The impact of tariff regulation on the economic and financial results of water service operators in Italy. A ten-year perspective (2007-2018).

Synthesis

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Abstract

More than a year has passed (July 2018) since the publication of "The impact of tariff regulation on the economic and financial results of water service operators" (Canitano & Peruzzi, 2018) and in this edition we are able to provide a time line that runs from 2007 to 2018, two years longer. The aim of the research is always the same, that of "an analysis of the changes that have occurred in the economic regulation of water companies, interpreting them in the light of the financial statements of a group of fifty water companies. The companies, with the MTI, have seen their profitability grow which has increased their incoming cash flows to such an extent as to allow them to make a higher volume of investments, distribute substantial dividends and at the same time increase their capitalization. This could suggest that, at least as regards the financial potential offered by the Italian regulator with the MTI, the companies could have made a greater volume of investments than that achieved so far.

Index

1   Introduction

In the last quarter of a century, water services (SII) in Italy has experienced a process of profound transformation, which has affected a large part of the country and which, despite frequent slowdowns and sporadic afterthoughts, has produced a situation in which beyond 60% of the population (AEEGSI, 2014) is served by companies operating according to current industrial logic.

It is certainly difficult to give a complete representation of the changes taking place and of those that have taken place in the management of water service in recent years. There are aspects that concern the cost of the service, those that concern safety and continuity in the supply of water, there are aspects that concern the environment such as the collection and treatment system of sewage sludge, finally there are issues that pertain to the investments made and those to be made. Building a profile of this industry and its performance over time requires careful observation and a data collection system that only the regulatory authority is able to manage with adequate means to the needs.

The aim of the research is, also limited, an analysis of the changes that have occurred in the economic regulation of water service companies, reading them in the light of the financial statements of fifty water companies.

The theme that interests us here is that the analysis of financial statements is certainly one of the most interesting tools for measuring the effects of tariff regulation on the economic and financial performance of water companies that manage the services. The assessments and decisions of the regulator must be inserted in a wider context than that offered by the analysis of the financial statements, but these however can constitute a useful complement for effective regulation. This research provides an analysis of the financial structure of a sample of 50 companies (reduced in 2018 to 46 due to mergers) over a twelve-year period, measuring the effects that regulatory tariff policies may have had on the financial statements and the economic and financial performance of companies. In the development of the analysis of the financial statements, almost 600 in this new edition, the data of the sample as a whole were compared in different ways: by size, by form of management and by geographical distribution.

2   The tariff regulation of these years

The analysis of this research extends over a period, during which the competence of the Ministry of the environment (even before the Ministry of Public Works) and ARERA took over. The period from 1996

to 31 December 2011 tariff regulation was ensured by the "Metodo Normalizzato" (*Normalised method*)[1]. From 1 January 2012 the responsibility passed to the then AEEG (today ARERA) which intervened up to now with four measures: the MTT (AEEG, 2012), the MTI (AEEGSI, 2013), the MTI – 2 (AEEGSI, 2015) and (AEEGSI, 2017a). The measures regulated time periods that include the years from 2012 to 2020. The first measure, the MTT regulated the years 2012-2013, the MTI the years 2014-2015 and the MTI-2 a longer period (regulatory lag) that runs from 2016 to 2019. The MTI-2 was, however, revised after 2 years (AEEGSI, 2017c), which entailed both the updating of the monetary and yield parameters, and the introduction of new tariff provisions linked to the connection between the other regulatory provisions of the Authority, such as that of quality service technique ((AEEGSI, 2017b) and that of the social water bonus (AEEGSI, 2017c).

3   The building blocks of MTI

There are various methodologies for obtaining the revenue to be recognized by the operator (Green & Pardina, 1999). Some are based on a financial approach and aim to establish the amount of resources needed by the company to finance its management. Other methodologies are based on an economic approach and on more or less defined notions of "efficient costs". Among the latter, the methodology based on building blocks is undoubtedly the one most applied (EuropeEconomics, 2009, p. 65), (OFWAT, 2011, march, p. 11).

The idea behind this representation is that the coverage of costs, quantified in part in order to reflect the actual operating costs and in part in order to give incentives to efficiency, allows the manager to generate such revenues and cash flows to enable him to meet management costs and finance the investments necessary for the service. Following this approach, it is interesting to try to understand what the relationship is between the costs recognized in the tariff and the costs in the representation of the financial statements of the water companies. Once this relationship has been defined, it will be interesting to check what the effects of the costs recognized in the tariff are on the financial statements of the sample companies.

With this premise, the representation of the MTI-2 was used through the building block type scheme, already defined in other research (Canitano, Peruzzi, & Todini, 2016, p. 23), and the income statement typical of the financial statements of a water company was added to it.

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[1] (D.M. 1 agosto 1996 "Metodo normalizzato per definire le componenti di costo e determinare la tariffa di riferimento")

4   The building blocks and the companies' balance sheet

Subsequently, all the cost components of the MTI-2 were included in this scheme: operating costs (Opex), capital costs (Capex), i.e. amortization, financial and tax charges, and the New Investment Fund (FoNI), which will be discussed later. The representation of the tariff components does not explicitly include the environmental costs (ERC), which represent a mere reclassification of certain Opex, or, for simplicity of presentation, the adjustments (RC) guaranteed by the revenue cap mechanism in the regulation.

In combining the tariff components with the cost categories of the Income Statement, the issue of the method of accounting for some specific cost components, which may not be the same among water companies, was addressed. We refer in particular to the method of accounting for the FoNI, which can alternatively be entirely included in the revenues or, conversely, accounted for as a non-repayable contribution on investments, excluding it from revenues unless the annual use, thus modifying the effect that FoNI itself produces on the value of production, on the EBITDA and on the EBIT.

Two approaches compare the economic nature of the FoNI (revenue versus non-refundable contribution) and the consequent accounting treatment for a correct statutory representation in the financial statements. The recognition of the FoNI among the non-refundable contributions implies that the gross operating margin is lower, since only a portion of the revenue is allocated to the year, while the net book value of the fixed assets can be easily reduced by the amount of deferred income. In this case, the regulatory surrender value is likely to be greater than the assets net of the deferral due to monetary revaluation (Canitano, Peruzzi, & Todini, 2016, p. 26). In the representation it was assumed that the FoNI is accounted for entirely as revenue.

For operating costs (OPEX), we should not expect particular variance, apart from pathological situations, between what is recognized in the tariff and the operating costs of the companies. it's a different matter for the tariff component of depreciation where variance is possible with respect to the tariff component that uses both a tax base (revalued assets) and depreciation rates (longer useful lives) probably different from those found in the financial statements, and whose result is difficult to evaluate. For the component of arrears, as we have seen, probably a part corresponds to a cost in the balance sheet and a part goes to increase the gross operating margin and operating income.

For the return on invested capital, the rate is applied to a net invested capital higher than the balance sheet, both due to the application of the deflator and the slower amortization. However, the cost of equity is not included in the financial statements, instead it's considered in the tariff. Finally, there is the FoNI, which depending on how it is accounted for may in turn increase the yield on the balance sheet

to a greater or lesser extent. Overall, therefore, a return on capital invested in the balance sheet higher than that expected as financial charges (including time lag) and tax charges (Table 1) should be expected.

Table 1 - Tariff components, correspondence to the financial statements and possible effects on profit

component of the charge	Balance sheet component	Correspondence and effects	Effects on the operating result
Opex	Production costs	Correspondence between Opex and operating costs in the financial statements	neutral
Depreciation	Depreciation	Possible deviations for deflators and useful life (rates)	positive / negative
Other operating costs	Other operating costs	The arrears cost, a part corresponds to a cost in the balance sheet and a part goes to increase the gross operating margin	positive
Financial and tax charges	Interest, tax and profit	A rate of return to be applied to the capital invested, probably higher than that of the balance sheet, which may lead to a return on the capital invested in the balance sheet greater than that fixed by the tariff component	positive
FoNI		The FoNI further increases the return on capital invested in the financial statements, with a greater effect if not accounted for as deferred income	positive / moderately positive

Source: processing from (AEEGSI, 2015) and (AEEGSI, 2017a)

5   The sample of companies

The element that characterizes each of the companies included in the sample is that of being a single service company, that is, managing only and exclusively integrated water service. This circumstance makes it possible to analyse the financial statements without any processing relating to the balance sheet or income statement. This choice meant that the multiservice companies that still represent an important part of the integrated water service in Italy and are among the large listed companies were not part of the sample.

The population served by the companies in the sample constitutes 48% of the population of Italy. As can be seen from Table 2, the population served by the companies in the sample is less than that of the BlueBook survey which includes about 140 companies, but is nevertheless a significant percentage of the population of Italy.

Table 2 - The sample and the population in Italy (2015)

	Population served by companies	Population Italy ISTAT 2015	Sample coverage
The sample	29.102.456	60.665.551	48%
From BlueBook	39.213.978	60.665.551	65%

The sample was then divided into groups: by turnover, by form of management (ownership structure) and by geographical distribution . The group made according to by turnover draws a sample where large companies account for 17% (8) of the sample but make up more than half of them in terms of revenue (56%) and population served (58%). On the other hand, the small companies account for 17% of the sample but represent only 5% in terms of revenue and 3% in terms of population served. This grouping allowed an evaluation of the weight of the dimension in the characterization of the economic and financial performance of the companies. The group formed according to ownership structure sees only two forms of management: mixed companies (PPP) and public companies (WP). Public companies predominate in the sample, making up 72% of the companies and 62% of the population served. In the geographical distribution, the regions of the centre have the largest number of companies with 48%, while the northern regions represent, albeit slightly, the largest percentage of the sample population. In this territorial division, the three groups (North, Centre, South) are equivalent for the population served.

Below are some reflections that emerged from the analysis and representation of the sample data.

6   Investments

The first consideration concerns investments. The average annual investment in 2018 was 44 euro per capita (Table 3), 34% more than the value of 2008 (33). However, growth in investment per capita in the sample appears to have stopped . We have seen how the per capita investments reconstructed for the years 1985-1991 are higher than those recorded in the sample for 2018. Even today, after the reform of the water services and after a new tariff regulation entrusted to ARERA, even more than thirty years, the country has not managed to reach the level of investments in water service of 1985.

The comparison with the per capita investment data of some other countries does not give us any comfort us. The investments per capita of Italy in the sample (44 euros) are slightly less than half of those of England and Wales in 2010 (93), much less than half of those of France (109) and Holland (106) and less of a third of the USA (154), which perhaps also contain investments in rainwater, from 2010.We confirmed what was revealed in the first edition and that is that we are still far from what seem to be the standards of per capita annual investments of some of the most industrialized countries.

Table 3 - Annual investments per inhabitant in the estimates of the sample, the Blue Book and the AEEGSI, (euro)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Sample		33,0	32,8	33,7	31,4	37,3	28,5	32,2	38,5	42,0	46,8	44,2	
BlueBook 2016	32,3	35,1	34,3	35,3	34,3	36,8	31,3	33,5	36,8				
BlueBook 2019						31,3	32,7	34,2	36,5	36,7	38,7		
AEEGSI (Relazione 2017)										41,8	41,8	53,5	53,5

Source: (AEEGSI, 2017), (Utilitatis, 2017) and (Utilitatis, 2019)

7   Revenue per capita, expenditure per user and operating costs per inhabitant

Meanwhile, to ensure the realization of this level of investments, the average revenue per capita for 2018 has gone from 98 to 169 euros with an increase over the entire period (2007-2018) equivalent to 72%. On the other hand, albeit with a lower number of observations, the average annual expenditure per user has also increased from 143 to 260 euro per year with an increase of about 85%. That is, the average annual expenditure in the period has almost doubled. This is a greater increase, albeit slightly, than that recorded for the average revenue per inhabitant (72%), a circumstance that could be explained by the reduction in the volumes consumed and the consequent increase in the tariff structure to maintain the volume of revenues. If tariffs are the only source of financing for investments, and if they must grow, tariffs will also be destined to grow. Operating costs per inhabitant also increased, but less than revenues and expenditure. Operating costs per inhabitant of the sample increased by 40% in the period.

Table 4 - Annual revenues per inhabitant (euro)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Sample	98	109	114	120	129	138	147	149	157	162	167	169
number of companies in the sample	49	50	50	50	50	50	50	50	50	50	48	46

Table 5 - The trend of average expenditure per user estimated for a consumption of 130 cubic meters per year

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Sample	143	137	164	177	179	194	207	214	231	241	240	266
number of companies in the sample	15	16	19	22	20	25	25	28	30	33	33	29

8   Return on investment

One of the topics we have returned to in the analysis developed in this second edition is the return on investment.

The return on invested capital of the sample in 2018 was 7,1% compared to 5,3% in 2007. The return on invested capital in the last two years seems to have settled at 7%, a lower values than those recorded in 2015 (8.2%) and 2016 (9.3%). The companies in the sample made this return on their invested capital after making provisions to write out the receivables. It is therefore interesting to see how much, in the same period, the companies accounted as a provision to the bad debt provision, or what was the amount of receivables from users that the companies deemed appropriate to consider difficult to obtain. The amount of provision for bad debts in the sample in 2018 is equal to 4.1% of the turnover (including VAT). This is almost three times amount for 2007 (279%). It is therefore confirmed that the returns on invested capital increased despite the fact that the companies, in the same period, was substantially increased the provision for bad debt. In 2018 the return of the sample (7.1%) is still higher than the nominal one (6.4%) set by the regulator, but lower than that calculated taking

into account the costs of arrears. It is therefore confirmed that, on average, the returns on invested capital have in the last few years been higher than what was recognized by the regulations, despite the fact that the companies, in the same period, had consistently increased the bad debt provision .

Table 6 - Return on invested capital, (EBIT / Fixed assets)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Sample	5,3%	6,5%	4,6%	6,1%	6,1%	4,4%	8,6%	7,5%	8,2%	9,3%	7,3%	7,1%
number of companies in the sample	42	46	46	47	48	48	46	47	48	48	47	43

9   The cost of debt

The cost of debt is a new variable that has been introduced in this second edition. We have seen that the cost of debt of the companies of the sample in 2018 is equal to 3.6%. Since 2011 the cost of debt has been more or less constant, fluctuating between 3,5 and 4%. We have contrasted this substantial cost of debt with the trend in interest rates on loans in the market which instead tended to fall substantially after 2012. We have seen how one of the possible explanations of why the cost of debt does not drop when market interest rates decrease lies in the structure of debt, in particular in its evolution over time. In fact, more than half of the debt occurred in previous years (2007 and before), and the subsequent debt (2008-2018), probably contracted at lower interest rates, only partially managed to bring the cost of embedded debt at market rates. As we have underlined, the incorporated debt is one of the issues on which the regulation of OFWAT has developed, which when facing the cost of the debt to be recognized in the tariff distinguishes precisely between embedded debt and new debt.

Table 7 - Comparison between the cost of the sample's debt and the 10-year IRS rates Italy (ECB), loan rates of more than 1 million (Bank of Italy) and the annual change in the sample's financial debt

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Samples cost of debt	4,2%	4,6%	3,7%	3,1%	3,6%	3,9%	3,7%	3,8%	3,8%	3,5%	3,8%	3,6%
IRS rate 10 years Italy (ECB)	4,5%	4,7%	4,3%	4,0%	5,4%	5,5%	4,3%	2,9%	1,7%	1,5%	2,1%	2,6%
Loan interest rates over 1 million euros (Bank of Italy)	4,6%	5,1%	2,4%	2,0%	2,9%	3,0%	2,9%	2,4%	1,7%	1,3%	1,1%	1,1%
number of companies in the sample	40	45	44	44	46	46	46	45	46	46	44	42

Source: (European Central Bank - StatisticalDataWarehouse, 2019); (Banca d'Italia, 2019)

10   The financial structure of companies

We have seen that the analysis of net outgoing flows would indicate a higher investment expenditure in the period of the "Metodo Normalizzato". However, investment data give us a different image, investments increased in the MTI period. This apparent contradiction is always explained by the high profitability and contemporary capitalization that the companies have created with the introduction of the MTI. The companies, with the MTI, have seen profitability increase which has increased their incoming cash flows to such an extent as to allow them to make a greater volume of investments, distribute substantial dividends and at the same time allowed them to retain them a part of the same

flows thus increasing its capitalization. This circumstance is also confirmed by the performance of all the indicators of the financial structure and in particular the relationship between financial debt and equity and by the "Net Debt / RAB", two indicators of the financial structure. As we have seen, these two indicators have highlighted how the weight of financial payables in relation to both shareholders' equity and fixed assets, following the introduction of the MTI, has steadily decreased, well below what constitutes a reference point in tariff regulation in the context of England and Wales (OFWAT). All this could lead us to think that, at least as regards the financial potential offered by the Italian regulator with the MTI, the companies could have made a greater volume of investments than those achieved so far.

Table 8 - Financial debts on equity

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Sample	1,10	1,51	1,53	1,31	1,67	1,55	1,28	1,05	0,90	0,83	0,68	0,51
number of companies in the sample	46	48	48	49	50	50	50	49	50	50	48	46
Number of enterprises with an index> 1	14	16	15	19	18	17	14	17	15	14	11	7

Table 9 - Net Debt/RAB

	2.007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
campione	0,53	0,59	0,60	0,62	0,57	0,52	0,52	0,45	0,42	0,38	0,32	0,26
number of companies in the sample	44	46	46	47	48	48	48	47	48	48	46	43
Number of enterprises with an index > 0,65	30	29	30	31	35	36	35	36	40	41	40	39

11 High profitability, capitalization, tax and profits distributed

The composition and variation of the shareholders' equity of the companies of the sample was also examined, which highlighted the growth in profitability on the financial structure of the companies. In these years the companies in the sample paid taxes of 2,003 billion and profit of 2,595 billion of euro. This high profitability contributed to a substantial capitalization of the companies. The shareholders 'equity of the companies went from 2,773 to 4,941 billion, with an increase of 2,159 billion, an increase of 78% of the 2007 shareholders' equity. If the increases in reserves (1,183 billion) are subtracted from the total profits generated in the period (2,595 billion), an estimate of the distributed profits (1,412 billion) is obtained, and if the estimate of the profits distributed in the period is also considered, the value goes to 6.354 billion with an increase in flows of 3.571 billion equal to 128%. Considering also the accumulated taxes (2.003 billion) in the period, the flows would go to 8.356 billion with an increase of 5.574 billion, equal to 200%, or in the period resources were generated for more than double the net equity of 2007.

Table 10 - The evolution of equity: share capital, revaluation reserves, other reserves, profits.

The resources contributed and those generated	2007	2018	variation	variation % on net equiti 2007
From capital increases	1,987	2,925	0,938	34%
From revaluation reserves	0,140	0,178	0,038	1%
From increases in other reserves	0,655	1,838	1,183	43%
Net equity	**2,783**	**4,941**	**2,159**	**78%**
Cumulative earnings - increases in other reserves (dividends estimate)		1,412	1,412	51%
Net Equity 2018 + Dividends estimate		**6,354**	**3,571**	**128%**
Cumulative tax		2,003	2,003	72%
Net Equity 2018 + Dividends estimate + Cumulative tax		**8,356**	**5,574**	**200%**

Source: processing on sample balance sheets

12 Net flows analysis

We have seen that the analysis of net outflows would indicate a higher investment expenditure in the period of the Normalized Method (before the creation of ARERA, the authority). However, investment data give us a different image, investments increase in the MTI period. This apparent contradiction can be explained by the high profitability and contemporary capitalization that the companies have created with the introduction of the MTI. The companies, with the MTI, have seen the increase in profitability which has increased their incoming cash flows to such an extent as to allow them to make a higher volume of investments, distribute substantial dividends and at the same time it has allowed them to retain them a part of the same flows thus increasing its capitalization. This circumstance is also confirmed by the performance of all the indicators of the financial structure and in particular of the relationship between financial debt and equity and by the "Net Debt / RAB", two indicators of the financial structure. As we have seen, these two indicators have highlighted how the weight of financial payables in relation to both shareholders' equity and fixed assets, following the introduction of the MTI, has steadily decreased, well below what constitutes a reference in tariff regulation in the context of England and Wales (OFWAT). All this could lead us to think that, at least as regards the financial potential offered by the Italian regulator with the MTI, the companies could have made a greater volume of investments than those achieved so far.

Table 11 - Net annual cash flows, 2008-2018

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Net annual cash flows	-619	-306	-289	-282	-531	-30	-17	-119	-115	-128	-80
Cumulative net flows	-619	-925	-1.214	-1.496	-2.027	-2.057	-2.073	-2.192	-2.307	-2.435	-2.515
number of companies in the sample	46	45	48	48	48	46	47	48	49	46	43

13 Vertical integration and outsourcing

In this new edition we addressed the issue of vertical integration and the simpler one of the degree of internalization of the companies in the sample. The first indicator used to measure the integration of

the companies in the sample is the relationship between the added value and the production value. The value assumed by this indicator for the companies in the sample in 2018 is 48.8%. The indicator went from 37% in 2007 to 48.8% in 2018 with an increase of 32% equal to more than 11 points. If on one hand the indicator would seem to underline an increase in vertical integration, on the other the growth of added value compared to the value of production is certainly conditioned by the increasing weight that investments have had in added value (depreciation and return on invested capital), without this being considered an increase in the vertical integration of companies such as to change the structure of the production chain. Another way of reading the degree of vertical integration of the production chain of the companies in the sample is to investigate the proportion between the cost of labor and the cost of services that the company buys on the market. The weight of labor costs first grew (2007-2010), then remained more or less constant (2011-2016), and then slightly decreased (2017-2018). It is perhaps more interesting to note that this indicator characterizes small and large companies, mixed companies compared to public companies, northern companies with respect to others for greater recourse to outsourcing.

Table 12 - Degree of vertical integration of the production chain of the companies (Added Value / Production Value)

	2.007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Sample	37,0%	36,9%	39,7%	42,1%	42,3%	42,3%	45,1%	46,2%	48,1%	49,9%	48,4%	48,8%
number of companies in the sample	44	48	48	49	50	50	50	49	50	50	48	44

14 Working capital

In the miscellany of the measures that can be developed on the sample data we have included that of the working capital. The reason for this choice lies in the fact that this statistic is used by MTI in remuneration. The first consideration that emerges from the data analysis is that the proportion used by MTI in the estimate of working capital, i.e. the ratio between customer extension days and supplier payment days does not correspond to that resulting from the sample data. If we assume, as the MTI does, that the average customer extension days are greater than the supplier payment days, it is assumed that there is working capital which must then be remunerated. The data on the days of extension and payment days of the sample would seem to indicate that, at least since the ratio reaches the value of the unit (2011), on average there is no working capital to be remunerated at least with reference to the days. In effect, the balance sheet data give us a working capital value clearly lower than the portion of the net working capital recognized by MTI.

Table 13 - Calculation of working capital of the sample and in the MTI

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total short-term assets	3.201.301	3.439.452	3.497.931	3.598.183	3.654.219	3.748.217	4.371.695	4.493.238	4.681.140	4.782.124	5.055.184	4.548.431
Total short-term liabilities	2.070.079	2.471.861	2.701.388	3.036.005	3.070.340	3.662.816	4.182.013	3.937.004	4.285.641	4.344.313	4.410.462	4.486.022
Net working capital (to be financed)	1.131.222	967.591	796.542	562.178	583.879	85.401	189.681	556.234	395.499	437.810	644.722	62.409
Working capital in MTI	396.418	429.780	465.094	498.528	535.380	573.551	650.228	683.515	713.050	771.848	772.641	750.247

Source: processing on sample balance sheets and (AEEGSI, 2015)

15 Financing investments with debt assisted by the state?

We have chosen to examine the idea of the renationalize water services in England and Wales, supported by the two scholars (Bayliss & Hall, 2017), for two reasons. The first because it actually seems interesting to us to reflect on the fact that relying completely on the market in the financing of investments has consequences that are worth considering, not so much because it is not the most effective tool to find the necessary financing to ensure investments, but for the consequences which in the long run can be determined on the cost of the service.

The second reason lies in the fact that having the data of a sample of 50 companies, making some hypotheses it would have been possible to calculate what the impact would be on the user of such a hypothesis. If one imagines to finance the fixed assets with a debt assisted by the state at 1,5% rate, the cost savings for the user on the annual bill would be 11% in 2017 and 2028, depending on the scenario, 16% and 20%.

Table 14 - Debts, shareholders' equity and lower user expenses in two scenarios in Italy (Euro)

|	OFWAT	Italy 2007	Italy 2018	Italy 2028 annual average 2007-2018	Italy 2028 twice the annual average 2007-2018
Fixed assets (billion)		4,9	10,3	19,9	29,4
Net financial debts + Shareholders' equity (billion)	56,6	5,0	8,4	16,1	23,9
Users (millions)	23,1	12,6	12,6	12,6	12,6
(Net financial debts + Shareholders' equity) / Users	2.451	397	664	1.279	1.895
Earnings before income tax + net interest expense (billion)	3,277	0,315	0,718	1,382	2,047
(Earnings before income tax + net interest expense) / Users	142	25	57	110	162
Cost of capital = (Net interest expense + Pre-tax profit) / (Net financial debt + Shareholders' equity)	5,8%	6,3%	8,6%	8,6%	8,6%
Interest rate of public funding	1,25%	1,3%	1,50%	1,50%	1,50%
New cost of capital = (Net financial debt + Shareholders' equity) x (Interest rate on public financing)	0,708	0,063	0,125	0,242	0,358
Annual saving on cost of public capital over private capital	2,569	0,252	0,592	1,141	1,689
Annual saving per user	111	20	47	91	134
Average spending per user (revenue per user)	395	235	405	470	580
Saving as % of household bill	28%	9%	12%	19%	23%

16 A chart to summarize

We close these brief concluding considerations by proposing a graphic summary of the elements that seem to characterize the progress of this sample in the past twelve years, seven of which with MTI.

After defining and analysing many tables and as many graphs, we came across a chart that summarized, according to the author, the most important elements that had characterized the economy of a country over time. What was striking was the ability to evaluate a multiplicity of different aspects, even in the way to misure. Hence the idea of proposing a summary which, using some of the indicators, proposed a unitary graphic representation. The original indicators have different size scales. So to allow their representation in a single graph, they all fell back on a single scale from 0 to 100. The indicators are: return on invested capital, as a measure of profitability, investments per inhabitant, as a measure of

investments made, reserves on equity, as an indicator of the capitalization of companies, and finally, debts in relation to equity, as an indicator of debt.

We can choose to read the graph using whatever variable we want. We begin with the return on investment (RCI) the growth of which starts with MTI. This allowed the growth of investments but at the same time allowed the growth of reserves while the debt fell. The conclusion is always the same, if profitability allows investments to grow and companies capitalize a large part of this profitability, but indebtedness decreases well below what is considered investment grade, then there is a part of the leverage that is not used and the investments are below what could have been achieved.

Investements, return on invested capital, debts on equity and reserves on equity
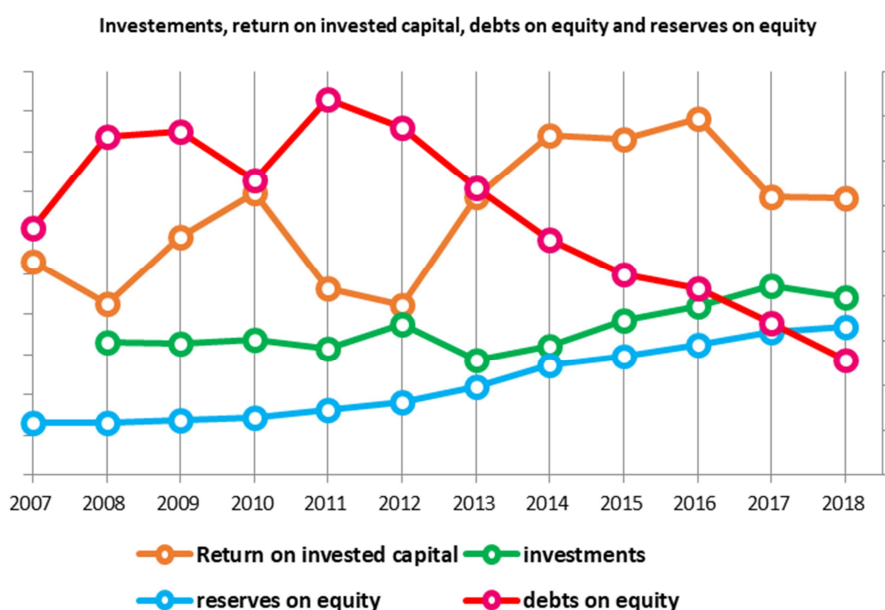
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