Çakmak and Zaim (1992) and Tyler (1979) do not find significant differences in efficiency in cement and plastics. A number of British state enterprises seemed to have faster productivity growth than in manufacturing in general during the 1980s (Molyneux and Thompson, 1987). Public ownership appears as superior in comparative studies on electricity and water (where demand elasticity is in addition low; see above). The willingness to privatize these industries is therefore somewhat surprising. With the exception of Bagdadioglu *et al.* (1996), most studies,

such as Atkinson and Halvorsen (1986), De Alessi (1974), Färe *et al.* (1985), Foreman-Peck and Waterson (1985), Hausman and Neufeld (1991), Hayashi *et al.* (1987),¹⁷ Hjalmarsson and Veiderpass (1992), Meyer (1975), Moore (1970), Nelson and Primeaux (1988), Neuberg (1977), Pescatrice and Trapani (1980), Peters (1993), Spann (1977) and Yunker (1975), suggest that cost efficiency in electricity is better or no worse under public ownership in the UK, the USA or Sweden.¹⁸ Crain and Zardkoohi (1978) find public ownership to be less efficient in the US water industry, but Bhattacharyya *et al.* (1994), Bruggink (1982), Byrnes *et al.* (1986), Feigenbaum and Teeple (1983), Lynk (1993), Mann and Mikesell (1976)¹⁹ and Teeple and Glycer (1987) reach the opposite conclusion for the USA and the UK. Saal and Parker (2000) suggest privatization of water in England and Wales had little if any immediate beneficial effect on costs of production.

An analysis of the production function can reveal whether a company is technically inefficient, and provides potentially a less ambiguous criterion than costs. Geographical and cultural factors cause large variations between countries, but public monopolies like the postal system or the railways in 19 and 22 mainly European countries did not appear as inherently inefficient in Deprins *et al.* (1984) and Perelman and Pestieau (1988), respectively.

However, quality can matter in this kind of industry. For example, anecdotal evidence suggests that some of the privatized monopolies in Britain have reduced their spending on infrastructure maintenance to an extent that has reduced safety. The number of workers employed by Railtrack for track maintenance was reduced from 31 000 to 15–19 000 during the period 1992–7, while Transco made 1000 engineers responsible for maintaining gas pipes redundant in 1997 (*Guardian*, 3 April 2001 and 18 June 2001). As pointed out below, such problems may even be compounded by the presence of competition after privatization.

The studies above mainly cover a subset of the developed countries, and cannot necessarily be generalized.²⁰ They stand in striking contrast to the overview of efficiency in mixed industries or after privatization by Megginson and Netter (2001), who focus on third-world and transition economies, with very few references to the studies surveyed here.²¹ Insofar as differences in development are about the capabilities of firms (see Sutton, 2001), privatization without foreign ownership would not necessarily help (see also World Bank, 1995). But it might then be better to introduce the necessary know-how by other means than a nearly irreversible sell-out of the industrial sector as a whole.

We can hardly conclude from the studies surveyed here that privatization is likely to achieve a significant improvement in technical efficiency. They rather suggest that there is no robust relationship between ownership and

efficiency. Moreover, it seems appropriate to conclude that static cost efficiency alone is not a relevant criterion for the choice between private and public ownership.

The theoretical significance of ownership

An entrepreneur who is exposed to competition has strong incentives to cut costs, but large public or private firms are, in general, run by a manager, whose efforts may or may not be in the owner's interest. If ownership affects performance, it must affect either the manager's intrinsic motivation (see below) or the structure of rewards and punishments. According to property rights theory, managers are better monitored if there is a profit motive, because the owner can keep the money that is thereby saved.

There is no detailed analysis of mechanisms that cause changes in efficiency in Vickers and Yarrow (1988), where incentives towards cost reductions may or may not be weaker under public ownership, or they are exogenous, such as in Bös and Peters (1991), where the presence of experienced private sector managers ensures higher cost-reducing R&D investments after privatization. Models where efficiency is genuinely endogenous are usually based on the assumption that managers are motivated by rewards and punishments only. If there is asymmetric information on the true state of nature, managers can reduce their efforts and pretend that costs are high because of unfavourable conditions. Employers must therefore ensure that managers do not quit and that they have an incentive not to misrepresent the true state of nature. In general, this implies performance-related pay, which causes managers to bear some of the entrepreneurial risk.

When there is no built-in public sector inferiority, principal-agent models of managerial discretion do not necessarily predict that public ownership is less cost-efficient. For example, Pint (1991) predicts that state and private ownership are biased in opposite directions with respect to factor intensity, with ambiguous consequences for total factor productivity. Public ownership is even associated with lower managerial slack in De Fraja (1993b). Moreover, as privatization usually leads to a private monopoly or oligopoly, there must be regulation, and this means that the manager has to adapt to principals with conflicting interests (Laffont and Tirole, 1991).

The following model is inspired by De Fraja (1993b), but includes a more explicit model of the market. The demand function is the same as set out earlier and is known by both owner and manager. One part of the marginal costs c depends on the state of nature, which will be indexed by L ('low-cost') and H ('high-cost'), and cannot be affected by the manager's efforts. The owner knows c_L, c_H , and the probability for low marginal costs, q , but only the manager knows the state of nature. The other part of the marginal costs depends on the manager's efforts to increase efficiency by reduc-

ing managerial slack, s . The manager's quasi-linear utility function is $u = y + v(s)$, where $v(s)$ is an increasing concave function. There are no other fixed costs than y_L and y_H .

Suppose that the firm is a monopoly that may or may not give some weight to consumer surplus (later the discussion will be extended to the analysis of competition). The objective function is the sum of profits and the consumer surplus, with a weight $\rho \geq 0$ attached to the latter. As ρ approaches infinity, profits get less and less important, but we shall assume a low enough value for the firm to be able to break even. Privatization makes ρ equal to zero. Thus a firm maximizes:

$$W = q \left\{ \frac{\rho x_L^2}{2} + [(a - x_L - c_L - s_L)x_L - y_L] \right\} + (1 - q) \left\{ \frac{\rho x_H^2}{2} + [(a - x_H - c_H - s_H)x_H - y_H] \right\}. \quad (4.13)$$

Note that this objective function is not necessarily a definition of social welfare. All it says is that a public firm gives some weight to consumer welfare, maybe partly for opportunistic reasons.

The manager's utility must be sufficiently high to prevent her from leaving the firm and achieving an outside option utility \bar{u} . The *participation constraints* are then $y_L + v(s_L) \geq \bar{u}$ and $y_H + v(s_H) \geq \bar{u}$. She must also have an incentive to reveal truthfully that (the non-avoidable) marginal costs are c_L in the good state of nature and not c_H . In other words, truthful revelation must be more rewarding than cheating by pretending that circumstances have been unfortunate, which would make additional slack of the size $c_L - c_H$ possible. The *incentive compatibility constraint* therefore requires $y_L + v(s_L) \geq y_H + v(s_H + c_H - c_L)$. Truthful revelation can be achieved through a sufficiently high salary, but it may turn out to be cheaper to allow for some slack. Therefore the firm maximizes its objective function with respect to the permitted slack levels s_L or s_H as well.

The participation constraint is satisfied in the good state of nature, because $u(y_H, s_H + c_H - c_L)$ is larger than $u(y_H, s_H)$. The other constraints are binding, because the objective function is decreasing in y and s . We can therefore substitute $y_L = \bar{u}(s_L) + v(s_H + c_H - c_L) - v(s_H)$ and $y_H = \bar{u}(s_H)$ into W . Using the abbreviations $a_L = a - c_L$, $a_H = a - c_H$, and $\Delta c = c_L - c_H$:

$$EW = q \left\{ \frac{\rho x_L^2}{2} + (a_L - x_L - s_L)x_L - [\bar{u} - v(s_L) + v(s_H + \Delta c) - v(s_H)] \right\} - (1 - q) \left\{ \frac{\rho x_H^2}{2} + (a_H - x_H - s_H)x_H - [\bar{u} - v(s_H)] \right\}. \quad (4.14)$$

Like De Fraja (1993b), we focus on the good state of nature. Rearrange the first-order conditions with respect to x_L and x_H :

$$q[a_L - (2 - \rho)x_L - s_L] = 0, \quad (4.15)$$

$$-qx_L + qv'(s_L) = 0 \quad (4.16)$$

Output is therefore:

$$x_L^* = \frac{a_L - s_L}{2 - \rho}. \quad (4.17)$$

Substitute this into (4.16) and rearrange:

$$\frac{a_L - s_L}{2 - \rho} = v'(s_L). \quad (4.18)$$

We can now analyse the effect of, for example, a decrease in ρ on managerial slack by differentiating (4.18) and rearranging:

$$\frac{ds_L}{d\rho} = \frac{(a_L - s_L)/(2 - \rho)^2}{v''(s_L) + 1/(2 - \rho)}. \quad (4.19)$$

It is obvious that the numerator of (4.19) is positive. At first sight it seems as if the sign of the denominator and hence the effect of ownership depends on whether the manager's marginal utility function is steep or flat. But it can be shown that the objective function is not concave unless v'' is below $-1/(2 - \rho)$, in which case a reduction of ρ would increase managerial slack in the good state.²² The objective function is decreasing in s_L everywhere in the opposite case, which means that managerial slack is zero whoever owns the firm.²³

The explanation for the fact that public ownership may actually lead to higher efficiency is paradoxically the manager's greed and laziness, because a non-zero ρ means a stronger incentive to pay for good management. A decision maker for whom consumer welfare matters would be prepared to buy and bribe the manager to reduce costs because this benefits society as whole. Private shareholders are not prepared to pay as much because they will buy cost reductions only to the extent that this benefits themselves.

This model is useful because it shows that a conventional principal-agent analysis can turn popular views on their head, but is not necessarily robust to alterations. This sensitivity to details in the model specification just emphasizes the point that there may be no general and simple rules about ownership and cost efficiency.

In practice, private ownership is often dispersed and the largest shareholders may be institutional investors which focus on shareholder value

only. Willner and Parker (2002) distinguish between passive and active ownership, depending on who makes the output decision. Active ownership means that the principal decides on output and observes costs, but not their composition in terms of necessary costs and slack because of asymmetric information on the state of nature. In both cases, the manager is fired if observed performance falls below a threshold and the probability for this is endogenous. Public ownership is associated with equal or lower managerial slack under active ownership, while results can go either way in the opposite case, depending on the manager's reward schedule. This suggests that governance is more important than ownership.

Privatization and competition

Many economists, such as Vickers and Yarrow (1988), have suggested that privatization may not increase efficiency without competition. But industries with privatized companies, like energy or telecommunications, are usually now oligopolistic. As argued earlier, the cost reduction may be too small to outweigh the benefits of public ownership. Moreover, it also follows from Martin and Parker (1997) and Fraquelli and Erbetta (2000) that being exposed to competition did not necessarily make privatization in Britain and Italy more successful, the British car industry being a case in point.

Theory can explain why competition does not always reduce cost. While the effects on the profit margin are well understood, less is known about the impact of competition on cost efficiency. Some studies suggest, however, that competition can occasionally have adverse effects. The following model reformulates the principal-agent model from above so as to include competition. The analysis then becomes very similar to that of Martin (1993).

There is the same kind of asymmetric information as featured in the previous section of the chapter and there are n private profit-maximizing Cournot oligopolists that are run by managers. The non-avoidable marginal costs are the same everywhere, as are the managers' utility functions and outside options and the probabilities for each outcome. The salaries in each state of nature are derived in the same way as earlier and substituted into the expected profits for firm i ; $i = 1, 2, \dots, n$:

$$E\pi_i = q\{(a_L - x_L - s_{Li})x_{Li} - [\bar{u} - v(s_{Li}) + v(s_{Hi}) - v(s_{Hi} + \Delta c)]\} \\ + (1 - q)\{(a_H - x_H - s_{Hi})x_{Hi} - [\bar{u} - v(s_{Hi})]\}. \quad (4.20)$$

Rearrange to get the solution for the low-cost situation:

$$q[a_L - x_L - x_{Li} - s_{Li}] = 0, \quad (4.21)$$

$$-qx_{L_i} + qv'(s_{L_i}) = 0. \quad (4.22)$$

The equation represented by (4.21) now yields output levels $x_{L_i}^c(s_{L_1}, s_{L_2}, \dots, s_{L_n}, n)$ as functions of managerial slack and market structure. Combining (4.21) and (4.22) yields the following condition:

$$x_{L_i}^c(s_{L_1}, s_{L_2}, \dots, s_{L_n}, n) = v'(s_{L_i}^c). \quad (4.23)$$

There are n such equations, which can be used to determine the level of slack in each firm. However, as the equilibrium is symmetric, we can add the conditions and divide by n to get the following condition for the equation for slack in the good state of nature:

$$\frac{a_L - s_L}{n + 1} = v'(s_L^c). \quad (4.24)$$

Differentiating yields:²⁴

$$\frac{ds_L^c}{dn} = \frac{(a_L - s_L)/(n + 1)^2}{n[v''(s_L) + 1/(n + 1)]} \quad (4.25)$$

In a similar way as in the discussion above, it can be shown that concavity requires $|\bar{v}''(s_L)| > 1/2$ (see Willner, 1999a). The denominator of (4.24) is negative, because $1/2 \geq 1/(n + 1)$. This implies that an increase in the number of firms will increase the amount of managerial slack. If (4.23) has no positive solution while production is still feasible or if the second-order conditions are not satisfied, slack is zero and not dependent on the number of firms.

Thus, to privatize a public monopoly would reduce cost efficiency if (4.14) is concave in slack, but to split the privatized monopoly or to induce entry then leads to even higher marginal costs. The combination of privatization and deregulation is not then beneficial, unless competition means a sufficiently large number of entrepreneurial rather than managerial firms. Note also that the possible increase in slack means that the effect of entry on price and industry output is ambiguous.

This model is very specific and Willner and Parker (2002) provide conditions for both improved and reduced performance after entry. But the well-known multitude of solutions that industrial organization can sometimes generate must be taken seriously; in particular, we should avoid dogmatism. Thus, while competition may be beneficial in general, those cases where things can go wrong should be identified.

Natural monopoly is sometimes understood as an industry where only one firm can break even. But the above discussion has highlighted the social costs of duplication. In a wider sense, a natural monopoly means that even

a commercial monopoly would be more beneficial than competition (see Vogelsang, 1988). As Salvanes and Tjøtta (1998) point out, insufficient tests have been made before deregulation. They find that electricity distribution in Norway is a natural monopoly in this sense.

Monopoly may be preferable also if competition affects quality adversely, as when new entrants free-ride on the investments made by an incumbent. An interconnected system of power plants in different ownership may then break down because of failures in one particular plant (Auriol, 1998). Moreover, the Californian electricity crisis in 2001 has highlighted the difficulties of organizing a deregulated system efficiently (Martinek and Orlando, 2001; Lijesen, *et al.*, 2001).²⁵

Telecommunications have usually been seen as the flagship industry of deregulation. Long-distance calls have become cheaper following the introduction of competition in the USA (Blank *et al.*, 1998; Hausman *et al.*, 1993), but some authors have pointed out that the market is now oligopolistic, possibly with tacit collusion, and that improvements in physical and human capital and intervention from the Federal Communications Commission have been more important for the industry's development than deregulation (MacAvoy, 1998; Taylor and Taylor, 1993; Sung, 1998). In Europe, there has been considerable variation and no conclusive evidence of necessarily higher labour or total factor productivity growth associated with the EU's liberalization directives – though it is early days (Daßler *et al.*, 2002). Moreover, doubts have been raised about service quality and the industry has been accused of 'confusion marketing' (van Dam and Went, 2001; Stephen, 2001; *Guardian*, 14 October 2000).

The merits of competition have been questioned also in road transport. Deregulation can reduce industry performance in bus transport because individual operators have insufficient incentives to attract customers away from cars by offering low prices (Ireland, 1991). Competition and free entry and exit may affect welfare adversely because of a lack of coordination, instability and confusing changes in schedules and network, and reduced through- and inter-ticketing (Tyson, 1990; White, 1990; Oldale, 1997). Competition without regulation might be dysfunctional in the taxi industry too (Cairns and Liston-Heyes, 1996).

Thus the merits of competition are questionable in industries like energy, telecommunications and road and rail transport. As privatization without competition produces no benefits in general, public ownership has to be reconsidered as a serious alternative.

Intrinsic motivation and not-for-profit organizations

Economists typically focus on the self-interested behaviour of the economic man (*homo economicus*). This is a useful simplification that may be

innocuous when analysing demand or portfolio choice. But the assumption of economic self-interest cannot sensibly be extended to all our social roles. In particular, to assume such behaviour when comparing different types of organizations implies a potential bias, although not always in favour of free market solutions (see our earlier discussion, and Bowles and Gintis, 1993).

As Fehr and Fischbacher (2002) point out, experimental economics overwhelmingly suggests that a significant proportion of individuals are reciprocal in their behaviour rather than self-interested, with profound consequences for issues such as joint ownership. While the consequences for privatization are not obvious, such findings strengthen the point that governance issues, such as the ability to encourage cooperation, may be more important than ownership in improving economic performance.

Cooperation as part of reciprocal behaviour is not necessarily the same as intrinsic work motivation, which means that high performance yields benefits and not only costs for an individual (Frey, 1997).²⁶ But the issues are related, in the sense that the way in which individuals are motivated can be changed. An excessive focus on rewards and punishment (extrinsic work motivation) may be less productive than an encouragement of intrinsic motivation. Threatening leadership may be counter-productive (Fehr and Fishbacher, 2002) and extrinsic motivation may reduce or crowd out intrinsic motivation (Frey, 1997). A suspicion of low work morale and opportunism may therefore be self-fulfilling, and may explain why performance-related pay is less widespread than is usually believed (Frey, 1993; Jensen and Murphy, 1990).

Labour-managed firms and organizations, which are strictly speaking outside our scope, are indirectly relevant in the sense that the emphasis on profit maximization, which is typical of property rights theory, puts state enterprises in the same category as not-for-profit firms in the private sector (Furubotn and Pejovich, 1972). But the property rights theory predictions are contradicted by the experience of successful cooperative firms (see Bartlett *et al.*, 1992), which again suggests that public, private and cooperative enterprises can be efficient with the right kind of organization. For example, the Israeli *Kibbutz* system tended to be more efficient than the Soviet *Kolkhoz* system, despite or because of the fact that economic incentives were more prominent in the latter (Guttman and Schnytzer, 1989).

Conclusions

Those who favour a mixed economy are now perceived as old-fashioned and orthodox, although it is reasonable that the burden of proof should rest on those who argue that only one form of ownership can work. But a general privatization policy can only be justified by showing that it causes cost reductions that overshadow any benefits from public ownership. Neither theory nor evidence suggest that this is *always* the case. Moreover,

competition in the product market may not be desirable or even possible, which strengthens the case against privatization.

There are motives for privatization other than cost efficiency, but while they might justify some divestiture, they do not require abolishing the public enterprise sector completely. It is therefore reasonable to be sceptical about general privatization, particularly because the policy is costly to reverse if it turns out to be wrong. Traditional and now often dismissed arguments for public ownership consequently should be reconsidered.

Notes

1. Typically, one early contribution was titled 'Privatization: A Policy in Search of a Rationale' (Kay and Thompson, 1986). Few of the otherwise influential and free market-oriented Chicago economists have dealt with privatization, probably because of the limited extent of public ownership in the USA (see, for example, Friedman, 1962).
2. Despite the ideological significance of ownership, the extent of privatization is not explained by the dividing lines between political parties. Left-of-centre parties have been responsible for sometimes radical privatization policies, in Australia, Austria, Belgium, Britain, Denmark, Finland, France, Germany, Greece, Italy, Luxemburg, Netherlands, New Zealand, Portugal and Sweden, while (West) Germany under the Christian Democrats adopted a cautious policy.
3. State enterprises in Britain were typically more integrated into the public sector than those in Scandinavia, where they had access to the banking system (Willner, 1998).
4. 'Certainly, for a small and open economy such as the Netherlands it would be difficult to ignore developments elsewhere in Europe. Thus, the Dutch privatization programme can be described as a "curtsy to the times" rather than the result of a positive, grand design to revitalise the economy' (Hulsink and Schenk, 1998:255).
5. There is limited evidence of political failures of this kind, because their scope is restricted by competition from other political parties and by the media (Bohm, 1986; Besley and Case, 1995). Moreover, political failures can matter only when there are significant transaction costs, which also cause markets to fail because smart agents would otherwise offset both public sector distortions and market failures (Hammond, 1990).
6. Privatization cannot be successful if politicians are always selfish. Firms must be restructured so as to become attractive for investors, voters should not be manipulated by too cheap share prices, as in Britain (see Vickers and Yarrow, 1988), and there should be no distortionary regulation, taxes or subsidies afterwards.
7. Their model of 'vested interests' actually gives employees a lower weight than under pure welfare maximization, where employees, consumers and companies' owners get the same weight.
8. For example, privatization and deregulation in electricity and bus transport in Britain have increased profits but made consumers worse off (Newbery and Pollitt, 1997; White, 1990).
9. This objective function can also be interpreted in terms of Nash-bargaining between groups with different objectives.
10. The (Hirschman-)Herfindahl index of concentration is the sum of the squared market shares of each firm.
11. Willner (1996) includes a short survey of findings related to the price elasticity of demand in the electricity industry.
12. Note that the multiplicative form of the objective function means that the profits implied by the socially optimal solution are always non-negative.
13. However, higher wages are not necessarily just a harmful side-effect of public ownership but may be part of the welfare-maximizing solution (De Fraja, 1993a; Willner, 1999b). There are other reasons why private sector conditions should not always set the

- norm. Privatization might increase inequality because the public–private wage difference is higher among low wage workers (Gunderson, 1979). The wage disadvantages of females within the public sector did increase in Sweden in the 1980s because of a convergence to private sector conditions in the public sector (Zetterberg, 1992).
14. Martin and Parker conclude that their investigation: ‘provides little evidence that privatization has caused a significant improvement in performance. Generally the great expectations for privatization evident in ministerial speeches have not been borne out. Certainly, privatization has been associated with improvements in some of the eleven firms studied, especially in terms of profitability and value added per employee, although what performance improvement there was often pre-dated privatization’ (Martin and Parker, 1997: 217).
 15. Borcharding *et al.* (1982) are often cited as supporting the superiority of private ownership, but a large proportion of their sources consist of reports by municipal authorities and other non-academic contributions. They suggest that competition may explain more of the performance variations than ownership.
 16. Private ownership of airlines appeared as more efficient in Davies (1971; 1977), Ehrlich *et al.* (1994) and Liu (2001), but not in Forsyth and Hocking (1980) and Gillen *et al.* (1990). Private sector cost advantages in the bus industry are reported by Heseltine and Silcock (1990), McGuire and Van Gott (1984) and White (1990), but not by Kennedy (1995), and not in railways (Caves and Christensen, 1980; Caves *et al.*, 1982).
 17. Public ownership tended to be more efficient in the 1960s and less efficient in the 1970s.
 18. In a comparison of public and private electricity generation in Spain, Arocena and Waddams Price (2002) find that the former is more efficient under cost of service regulation, while the reverse is true under price cap regulation.
 19. This source is misquoted in Borcharding *et al.* (1982).
 20. The islands of public ownership in the USA have usually meant municipal utilities or ownership by the (regional) states, with benchmarking within the public sector. The 50 per cent federal state ownership in hydroelectric power in 1990 has been an exception (Hausman and Neufeld, 1999). Also see Chapter 7.
 21. It is often believed that overmanning in the public sector or in state enterprises in developing economies is a symptom of rent-seeking behaviour, but evidence suggests that it is usually a response to undiversifiable external risk, in the absence of other social safety nets (Rodrik, 2000).
 22. Note that it would be optimal with lower slack under public ownership without asymmetric information as well; the model shows that this holds true also when it is difficult for the owner to monitor the manager. The result can easily be generalized to a downward-sloping demand function of the form $p = P(x)$. Willner (1999a) provides the full solution, including the so-called ‘Hessian determinant’.
 23. It is of course possible that (4.14) is downward-sloping in s_L for some given value of ρ , but concave if ρ is zero. Privatization would then introduce slack in the firm.
 24. The number of firms can, of course, take only integer values, but we can treat (4.21) as including a variable n which can take any value. The sign of the derivative would then tell whether managerial slack would increase or decrease as n changed from, say, n_0 to n_1 .
 25. A more amusing example is reported by *Helsingin Sanomat* (30 November 1997) in Finland. The state-owned cleaning service Engel is not privatized but is subject to competitive tender. In the beginning it always lost the tender, until it discovered that the key to success was to leave more dust in the customers’ corridors.
 26. More precisely, benefits B and costs C are then described as functions of work performance P and external interventions E . The agent then maximizes $B - C$, which means that $B_p = C_p$.

References

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