WORKING PAPER SERIES

Natural gas distribution in Italy: when competition doesn't help the market

Susanna Dorigoni, Sergio Portatadino

Working Paper N. 7

November 2007

Natural gas distribution in Italy: when competition doesn't help the market

Susanna Dorigoni , IEFE, Bocconi University [*]
Sergio Portatadino, IEFE, Bocconi University [**]

November 2007

Abstract

In this article consequences of the introduction of competition for the field in the Italian natural gas distribution sector are analyzed. Natural gas distribution constitutes, due to its technical and economic features, a natural monopoly. For this reason, in the framework of the liberalization process, the Italian legislator has introduced, in addition to price regulation, competitive tenders in order to have different operators compete amongst each other for the service concession. After a brief overview of the economic theory referring to natural monopoly regulation and after presenting the liberalization goals and the new regulation system, the critical aspects of the outlined regulatory framework will be highlighted. More particularly the main features of tenders will be assessed, while, in the following section, the meaning of the imposed revenue cap and its tie to the concession fee will be explained. An analysis of possible reasons for extremely high concession fees will be carried out, while evaluating their impact on companies' profitability. In the last part of the work, a solution will be proposed in order to build an effective regulation framework where competition for the field could actually lead the market to efficiency.

---

[*] Corresponding author: IEFE – Università Bocconi, Viale Filippetti 9, 20122 Milano, Italy. Tel.: +39 02 58363820-1; fax +39 02 58363890; e-mail susanna.dorigoni@unibocconi.it

[**] Corresponding author: IEFE – Università Bocconi, Viale Filippetti 9, 20136 Milano, Italy. Tel.: +39 02 58363820-1; e-mail:sergio.portatadino@unibocconi.it

Natural gas distribution in Italy: when competition doesn't help the market

Susanna Dorigoni   Sergio Portatadino

1   Natural monopolies regulation and competition "for" the field

Apart from the eternal debate relating to the opportunity of whether to regulate or not natural monopolies (Braeutingam, 1989; Baumol, Panzar, Willig, 1982), and setting aside the main reasons supporting the former or the latter thesis, it is worth remembering that the main issue in regulating natural monopolies is price control. This target represents the most important justification for the regulation of public services in which the presence of a sole firm able to clear the market is more efficient due to economies of scale or cost sub-additivity: a single firm can produce at a lower cost than two firms would be able to.

In this case, competition wouldn't be the first best solution notwithstanding that an unregulated natural monopoly wouldn't be efficient too.

The economic literature gives examples of different ways in which a natural monopoly regulation, as natural gas distribution, can be practiced, that is: state owned monopolies, price regulation and competition "for" the field instead of competition "in" the field, the latter being impossible to occur in natural monopolies.

Starting from the assumption that natural monopolies are not contestable since service production involves the supporting of huge sunk costs, that constitute significant barriers to entry, Demsetz in 1967, proposes to make the assignment of exclusive rights to supply services in a monopolistic regime contestable by calling a competitive tender in which the winner should offer its discounted profit flow to the government for the entire duration of the service concession. The government would in this way be able to recover the monopolist's profit and to use it for redistributive purposes.

Alternatively, the service could be assigned to the firm that is willing to offer the lowest tariffs to final consumers.

The government is in fact entitled to claim that the winning firm operates in such a way as to increase social welfare beyond monopoly levels. When selecting the best offer, the public authority would in other words consider the price that the bidder would be charging its customers in supplying the service.

If the winner is compelled to let consumers pay low prices, monopolistic profits will tend to zero.

2   The normative context

The legislative Decree n. 164 of 23rd May 2000 (the so called "Letta Decree" according to the signatory Minister) defined natural gas distribution as a public service activity, opening it to the so called competition "for the field".

Up to then, the mentioned service had been carried out by Local Governments, either directly, by means of their departments (the so called "economy management"), or through a controlled and purposely founded company, or by granting it to private enterprises. In these cases the distribution service was carried out together with the sale activity on an exclusive

right basis without the obligation of taking part into a competitive tender, not even for private operators.

With the Letta Decree important changes have been introduced: first of all, gas distribution must be unbundled from gas sale; secondly all the existing concessions will come to an end, in spite of their natural expiry date, and re-granted on a tender basis after a transitory period[1]. In other words the legislator imposed the cessation of local monopolies and the calling, commune by commune, of a competitive tender for the granting of the natural gas distribution service. It is just the case of the introduction of the competition "for the field", considering that the competitive comparison takes place before starting the service management which will then be, for natural reasons (natural monopoly), carried out on a local monopoly basis for a maximum period of 12 years.

What are the reasons supporting the recourse to a tender?

The Italian legislator has recognized the natural gas distribution activity as a natural monopoly, granting the exclusive right for its management; but, according to the liberalization goals, he decided to introduce a competitive contest so as to give the possibility, with every concession expiry, to new, and more efficient, operators to enter the market. Nowadays contests are held at a municipal level: every local administration grants the service for its territory on the basis of a previously published announcement.

The liberalization process targets consist in lowering total costs of the service (efficiency) while achieving high quality standards. Quality regulation has been delegated to the Authority for Electricity and Natural Gas, while the tender is supposed to select the most efficient company in delivering the service.

It is here worth mentioning that, on the distribution firms side, another way of achieving reduction in total costs seems to be represented by the recent merger and acquisition process: in year 2000 almost 800 companies were on the market, many of which of public property, an amount potentially too excessive leading to inefficiency and waste. In fact, in the past, a very high amount of grants had been paid by the central government to local municipalities and private, small firms in order to bring gas countrywide. Now gas is almost everywhere in Italy, and the number of firms on the market has decreased to almost 350. The aggregation process has also been stimulated by the legislator himself[2] and also tenders are believed to be an effective instrument in promoting the distribution sector aggregation. In other words, the latter could be another advantage for the competition in the field provided that, as previously mentioned, it would take place within an effective and regulatory framework.

This matter will be discussed below.

In fact, in the next paragraphs the real impact on the efficiency and quality of tenders (in the way they have been organized in Italy) will be evaluated.

3   Tender announcements and offers analysis

In this section, we analyze a data base concerning 55 announcements in order to assess the way in which tenders are structured and to evaluate whether regulation is based on effective and efficient mechanisms actually able to achieve the objectives reforms. The contests generally took place in small and medium-sized towns homogeneously spread throughout Italy and varying between 200 and 55,000 consumers[3].

---

[1] Supposed to come to an end within the 31st December 2010 as stated by the Decree 273/05, "Milleproroghe".
[2] See the Decree 164/00.
[3] This analysis is based on a public study made by Anigas (the most important firms association for the Italian gas market) among its members.

Table 1 – The sample

Category	Number of customers	Number of municipalities	Average customers per municipality
A	0-1,000	10	467
B	1,001-3,500	25	2,256
C	3,501-7,500	11	5,025
D	7,501-20,000	5	8,990
E	> 20,001	4	37,421
Total		**55**	**5,654**

Source: ANIGAS, 2007.

In general, it is possible to note that no big city has so far organized a tender, but this does not particularly influence the significance of the study, given that in Italy only a few cities by far exceed the sizes of our sample.

The qualifications required by municipalities in order to participate in the tender, with their frequency, are listed below:

Table 2 – Frequency of qualifications required by municipalities

Category	Economic	Operational	Quality Certifications
A	100%	80%	70%
B	88%	80%	76%
C	73%	82%	64%
D	80%	80%	60%
E	100%	100%	25%
Weighted average[4]	**80%**	**75%**	**62%**

Source: ANIGAS, 2007.

As it is shown in table 2, most of the communes require economic qualifications in order to allow firms to take part in the tender. They are mainly represented by:

- Balance sheet auditing;
- Minimum amount of owner's equity;
- Bank guarantee;
- Minimum turnover in the distribution sector.

Also operational qualifications are very common, especially for big municipalities, where the extension and complexity of networks require very skilled and experienced firms. Among these requisites, it is possible to highlight:

- Minimum number of customers;
- Minimum number of concessions for gas distribution;
- Amount of distributed gas volumes.

Finally, a third kind of prerequisites is often required: quality certifications (ISO 9001, SOA, CCIAA,…), especially for little municipalities. In fact, in those cases, given the smallness (sometimes almost irrelevance) of the business, it is possible that only small firms participate in tenders, maybe with just a few experiences (or nothing at all), while gas distribution is a potentially dangerous activity. For large municipalities this problem should be less relevant (at least theoretically) because only big and experienced firms are supposed to be able to play a role in the tender. As far as awarding criteria is concerned, it is possible to see from table 3 that economic criteria are usually preferred to the technical ones, except in very small

---

[4] On the number of concessions relating to each category.

municipalities. The economic criteria typically include a "una tantum" payment, an annual concession fee (both to be paid to the commune) and the cash surrender value of the assets[5], but, as shown in table 4, the greatest part of the economic criteria consist of the concession fee paid to local municipalities. On the other hand, technical criteria normally consist of an investment plan (both for maintenance and expansion), safety measures (odorization, high quality materials), commercial quality (relative to call-center for complaints and emergencies, number of public counters, etc.) and other criteria (like technological innovation and so on).

Table 3 - Awarding parameters weights (total score: 100)

Category	Economic	Technical
A	48	52
B	64	36
C	62	38
D	52	48
E	53	47
Weighted average	**58**	**42**

Source: ANIGAS, 2007.

Table 4 – Impact of the concession fee on the economic awarding criteria

Category	Concession fee impact
A	87%
B	80%
C	79%
D	77%
E	89%
Weighted average	**81%**

Source: ANIGAS, 2007.

Table 5 – Impact of investments, safety and commercial quality on technical awarding criteria

Category	Investments	Safety	Commercial quality	Others
A	21%	9%	12%	10%
B	17%	5%	6%	8%
C	23%	4%	6%	5%
D	20%	6%	5%	17%
E	22%	10%	8%	7%
Weighted average	**19%**	**6%**	**7%**	**10%**

Source: ANIGAS, 2007.

---

[5] It is worth mentioning that the cash surrender value does not always represent an awarding criterion but is sometimes included in the qualifications. In other words, sometimes, it is just reported in the tender announcement as a piece of information and it has nothing to do with the tender awarding procedure.

In conclusion of this paragraph, it is possible to argue that there is not a uniform legislation concerning tenders and tender announcements, so that every local municipality has set its own regulations.

As mentioned before, the most important criteria is by far the amount of concession fees paid to the local municipality. This importance is further stressed by the fact that usually firms are all able to get a very high score for safety, quality and others criteria: given the absence of a serious ex-post control, firms tend to promise very high level of safety and commercial quality. In this way the real difference in awarding is made by the amount of the concession fee paid to the commune, but this, as we will show in the following paragraphs, introduces distortions in the competition for the field mechanism under a twofold point of view:
-the selected firm is not the most efficient one, but just the one that is willing to pay the highest fee to the commune;
-an inflated concession fee could undermine the system of security.
These aspects will be clarified in the following sections.
Moreover, distortions to competition might also come from the evaluation of the investment plan. The weight of this parameter is quite high (about 20% overall) to deeply influence the outcome of the tender. In fact the assessment of the technical offer is purely subjective, and its effective implementation is extremely difficult to control. In addition, investments are fully recoverable through "cost-plus" tariffs[6] and, so, operators may have incentives to over-invest[7], leading to a loss of social welfare.

4   The revenue cap

As said before the main parameter considered in the tender awarding procedure is the economic one. It may consist in the cash surrender value for the distribution plant (to be paid to the previous distributors), in a "una tantum" payment at the contract stipulation, but the main weight is attributed to the concession fee.
The latter is usually calculated as a percentage of the revenue cap[8], which represents the sum of total costs recognized to the operator by the regulating authority every year. The revenue cap can be calculated in two ways: parametric and individual. In the latter case the revenue cap is calculated considering the effective cost of the regulated company as reported in the balance sheets, and appropriately depreciated or normalized.
From some interviews to operators it was possible to derive that in most cases the parametric method yields a more convenient revenue cap for operators than the individual method does[9], for this reason, that will be better clarified by the rest of the work, we will refer only to the parametric revenue cap.
The latter allows to recover, by means of a mathematical formula tied to physical parameters (resident population, number of clients, length of the grid in km, length of grid/number of clients ratio, delivered energy) the operational and capital expenditure (respectively CGD and CCD).

---

[6] Distribution costs can be calculated in two ways: through a parametric formula (AEEG Deliberation 237/00), or through the so called "Individual Regime" (AEEG Deliberation 170/04), that is to say on the basis of the real encountered costs. Nevertheless, in both cases, new investments are recovered through a cost-plus mechanism.
[7] The well known Averch-Johnson effect.
[8] See AEEG, Deliberation 237/00.
[9] The individual method is not chosen by the majority of distributors, mainly according to the fact that it implies the evaluation of tangibles net of real depreciation funds. In fact, the great parts of operators, in the last years, have in general used high depreciation rates resulting in their balance sheet in low tangibles values.

The CGD includes, among the others, cost of labor, material purchase costs, and funds others than depreciation. The CCD includes depreciation and cost of capital estimated through the WACC (Weighted Average Cost of Capital) methodology and equal to 7.5% real before taxes.

The depreciation sum is not meant to cover the pure accounting data but the investments necessary to keep constant the grid value in the coming years.

From now on we will therefore consider depreciation as a kind of maintenance investment to be sustained even in the absence of accounting depreciation.

The regulating authority stated with Deliberation 237/00 that the annual depreciation rate on invested capital is assumed equal to 2% of Gross Distribution Capital.

On average, depreciation amounts to 19% of the revenue cap which is divided as follows[10]:

Figure 1 – The VRD structure

CGD = 39%
Depreciation = 19%
CCD = 42%

Where:
CGD represents the operational expenditure of distribution;
CCD represents the return on capital of distribution (capital expenditure).

This revenue cap is annually updated taking into consideration inflation and an efficiency gain, through a price-cap formula (only for OPEX and depreciation), and new investments, which are, as mentioned before, fully recovered through tariffs.

5   Why are concession fees so high?

We have seen how most of the tenders are taken by the firm which offers the highest concession fee expressed as a percentage of the annual revenue cap. Typically, firms are asked to make an offer relative to the concession fee, starting from a base value. In the announcements we have analyzed, the base value was as follows:

Table 6 – Size of concession fees as a percentage of VRD

Category	Concession fee as a percentage of VRD as starting value for auctions
A	14
B	33
C	28
D	27
E	35
Weighted Average	**30**

Source: ANIGAS, 2007.

---

[10] See Technical Relation to AEEG Deliberation, n° 170/2004.

On average, as it is possible to see from table 6, the minimum requirement regarding the concession fee is on average 30% of the revenue cap. However, if we take a look at the winning offer, we will surprisingly note that this figures become even higher:

Table 7 – Concession fees' size in winning offers

Winning bidders: offered part of revenue cap (%)	*Frequency*
<40	22%
40-50	16%
51-70	32%
>70	30%

Source: IEFE, 2007.

In table 7, we can see how most of the winning bidders (62%) pay to the local municipality more than 50% of the annual revenue cap, and 30% of them pay more than 70% of their own annual revenues!

These data are very important since they show how much the concession fee can erode companies' revenues: if, on one side, it could be understandable that a company is willing to give up part of its return on invested capital (42% of VRD) in order to obtain the concession, it is hardly explainable how an operator is able to renounce to the part of revenues meant to cover operational expenditures and depreciation[11].

Sometimes the network ownership remains to the local municipality: theoretically, in these cases, the commune may legitimately ask for the revenue cap share relating to CCD, which is, on average, 42% of the overall revenues.

We will afterwards discuss the problem of ownership and the sharing of VRD among the investment decision maker (the distribution operator) and the owner (the commune).

For the time being it is fundamental to highlight the fact that fees so far paid are in general considerably beyond 42%.

So, how can distribution companies offer such notable concession fees?

And, what are the risk this fact would imply for the quality and safety of the service?

Below, we are going to answer these questions, highlighting how the winning firm might not always be the most efficient one.

1) A possibility is that tariffs are oversized.

However the revenue cap formula has been made by the authority starting from a detailed study on actual costs of distribution companies[12]. Nevertheless it is possible that, in some cases, real costs are less than permitted costs[13], but difficult to an extent that would allow the payment of concession fees even higher than 70% of the annual revenue cap. In addition,

---

[11] This is the explanation to the fact that for our purposes we have considered just the parametric VRD. In fact, in addition to the circumstance that most operator have opted for the parametric tariff mechanism, those who have chosen the Individual Regime are supposed to have minor efficiency margins, since their cost functions are known.

[12] See the technical relation to AEEG deliberation n. 237/00.

[13] Actually, this is the case for all the "more efficient" firms.

distribution companies have recently won a lawsuit against the Energy Authority, because AEEG had changed the parametric revenue cap formula by introducing a constant efficiency factor of 5% on OPEX. The administrative judge has admitted that a constant decrease of tariffs (on average 3% of the overall revenue cap) would have been too severe for companies, implicitly stating that there is not a huge scope for tariff reduction[14].

Moreover most of the companies that have offered particularly high fees were new competitors[15], so they could not precisely know the actual costs of delivering the service in the municipalities they were competing for: this means that those fees do not stem from (expected) exceptional efficiency gains.

In the light of the above mentioned considerations it is possible to generally exclude that excessive fees only originate from oversized tariffs.

2) A second possibility is that firms freely decide to give up part of their revenues in the distribution sector since it would be compensated by economies of scale and scope which originate from the increase in the firm dimension or diversification of activity. However, there is no proof of (significant) economies of scale in the distribution sector[16] that could stimulate companies to obtain more and more concessions in order to expand their production until the optimum scale.

Also economies of scope can be maintained as being scarce[17] and mainly due to the pulling down of the so-called fixed operational costs (network costs) relating to billing, meter reading, advertising, etc.

3) A third possible explanation, which is a case of evident distortion to competition, is represented by the situation where the local municipality that organizes the tender is also shareholder of one of the bidders. This is very common in Italy, because of the existence of a very high number of "municipal companies" owned by the local communes, which were constituted just to provide the distribution service. These firms are still on the market and only a few of them have been privatized. In these cases, the concession fee is only a clearing entry for the commune/auctioneer. Therefore the local municipal company can offer extremely high concession fees in order to retain the control of the service (and keep the firm working) without putting its existence into danger. In fact the commune and the municipal company can considered as a whole, unique entity, so that the company looses perfectly offset what the commune earns. The latter can finally compensate the company with a proper monetary grant. This does not necessarily bring to underinvestment (even if it is a clear distortion of competition) provided that the local municipality is willing to use the concession fee or, at least, part of it, for the natural gas distribution activity. However, we know that this is not always the case, given that municipalities do not have the competencies to manage complex business, and anyway they often prefer to spend money on more "election-sensitive" businesses.

4) Another reason for excessive concession fees is that there are a number of firms which may give up a high share of their revenues with the simple goal of surviving in a market which was formerly considered as "protected", and that is now turning to competitive: small private firms with maybe just one concession tend to offer exaggerated fees in order to stay on the

---

[14] In fact a recent Deliberation (218/06) introduced a decreasing efficiency recovery factor for the second regulatory period.

[15] That is to say they were not the old distribution operator (previous concession holder).

[16] IEFE, *Le trasformazioni in atto in Italia nel settore della distribuzione del gas*, 2000.

[17] See Erbetta and Fraquelli, 2003; Erbetta and Rappuoli, 2003.

market, with the goal to become bigger by being bought by major companies at a convenient price.

5) It is also worth highlighting the cases of distributors that are not listed on the stock exchange. In fact, listed companies need to respect market rates and investors' expectations, and an incidental decrease in expected profit, for example caused by a very high concession fee paid for the distribution service, could have a very negative impact on the companies' market value. It is therefore possible to observe a kind of advantage for companies not listed[18], since they could more easily give up part of their return on capital.

6) Last but not least, there are companies that try to take advantage of this lack of rules[19], and are willing to minimize investments in order to offer high concession fees and get the tender award.

It is also necessary to underline that in several municipalities the tender regards only the management of the network, and not its ownership. In these cases, the new distributor does not have to pay any cash surrender value for the network, which means the part of revenue cap relating to capital costs can go to the municipality. In other words companies which do not have to pay for the network, can give up the CCD share of the cap, which is, on average, the 42%[20].
Unfortunately, this is another critical point in the lack of an effective regulation: the commune might be the owner of the grid while the distribution company is the manager (that is to say the investments decision maker). This turns into a situation leading to a series of problems (like the split of the eventual cash surrender value), once again not yet taken into consideration.

In the light of the analysis so far proposed, it is possible to conclude that the Italian legislation affecting the natural gas distribution sector consists of a regulation which does not seem able to guarantee a proper transition from a monopoly to a competitive market.
More specifically, the regulatory framework is fragmentary, non-homogeneous and incomplete, that is to say ineffective, while effectiveness is the natural requirement for efficiency.

6 The impact of high fees on the activity and profitability of companies

Too high concession fees entail the risk that companies could start cutting expenditures in order to recover part of the revenues they have passed to municipalities. Considering that the current legislation does not provide incentives to local governments to be severe controllers of the quality and safety of the service, this may lead to a potentially dangerous situation for the distribution system.

First of all, it is important to remember that the revenue cap is structured in such a way that could allow efficient operators to cover their operational and capital expenditures. More

---

[18] That are able to offer higher concession fees to the municipality and have, therefore, more possibilities to win the tender.

[19] The reference goes here to the fact, previously mentioned, that there is no ex-post checks of the commitments taken up in the offer. In other words no "control" after the "command" is foreseen in the actual regulatory framework.

[20] Which is in any case always less than the amount of fees generally paid to communes?

efficient enterprises, that present costs below the recognized average, will yield a major economic return on their investments. In fact, as previously said, CCD and CGD are calculated through a parametric formula based on physical drivers, that can be assumed as exogenous parameters. Consequently, given a certain revenue cap, the more efficient the firm, the higher the return it will yield on capital. The further return compared to recognized WACC of 7.5%[21] is here called "distribution margin", while *CF* is the fee paid to the local authority and *X* the part of the margin that is left after payment of the concession fee:

Figure 2 – Concession fee, distribution margin and VRD

Figure 2 – Concession fee, distribution margin and VRD
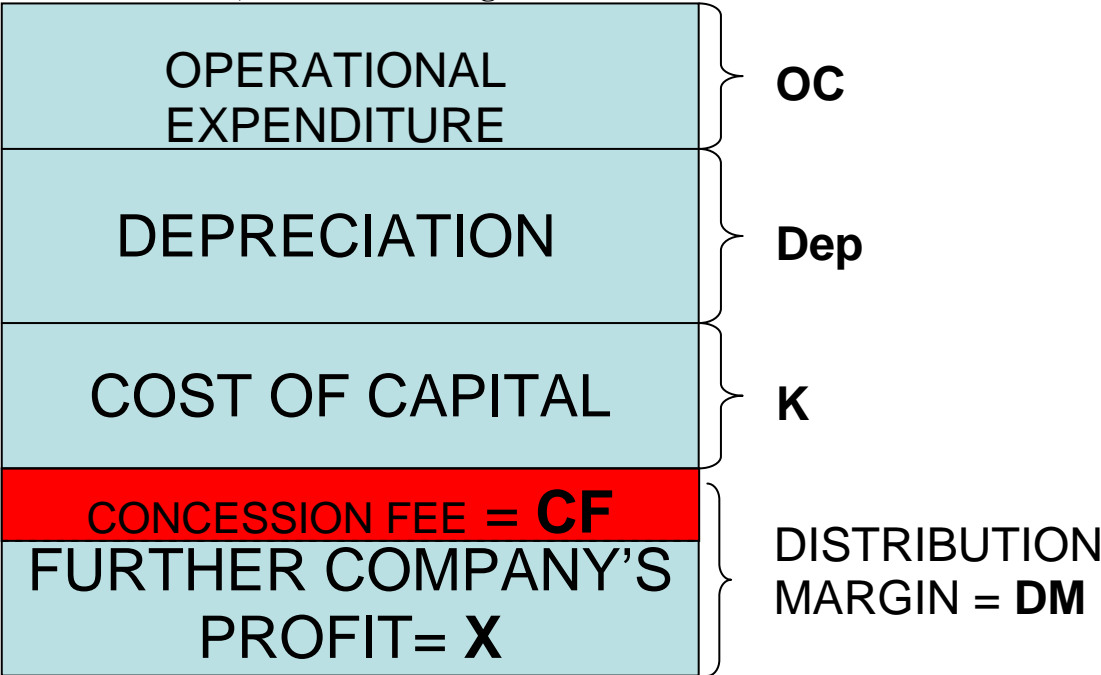
However, if the concession fees offered to the communes increase; it may exceed the distribution margin and start to erode the other components of the revenue cap. In the worst case, the winner may not be able to cover depreciation and the operational expenditure:

Figure 3 – Concession fee eroding both capital and operational expenditure

Figure 3 – Concession fee eroding both capital and operational expenditure

---
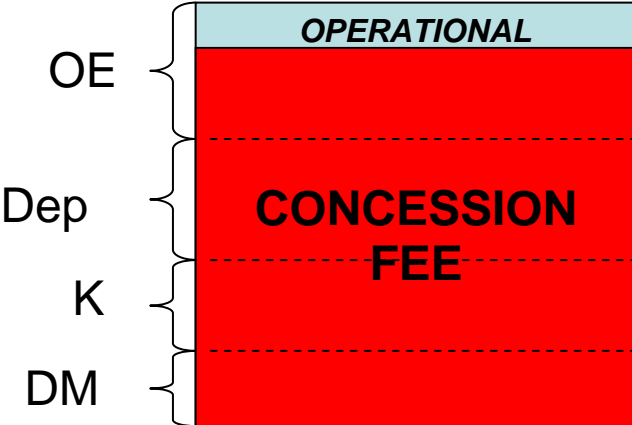
[21] For a deeper investigation on the WACC calculation see the Technical Relation to AEEG Deliberation 170/04.

7 Possible remedies and policy indications

In the previous paragraphs the main criticalities of tenders in the natural gas distribution sector have been outlined.

They can be summarized as follows:

-The absence of an effective and homogeneous regulation regarding the tender awarding criteria which leads to an excessive discretion of the commune;

-The lack of an ex-post control system relative to the commitments contained in the winning offer.

Such a fact leads to a situation in which:

-The tender turns into a beauty contest[22] because of the discretion in the offers evaluation. The reference talks about the algorithm used to determine the winner. If the algorithm is chosen in a far too discretional way, or, even worse, is not defined ex-ante, the tender becomes a beauty contest in which personal preferences are free to voice;

-Due to the absence of ex-post controls the tender is substantially awarded on the basis of the concession fee and not necessarily to the most efficient operator;

- Concession fees that too high can erode the VRD of the distributor preventing him from carrying out the proper investments on the grid, risking the safety of the system.

A proper solution to this kind of situation could be represented by the introduction of a "standard tender announcement" (before the competition takes place) and of the "standard service contract" (once the tender has been awarded).

The standard tender announcement should contain the rules for the contest management, establishing a kind of predetermined framework, (of course) characterised by a certain degree of flexibility, within which, the municipality could operate, taking into account the grid features and the specificity of the local context.

The tender has been chosen in order to introduce the competition for the field in the natural gas distribution sector, a natural monopoly market which needs to be regulated.

Competition and regulation can coexist here, provided that the boundaries within which the former can develop and the scope of regulation are set in a clear way.

And this is just the standard tender announcement function.

The Decree 164/00 foresaw the adoption, by the AEEG, of a "standard contract" in order to regulate the relationship between the distribution operator and the commune; it is nevertheless worth emphasising that competition takes place before the contract formulation, so that it is of paramount importance to define ex-ante the "rules of the game".

It is in fact arguable that it is just in a clear, homogeneous and stable normative context that competition is actually able to express its maximum potentiality.

Otherwise, as the analysis presented so far has shown, micro-legislations are likely to arise in different municipalities, leaving room for personal interests and discretion.

Through the introduction of the standard tender announcement the position and responsibilities of the municipality would also become clearly defined: the standard tender announcement set up, the tender management and, ex-post, the control relative to the respect of the winner's commitments.

The tender announcement should consist of:

-An introductive part containing the technical and economic features of the distribution plant;

-A second part regarding the prerequisites necessary to take part in the tender;

-a third part, where the awarding criteria are explained.

---

[22] See Klemperer P., The Economic Theory of Auctions, UK, 2000.

An important role in the supply of the natural gas distribution service should be applied by the service contract.

The standard contract, which was already foreseen by the liberalization law[23], but never enforced, should be designed in order to standardize the service towards high level of quality and safety and should set common procedures for assessment and ex-post control. In addition, it should define clear and proper sanctions (withdrawal of the concession included) in case of a non execution of the contract.

7.1 The tender based on economic criteria

As shown before tenders are awarded on the basis of both economic and technical parameters. Actually technical, quality, security and innovation aspects represent awarding criteria and are on average given a significant score (more than 40%).

Nevertheless, it is worth analysing the advantages connected with their transformation into pre-requisites.

In other words and according to the already mentioned theoretical stream, it seems to be interesting to evaluate the possibility of a tender based solely on economic awarding criteria.

In this paper the risk associated to the so called "beauty contest" has been already taken into consideration. This problem is insignificant when the subject entitled to decide is also the one who bears the effects of the decision.

As far as the natural gas distribution sector is concerned the opposite situation occurs in which the principal and the final customers, bear the tender's effects and are not able to control the agent's (the municipality) activity.

This suggests that the tender should be awarded on the basis of objective criteria, which are easily verifiable ex-post, that is to say economic criteria.

The reasons for this are numerous: technical investments are fully recovered due to a cost-plus tariff which does not stimulate efficiency among operators; the Energy Authority already regulates quality and service security through an incentives/penalties system and a tender is therefore awarded on the basis of the latter parameters which seem to be superfluous.

The economic theory (Williamson, 1967 and 1985) states that a tender based on technical aspects can attribute a competitive advantage (informative rent) to the incumbent that is surely able, because of its previous experience, under a technical point of view, to formulate a more attractive offer, giving rise to a barrier of entry to new competitors.

A tender solely based on economic criteria would generate the benefit of reducing the municipality discretion in awarding.

Economic criteria should consist of a few categories: the main one should be represented by tariff discounts. Other parameters should relate to economic aspects easy to monetize such as connection costs, meter substitution costs, re-connection costs after service interruption, and so on.

Obviously the concession fee should disappear, unless the municipality is the owner of the grid, in whose case that part of the VRD should be given, which is meant to cover capital expenditures. But in the latter case it would not be correct to talk about concession fees, but rather of the fair return on invested capital that must go to the investor.

Tariff discounts are preferable to concession fees for two basic reasons:

-First of all they would eliminate the interests' conflict within the municipality[24], that would not get any direct revenue and would be therefore keener on the safety and quality of the

---

[23] Decree 164/00.
[24] See § 5.

service for its citizens. In fact, with the concession fee, the local administration – judge of the tender – may be spurred to overrate high monetary offers in spite of higher quality levels. This may happen because of the persisting tight financial situation of local administrations, especially if we consider the short time horizon of a political administration – related to the election schedule – and the long and hardly monetizing revenues of a quality-oriented policy. With the tariff discount instead of the concession fees this problem disappears: the local administration does not have any conflict of interests, given that the discount goes directly to the final consumers. Therefore, ex-post controls and penalties (foreseen in the service contract) would lead companies to reduce and carefully evaluate the portion of VRD that they are actually able to give up (as rebate on tariffs), with no risk for the system of security;
-Secondly, they would entail a direct benefit for the final consumers, which is the main goal of liberalisation. Through the discount part of the monopoly rent would go directly to customers while concession fees could be used by municipalities in ineffective ways or, simply, for different purposes.

Table 8 – Concession fee vs tariff discount

Concession fee	PROS	CONS
	-it can be considered as an indirect tax on an inelastic-demand good, and, therefore, not very distorsive;	- it is no progressive tax but rather regressive like all taxes on essential goods; -it could be discriminatory for private enterprises especially if listed on the stock exchange; -it could lead to serious risk for the security and integrity of the distribution system; -taken as main warding criterion it does not determine the selection of the most efficient firm.
Tariff discount	**PROS**	**CONS**
	-it gives a direct benefit to the final consumer; -it does not lead to discrimination among private and public enterprises; -the municipality would be stimulated to conduct ex-post control relating to the security and quality of the service; -**it allows the achievement of one of the main goals of the liberalisation process.**	

Source: Authors' own elaboration, 2006.

With the above statement, we are perfectly aware of the fact that the possible efficiency recovery in the distribution sector would not be that significant if compared to the other segments of the total value chain.

Distribution costs, in fact, present a weight of 18% on the gas pre-tax final price, while supply cost (import and international transport) account for 57%.

7.2 Multi-criteria tender

The economic tender has been indicated here as the solution preferable to make the contest an effective tool in selecting the most efficient firm in the delivery of the service. This choice has been made according to the provisions of the theoretical stream mentioned in the paper.

The latter states that in order to safeguard the final customers' interest the services that constitute the object of the tender should be clearly defined ex-ante, and easily measurable ex-post.

Should these conditions be respected it would be actually possible to select, through the contest, the most efficient operator in delivering the service, that is to say the operator that is able to offer the service at the minimum price. This result would be the same a competitive market would yield.

Leaving aside the economic theory (or, at least, the part of it that has been mentioned here) a tender could also be based on different criteria, especially when the service is characterised by a high level of complexity.

The reference mentions the multi-criteria tender in which competitors define the offered services as well as the requested price. In this case the municipality (the auctioneer) fixes the minimum standards of the service and the participants offer improvements on the stated "baseline" by formulating both a technical and economic offer.

Also such a kind of tender can lead to social welfare provided that the above mentioned conditions are fulfilled (univocal set up of the awarding rules, measurement of the delivered service and its control, sufficient number of participants)[25].

The Italian legislator has opted for this second kind of tender type.

The reference mentions the Decree 164/00, article 14, comma 6 which states: in respect of qualitative, quantitative, environmental, territorial distribution and security standards, the tender is awarded on the basis of the best economic conditions and on the level of quality and security, of the investment plans regarding the development and maintenance of the grid and plants, and of the technology innovation and operational contents presented by the competing firms.

As previously argued, one of the main disadvantages of multi-criteria tenders are represented by the way in which the awarding algorithm is designed.

In order to lead to the maximisation of social welfare, the latter needs to be formulated in a non-discretionary way[26].

In fact, as mentioned before, if the principal (the customers) is not able to control the agent's (the municipality) activity, the latter could also pursue individual objectives rather than the principal's interest[27]. As far as the natural gas distribution sector is concerned it is also possible that the agent is unable to defend the principal's interests because of its scarce competencies or the lack of proper structures. This is particularly true for small communes

---

[25] See Demsetz, 1968; Sappington and Stiglitz 1987.
[26] See what said about "beauty contests" in the previous §:
[27] See Guston, 1996.

that are often not able to correctly evaluate the requested services, and that might be therefore captured by the distributors (independently from their efficiency level).

In such a context the adoption of a standard tender announcement is more important (if compared to the previous case; the economic tender). It would in fact be particularly necessary to support municipalities in the tenders' management.

The standard tender announcement should clearly define the service contents and the awarding algorithm[28].

The standard tender announcement set up is a priority objective and represents the only way in which contests could be seriously carried out.

As far as awarding criteria is concerned, they should be split in: economic, technical and quality criteria. The economic parameters could consist of the tariff rebate and of the discount on connection or activation/deactivation fees.

More specifically the economic offer should be designed independently from an eventual concession fee (due to the municipal ownership of the plant) that does not yield any score.

In other words the concession fee should not represent awarding criteria, stated that it should be paid to the commune (if owner of the plant) just with regard to that part of the VRD which is meant to cover capital expenditures.

Technical criteria could be represented by the investment and maintenance plan and by security aspects.

Last but not least, quality parameters could consist in improvements with respect to the quality standards foreseen by the Energy Authority, as well as quality certifications, prompt intervention systems, technology innovation aspects, demand side management activities, and so on.

8   Conclusions

The gas value chain consists of contestable segments and others which are and will remain natural monopolies, in spite of the liberalization process. The gas distribution segment is, in fact, a monopolistic market, because of its sub-additive cost function.

The role of the regulator is, therefore, to reproduce the effects of open markets: the Italian legislator has chosen the "competition for the market", that is it has introduced competitive tenders in order to identify the most efficient firms which can deliver the service.

As it is shown in the presented analysis, a liberalization process which is not supported by an effective regulatory framework, does not bring efficiency, but, on the contrary, it might lead to destructive competition: offered concession fees, as the result of incomplete liberalization, that is to say the lack of clear, non-discriminatory, homogeneous and stable rules, are oversized, which makes covering the pure service costs very difficult for distribution companies.

In order to win the tender they are in fact stimulated to cut investments by reducing security and quality expenditures (which are supposed to be very high, given the infrastructures' age).

This is made possible due to the lack of any ex-post control/penalty mechanism and by the fact that municipalities may have incentives to maximize short run monetary revenues, rather than long-term safety standards.

In order to re-establish the effectiveness of liberalization (and have the tender be the right instrument to select the most efficient operator) it is necessary to:

-Make the competitive contest rules clear and non discretionary (ex-ante normative intervention);

---

[28] Also the range of weights to be given to each parameter would be sufficient.

-Organise an effective control/sanction mechanism in order to make sure that the commitments taken by the winner are fulfilled (ex-post normative intervention).

The tools that should be used to achieve this result are represented by the standard tender announcement and the standard contract.

In fact, as the presented analysis has shown, the multi-criteria tender system chosen by the Italian legislator, calls for a strong support in order to be effective. The reference goes to the verification of the formal prerequisites of the competitors, adding to the ex-ante control (also regarding other held concessions), an *in itinere* inspection, and an ex-post control on the fulfillment of the winner's commitments.

The standard tender announcement and the standard contract would help in reaching the liberalization goals in both the economic and multi-criteria tender.

In fact and unfortunately, the current regulation is not compatible with the primary objectives of the reform process that first of all calls for the transfer of competition gains to final customers.

REFERENCES

AEEG, Segnalazione a Parlamento e Governo sulle concessioni di distribuzione del gas, 21 ottobre 2005;

AEEG, Delibera 237/00;

AEEG Delibera 170/04;

AEEG Delibera 170/04, Relazione Tecnica;

Baumol W.J., Panzar J.C., Willig R.D., Contestable Markets and the Theory of Industry Structure, New York, 1982;

Berg S., Tschirhart J., Natural Monopoly Regulation, Principle and Practice, Cambridge University Press, 1998;

Braeutigam R., Optimal Policies for Natural Monopolies, in R. Schmalensee and R.D. Willig, *Handbook of Industrial Organisation*, 1989;

Carlton W.D., Perloff M.P., Modern Industrial Organisation, Milano, 1997;

Cervini G., L'intervento pubblico nelle essential facility: aspetti teorici e analisi istituzionale, in *Concorrenza e Mercato,* Milano,1998.

Coase R., "The Nature of the Firm", in *Journal of law and Economics*, 1937.

Decreto Legislativo n° 164/2000, 23 maggio 2000 – Decreto Letta;

Demsetz H., Why Regulate Utilities?, in *Journal of Law and Economics*, 11/68;

Erbetta F. and Fraquelli G., Produttività e redditività nella distribuzione locale di gas naturale in Italia: proprietà, diversificazione e scala operativa, *CERIS-HERMES*, Working Paper 3, 2003.

Erbetta F. and Rappuoli L., Estimatine optimal scale and techinical efficiency in the Italian gas distribution industry, *CERIS-HERMES*, Working Paper 6, 2003.

Guston D., Principal-Agent theory and the problem of science policy, in *Science and Public Policy*, Volume 23, nr. 4/96.

Gobbo F., Noce A., Il settore del gas naturale: tra monopolio e concorrenza, in Grassini F.A., *La concorrenza nei servizi di pubblica utilità*, Bologna, 1998;

IEFE, Le trasformazioni in atto in Italia nel settore della distribuzione del gas , 2000;

Kahn A.E., The Economics of Regulation: principles and institutions, 1988;

Klein B.,Contracts and incentives: the role of contract terms in assuring performance, in *Contract*

economics, Oxford, 1992.

Klemperer P., The Economic Theory of Auctions, UK, 2000

Laffont J.J., Tirole J., Auctioning incentive contracts, in *Journal of Political Economy*, 95/87.

Legge n° 239/2004, 23 agosto 2004 – Legge Marzano;

Sharkey W., The Theory of Natural Monopoly, Cambridge University Press, 1982;

Sappington d. and Stiglitz J., Privatization, Information and Incentives, *Journal of policy Analysis and Management*, Volume 6, nr. 4, 1987

Train K., Optimal Regulation: the economic theory of natural monopoly, Cambridge University press, 1991.

Williamson O.E., Franchise bidding for natural monopolies, in *The Bell Journal of Economics*, n. 7, October 1976.

www.autorita.energia.it
www.anci.it