

Alternative water governance arrangements and performances: an analysis of Italian water companies.

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Introduction

In the last decades local public services have been deeply reformed, changing the role of local governments.

While in the past local public services were managed and delivered directly to citizens by governments, since the end of 80's and the beginning of 90's alternative governance arrangements started to be experiences in different sectors. The 90s' in Italy have been characterized by the efforts of legislator to introduce markets mechanisms and private logics in the public sector.

The reforms have substantially pursued two main objectives:

- The privatization of public utilities
- The market liberalization

About privatization, after two decades of reforms, we can assert that in most of the cases it has been a purely formal process, through the substitution of public direct delivery with completely public owned companies. A substantial privatization process has interested only few sectors, like telecommunications, energy and national train transports.

About market liberalization, instead, it is necessary to distinguish the competition “in” the market, when several firms compete to deliver the same service, from the competition “for” the market, when after a public competitive bidding the service delivery is entrusted to a private firm, that will operate in a monopoly regime, with a contract that rules the obligations of the parties. In Italy, the lack of private operators brought to the spread of the second solution.

The two objectives explained above have been pursued by legislators with several contradictions. As first through the art. 35 law n. 448/2001, the legislator seems to push towards the market and private direction. The norm, in fact, obliged the local governments to privatize local services at least formally transforming the public operating organizations (like consortium, foundations, special firms) in joint- stock companies, even though public.

Moreover it stated that public competitive bidding were necessary for the concession of “industrially relevant” services like transports, waste and water .

Another element of innovation introduced by the art. 35 was the separation between infrastructure ownership that could still remain in public hands and the service delivery and ordinary maintenance to contract out to private operators.

These dispositions would have drawn industrially relevant services towards liberalization, but some factors obstructed the path.

One of this was two contradictory norms issued some years later: the art. 14 of legislative decree n. 269/2003 converted in law n. 326/2003 and the art. 4 of law n. 350/2003. These dispositions confirm the separation between infrastructure ownership and service delivery. Infrastructures ownership can be assigned to exclusively public owned companies, while for service delivery, Local Governments have three different possibilities:

- 1) The concession to private companies through a public competitive bidding;
- 2) The direct concession to mixed owned companies, where the private has been previously selected through a public competitive bidding;

- 3) The direct concession to a company that is completely owned by the local government, according the model of “in-house provision”.

These norms signed “a step back” in the privatization and liberalization process started 2 years before. The abolition of governments’s obligation to select providers through a public competitive bidding and the possibility of “in-house solution”, in fact, brought in few years to an almost exclusively formal privatization. Since 2003 to nowadays hundreds of new joint stock companies were started by local governments to manage local public services and the easier procedures of in-house solution in concrete reduced the public competitive biddings initiatives. Private operators restricted their intervention to participate as shareholders of the few promising companies.

These process of “formal privatization” would have been a temporary step before starting the substantial one, but in the facts, probably also for the contradictory norms, becomes a structural and relevant phenomenon.

Some aggregated data could help to understand its dimensions. According Confservizi¹ data (2004, 2008) on local public services, the joint-stock companies passed from 56 in 1996, to 650 to 2003 and to 874 in 2008. Analysing data on the ownership of these companies, they reveal that in 2004 the 73% of them were completely public owned companies, in the 23,60% majority shareholders were public entities and only in the 3,40% of cases majority shareholders were private. After 4 years the public companies were the 65,10%, in the 28,80% of cases shareholders’ equity was majorly in the hands of public organizations and the 6,10% were majorly owned by private. These numbers explain the low attractiveness of public services for private investors, because even though during time the numbers of completely owned companies went down, it was absorbed by the increase of majorly public companies rather than the majorly private ones. These data concerns all local public services, but if we focus on the industrially relevant industries, we can observe a higher percentage of private participation. A recent study (Monteduro, 2010) conducted on 623 local services companies evidenced that about the 42% of them are privately participated, but only in the 7,1% of these private operators are the major shareholders. From these data is not possible to understand if there are significant differences among the services, but it evidenced the interesting phenomenon of the increasing number of mixed enterprises.

In particular, what interest to us is to analyze water sector, that has been ruled by specific norms that changed the governance assets several times. Moreover the privatization of this industry, has recently been object of a public referendum, that determined a stop towards water privatization, that had been strongly encouraged in the years before.

Despite the great relevance of local public services for citizens as well as for the Italian economy, since the turnover amounts at 40 billions and it employs about 170.000 workers, many aspects of it have still not been studied by researchers.

There are several studies on the privatization and liberalization process, but very few have investigated the performances related to different ownership structures or to other factors. Many studies focus on the effects of privatization on cost reductions and service quality, but investigating the effect of water privatization in Italy, could be misleading and not so interesting, since in most of the cases is purely formal.

Instead, it could be interesting to analyze the effects of private participation to water companies equity, that some authors define as the second best choice (Monteduro, 2010), verifying if it is anyway a solution to prefer instead of completely public ownership. So the research questions of this paper can be summarized in this way: “Do exist some differences in performances among companies characterized by a different degree of private participation? And which are the determinants of positive performances?”

¹ Confservizi is an association of local governments and companies operating in utilities sectors.

In order to try to find an answer to this question, the paper has been structured as follows. The next section contains a review of the literature on privatization, explaining the assertions by which we started to formulate our hypotheses. The third section gives an overview of Italian water governance industry. In the fourth the methodology used is explained. In the fifth section are illustrated the results of this empirical research. The last section is dedicated to discussion and conclusions,

2. Theoretical background

Theories and empirical evidences of economic literature

In the economic literature, the public monopoly has been usually criticized using three different theories: the agency theory, the property rights theory and the public choice theory.

The critics by agency theory founds on the consideration that both in public and private firms the agents (or managers) pursue the aim to maximize their own utility instead of the principal's one (property). But in the private firms this divergence is reduced for the presence of a market that allows owners to sell their equity shares if they are not satisfied by the performance that managers have achieved. In public firms, these mechanisms do not operate, because the agency relationship is more complex. There are two relationships, one that links the government to citizens and another that links the government to management, and the absence of profits reduces the incentive for citizens to control performances, and so it should generate worst performances (Alchian and Demesets, 1972; Barzek, 1989; Grossman and Hart, 1986).

The fundamental argument of public choice theory is that politicians pursue their own utility instead of public interest, so the objectives they define and the behaviours they have are aimed at re-election rather than efficiency and service quality (Boycko and Vishny, 1996; Boyne, 1998). According to this approach, that is substantially the property right approach, the citizens are the owners of governments, since they are financed by taxation, but the cost of controlling the activities they do and the services they deliver exceeds the single benefit they can get (low taxation or better efficiency or quality in public services). So despite the fact that the community could have relevant benefits from controlling the performances of their governments, these benefits are fractioned among so many people that nobody has the incentive to exercise it. The absence of controls influence negatively the performance of public owned companies.

In order to test empirically the existence of a relation between companies ownership structure and performances many empirical studies have been conducted.

Water industry, in particular, has been the object of numerous studies, probably for the relevant public interest connected (i.e. Link, 1993; Saal and Parker, 2001, 2004; Shaoul, 2005; Teeple and Glyer, 1987). Many researches focused on the measurement of the most efficient ownership structure in water companies, through different methods (cost function, stochastic frontier, statistical analysis, DEA, financial analysis) and in different contexts, obtaining contrasting findings.

Even though some researches showed that the ownership structure does not influence the performance (Renzetti and Dupont, 2003; Sal and Parker 2000; Byrnes, Grosskopf and Hayes, 1986, Houstma 2003), there many authors that find the existence of a relationship (Mogan, 1977; Fox and Hofler, 1985; Bhattacharyya, Harris Narayaan and Raffie, 1995; Sal and Parker, 2001).

The contrasting findings could be dependent by many reasons like the geographical context considered, the sample composition or the methods used for data collection and elaboration.

Many scholars tried to find the possible determinants of these differences. Some of them ascribed the diversification of water companies performances to economies of scale with more convergent findings (Fox and Hofler, 1985; Bhattacharyya, Parker and Raffie, 1994, Fraquelli and Moiso, 2005; Nauges and Van de Berg, 2007). Others found the existence of economies of scope, due to a vertical integration strategy in the value chain or to a business diversification. Fraquelli and

Giandrone (2003), in example, showed that the integration of water production and distribution determines relevant gains for companies, while they did not reach to the same conclusion for water distribution and waste water.

Some other authors (Link, 1993, Martins, Fortunato and Cohelo, 2006) sustain that synergies can come from different business integration, but others found the existence of diseconomies (Sal and Parker, 2000).

Public Management studies

Apart from economic studies in the last years there is a wide circulation of management studies that face the same problem from different perspectives. The New Public Management, in example, bases on the assertion that private firms achieve better performances than public firms because of the presence of bureaucracy that slow down processes, the lack of incentive mechanisms for managers, the absence of performance measurement systems and control tools. So it suggests several solutions like higher autonomy degree and discretion to managers, the introduction of private tools and logics, the introduction of mechanism of competition, the focus on the client and so on (Ferlie et al, 1996; Barzelay, 2001; Mc Laughlin et al., 2002).

Also Italian public management scholars analysed widely the public companies, privatization and the governance of public services (Borgonovi, 1979; Vallotti, 1996; Elefanti, 2003; Mele, 2003; Grossi and Mussari, 2004,2006; Garlatti 2005) reaching less drastic positions on the better performances of private companies than public ones. Probably this is due also to the absence of a substantial privatization in Italian context, with exception of few sectors like telecommunications, and to the presence of more mixed firms rather than private ones. So rather than analyzing the effect of privatization process many authors focused on the effects of private participation to the ownership of utilities companies.

Even though also mixed firms solution is not free from critics, many authors (Mele, 2003; Garlatti, 2005, Zuffada, 2000) believe that it can be considered as a second best choice, because of:

- the possibility for governments to access to new financial resources, competences and know-how;
- the higher autonomy that the private operators have from politicians influences, that increase when they assume managerial roles, like general director or CEO. This autonomy in decisional processes, like the organization assets, the resources acquisition and their employment should allow them to achieve better performances;
- higher attention of privates to economic performances, since they invest in order to obtain profits in medium-long term.

At the same time, the mixed firms can also bring to some disadvantages like conflicts of interests that can obstruct or slow down the decisional processes. In order to avoid these inconveniences some tools are usually adopted like contracts and agreements that rule the different aspects of the relationship.

Another problem that can arise with mixed firms is that private managers could be more focused on the efficiency indicators than on the service quality and the public interests.

This can be due also to the difficulty to measure quality aspects, that in many cases are not easily identifiable. That is why there are many researches that investigate utilities economic performances, but studies that include among performances also quality or social indicators are almost absent.

Here we analyze different aspects of companies performances, through the financial ratios analysis. The study in particular aims to analyze the possible determinants of water companies'

performances in Italy. However, before proceeding with the empirical analysis, seems to be necessary an overview of Italian context.

3. An overview of the Italian context

The water sector in Italy has been deeply reformed since 1994 by Law n. 36, known as Galli Law by the name of its proponent. The main points of that reforms were:

- the integration of water services (water supply, wastewater and sewerage) in order to exploit economies of scope;
- the merging of water utilities in order to exploit economies of scale;
- the industrialization of water industries, in order to avoid the in-house solution;
- the definition of tariffs that cover both current costs and investments.

The first effect of this law was the vertical integration of water industries (water, wastewater and sewerage) in a unique integrated system called “Sistema Idrico Integrato – S.I.I.”. Each company manages all those services in a specific geographical area, that usually coincide with the provincial areas but even more frequently they overpass the borders including several Provinces. The company to which the service is assigned operate in that area in a condition of natural monopoly.

In order to exploit the economies of scale and to avoid the excessive fragmentation of services, with plenty of entities and companies that deliver water services to small communities, this Law established that each Region had to define the “ATOs” (Ambiti Territoriali Ottimali). ATOs can be defined as the optimal geographic areas of the Regions, delineated on the basis of the natural water basins. Conviri² estimates that in Italy in 2008 were defined 92 ATOs, whose population and dimensions are very different. There are ATOs that correspond to an entire Region and ATOs that only correspond to a specific urban aggregate.

Each ATO is managed by a public Authority that has to entrust the management of the S.I.I. to the alternative subjects allowed by law: a private company chosen with a public competitive tender; a mixed owned company, where the private partner is chosen with a public competitive tender; or a public-owned company, through in-house providing solution.

However, this disposition found some obstructions in the application, since Conviri in its last report (2009) declare that at the end of 2008 only 69 of the 92 ATOs entrusted the water services management to 114 firms, that served 57% of the Italian municipalities and 66% of the Italian population.

In the residual municipalities the water services were provided mainly in-house (Conviri, 2009). 50% of these 114 firms public owned companies and 65% of them have their business area located in the North of Italy.

After several political debates on the need to accelerate the ATOs establishment, in 2010 with the Law n.42 the legislator, in order to reduce public expenditure stated, among the other measures, the elimination of ATOs in one year. But, presumably, if 14 years were not enough to complete their establishment, one year will be too short for their elimination.

Tariffs represent another point of that law has not been applied. According to OECD (2010), the Italian unit price of water supply is one of the lowest among European countries. This if on one side can be considered a positive measure of sociality, on the other side low tariffs could be one of the reasons of the low attractiveness for private investors and the poor quality of water services in many

² It is the National Commission of Vigilance on Water Resource. Data about these companies have been collected from different sources.

Regions, with numerous services interruptions and scarce coverage, due to the few and old infrastructures.

According to some scholars, moreover, a right price on water will encourage people to waste and to invest in infrastructure. But data on Italian context seems to not confirm this last hypothesis. Conviri data (2009) show that Italian tariffs had on average a 5% increase from 2007 to 2008 and a 6% increase from 2004 to 2008, and Federconsumatori (2010) another average increase from 2009 to 2010. But the investments did not increase as well. Conviri estimates that in 2008 only 56% of the investments scheduled in the three years before were realized with substantial differences among Regions; in particular, whilst in the Centre and in the North of Italy, respectively, 85% and 75% of scheduled investments were realized, in the South the percentage was only the 24%, increasing the distance between southern and northern conditions.

In summary after almost two decades since the reform started, its purposes are still not completely achieved, even though some progresses have been made.

In particular, most of the firms now integrate water, wastewater and sewerage services and even more firms decide to integrate different businesses, like energy, gas, waste and water in order to achieve scope economies. In the last years we are assisting at a growing process of aggregation of these multi-utilities, like ACEA s.p.a., Hera s.p.a. ACEGAS-APS s.p.a., that are listed on the Stock Exchange and serve a vast population and many municipalities.

However, many firms still operate only for a municipality or for a restricted group of municipalities.

4. Methodology

Research questions

1. Do exist some differences in performances among companies characterized by a different degree of private participation?
2. What are the determinants of positive performance of water companies in Italy?

Determinants of performances

On the basis of literature review and the considering the features of Italian context, we chose the following variables to test if they can be considered as determinants of positive performances:

- ownership structure: private, mixed or public;
- firm size: the firms size can influence their economic and financial performances. We used as measure the annual sales using European Union parameters so that small firms have annual sales lower than 10 million euros, medium firms have annual sales between 10 and 50 million euros and big firms have annual sales of more than 50 million euros;
- geographic localization: the socio-economic context can influence the economic performances. In particular the firms operating in the south and centre of Italy could have worse performances because they operate in less-developed area, where infrastructures are often deficient and in bad conditions, so the water dispersion is higher and they need more investments. Several studies on public services evidenced the existence of significant differences between the north and south of Italy, so that some authors speak about “two speed Italy” (i.e. Gilardoni A., Romè L., 2009).
- business diversification: it could influence positively firms performances, because they can earn profits from other business to cover the scarce revenues related to water industry.

Performance measures

In literature the economic performances have been investigated through different indexes of profitability and efficiency.

Here have been investigated in terms of profitability, efficiency, financial solidity and financial leverage and equity/sociality. To measure these variables we several indicators:

Profitability:

EBIT (Earnings before interests and taxes) : An indicator of a company's profitability, calculated as revenue minus expenses, excluding tax and interest. EBIT is also referred to as "operating profit", and it is calculates as follows: $Ebit = Revenue - Operating Expenses$.

EBITDA (Earnings before interest, tax, depreciation and amortization) : It is an indicator of profitability company's core profitability.

ROI (Return on Investment): the return on investments is a performance measure used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments. It is calculated dividing Ebit with Total Assets.

ROE (Return on Equity): ROE is the amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested. $Return\ on\ Equity = Net\ Income / Shareholder's\ Equity^3$.

Capital Turnover (Sales/Invested Capital): It is used to calculate the rate of return on common equity, and is a measure of how well a company uses its stockholders' equity to generate revenue. The company's annual sales is divided by its average stockholders' equity. The higher the ratio is, the more efficiently a company is using its capital. also called equity turnover.

Efficiency:

Labour cost to Production Value: it is a common measure of efficiency, that indicates how much the labour force is productive.

Labour cost to Production Cost: it is used to measure how much the labour cost weighs on production cost. It is a the same time a measure of efficiency and sociality.

Financial solidity:

Primary capitalization index = Equity/debts

This ratio shows you by how much the assets of a company can decline in value before it becomes insolvent.

Primary structure index = Equity/Fixed Assets

This ratio reveal the relative financial strength and long-run liquidity. A high ratio suggests that the will have less difficulty meeting fixed interest charges and maturing debt obligations

Financial leverage:

³ Net income is for the full fiscal year, before dividends are paid to stock holders but after dividends to preferred stock.

Debt to Equity Ratio: It measures how much money a company should safely be able to borrow over long periods of time. It does this by comparing the company's total debt (including short term and long term obligations) and dividing it by the amount of shareholders's equity. It indicates what proportion of equity and debt the company is using to finance its assets. Debt to equity ratio= Total liabilities/Shareholders equity

Equity and sociality:

Tariffs 2010

Data collection

The first step of our analysis was to investigate the universe of companies operating in Italian water industry. Crossing data of Utilitatis⁴ and Conviri's annual reports, we draw up a list of 210 companies.

Using Telemaco database, we obtained financial statements of 2010 for 156 of 210 firms. Some of them have been excluded from the analysis because they have been liquidated or have been object of merging and acquisition processes. From the sample so obtained excluded other 16 companies because some data were not available.

Data on ownership structure, business diversification and geographical localization have been collected by Telemaco, the Chamber of Commerce's official database.

Data on economic performances instead have been obtained by the elaboration of the financial statements available on Telemaco database. Finally data on water companies fees have been obtained by Federconsumatori annual report.

Then we defined different clusters on the basis of the controlling variables (i.e. public/mixed/private-owned firms, large, medium and small firms, monutilities and multiutilites) and, using parametric statistic methods, we compared the means value in order to highlight the differences among clusters.

5. Discussion and main results

5.1 Sample composition

First of all we analyzed the sample composition, differentiating companies according their ownership structure, geographical area, firm size and business diversification.

First, we analysed the most relevant differences among private, mixed and public-owned utilities in terms of profitability, tariffs, efficiency, financial solidity and financial leverage. In the sample there is a little group of listed companies, so that considering the relevant differences in terms of governance, access to credits and financing, size and so on we decided to consider them as a separate cluster.

In the sample considered, the public-owned firm prevails. Private firms are only 9 but there is a considerable number of mixed, that are 35 if we consider also the listed ones. Half of the whole sample consist of small companies.

Ownership	Small	Medium	Large	Total
Public	49	37	11	97
Mixed	15	9	6	30

⁴ It is a Foundation that yearly publishes researches on the state of art of waste, water, gas distribution in Italy.

Mixed Listed	1	0	4	5
Private	5	3	0	8
Total	70	49	21	140

The next table shows the distribution according to geographical localization and firms size. We note that most companies are located in the north of Italy, then in the centre and only a few operate in the south. As regards the size, most companies are small and medium enterprises (SME).

Size	North	Center	South	Total
small	47	15	8	70
medium	35	11	5	51
large	6	7	6	21
Total	88	33	19	140

As regard to geographic localization we see that most of the firms included in our sample are located in the northern and center area, and almost all the private and mixed listed companies are located in the north of Italy.

Ownership	North	Centre	South	Total
Public	59	22	16	97
Mixed	20	8	2	30
Mixed Listed	4	1	0	5
Private	5	2	1	8
Total	88	33	19	140

As regard to business diversification the sample is composed in almost the same proportion by mono-utilities operating in the integrated water system, and multi-utilities, that provide also other services, like waste collection, gas and electricity distribution and so on. As aforementioned this should act positively on the firms' financial statement, since they can achieve density and scale economies. The performance measurement of these companies is not easy, as a positive aggregated result or indicator can hide bad performances in some business area.

Diversification	North	Centre	South	Total
Monouility	42	14	13	69
Multiutility	46	19	6	71
Total	88	33	19	140

Business diversification seems to have no association with the geographic localization or firms' size seems to be not statically significant, showing a similar distribution. While public-owned are in prevalence mono-utilities.

This is probably due to the weak profit orientation of public-owned companies, which often do not look for synergies among related industries and restrict their range of action only to water, wastewater and sewerage. However in the last years as Conviri (2009) data show there is a growing number of local governments that provide more than one service through a multiutilities,

Diversification	Small	Medium	Large	Total
Monouility	35	25	9	69
Multiutility	35	24	12	71
Total	70	29	21	140

Ownership	Monouility	Multiutility	Total
Public	59	38	97
Mixed	16	14	30
Mixed Listed	0	5	5
Private	4	4	8
Total	70	60	140

As second step we calculated means values of performances of the clusters in order to highlight the existence of differences.

Profitability

	Profit	ROE %	Ebitda	Ebit	ROI %	Capital turnover
Business Diversification						
Mono	314.559	2,217	3.420.480	-935873	1,78	0,3997
Multi	1.919.341	2,417	9.073.509	1292123	1,863	0,3902
Geographical Localization						
North	1.792.109	2,217	8.630.173	875755,5	1,736	0,3878
Center	297.927	2,209	5.988.929	-331202	1,754	0,3944
South	280.779	1,767	3.370.093	-1146399	1,917	0,4008
Ownership structure						
Public	312.373	2,203	3.393.903	-930559	1,74	0,3968
Private	172.620	3,075	3.381.606	-590551	2,367	0,3887
Mixed	312.392	2,219	3.344.840	-944977	1,858	0,401
Firm Size						

Small	1.776.731	2,217	8.527.441	875.346,2	1,736	0,3901
Medium	319.806,6	2,252	3.461.314	-959.980	1,781	0,4017
Large	1.817.782	2,325	8.786.809	928.339,3	1,803	0,389

Data in the table below show the existence of significant divergences between monoutilities and multiutilities. This confirms the theory according to which the delivery of more than one service creates synergies that influence positively companies' profitability, as many authors sustain. However, data collected are aggregated because most of the companies are not listed and so they are not obliged to apply the IFRS 8 (International Financial Reporting Standards) – Operating Segments. This did not allow us to separate data related to water segment from the others.

Geographic localization as well can be considered as a possible determinant of companies' performances, and in particular companies located in the North area show higher profits and also a positive result in their core activity against the ones located in the Centre or South, that show negative EBITs.

As regards to ownership structure, differently by our assumptions, the profits are lower than mixed and public owned companies, but the average ROE is higher, that can be due to lower equities. Public-owned and mixed companies show instead similar values.

Regarding firms' size, large companies present higher profits, EBIT and ROI values, but they are not significantly different by the small companies.

Efficiency

	Labour cost/Production cost	Labour Cost to Production Value
Business Diversification		
Mono	0,263749	0,279
Multi	0,274938	0,276
Geographical Localization		
North	0,273392	0,275
Center	0,276063	0,276
South	0,265998	0,284
Ownership structure		

Public	0,261796	0,277
Private	0,249054	0,252
Mixed	0,263556	0,278
Firm Size		
Small	0,274563	0,276
Medium	0,262326	0,275
Large	0,274662	0,276

As regard to efficiency indicators, data do not show significant differences among the clusters.

Financial Leverage

	Equity to Fixed Assets	Equity to Total Liabilities	Debt to Equity ratio
Business Diversification			
Mono	1,124655	2,071	8,24813
Multi	1,201008	2,135	8,12274
Geographical Localization			
North	1,188072	2,09	7,97078
Center	1,199095	2,135	8,16654
South	1,095328	2,134	6,57639
Ownership structure			
Public	1,201372	2,137	8,18768
Private	1,156412	2,626	8,87268
Mixed	1,091285	2,029	8,26352
Firm Size			
Small	1,184649	2,091	7,99873
Medium	1,139357	2,095	8,27077
Large	1,193485	2,123	8,10434

About financial leverage data, the primary capitalization and equity to total liabilities indicators don't evidence significant differences, while debt to equity ratios seems to be influenced by the geographical localization with higher ratios for companies located in Centre of Italy, followed by North and significantly distant from the South. This inducted us to presume that companies located in the Centre have a higher financial exposition and an easier access to credit, thanks to which they finance their activities. Also firm's size dimension influences debt to equity ratio, with large and medium sized companies that find easier than small ones the access to external financing by banks and other credit institutions.

4.2. Empirical results

In order to understand whether and how the independent variables influence the performances of water companies we run a linear correlation.

		Profit	ROE %	Ebitda	Ebit	ROI %	Capital turnover	Equity/ Fixed Assets	Equity to debts	Debt to Equity ratio	Labour cost/Production cost	Labour Cost to Production Value	Cost per cubic meter
North	Pearson	,078	,081	,052	,111	-,075	-,110	-,168	,063	,043	-,023	,001	-,410
	Sig. (2-code)	,359	,344	,544	,192	,378	,197	,048	,464	,613	,785	,987	,000
Centre	Pearson	-,070	,005	-,027	-,044	-,027	-,009	,161	,036	-,069	-,043	-,041	,490
	Sig. (2-code)	,409	,949	,756	,608	,756	,914	,058	,670	,421	,614	,628	,000
South	Pearson	-,024	-,120	-,042	-,103	,142	,166	,035	-,143	,030	,085	,047	-,032
	Sig. (2-code)	,781	,157	,623	,227	,095	,050	,682	,093	,723	,319	,581	,707
	N	140	140	140	140	140	140	140	140	140	140	140	140

Companies' geographic localization seems to influence the cost per cubic meter, that is an important measure of equity and sociality. In particular, companies located in the North of Italy present lower tariffs, as well as in the South, while companies located in the Centre of Italy applied higher tariffs, to which it is not associated a higher profitability. North localization seem to be also negative associated with equity to fixed assets, showing a low capitalization.

		Profit	ROE %	Ebitda	Ebit	ROI %	Capital turnover	Equity/ Fixed Assets	Equity to debts	Debt to Equity ratio	Labour cost/Production cost	Labour Cost to Production Value	Cost per cubic meter
Public	Pearson	-,130	,022	-,199	-,141	,015	-,093	,049	,129	,016	-,123	-,149	-,094
	Sig. (2-code)	,127	,799	,019	,096	,859	,274	,566	,128	,851	,146	,078	,269

Private	Pearson	,240	-,006	,390	,250	-,011	,045	,018	-,108	,019	,209	,029	,027
	Sig. (2-code)	,004	,942	,000	,003	,901	,599	,833	,204	,819	,013	,738	,750
Mixed	Pearson	-,024	-,020	-,052	-,018	-,010	,073	-,068	-,069	-,032	-,009	,148	,087
	Sig. (2-code)	,780	,814	,539	,837	,911	,391	,427	,420	,709	,913	,082	,309
	N	140	140	140	140	140	140	140	140	140	140	140	140

As regard to ownership structure, private owned companies are positive correlated to some profitability indicators, like profit, EBITDA and EBIT, while public owned companies are negatively correlated to EBITDA. Data don't evidence any other correlation with efficiency, financial leverage and equity indicators.

		Profit	ROE %	Ebitda	Ebit	ROI %	Capital turnover	Equity/ Fixed Assets	Equity to debts	Debt to Equity ratio	Labour cost/Production cost	Labour Cost to Production Value	Cost per cubic meter
Monoutilities	Pearson	-,082	-,017	-,158	-,088	-,120	-,018	,066	,015	,115	-,075	-,100	-,048
	Sig. (2-code)	,335	,846	,063	,300	,159	,831	,441	,857	,176	,377	,242	,574
Multiutilities	Pearson	-,070	,017	-,095	-,064	,122	,056	-,056	,003	-,094	-,040	,109	,052
	Sig. (2-code)	,413	,846	,262	,454	,152	,510	,512	,969	,272	,640	,201	,543
Listed companies	Pearson	,403	,001	,673	,404	-,001	-,099	-,028	-,050	-,060	,306	-,021	-,009
	Sig. (2-code)	,000	,994	,000	,000	,987	,242	,742	,559	,479	,000	,808	,918
	N	140	140	140	140	140	140	140	140	140	140	140	140

Business diversification seems to be not correlated to performances, but what changes positively is the listing process. Listed companies are positive correlated to profit, ebitda and ebit, but also to labour cost. Higher labour costs can mean higher wages for workers, that can be considered at the same time a negative measure of efficiency and a positive measure of sociality, that often represent two side of the same coin.

		Profit	ROE %	Ebitda	Ebit	ROI %	Capital turnover	Equity/ Fixed Assets	Equity to debts	Debt to Equity ratio	Labour cost/Production cost	Labour Cost to Production Value	Cost per cubic meter
Large	Pearson	,228	,011	,400	,165	-,003	,066	-,066	-,167	,044	,155	-,046	,162
	Sig. (2-code)	,007	,897	,000	,052	,968	,441	,437	,049	,604	,068	,592	,056
Medium	Pearson	-,083	-,018	-,117	-,065	-,045	-,005	-,038	-,121	-,056	-,094	-,079	-,012
	Sig. (2-code)	,331	,833	,168	,449	,598	,955	,654	,155	,509	,271	,352	,885
Small	Pearson	-,084	,009	-,174	-,056	,045	-,042	,084	,234	,022	-,021	,108	-,104
	Sig. (2-code)	,324	,914	,040	,511	,595	,620	,325	,005	,795	,804	,203	,222
	N	140	140	140	140	140	140	140	140	140	140	140	140

Looking at firms' size we see that large dimension is positively correlated to profitability indicators, but negatively to equity to debt ratio. This could be related to an easier access to credit for larger firms, since they are more profitable and are usually considered by banks as more reliable. This consideration seems to be confirmed by the positive correlation existing between small dimension and equity to debt ratio, and the negative correlation with profitable indicators, that highlight their difficulty to access to credit systems.

5. Conclusions

At the end of this analysis it is possible to get some conclusions on the possible determinants of performances for water companies. First of all, since the relevant public interests related to water service delivery, it is not possible to consider exclusively the cost reduction and efficiency or profitability indicators, but it is also important to consider the quality standards as well as equity and sociality dimension. To take into consideration quality standards it could be useful to analyze data like service continuity, customer care, waiting lists for a new connection, the frequency of controls on water quality, that in this study have not been considered for the scarce and contrasting available datasets. To measure equity a good measure can be the tariffs paid by consumers, and we observed that this dimension in Italy is highly influenced by geographical localization rather than the ownership structure or firms' size. In particular people that live in the South pay lower tariffs than people that live in Centre or in North area, but at the same time they receive lower quality services. Confservizi and Federconsumatori reports in fact confirm that in the South and Islands, there are low investments in infrastructures and this causes frequent services interruptions. At the same time southern companies are characterized by low profitability indicators, like profits, ROE, EBITDA and very low EBITs. This could be connected to the almost absence of private participated companies, neither partially or totally, located in the South. These companies are strongly dependent by governments financial transfers to cover their losses.

Large dimension instead it does not seem to be positively correlated to performance, while listing companies are strongly associated with good performances. Big listed utilities like Hera s.p.a., ACEA s.p.a., IREN s.p.a., Acegas s.p.a. operate in large territorial areas, serving many municipalities and millions of citizens with many services like energy, water, waste and so on. This allows them to achieve large scale economies and scope economies and to gain high profits.

As regard to sociality it could be useful to analyze the presence of lower tariffs for people that live in social and economic disadvantages. These data were not available for all the companies included in the sample, so it has not been included in the analysis.

Regarding investments we did not find significant relation among variables, that it could depend also on the indicator used. Probably the levels of investments realized in a certain time it could be more effective as measure.

Finally the indicators used to measure financial leverage instead gave some indications on the how companies finance their activities. It emerged that large companies or located in the North of Italy have higher levels of equity to debt ratios, than small sized companies located in the South. Southern and small water companies utilities use less debt, possibly because they have a more difficult access to credit due to their low profitability and are therefore considered by banks and other financiers as less reliable. This confirms that there are significant differences among water companies located in different areas of Italy.

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