

Public–private versus public ownership and economic performance: evidence from Italian local utilities

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Abstract In the last century local public services have often been reformed. The declared outcome of the most recent reforms is the privatization and liberalization of the sector. However, in almost all European countries, the privatization of local public services has been only partial, because local governments have sought to privatise a minority stake in the public owned-companies, while remaining committed to retaining public ownership and control over the longer-term as a means of protecting public interest. The phenomenon of mixed public–private companies emerged as a result of this process. In this context, the article investigates whether differences in financial performance can be found between public–private companies and totally public-owned enterprises. Empirical quantitative studies on this particular topic are quite lacking at the moment. The present study tries to fill this gap through an empirical analysis on a sample of 623 Italian local utilities. The results of the study suggest that there are differences in economic performance between local utility companies with varying degrees of public ownership. In particular, public–private utilities show better economic performance than publicly owned firms, especially in terms of profitability. The results also seem to suggest that the majority private ownership is not necessary for better performance. In other terms, public–private partnership—and not private majority ownership—seems to be the key point for good performance.

Keywords Public utilities · Performance · Public–private partnerships · Ownership · Privatization

1 Introduction

During the last century, the field of local public services has experienced profound changes worldwide (Osborne and Brown 2005). The years following World War II

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showed a clear tendency of governments to intervene in the economy through public ownership and regulation. On the contrary, by the 1970s, the poor performance of public-owned companies began to be evident and strong debates emerged on how to improve their performance. By the middle of the 1980s, privatisation had become a key component of economic reform within the OECD area (OECD 2003).

For many years the debate on the desirability of the privatization has monopolized the attention of international institutions, policy makers and scholars (Peters 2012; Estrin et al. 2009; Price 2007; Bortolotti et al. 2004; Megginson and Netter 2001; Hodge 2000; Villalonga 2000). Two opposing arguments have been at the centre of the political and academic arena (Hanke 1987). The first was clearly in favour of privatization that is interpreted as a solution to the budget constraints and the poor performance of public-owned companies (Yarrow 1986; Boycko et al. 1996; Andrews and Dowling 1998). The second one was against the privatization and emphasized the necessity of the ‘public hand’. According to this thesis, the rationale policy for public ownership is the presence of some forms of market failure and, given the nature of the public services, governments have been expected to guarantee adequate provision of these essential services at a reasonable cost to the entire population (Moe 1987; Grout 2003).

The rhetoric for or against privatization is characterized by a high ideological component. As a consequence, the privatization processes have been often unclear, and at times contradictory, and their relative importance has varied across countries, and, even within the same country, they have changed over time (OECD 2003).

In almost all European countries—including Italy—the privatization did not affect equally all sectors and has been only partial. This is the case of local public services, where governments have sought to privatise a minority stake in the public owned-company, while remaining committed to retaining public ownership and control over the longer-term as a means of protecting public interest (Bel and Fageda 2009). The phenomenon of mixed public–private companies emerged as a result of this ‘partial privatization’ (Boardman et al. 1986; Gupta 2005).

At the beginning, public–private companies were frequently considered as a temporary phase before full privatization. Crushed between the model of the state-owned companies and that of the private firms, public–private companies had no relevance as a phenomenon in itself. However, since the late 1990s they have gradually been recognized as a separate model, able to mitigate market and state failures in the provision of local public services. International institutions, policy makers and scholars began to be interested in the issue of public–private partnerships (PPPs). In particular, European Union (COM 327/2004) suggested implementing different types of PPPs in the provision of public utilities. In particular, it defined two kinds of PPPs: the contractual one, in which production is private and the partnership between the public and the private sector is based solely on contractual links; the institutional PPPs, where public and private partners share the ownership of a firm, constituting a new and different organisation.

Public–private companies are a form of institutionalised PPP and it can be put in place either by creating an entity held jointly by the public partner and the private one or by a private partner entering in the ownership of an existing public firm. In Europe, this form of PPP is the most frequently used for managing public services at the local level (for example, water supply services, waste collection services, etc.).

Empirical literature strongly supports the notion that privatization brings about a significant increase in the performance of privatized companies. Megginson and Netter (2001) survey empirical studies over different periods of time, countries and industries. Of the 22 studies surveyed, 20 find that companies perform better after they had been privatized. Of the 10 studies that compare the performance of public and private enterprises operating in the same industry, eight conclude that private enterprises perform better. The studies also report that fully privatized companies perform better than partially privatized ones, but this difference in performance is minor. They conclude that there is almost unanimous support for the view that privatization is associated with increased performance. However, the same literature warns that the results on improved performance are really evident when the company operates in a competitive market and with the same regulation of the private sector (Yarrow 1986).

In practice, this happens very rarely. In fact, in most countries (especially in Europe and in Italy) and for the majority of public services, there are political and social reasons that lead governments to intervene through regulation or public ownership. Therefore, there is a gap in the existing literature. Empirical studies have shown that in some circumstances totally privatized companies perform better than public-owned companies. But these results are of little help in many areas of public services where the fully privatized companies are rare and where service delivery takes place through companies with some degree of public (totally public or public–private) ownership and where the environment is heavily regulated. In these cases, it would be useful to know whether public–private companies perform better than (totally) public-owned enterprises. However, this research question has not been subject to sufficient empirical research, especially quantitative studies (Gupta 2005).

Starting from these premises, the article tries to answer the following research question: do public–private companies have better financial performance than totally public-owned enterprises? Drawing from some well known economic theories (agency theory, property rights theory, public choice theory) and from research on PPPs, the article empirically tests the hypothesis that better financial performances are associated with the presence of private partners in the ownership of public utilities. The empirical analysis is carried out on a sample of 623 Italian local utilities. The findings of the study indicate that there is a positive relation between the presence of private actors in the ownership of local utilities and financial performance, especially in terms of profitability.

The article contributes to the advancement of the public management and governance research in two ways.

First, it contributes to the debate on privatization, by showing that public–private ownership is an alternative preferable—at least in terms of financial performance—to the total public ownership, when full privatization is not politically feasible. Therefore, not only private-owned companies but also mixed companies have better economic performance than public enterprises. This finding adds to what is already known about privatization and it is an empirical confirmation of the economic theories in support of privatization, even in the case of a partial privatization.

Second, the article empirically supports the arguments of the public–private partnership proponents. Privatization may not be feasible or practical in all circumstances. In these cases, the involvement of private partners in the ownership

of government-owned companies can be a solution potentially capable of mitigating the trade-off between the pursuit of the public interest by public service organizations and their financial performance.

The remainder of this article is structured as follows. An overview of the Italian context is provided in Sect. 2. The literature review, followed by the formulation of the hypotheses, is described in Sect. 3. The research design and methods are shown in Sect. 4. The main results and findings are discussed in Sect. 5 and Sect. 6. Finally, in Sect. 7, conclusions and future research directions are given.

2 The Italian context

Overall local public services represent a significant share of the Italian economy (about EUR 42 billion, 1.4 % of GDP and 4 % of national industrial production), and its share remains stable. In 2005, approximately 1,000 enterprises operated at local level, 40 % of which registering less than EUR 5 million turnover, while 22 % registered more than EUR 25 million turnover. In 2006, they employed 170,000 people, i.e. 4.1 % of the employed labour force in the industrial sector. Most of the Italian local utilities provide only a type of services. Only one public utility out of five has diversified its services. The number of organizations is higher in the north of the country (Confservizi 2004 and 2008b; OECD 2009).

Over the last century, the local public services sector in Italy has featured the progressive overhauling of the supply system and the redefinition of the role played by the local authorities (Grossi 2007; Grossi and Reichard 2008; Bognetti and Robotti 2007; Monteduro et al. 2011).

Traditionally, local public services were managed by the local authorities, either directly or through ad hoc agencies, but during the 80s and early 90s the system was reformed, with the introduction of a more entrepreneurial mindset and approach. Lastly, in the late 90s, the current arrangement gradually took shape, with a progressive trend towards the introduction of an increasing degree of competition (Bognetti and Robotti 2007).

Overall, the local public services reform in Italy has pursued two lines of action:

- (a) *the privatization of service providers*, although privatization in this sector has been often merely ‘formal’, consisting in the replacement of the traditional forms of organization grounded in public law (called *azienda speciale*), with organizations governed by private law (corporations). In some cases, however, privatization has been more ‘substantial’, with the partial or full transfer of ownership to private-sector entities.
- (b) *market liberalization*, to enhance competition. Given the nature of the services, however, the competition is primarily “for” the market (because each service provider plays an exclusive role, following the contracting out of the service by public competition), rather than “in” the market (where a number of enterprises compete in providing the same service).

In fact, the two above-mentioned lines of action have been pursued in a highly contradictory fashion (OECD 2009).

At first, in the 2001 reform the path of privatization has been firmly pursued (Article 35 of Law 448/2001). First of all, the legislative measure made it mandatory for utilities to be “formally” privatized, since the local authorities were required to transform the legal status of the service providers, from public bodies into corporations. Alongside this process, substantial privatization (whether partial or total) was also strongly encouraged. But the most significant advances were made in the field of liberalization. The legislators’ master plan, in fact, was to assign the management of the utility services providers through ordinary open calls for tenders. This led to competition for the market (Demsetz 1988). Another important element of innovation, contained in Article 35 of Law 448/2001, was the mandatory separation between the utility service providers and the network operators (the networks being viewed as a set of technical assets and facilities forming a long-lived infrastructure). This encouraged the introduction of further competition in the delivery of services. It was thought that, by separating the networks and the service providers, it would be possible to establish the conditions for enabling the non-discriminatory access to the market by more than one utility service provider in each sector.

Then, in 2003, two measures changed the initial arrangement (Article 14 of Decree Law 269/2003, converted into Law 326/2003, and Article 4 of Law 350/2003), affecting the privatization and liberalization processes in a rather contradictory way. The separation between utility service providers and network operators has been confirmed. The network, and the related facilities, could only be owned by a wholly publicly-owned company, no stake in which could be sold to private-sector entities. On the contrary, the delivery of the services could be contracted out, as follows: (a) to a privately-owned company, through an open call for tenders; (b) to a mixed public–private company, the private partner of which would be selected by an open call for tenders; or (c) to a wholly publicly-owned company controlled by the local authority (so-called “in-house” model), without any tendering. This new arrangement represents a step backwards, compared to the 2001 reform. In fact, substantial privatization and competition are no longer mandatory and have been reduced to a mere choice for the local authority (Bognetti and Robotti 2007).

In the late 2000 a new reform tried to propose again the principles of substantial privatization and competition (Law 133/2008 and Law 166/2009). Recourse to open bidding became mandatory with some exceptions, in the case of specific economic, social, environmental, and geo-morphological characteristics of the area (Cambini et al. 2011).

In 2011, a referendum abolished the key points of the 2008–2009 reform. Italian citizens expressed distrust on privatization and liberalization of local services. Consequently, new laws (Law 148/2011 and Law 183/2011) were enacted, but the local public services regulation still remains complex and unclear.

All these reforms have suffered from conflicting pressures (Cepiku and Meneguzzo 2011). The confrontation between market-oriented, privatisation and liberalization forces, on the one hand, and vested political and economic interests strongly represented by municipalities, on the other hand, led to an uncertain and contradictory path of reform and consequently encouraged the maintenance of the *status quo* (OECD 2009).

The outcome of this ambiguity in local public services reforms has been the so-called ‘municipal capitalism’ (Bortolotti et al. 2007). Municipal capitalism is the

result of the ‘formal’ privatization and can be interpreted as a system of local service provision in which providers have the legal status of joint stock companies, either partially or fully owned by local governments. Municipal capitalism should have been a temporary phase, or just a secondary option, while awaiting a more thorough opening up of the markets through substantial privatization and liberalization. On the contrary, due to the ambiguity with which the reform process was implemented in Italy, this temporary stage has, in fact, become permanent on a very large scale.

A clear picture of the Italian municipal capitalism can be obtained from the sectoral data (Confservizi 2004, 2008a and b).

A first aspect is the rapid emergence of the formal privatization. In 1997 there were only 56 enterprises that had adopted the form of joint stock company, while in 2003 their number had skyrocketed to 650, reaching 900 in 2008. In 2008, joint stock companies accounted for the majority (55 %) of all enterprises.

Unlike the “formal” privatization process, the “substantial” process seems to progress at an extremely slow pace. In 2008, 65.1 % of the local public services enterprises were wholly publicly owned; the remaining are mainly mixed companies in which the local authorities maintaining a majority stake (28.8 % of cases). Although the proportion of wholly publicly-owned companies dropped by 8 points in 2004–2008, this did not translate into a significant opening to the private sector. Most of the difference, in fact, was absorbed by an increase in the number of companies with a majority public ownership (+5.2 %), while the proportion of companies with a majority private ownership increased at a far slower rate (+2.7 %).

In summary, public monopolies continue to persist in all sectors and the opening to private capital remains slow. Substantial privatization and liberalization are still far away, and the only aspect of the entire reform process that vaguely comes close to achieving these objectives is the establishment of mixed public–private companies, which are in any case an absolute minority.

3 Literature review and hypotheses

In the economic literature, the public ownership of enterprises is generally viewed in a negative light, by three schools of thought in particular: the agency theory, the property-rights theory and the public-choice theory.

The critical approach by the agency theory is grounded on the consideration that different forms of ownership are associated with different agency dilemmas, and different solutions to the dilemmas. In both public and private companies, the general assumption is that the managers (the agents) tend to pursue the aim of maximizing their own profit, instead of the owner’s (the principal). However, in private companies this conflict of interests is reduced due to the presence of some incentives. For example, Laffont and Tirole (1991) examined incentive problem in a common agency framework. They argued that there are many sources of different specific costs in each organisational form. If principal private and public ones have different objectives of performance (economic performance only for the first and economic, social performance and policy for the second), the private and public

agents are normally interested by their own profits, and the improvement of their incomes. In the private firms managers have more clear incentives and the principals do not have any reason to limit the profits. On the contrary, in the public sector organizations the principals have a more complex system of objectives, and the managers have less clear incentives to pursue company's efficiency. Thus, the private property ensures greater attention to the company's efficiency and profitability with respect to public ownership.

Property rights theory focuses on how control rights are allocated in a contractual relationship when contracts are incomplete. The constant topic of the theory of the property rights is that attribution with the individuals of property rights perfectly definite is the condition of the economic efficiency. The two essential attributes are: the exclusiveness, which guarantees to the individual a use of the goods non-subordinate to other agents, and the transferability, which allows a free choice between the various rights. In the case of government-owned enterprises there is no clear holder of the residual rights to control the company's asset. This determines less incentive to control performance and, consequently, worse performance (Grossman and Hart 1986; Alchian and Demsetz 1972; Barzek 1989; Demsetz 1988). However, some scholars (Hart et al. 1997) suggest that the manager of a private firm producing public services has incentives to reduce costs, but he/she has no concern for quality erosion. Hence, a trade-off between costs savings and service quality is likely to emerge. Privatisation is likely to reduce costs, but it can also result in a lower quality of service. In this theoretical setting, Schmitz (2000) shows that partial privatisation may imply better incentives to reduce costs in comparison to purely public production, while also bringing better incentives to improve quality in comparison to purely private production.

The public-choice theory focuses on the fact that politicians tend to pursue their own profit, rather than the public interest. Consequently, they impose objectives on public enterprises that have more to do with winning electoral consensus, than with achieving economic efficiency (Boycko et al. 1996). According to this approach, for any single citizen, the monitoring cost of enterprises' activities generally exceeds the individual benefits (lower taxes or improved efficiency of public expenditure). This means that, despite the considerable benefits accruing to the community, from controlling the performance of public enterprises, these benefits are spread over so large a number of individuals that none of them, taken individually, has any interest in exercising this form of control. This, of course, is not the case of pressure or special interest groups, which, on the contrary, exercise their power of influence, with respect to public enterprises, for reasons of gain. Therefore, this theoretical approach also agrees with the assumption that performance control incentives are very weak in public enterprises, or even contradictory, with respect to private enterprises, and this entails a worse economic performance of the former, compared to the latter.

International empirical research has attempted to investigate if and to what extent there are differences in performance (primarily economic performance) between public and private enterprises.

Villalonga (2000) has reviewed the cross-sectional studies, finding: 104 studies which conclude that private enterprises perform better than public enterprises, 14

studies featuring the opposite conclusion, and 35 ‘neutral’ studies. According to the same author, the longitudinal studies are less numerous and feature inconsistent outcomes. It should be specified that the above-mentioned literature focuses on the study of the effects of full privatization processes (i.e. transfer of the entire ownership interest to the private sector), or on a comparison between public and entirely private enterprises. No comparison is made in terms of the performance of wholly-public and partially privatized enterprises.

The study of Megginson and Netter (2001) is one of the most cited in the literature. They reviewed 32 empirical studies. Of the 22 studies surveyed, 20 found that companies performed better after they had been privatized. Of the 10 studies that compared the performance of public and private enterprises operating in the same industry, eight concluded that private enterprises performed better. They concluded that there was almost unanimous support for the view that privatization is associated with increased performance. Interestingly, Megginson and Netter also report that fully privatized companies perform better than partially privatized ones, though this difference in performance is minor. Also in this work the difference between totally public and mixed ownership is not investigated.

Thus, although mixed public–private enterprises play a significant role in the delivery of local services, the empirical literature on partial privatisation is scant (Bel and Fageda 2010). The relatively few studies that have analysed the case of mixed ownership found that mixed ownership perform no better and often worse than government-owned firms, which may be caused by the conflict between public and private shareholders. (Boardman and Vining 1989).

Management studies, and the New Public Management (NPM) in particular, although linked to the preceding theoretical approaches (Gruening 2001), tackle the issue from a different perspective: in fact, they analyse the differences between public and private enterprises from the point of view of their governance models, management systems, control mechanisms, accounting/financial reporting systems, etc. The NPM is based on the assumption that the better performance of private enterprises, compared to public enterprises, resides in the limited managerial evolution of the latter (Ferlie et al. 1996; Lane 2000; Barzelay 2001; Mc Laughlin et al. 2002; Andrisani et al. 2002; Jones et al. 2004).

Italian management (*economia aziendale*) scholars have deeply investigated the topic of public-owned enterprises (Saraceno 1975; Borgonovi 1979; Cafferata 1993) and their role in reforming local public sector (Valotti 1996; Grossi and Mussari 2004; Mele and Mussari 2009). Compared to the NPM approach, this literature tends to express less clear-cut and radical positions concerning the higher performance of the private over the public organizations. Public–private mixed companies are generally considered positively, although problems connected to their complex governance are often highlighted (Grossi and Mussari 2004).

More recently, the issue of public–private companies has been investigated from a perspective different from that of the NPM. In particular, the mixed companies have been interpreted as one possible form of public–private partnership (Hodge and Greve 2007). Providing a summary of this broad-ranging research would be a very complex task and, in any case, outside the scope of this article. What we would like to focus on here is that the PPP literature provides interesting suggestions for

hypotheses. While the agency and public-choice theories tend to compare the public and private-sector companies, the PPP literature focus on an intermediate type of organization: public–private company. This is particularly important, because the research question formulated in this article does not so much concern making a comparison between public and private-owned companies, but rather between mixed and public-owned enterprises in the local public services. While the traditional economic theories are still useful to define the research hypotheses, further relevant insights may be drawn from the copious literature on PPPs.

Although there are some negative critical observations on mixed public–private companies—especially in terms of governance (Grossi 2007)—generally speaking, the PPP literature highlights how this is the preferable solution, primarily in terms of efficiency, to wholly publicly-owned companies. The main reasons for this are (Bovaird 2004; Eckel and Vining 1985):

- a. *Acquisition of knowledge and know-how.* The specific structure of the industry, and the current regulatory framework (which obliges the local authorities to select a private partner via open calls for tenders), concur to determine that the private partners acquiring a stake in a public utilities must have the specific know-how and technical resources and, generally speaking, the desire to play a proactive role in the company’s management. It is important to highlight that, since utilities feature a high degree of industrial complexity, the injection from the outside of new resources and skills can enhance overall efficiency and competitiveness.
- b. *Enhanced management independence.* The presence of private partners can represent a powerful barrier to conditioning from the political world, although informal pressure and interference by politicians cannot be barred entirely. Independence concerns the management of the services, corporate finance, pricing policies, etc. The level of independence of an organization is reflected on its internal organization structure, through the vesting of discretionary and decision-making powers in the various organization levels, promoting widespread accountability on the achievement of the company’s objectives.
- c. *Enhanced focus on economic performance.* There are a number of reasons why a private partner decides to acquire a stake in a local public utility, but the most obvious is profit. This entails an increased focus on the company’s economic performance, compared to wholly-publicly-owned enterprises.

The mixed public–private ownership formula may entail cons as well as pros, primarily related to potential conflicts arising between the public and private partners, which, it should not be forgotten, pursue different interests, which can, theoretically, be reconciled, but which nevertheless may lead, in practice, to “deadlocks” in the decision-making process. Yet another critical aspect is related to the high transactions costs. The measures implemented to protect mixed public–private companies from the risk of deflecting from the public interest are open calls for bids (to select the private partner) and the conclusion of shareholders’ agreements and service contracts, which may entail considerable transaction costs. A last problematic area is the ‘flip side of the coin’ of the enhanced focus on economic performance. The same reasons that prompt the private partner to focus

on profitability and efficiency could lead to a diminished interest in the effectiveness, quality and creation of public value. This is undoubtedly a significant concern and should be mentioned here, although it lies outside the scope of this article.

The empirical research focusing on the differences in economic performance between mixed and wholly publicly-owned companies is not yet sufficiently developed. Bognetti and Robotti (2007) explain the legal status of mixed firms in Italy and discuss the pros and cons of mixed firms regarding efficiency and performance. Bel and Fageda (2010) makes use of survey data from Spanish municipalities to examine the motivations of local governments for engaging in partial privatisation of local service delivery of water distribution and solid waste collection. Bortolotti et al. (2007) analyse the relationship between ownership structure and performance in Italian local utilities. The results suggest that the presence of private shareholders is associated to a higher degree of company's profitability and efficiency.

The aforementioned literature generally suggests that the presence of private shareholders in the local utility companies should have positive effects on economic performance.

H₁: There is a positive relationship between the presence of private shareholders in the local utility companies and their economic performance.

The test of the H₁ requires the adoption of a cross-sectional approach. This method tries to evaluate the relation between ownership and performance by comparing the performance of different firms (state vs. privatized) operating under reasonably identical conditions: at the same time, in the same markets, within the same environment (Frydman et al. 1999). In order to capture the effect of ownership cleanly, a study has to assure the absence of a selection bias (Megginson and Netter 2001; Frydman et al. 1999).

According to Megginson and Netter (2001), the possibility of sample selection bias can arise from several sources, including the desire of governments to make privatization "look good" by privatizing the healthiest firms first. Frydman et al. (1999) argue that selection bias may occur if better firms were chosen for privatization. Megginson et al. (2004) find that governments selling state-owned enterprises tend to sell the more profitable firms in the public capital markets and the less profitable ones in the more opaque private markets. Those sold in the public capital markets are the firms examined in studies of performance. Dewenter and Malatesta (2001) show that the profitability of the state-owned firms increases before privatization. Controlling for the degree of remaining state ownership post-privatization, they find an inverse U-shape of profitability over a period running from 10 years before the privatization to 5 years after the privatization, with a top of firm profitability just before the privatization. The authors then draw the following conclusion: if the government restructures firms and improves their performance before privatization, then the improvements cannot be attributed to the change in ownership.

In other words, these studies raise the issue that, in cross-sectional studies, the presence of a selection bias can distort results. It is necessary to better clarify the point. The cross sectional studies make a comparison between firms with different

ownership structures: government-owned enterprises versus fully or partially privatized firms. This comparison concerns the performance of the two types of firms in the same period (for example, by comparing the performance achieved in the year t_0 by a sample of firms). If no selection bias occurs, and if privatized firms perform better than government-owned, then one can suppose that private ownership leads to better performance. However, the presence of a selection bias could distort this result. Suppose—as the empirical findings of DeWenter and Malatesta (2001) suggest—that there is a systematic tendency to privatize state enterprises with better performance. In this case, government-owned companies with excellent performance at time t_{-1} (or before) will be probably privatized at time t_0 . Therefore, in a cross sectional analysis conducted at time t_0 , it is likely to have been included in the sample a large number of privatized companies that had good performance before the privatization. It is also likely that, at time t_0 , the state-owned enterprises included in the analysis are those which, having the worst performance in previous years to the analysis, were not selected for privatization. If this selection bias were significant, it would be quite wrong to attribute to the privatization (or rather, to the change of ownership) a positive effect on performance.

To evaluate the presence of selection bias, a second hypothesis has been formulated.

H₂: (Partially) privatized companies had before privatization better economic performance than not privatized companies.

Falsifying this selection bias hypothesis is an important element for claiming that privatization leads to improvements in performance (Frydman et al. 1999). Conversely if this hypothesis is not falsified, it would not be possible to support the argument of a positive effect on performance due to the presence of the private shareholders.

4 Method

4.1 The sample

The empirical analysis has been conducted on a sample of 623 Italian local utilities, accounting for all organizations created as joint-stock companies (i.e. companies wholly owned by the local authorities, or in which they hold a majority or minority interest), which are engaged in the distribution of consumers services such as the provision of electricity, gas, water, waste management, transportation and others. The sample excludes enterprises that have other managerial forms such as corporations different from joint-stock companies, special enterprises, institutions, in-house units and so on. It also excludes purely regulatory bodies and organizations engaged in ‘non-business’ activities such as social and community services, including health and education, research organizations.

The key characteristics of the sample are summarised in Table 1 below.

There is a clear prevalence of organizations totally owned by local governments (58.4 %).

Table 1 The sample

	n	%
Ownership		
Local Governments' total ownership	364	58.4
Presence of private shareholders (of which):	259	41.6
Majority owned by Local Governments	215	34.5
Majority owned by private shareholders	44	7.1
Total	623	100
Geographical location		
Northern Italy	336	53.9
Central Italy	196	31.5
Southern Italy	91	14.6
Total	623	100
Area of activity		
Water	216	34.7
Waste management	178	28.6
Gas	139	22.3
Energy	73	11.7
Transport	149	23.9
Pharmacy	80	12.8
Others	70	11.2

Source: Confservizi (2008a)

With reference to the territorial distribution, a prevalence of organizations located in the north of Italy is registered (53.9 %), reflecting the different geographical levels of economic development in the country.

Looking at the type of services provided, activities are concentrated in five key sectors. A considerable part of local utilities (34.7 % of units) is involved in the water industry, providing drinking water and wastewater services, including sewage treatment, to households and industry. The second sector in term of relevance (28.6 % of the units) is waste management that encompasses the collection, transport, processing, recycling or disposal and monitoring of waste materials. Local transport follows with 23.9 % of the units. Companies active in this field run road and rail transportation services in urban as well as in extra urban areas. The supply of gas for residential and commercial uses is the fourth field of activity, involving 22.3 % of the units.

The energy sector involves only 11.7 % of the units. Electric utilities are companies that engage in the generation, transmission and distribution of electricity for sale. Finally some units (24 %) provide other services such as pharmacies, funeral services, housing, touristic and cultural services and so on.

4.2 Data collection

Data has been collected from four main sources.

The data on the ownership structure, the geographical location, and the type of services delivered comes from the members' yearbooks (2005–2008 editions), prepared by Confservizi (2005, 2006, 2007, 2008a).

The data on economic performance comes from the 2008 statistical Digest, also prepared by Confservizi (2008b), containing a number of profitability and efficiency indicators for the 2004–2006 period. Since some relevant data is missing, we have been able to collect financial data only for 536 enterprises.

The information about wholly publicly-owned utilities that have been partially privatized in 2007–2009 was collected from their websites; if no relevant information was found there, the Italian Register of Enterprises held by the Chambers of Commerce (which record changes to the ownership structure of Italian companies) was consulted.

The analysis was carried out in January to March 2010.

4.3 Variables

Dependent variables. In the literature, economic performance is measured using profitability and/or efficiency ratios (DeWenter and Malatesta 2001). In this article, we have used three variables, which are also widely used in sectoral economic analyses (Confservizi 2008b):

- *ROI*: the *Return on Investment* measures the profitability and efficiency of an enterprise's core business, regardless of the sources of financing. The ROI has been calculated as income before extraordinary items divided by total invested capital (the sum of long term debt, minority interest, and common shareholder equity). In the analysis, we have used the average value for 2004–2006 (*ROI_AV*).
- *ROE*: the *Return on Equity* measures the rate of return on the ownership interest (shareholders' equity). The ROE has been calculated as the ratio of the net income (after tax) to the shareholder equity invested, on average, in the same period. In this case too we have used the average value for 2004–2006 (*ROE_AV*).
- *ROS*: the *Return on Sales*—or operating profit margin—is used to evaluate a company's operational efficiency. The ratio expresses how efficiently management uses the sales revenues, thus reflecting its ability to manage costs and overhead and operate efficiently. The ROS has been calculated as the ratio of operating profit divided by net sales in the financial period. Here too the average value for 2004–2006 has been used (*ROS_AV*).

Independent variables. The independent variables refer to the company's ownership structure. In particular, we have identified two dummy variables:

- Presence of private shareholders in the enterprise (*PRES_PRIV*): this variable assumes the value of 1, if there is a majority or minority private ownership; otherwise, it assumes the value of 0 (in the case of wholly publicly-owned enterprise).
- Private majority ownership (*MAJOR_PRIV*): this variable assumes the value of 1, if the private shareholders hold more than 50 % of shares; otherwise, it assumes the value of 0.

Control variables. Based on the existing literature (DeWenter and Malatesta 2001; Megginson and Netter 2001), we have identified the following control variables:

- *Organization size.* The size of the organization can affect economic and financial performance. We have used the total assets as the measure. Consistently with the indications found in the relevant literature (DeWenter and Malatesta 2001), we employed the logarithm—and not the absolute value—of the total assets (*LOG_ASSETS*).
- *Geographical location.* The socio-economic environment may significantly affect economic performance. In particular, utilities operating in the Central and, above all, in the Southern Italy, may post an inferior economic performance, due to the fact that they operate in less developed socio-economic environments. Therefore, we have specified two dichotomous variables, to identify the enterprises located in Central Italy (*CENTRE*) and Southern Italy (*SOUTH*).
- *Field of activity.* The field of activity, and the related regulatory framework, may also affect economic performance. Therefore, we have specified seven dichotomous variables to represent an equal number of significant sectors in which the companies operate (*WATER, WASTE, GAS, ENERGY, TRANSPORT, PHARMACY, OTHER*).

4.4 Data analysis

We have used two different approaches to test the two research hypotheses.

To test the first hypothesis, we have used a cross-sectional approach aimed at investigating whether—in 2004–2006—there was a positive relationship between the different economic performance indices (dependent variables) and private participation in the local utilities (dependent variables), controlling a series of variables. Therefore, we have conducted a multivariate analysis using ordinary least squares (OLS) regression.

Instead, to test the second hypothesis, being unable to carry out a longitudinal analysis (due to the available time series data)¹, we have attempted to verify whether the wholly publicly-owned companies that transferred interests to the private sector in 2007–2009, had better economic performance—in the previous 3-year period (2004–2006)—compared to the utility companies that did not change their ownership structure in the same period (remaining thus fully publicly-owned). The choice to focus the analysis on the 3 years before privatization (2004–2006) is based primarily on empirical results of DeWenter and Malatesta (2001). In fact, they found that better performance largely occurs during the 3 years just before privatization. Therefore, this 3-year period appears the most appropriate to test the second hypothesis (selection bias). Moreover, the 3-year period is frequently used by the literature (Megginson et al. 1994; Boubakri and Cosset 1998; D'souza and

¹ The data we were able to collect for all the study variables are related to the 2004–2006 time range, which is too short to attempt a longitudinal analysis aimed at verifying whether—for a given enterprise—there is a significant difference between the economic performance recorded in the period before and after the transfer of ownership interests to private companies.

Meggison 1999; DeWenter and Malatesta 2001; Bortolotti et al. 2002; D’Souza et al. 2005).

In terms of data analysis, we carried out a comparison of means using Student’s *t* test (Blalock 1979).

5 Results

The descriptive statistics are shown in Table 2 below.

5.1 Test of the first hypothesis

The multivariate analysis has been carried out using ordinary least squares (OLS) regression. Table 3 shows the results of the analysis.

Altogether, the regression models always appear significant, as highlighted by statistic *F* (in all cases $p < .001$). However, the adjusted *R* square values are quite low (respectively .117, .123 and .111) which means that the explanatory power of the model is not optimal. Moreover, the VIF index never exceeds 2, thus indicating a low collinearity.

The single estimates of the regression factors highlight some interesting results.

All the economic performance variables taken into account are significantly and positively related to the presence of private shareholders in the local utility companies. It is interesting to highlight here that the variable measuring the presence of private shareholding in these enterprises (referred to in Table 3 as PRES_PRIV), represents the opposite case of wholly publicly-owned enterprises. Therefore, the positive and significant relationship between this variable and the economic performance variables means that the wholly publicly-owned utilities feature a lower economic performance, compared to those in which there is a private ownership interest.

Instead, the variable measuring the private majority ownership (MAJOR_PRIV) does not achieve statistical significance for two of the performance variables (ROI and ROS). This means that, except for the ROE, there is a positive relationship between economic performance and the presence of private shareholders in local utility companies, regardless of the size of the stake they hold.

Moreover, the results confirm that there is also a relationship between the socio-economic environment and economic performance. Local utility companies operating in the South of Italy feature a significantly lower performance compared to those in other areas of the country.

Lastly, the area of activity plays a decisive role, with regard to economic performance. In particular, transport companies feature a consistently lower performance compared to the other sectors; while gas companies have the best performance.

In short, the regression analysis gives a result that is consistent with the Hypothesis 1.

5.2 Test of the second hypothesis

We tested this hypothesis as follows. First of all, we extracted from the overall sample of 623 local utilities, the 364 companies that were wholly publicly-owned in

Table 2 Descriptive statistics

	N	Minimum	Maximum	Mean	SD
ROI_AV	583	-26.00	28.00	2.8016	7.27625
ROE_AV	583	-141.10	84.93	1.0006	16.58761
ROS_AV	583	-41.00	23.60	1.8446	8.03669
PRES_PRIV	623	0	1	.42	.493
MAJOR_PRIV	623	0	1	.07	.256
LOG_ASSETS	554	2.75	6.64	4.3871	.66256
CENTRE	623	0	1	.31	.465
SOUTH	623	0	1	.15	.353
WATER	623	0	1	.35	.476
WASTE MANAGEMENT	623	0	1	.29	.452
GAS	623	0	1	.22	.417
ENERGY	623	0	1	.12	.322
TRANSPORT	623	0	1	.24	.427
PHARMACY	623	0	1	.13	.335
OTHERS	623	0	1	.11	.316
Valid N (listwise)	536				

2004–2006. Among these 364 companies, we then searched for any specific information on the transfer of ownership interests to private shareholders in 2007–2009. No information was found for 40 of these organizations. Therefore, the final sample for this analysis comprised 324 enterprises.

The sample was then broken down into two subsamples. Subsample 1, comprising the only 10 enterprises that transferred an ownership interest to private shareholders in 2007–2009 (in all cases, it was a minority interest, which means that the enterprises maintained a majority local government ownership), and subsample 2, comprising 314 enterprises, whose ownership structure remained unchanged in 2007–2009 (i.e. wholly publicly-owned).

At this point, we continued by comparing the means of the ROI, ROE, ROS ratios of the two subsamples, using Student's *t* test.

Table 4 above shows how the economic performance of the companies comprised in subsample 1 was worse, in the previous 3-year period (2004–2006), compared to those in subsample 2. In any case, the differences between the two subsamples are not statistically significant.

Based on the results, we can reject the Hypothesis 2.

6 Discussion

The results of the study suggest that there are differences in economic performance between local utility companies with varying degrees of public ownership. In particular, public–private utilities have better economic performance than publicly owned firms, especially in terms of profitability. The results also seem to suggest

Table 3 Results of the OLS analysis

Independent/control variables	Dependent variables			VIF
	ROI_AV Standardized coefficients	ROE_AV Standardized coefficients	ROS_AV Standardized coefficients	
PRES_PRIV	.132**	.119**	.112*	1.166
MAJOR_PRIV	−.008	.122**	.013	1.142
LOG_ASSETS	−.104*	−.059	−.002	1.211
CENTRE	.055	.033	−.017	1.132
SOUTH	−.106*	−.086*	−.152**	1.145
WATER	−.025	−.006	.072	1.433
WASTE MANAGEMENT	−.003	−.072	−.017	1.256
GAS	.091#	.174***	.080#	1.320
ENERGY	−.035	−.003	.019	1.294
TRANSPORT	−.206***	−.162**	−.193***	1.475
PHARMACY	.098*	.010	.039	1.259
OTHERS	−.016	.040	−.041	1.057
<i>Adjusted R²</i>	.117	.123	.111	
<i>Model F- statistic</i>	6.900 ***	7.242***	6.580***	
<i>N</i>	536	536	536	

*** Significant at the .001 level (2- tailed)

** Significant at the .01 level (2- tailed)

* Significant at the .05 level (2- tailed)

Significant at the .10 level (2- tailed)

that the majority private ownership is not necessary for better performance. In other terms, public–private partnership—and not private majority ownership—seems to be the key point for good performance.

These results are in line with the most widespread economic theories (agency theory, ownership rights theory and public-choice theory). They also confirm the arguments made by some management scholars about the advantages of public–private partnerships (Bovaird 2004) and are in contrast with the previous studies that found that mixed ownership perform no better and often worse than government-owned firms (Boardman and Vining 1989). Probably, this means that the advantages of the public–private ownerships (such as improved know-how, enhanced management independence, increased focus on the control of economic performance) outweigh its disadvantages (complexity of governance, conflict between public and private shareholders, etc.).

Our findings are also in line with those of Bel and Fageda (2010), which affirm that the decision to use mixed companies is fundamentally pragmatic and that local governments make use of this PPP when cost considerations, financial restrictions and private interests exert contradictory pressures. They also note that political and ideological factors have no influence on a local government’s decision to use mixed firms, and that mixed firms seem a non-ideological ‘middle way’ between pure public and pure private production.

Table 4 Comparison of means—Student's *t* test

	Subsample 1 Companies (wholly publicly-owned during 2004–2006) partially privatized during 2007–2009	Subsample 2 Companies (wholly publicly-owned during 2004–2006) and without any change in the ownership during 2007–2009	<i>p</i> -value ^a
ROI 2004–2006	−.3400	1.7588	.328
ROE 2004–2006	−3.4920	−1.7922	.838
ROS 2004–2006	−1.7980	.7928	.333
N	10	314	

^a Equal variance not assumed; Sig. (two tailed)

The falsification of Hypothesis 2 excludes the presence of selection bias in our analysis. Eliminating the selection bias hypothesis—that privatized firms perform better than state firms because they were simply better firms *ab origine* (and were perhaps privatized for this reason)—is an important element of our argument that privatization leads to improvements in performance. In fact, the analysis shows that partially privatized companies are precisely those that featured—in the years before privatization—worse economic performance than not privatized companies. In this perspective, our results are consistent with those of Frydman et al. (1999), while they are in contrast with those of Dewenter and Malatesta (2001). However, the results of this study should be interpreted with caution.

First of all, the analysis has highlighted that there are several factors, other than ownership, which play a significant role in enhancing performance, including, in particular, the socio-economic environment and the regulatory framework, as well as typical features of the different sectors. For example, we should not jump to the conclusion that private ownership is, in itself, sufficient to improve economic performance, because we need to understand exactly how the presence of private partners in local utility companies can affect market competition. As mentioned above, the current Italian regulatory framework provides for (partial or full) privatization through open calls for tender (competition for the market). It is, therefore, possible that the gap, in terms of performance, between wholly publicly-owned companies and mixed public–private companies, is due to the effect of this competition rather than to ownership (Yarrow 1986). In other words, the greater efficiency goals should be pursued through market liberalization, rather than scarcely competitive privatization strategies.

Secondly, there may exist other relevant variables that would be useful to consider (e.g., market concentration, average level of R&D investment, etc.) and that this work cannot examine due to limitations of data availability. This observation is supported by the low value of adjusted R-squared, as shown in the regression analysis.

7 Conclusions

The main implication of the study for policy makers—especially in European countries—is to carefully evaluate the opportunity to maintain the formula of the

wholly publicly-owned company in the local utility sector. This formula should be a residual—and not taken for granted—choice. A careful assessment of the effectiveness and efficiency should be undertaken before deciding to maintain the total public ownership. In particular, our results suggest to give due consideration to institutional public–private partnerships. They may be less efficient than fully-privatized firms, but seem to be more efficient than wholly publicly-owned companies. Moreover, institutionalized public–private partnerships can pursue social objectives better than fully-privatized firms.

Therefore the article supports the arguments of the public–private partnership proponents. Since privatization may not be ever feasible, the involvement of private partners in the ownership of government-owned companies can be a solution potentially capable of mitigating the trade-off between the pursuit of the public interest by public service organizations and their financial performance.

It remains unclear whether mixed companies have significant differences compared to purely public and purely private production, in terms of ‘non-economic’ performance. If they were able to demonstrate greater ability to achieve social objectives, then they could really be considered an optimal solution in the supply of local public services.

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