

# The Liberalisation of Natural Gas Markets: Regulatory Reform and Competition Failures in Italy

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# **The Liberalisation of Natural Gas Markets: Regulatory Reform and Competition Failures in Italy**

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## Abstract

In the last decade the EU has started to liberalise national gas markets and regulatory reform has followed in member countries. We analyse the basic issues concerning network and storage regulation and the implementation of regulatory reforms in Italy. Then we try to explain why in gas importing countries such reforms were not sufficient to foster competition. Even regulation ex-post by the Competition Commission has proved to be a formidable task, to the extent that entry barriers in the market for imports depend on congestion of transit pipelines still controlled by the incumbent. Moreover when gas supply is characterised by long run importing contracts with *take or pay* clauses, liberalisation policies lead to entry and market segmentation without benefits for consumers. In order to foster gas to gas competition the development of wholesale exchanges at market hubs is then necessary. However new investments in essential facilities are required to reach this aim. At present new investments are both subsidised and exempted from third party access regulation for financial reasons but we claim that the incentive to invest is negatively affected lack of ownership unbundling.

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## 1. Introduction

The European Union (EU) started a liberalisation process over the past decade in order to create an internal market for gas by breaking vertical integration in national industries, allowing entry on the supply side and consumer switching on the demand side. The final aim of this process - to create a single market for gas - is still far from being achieved and the degree of competition is considered to be unsatisfactory within most individual countries (Commission of the European Communities, 2005). Though liberalisation was expected to induce the most prominent gas producers to compete all over Europe for gas sales (Golombek, Gjelsvick and Rosendahl, 1998), national gas markets still remain separated and dominated by the former integrated gas utilities. Granting access to international pipelines devoted to gas transit proved to be a formidable task for regulators and interconnection capacity for gas imports appears to be insufficient to meet the requirements of new entrants in gas markets.

In this paper we consider the basic liberalisation principles and their implementation at the European level. Then we analyse the regulatory reforms that implemented liberalisation in Italy and the barriers to trade still preventing the development of competition in the Italian natural gas market. We would like to point out that the Italian case is not only interesting *per se* but also because it represents the first experiment of advanced liberalisation<sup>1</sup> in a continental country where gas consumption is highly dependent on imports, requiring access to international pipelines. Previous (and more successful) experiences with liberalisation involved gas producing countries like the UK, the US or Australia, where imports still account for a minor share of consumption or are absent due to abundant indigenous production.

In the past the Italian natural gas industry was characterised by vertical integration and monopoly by a State owned enterprise (ENI). In distribution and retail sales a fragmented market structure allowed the existence of small private firms and municipal undertakings operating as local natural monopolies together with Eni subsidiaries. Such a market structure contributed to network expansion to the extent that monopoly rents and public subsidies made it possible to finance the huge investments required to extend gas consumption over most parts of the country. Monopoly by a State owned firm (protected from entry) at the wholesale stage allowed cross subsidisation among regions characterised by different climatic conditions. Natural gas could then

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<sup>1</sup> As of January 2003 the Italian market has been completely liberalised on the demand side.

reach even consumers located in the warmest regions, where investment was not considered to be profitable *per se* in view of distribution costs<sup>2</sup>.

Liberalisation was expected to eliminate subsidies and monopoly rents. The development of gas to gas competition should have helped to decouple gas prices from oil prices. However current results cannot confirm these expectations as the price of natural gas in Italy not only remains linked to oil prices but is considered to be excessive when compared with prices in other EU Countries (see section 6.2.2), in spite of the convenient cost of imports for the dominant supplier. Actually, regulatory reform consistent with liberalisation principles has proved to be a necessary, but in itself not sufficient, condition to introduce competition. At present the Italian gas market seems to be characterised by entry without competition. Therefore new entrants benefit from liberalisation but consumers do not.

In section two we briefly analyse the main features of the natural gas industry in Italy. In section three we consider the basic principles that characterise the European liberalisation process. In section four the implementation of the main liberalisation principles in Italy is described. Then, we analyse regulatory reform affecting transmission, storage and distribution in section five. Section six focuses on the analysis of the gas supply following liberalisation and regulation ex-post by the Antitrust Authority. In section seven we consider gas hubs and the potential development of a spot market for transactions outside long run contracts. Finally, some conclusions are drawn in section eight.

## **2. The Italian natural gas market in a nutshell**

In Italy the natural gas network first expanded in the northern part of the country (Po Valley) in order to exploit indigenous production opportunities. National gas field exploitation was driven by a sharp process of industrial development concentrated in those regions. The impressive rate of economic growth that followed in the sixties also contributed to the increase in household consumption (see Ascari, 1985). The extension of the network to most parts of Italy took place more rapidly after the oil crisis of the seventies, inducing a widespread use of natural gas both by industries and households, supported by imports from the Netherlands, the former Soviet Union and Algeria. Therefore the completion of the national gas network was running together with investments in international pipeline connections made by ENI, the former integrated state-owned enterprise operating in the Italian market. Further developments of natural

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<sup>2</sup> For example, this was the case of many areas located in the South of Italy, where the low consumption both in the household sector (for climate reasons) and in the industrial sector (for development reasons) could not justify the extension of the network from the point of view of

gas consumption in the last decade are related to fuel oil substitution in the power sector, also due to environmental pressures and technological progress that contributed to the success of gas-fired power plants after Italy gave up nuclear power.

As a result, in 2005 natural gas consumption in Italy amounted to 71,09 Mtep, accounting for 35,8 % of total energy consumption. Natural gas represents nowadays the second energy source in Italy, after oil. In 2005 industrial consumption accounted for 24% of total gas sales, while residential and commercial consumption accounted for 35 % and power generation reached 38%<sup>3</sup>. When considering the evolution of gas consumption since 1990 the most striking feature is the growth of consumption in power generation, which more than doubled between 1990 and 2000. In the same period, residential and commercial consumption increased by 32,5 % and industrial consumption increased by 29%. Considering market growth after liberalisation, one can notice that total gas consumption increased by 13,4% between 2000 and 2004. Residential and commercial consumption followed the same pattern with an increase of 12,5%, while the increase of industrial consumption was less than 5% in the same period. On the contrary gas consumption in power generation experienced a further jump of 22,8% and its growth is expected to continue in the near future as more and more power plants are going to be converted to natural gas<sup>4</sup>. The household and industrial market can instead be considered a mature market.

Before the implementation of the first European liberalisation directive, Italy was characterised by a vertically integrated gas industry. ENI as a State owned enterprise was involved in the gas chain from production to retail sale, either as a monopolist or as the dominant firm. In the past ENI enjoyed exclusive rights in hydrocarbons exploration and production in the Po Valley, where the most promising oil and gas fields were located. Gas storage was bundled with production and controlled by a subsidiary of ENI: AGIP Spa. SNAM Spa, another subsidiary of ENI holding, enjoyed a *de facto* monopoly over national gas transmission and supply to the wholesale market, and controlled also international transmission pipelines built in joint-ventures with other foreign companies also involved in gas trades (see section six). Gas distribution was a separated business, bundled with retail sale. Being a local natural monopoly, gas distribution was controlled either by municipal companies or by other small firms on the basis of local concessions granted by municipalities that are still entitled to supply the distribution service. However ITALGAS, a subsidiary of ENI owning local gas undertaking especially in central and

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economic and energetic efficiency, due to high distribution costs. See also subsection 6.2.2 on this issue.

<sup>3</sup> See the Italian Energy Balance Sheet, Autorità per l'energia elettrica e il gas (2006) p.10.

<sup>4</sup> Data from "Ministero dello sviluppo economico" and "Statistiche Energetiche Enea"

southern Italy, played the role of the dominant player with about 30% of the distribution and retail market.

### **3.The European Liberalisation Process**

The European liberalisation process aims to break vertical integration in the gas industry and introduce competition by requiring each country to implement the following principles: 1) Unbundling the potentially competitive activities of the gas industry (production, imports, wholesale and retail sale of gas) from those segments of the gas chain characterised by a natural or a *de facto* monopoly (transmission, storage and distribution networks); 2) Third Party Access (TPA) to the essential facilities (not only transmission and distribution networks but also liquefied natural gas (LNG) and storage plants) required by gas suppliers and which firms with market power continued to operate; 3) Liberalisation on the demand side, by allowing consumer switching (initially granted only to eligible customers but expected to be extended to any gas customer by 2007).

As we shall see, the correct implementation of these principles is a necessary condition in order to get competition in the gas market, though it may not be sufficient to actually achieve this aim, as the recent experience of Italy shows. The transposition of the European directive 98/30/CE in National Countries shows different attitudes towards gas market liberalisation, with France and Germany at one extreme as the most “conservative” countries and the UK at the opposite extreme, having already achieved all the liberalisation goals and having nowadays a national spot market for gas whose price is de-coupled from oil prices. Such a variance appear to be due also to the directive allowing for a different degree of transposition of the basic liberalisation principles quoted above. A more recent liberalisation directive concerning the gas market (2003/55/CE) has amended the first one but most European countries have not implemented it yet. As far as Italy is concerned, we can show that most principles characterising the second European directive were already implemented at the national level after transposition of the first one

#### **3.1Unbundling.**

The separation of the competitive segments of the industry from the monopolistic ones can take place to varying degrees and may concern both vertical unbundling of the gas chain and horizontal unbundling<sup>5</sup>. The mildest version of unbundling concerns the simple separation of accounts (administrative unbundling) of the former integrated utility. The strongest version of unbundling is ownership unbundling, allocating the different

industrial activities of the gas chain to distinct corporations owned by different shareholders. Legal unbundling implies that activities that were once integrated into the same firm are separated and assigned to new corporations whose shareholders are, however, the same that once controlled the former vertically integrated utility. Functional unbundling aims to keep management units completely separated.

Ownership unbundling may be necessary to assure that essential facilities become neutral with respect to the development of gas transactions in the wholesale and retail markets. Let us consider for example a former integrated utility affected by legal separation between its gas transmission network - an essential facility operated by the transmission System Operator (TSO) - and gas purchase and resale activities which are potentially competitive. The principle of TPA, implemented by an independent regulator, could assure that no firm will be discriminated while demanding access to the transmission network. However investment decisions concerning network expansion still depend on the owner and may then be affected by potential strategic behaviour of the incumbent gas utility that could restrict competition by preventing the increase of transmission capacity needed by new entrants. Such a strategy may increase total profits of the incumbent due to its dominant position in the wholesale market, though the profits of its transmission branch may be negatively affected. Regulation ex-post may sanction these strategies as abuses of dominant positions but could be considered a weak solution compared to ownership unbundling requirements implemented by regulation ex-ante.

Nonetheless the last report of the European Commission (Commission of The European Communities, 2005) shows that ownership unbundling has been implemented just in the UK, Denmark and the Netherlands (at least as far as the TSO is concerned) while most countries opted for accounting or at most legal unbundling. The second European liberalisation directive (2003/55/CE) requires legal unbundling assisted by corporate governance rules that should assure the independence of TSO management with respect to utilities in charge of gas supply (“functional unbundling”), but such measures risk being inadequate to assure the neutrality of investment decisions.

### **3.2 Third Party Access.**

TPA means the definition of non-discriminatory access and pricing rules concerning the transmission network, the distribution network, the LNG plants and storage facilities. Concerning networks, the first European directive left single countries free to choose between regulated and negotiated TPA. Most Countries (Commission of The European Communities, 2005) opted for Regulated Access with the relevant exceptions of France and Germany. The new directive imposes regulated TPA to the

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<sup>5</sup> Horizontal unbundling may concern multi-utilities selling not only natural gas, but also



transmission and distribution network. In the case of storage plants the new directive requires that individual countries impose separate access with respect to the transmission network. However each Country can still choose between regulated or negotiated TPA to storage.

### **3.3 Consumer Switching.**

Common wisdom frequently associates market liberalisation with market opening on the demand side, i.e. the share of customers being free to choose their supplier (eligible customers). Also in this case differences persist among the European States. Only England, Italy, Spain and Germany have already completely opened their gas markets as all customers are eligible for competition. The other countries are supposed to follow in 2007.

Since market opening consumer switching estimates concerning large industrial customers range from more than 85% in the UK, to 60% in Spain, 30% in Denmark, 23% in Italy and just 14% in France. Estimates concerning small and medium business customers range from more than 75% in the UK to 3% in Italy. Very small business customers and households have shown a remarkable switching rate just in the UK (more than 47%) while estimates from other countries range from 5% in Spain to less than 2% in Denmark and about 1% in Italy (Commission of the European Communities, 2005). One should also consider that household prices may still be regulated in order to protect very small customers until competition has displayed its effects.

## **4. Liberalisation and Regulatory Reform in Italy**

The first European Liberalisation Directive concerning the gas market was implemented in Italy in 2000 (decree n.164/00). Even before the implementation of the European directive, other national laws introduced some changes in the Italian Gas Industry. Exclusive rights awarded to ENI and concerning gas exploration and production were eliminated. During the nineties, ENI went through a progressive privatisation process, which saw state ownership reduced to 30% of the shares today. In the meantime an Independent Regulatory Commission for electricity and gas (Autorità per l'Energia Elettrica e il Gas, henceforth AEEG) was created as regulatory policy shifted from direct control of public utilities and cost-plus practices to price-cap methods, in order to achieve efficiency goals in the gas (and electricity) industry. AEEG was then charged with the implementation of the European Directive, though in some circumstances it shares responsibilities with the Ministry of Industry, the institution in charge of energy policy.

As to the basic liberalisation principles, Italy went even further than basic requirements of the first directive. The latter just imposed administrative unbundling and left to single countries the option of negotiated or regulated TPA to the transmission and distribution network. Separated access to gas storage plants was not even imposed by the first directive.

With respect to the transmission network, Italy opted for legal unbundling from the former integrated gas utility. The national transmission network is now operated by a new company, "SNAM Rete gas", while gas imports and supply in the wholesale market are dealt with by a distinct branch of the former integrated utility, "ENI gas & power". The newly created TSO (initially totally controlled by ENI) was partially privatised in 2001, by floating 40 % of "SNAM Rete gas" shares on the Stock Exchange. Another privatisation deal reduced ENI control to slightly more than 50% but the former monopolist is currently expected to further reduce its participation to 20% by 2010. Italy went further also regarding gas storage by legally unbundling storage facilities from gas production and transmission activities. A separated storage firm (STOGIT Spa), though completely controlled by the incumbent, was created. Concerning TPA, Italy opted for regulated access to transmission networks, storage and LNG facilities. Access tariffs are subject to price-cap regulation by AEEG.

Concerning Gas distribution the former local monopolies had to separate their retail sale business from the distribution assets. Also in the gas distribution industry Italy opted for regulated TPA, with tariffs set by the regulator. Moreover the retail market is completely opened from the demand side and dating from January 2003 all final customers can be eligible for competition in gas sales

Thus, one could state that Italy had almost completely complied with the obligations of the second European directive (2003/55/CE) when implementing the first one. However, such a compliance effort was not sufficient to introduce effective competition in the market. Before discussing in more detail the reasons for such a failure we shall analyse the regulatory reform that followed the implementation of the European directive.

## **5. Third Party Access Regulation in Italy**

TPA has been implemented through regulated access tariffs for transmission, storage and distribution. Access to the transmission and distribution networks, to storage fields and to LNG plants is also regulated. As LNG imports at present are negligible – though they may increase in the future - we shall not deal with access regulation concerning the unique LNG terminal.

## **5.1 Regulation of Transmission**

In the natural gas industry dispatching activities are bundled with gas transport in high and medium pressure pipelines (respectively forming the national and regional networks). In most European Countries transmission networks are separated from (low pressure) distribution networks, with the notable exception of the UK, amongst others. Gas transmission in most countries represents a natural monopoly, though in some cases like the US (or even Germany) the market is said to allow some degree of “pipeline-to-pipeline” competition. However, even in those markets where competition appears to be a technically feasible option, allowing market-based tariffs would not necessarily be a correct option unless some conclusive test excludes the existence of market power. Even in the US, where the extension of the interstate market for natural gas allows the existence of multiple TSO, FERC (the Federal Energy Regulator) has never allowed them to set market based tariffs, due to the results of market power tests (The Brattle Group, 2002). Considering the existence of huge sunk costs in gas transmission, even potential competition is hardly feasible.

### ***5.1.1 Basic issues concerning transmission tariffs***

There are specific technical features that help to distinguish the gas transmission network from the electricity network. Like electricity, the gas transmission network can be unbundled and priced separately from service supply. Therefore access pricing should abstract (at least in theory) from the incentives of the incumbent utility in the supply market. In practice such a statement would be completely correct only with the implementation of ownership unbundling, which is rather the exception than the rule. Moreover natural gas has different physical properties from electricity, so the regulator should set transmission tariffs adopting different criteria also with respect to electricity transmission.

Issues related to transmission tariffs can be crucial with respect to the implementation of liberalisation not only because these tariffs affect the final price of gas but also considering that transmission networks are essential facilities, to the extent that new entrants cannot by-pass them to ship gas imported or purchased wholesale in order to sell it to industrial consumers or to local retail utilities.

The experience gained by energy regulators and professionals involved in regulatory tasks has already lead to analysis of the main issues concerning transmission charges in Europe, considering also the aims of the liberalisation process and the need for tariff uniformity across Europe (The Brattle Group, 2002). Most national networks in

Europe are characterised by a meshed structure and this means that it would be difficult to establish the actual route of gas flows. In this framework a TSO would rely on a variety of tools to provide firm service, rather than assuring that each contracted transaction exactly corresponds to a precise flow in the network. Therefore setting point to point tariffs can lead to inefficiency in resource allocation. “Point to point” tariffs are based on distance parameters, while transport costs are more dependent on pipeline capacity and actual gas flows. Moreover gas networks are also characterised by back-hauls, implying that delivering a supplementary quantity of gas in some point of the network may imply a reduction of marginal costs rather than an increase. Therefore point to point (distance related) tariffs can be cost reflective only for non-meshed networks without back-hauls, a condition which is rather far from being satisfied in most national networks. Alternatively a TSO should know the precise route of gas related to each transaction and should also award discounts for back-hauls. But this is practically impossible.

Moreover as physical flows in practice do deviate from contractual flows, an incumbent supplier in the wholesale market for gas with a wide portfolio of contracts may well be able to reduce total transmission charges paid to the TSO by the optimisation of gas flows related to its contracts: for example a gas swap between two different entry points of the network may be feasible, and changing the in-take point may reduce the distance from the off-take point. A similar operation may not be feasible for a new entrant with only a few contracts implying for example the supply of gas only through one entry point of the national network. Therefore distance-related tariff create entry-barriers to the extent that incumbents would face lower transmission costs for units of gas shipped with respect to new entrants.

Considering that European networks may be congested in several points and should go through planned expansion, efficiency requires that transmission tariffs correctly signals over-utilisation or spare capacity in different in-take and off-take points of network. Such a result can be achieved through entry-exit tariffs. In this case different charges at different entry and exit points of the network can signal different degrees of congestion. Entry-Exit tariffs can be said to be more cost-reflective to the extent that if the prospective cost of any incremental flow of gas is greater at point A (congestion) with respect to point B (under-utilisation of capacity) then flows through point B should be encouraged by setting lower charges. In order to be cost-reflective, Entry and Exit charges should then be set equal to LRMC (Long Run Marginal Cost) and back-hauls should give rise to negative charges<sup>6</sup>.

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<sup>6</sup> Lawrey (1998) contends that pricing at LRMC is correct when selling firm capacity while pricing at SRMC (Short Run Marginal Cost) would be more appropriate when selling interruptible transmission capacity and in the case of spot sales. For natural gas pipelines SRMC is compressor operating cost, i.e. the cost of fuel to pump the gas along the pipelines. However, as recognized by

However the calculation of LRMC may not be straightforward and the imposition of negative charges may not be feasible in practice. An algorithm for setting entry-exit charges on the basis of LRMC has been implemented in the UK<sup>7</sup>. While exit charges are still set by the regulator through this algorithm, at present entry charges in the British network are set through auctions that allocate transmission rights to shippers<sup>8</sup>.

Auctioning transmission rights implies that scarce transmission capacity is assigned to shippers on a market value basis so that congestion at entry points is dealt with efficiently and scarcity rents may be appropriated by the TSO to finance network expansion and overcome congestion. Auction design includes reserve prices so that even at non-congested entry points the TSO is able to collect part of the revenues (without reserve prices bids risk being lower than costs at those entry points). Reserve prices are also useful to control market power at those entry points characterised by significant market concentration, where a shipper could bid under costs and still get the required capacity<sup>9</sup>. Auctions allocate monthly transmission rights, but are accompanied by daily auctions concerning both firm and interruptible capacity. A secondary market for trading transmission rights is still in place to improve efficiency.

In some transmission systems the fair allocation of retrospective costs may be a more important issue with respect to pipeline expansion. In that case entry-exit tariffs should reflect average costs. In any case transmission tariffs should be able to recover

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Lawrey in the case of spare capacity pricing transmission rights at SRMC appear to be wise, but as soon as we consider congested network points over-utilisation of capacity leads SRMC to overcome even LRMC. Indeed secondary markets for transmission rights – i.e. spot markets for capacity - at congested entry points typically lead to very high market prices, reflecting very high SRMC to ship gas.

<sup>7</sup> Such an algorithm, known as *Transcost*, endeavours to measure LRMC: “One starts with a base case forecast expansion of the system able to deliver the forecast demand at least cost. One can then ask what would be the additional cost of providing a sustained increase in capacity between an entry and an exit point over some sensible period. The easiest way to think of this is that a buyer located at a particular entry point for a fixed period of time (10 years, for example), and at the same time signs a contract with Transco (*the British TSO, ndr*) to deliver that gas. Transco can then finance the necessary investment to provide capacity to deliver the agreed volume of gas to the buyer out of contract charges”. Cfr Newbery (1999), p. 2.

<sup>8</sup> Past experience with transmission rights allocation through posted prices has proved to be inefficient, especially considering congestion issues at entry points. The system did not incorporate transmission constraints ex-ante and the increasing cost of constraints resolution lead the TSO to proportionally scale back bookings in order that total booked capacity equalled actual gas flows at the entry point. The result was that some shippers were rationed while others (like the incumbent) still retained unused booked capacity that was successfully auctioned afterwards, so that scarcity rents were appropriated by some shipper operating in the gas market. The scaling back approach itself was leading shippers to breach licence conditions, by nominating gas flows above their initially booked capacity in order to face uncertainty concerning the actual amount of transmission capacity they would dispose of (considering the ex-post scaling-back intervention) and be able in any case to ship an amount of gas consistent with their commercial commitments. Cfr. McDaniel and Neuhoff (2004)

<sup>9</sup> At the Barrow entry point where there is essentially just one bidder, the reserve price equals the LRMC and auctions always clear at that price. Cfr. McDaniel and Neuhoff (2004) p. 215

total costs. Therefore deviations from a “pure” entry-exit approach are to be expected when considering regulatory practice.

Post stamp tariffs can be seen as entry-exit tariff with equal charges set in every point of entry and exit. Therefore they can hardly be considered efficient if a prospective approach of network expansion is adopted, or even fair, if a retrospective cost allocation approach is adopted instead.

While setting transmission tariffs on the basis of entry-exit criteria - with capacity charges based on LRMC - may give satisfactory answers to cost-reflectivity issues, efficiency concerning resource allocation may still represent an issue to the extent that the TSO may offer different kinds of access services (long run and short run, steady and interruptible) and/ or access demand differ seasonally or among shippers due to the features of the final (derived) demand that each shipper contributes to satisfying. Issues related to demand elasticity may then be relevant when considering the TSO as a multi-service natural monopoly. Optimal regulation with the aim of reducing distortions requires Ramsey pricing (Cremer, Gasmi and Laffont, 2003) but such a problem has not been considered in regulatory practice yet.

### ***5.1.2 Transmission Tariffs and Network Access in Italy***

As far as gas transport tariffs are concerned, the Italian regulator has opted for an entry-exit approach, but without considering LRMC analysis. Recovering retrospective costs by applying the principle of inflated historical costs to obtain the revenue constraint of the TSO was the methodology followed. New investments can then be recovered with specific charges. Post-stamp tariffs have been adopted just for the regional (medium pressure) transmission network. Regulated access tariffs set for the first regulatory period implied a reduction of transport charges with respect to the unregulated regime that was in place before.

Tariffs are multinomial and characterised by capacity charges dependent on annual capacity booking at entry and exit points and a commodity charge dependent on gas flows. Though fixed cost amount to more than 90% of total costs and should be recovered through the capacity charges, the regulator established that capacity charges cannot exceed 70% of the revenue constraint. This provision can be considered as an incentive for the transmission firm to increase gas flows in order to recover part of fixed costs through the commodity charge (accounting for the remaining 30% of the revenue constraint)<sup>10</sup> and share the market risk (though we recall that gas demand has steadily increased recently).

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<sup>10</sup> Such incentives are also more pronounced in the UK, where the revenues are recovered 50% with the capacity charges and 50% with the commodity charge.

Transmission tariffs set for the first regulatory period were considered to be rather profitable for the Italian TSO, with a rate of return of 7,94 % (pre-tax) on the regulatory asset base. Transmission tariffs are subject to a revenue cap, with the exclusion of the commodity charge that is subject to a pure price-cap<sup>11</sup>. Transport tariffs are expected to decrease further in the second regulatory period (2005-2008) as the rate of return on assets has been reduced to 6,7% (pre-tax) and a profit sharing mechanism has been introduced concerning the observed reduction of variable costs during the first regulatory period. However new investments in the network are allowed higher rate of returns, potentially contributing to increase transmission tariffs. Moreover in the second regulatory period capital costs are excluded from the revenue–cap mechanism (with the exception of depreciation) as they are estimated from year to year on the basis of new data supplied by the TSO. A methodology which appears to be more consistent with rate of return regulation.

Regarding the regulation of access to the network, we would like to mention that when congestion issues arise priority is given to the incumbent, to the extent that it can incur financial distress due to its TOP obligations related to long run contracts concluded before liberalisation was introduced<sup>12</sup>. Congestion issues mainly concern interconnections with foreign networks at the border (see also section 6). Until 2006 capacity reservation was supposed to be yearly based (but capacity booking can be extended to a five-year duration). Short-term capacity reservation is now allowed. Alternatively, gas transactions could be supported either by interruptible capacity allocated on the basis of the “use it or lose it” principle and by trading on the secondary capacity market.

Actually the incumbent not only benefits from priority in capacity reservation due to its past TOP obligations, but also enjoys the flexibility allowed by its long run importing contracts (see next section on gas storage), therefore some spare capacity may arise in the short term - in spite of long term reservations - when import flows are temporarily reduced. Then congestion resulting from long run capacity reservations made on the basis of priority rules may be accompanied in the short run by spare transmission

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<sup>11</sup> One can notice that transmission tariffs were set while the Italian TSO (Snam Rete gas) was undergoing a partial privatisation process with flotation of 40% of shares on the Stock exchange. Obviously stock prices (and consequently Treasury revenues) were greatly affected by regulatory decisions with a considerable impact on public finances to the extent that 60% of this company was controlled by ENI, which in turn is still controlled by the National Treasury for a portion amounting to 30%. In such cases regulatory policy faces an obvious trade-off between the protection of shareholders (including the State Treasury), requiring an high rate of return of investment, and the protection of both new entrants and final consumers, requiring lower tariffs.

<sup>12</sup> The priority given to firms with TOP obligations was a rule established by the regulator following the implementation of the first European directive. However new entrants claim that firms with TOP obligations should also prove the financial distress deriving from the impossibility of importing gas due to the lack of transmission capacity. In practice the priority is allowed just considering pre-existent take-or-pay contracts, without requiring any proof about the financial consequences were such contracts not respected.

capacity at interconnection points. Such additional capacity may not be available for trading due to asymmetric information<sup>13</sup>. In fact the incumbent could hinder competition in the wholesale market by pursuing capacity hoarding at the expense of new entrants.

Since 2004 trade of daily transmission capacity in a secondary market has been allowed in order to facilitate daily spot exchanges in a virtual hub of the transmission network known as PSV ("Punto di Scambio Virtuale"), similar to the National Balancing Point implemented in the UK<sup>14</sup> (see section 7).

## 5.2 Regulation of Gas Storage

The demand for natural gas is subject to seasonal, daily and hourly changes (especially due to gas consumption related to space heating) while gas supply may be completely flat. For example Take-or-Pay clauses concerning long run import contracts imply a steady gas supply. However take-or-pay obligations may concern just a share (say 80%) of the annual contracted quantity. Importers can also enjoy some flexibility due to make up clauses that make it possible to compensate among annual contracted quantities. Gas production may also be flat (like in Italy) or offer some opportunity for supply modulation (like in the UK). In order to satisfy seasonal and peak day requirements gas suppliers may also resort to interruptible contracts with industry. If the gas supplier is a multi-utility firm operating both in the electricity and gas markets, it can resort to gas volumes devoted to electricity generation in order to satisfy sudden peak demand by households, especially if dual-fuel generation plants are available.

However the gas industry offers a further opportunity for matching a flat supply with demand fluctuations, as gas can also be stored. The possibility of gas storage means that it is possible to avoid building pipelines whose transmission capacity is related to peak demand. It then becomes convenient to plan networks characterised by lower transmission capacities coupled with storage plants where gas can be injected when final demand is lower<sup>15</sup> and withdrawn when consumption grows. Gas can be stored in exhausted production fields, in aquifers, in salt cavities and also in LNG plants. Storage

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<sup>13</sup> In the EU a contradiction has been observed while comparing the amount of available capacity computed on the basis of the actual international gas flows and the amount declared by GTE, the European Association of TSOs. Such declaration implies that 42% of the 59 interconnection points are partially or completely congested (The Brattle Group 2002).

<sup>14</sup> Italy, like the UK, has adopted an entry-exit tariff system for gas transport. Such a system is particularly suitable to foster gas exchanges in a virtual hub, to the extent that natural gas already flowing into the network is homogenous from the point of view of entry and could be easily exchanged among shippers and taken off at any exit point. See section 8.

<sup>15</sup> Gas storage represents an important source of flexibility to cope with seasonal, monthly and weekly variations of demand. For hourly variations the necessary flexibility is provided by the gas network through "linepack", consisting in gas storage into pipelines: a service offered by the TSO



plants differ both with respect to storage space<sup>16</sup> and to the maximal withdrawal rate (the maximal gas off-take in a unit of time). While exhausted fields perform well in terms of storage space though they allow a lower withdrawal rate, salt caverns on the contrary assure a higher withdrawal rate but are characterised by lower capacity as far as storage space is concerned. It would thus be optimal for any gas system to have a “portfolio” composed of different storage plants in order to satisfy flexibility requirements. However, the structure of storage plants depends on geological features and on past choices of former integrated utilities. These firms were not interested in the optimisation of storage per se, but rather considered storage as an ancillary activity with respect to gas production and transmission.

In a liberalised gas system TPA to storage facilities is as important as TPA to the transmission network. For new entrants in the gas industry, storage might be the only tool at their disposal to face demand fluctuations. New entrants do not possess either a wide portfolio of flexible importing contracts or a sufficient portfolio of interruptible contracts with industry. Therefore either new entrants are multi-utilities with access to (interruptible) gas supplies for electricity generation or they can only require access to storage to get the amount of flexibility they need to provide their customers with supply security in any event.

We can notice that in order to extend market shares, new entrants must induce some customer switching and to keep their customers they must be able to assure supply security regardless of the amount of demand. Any supply failure would in fact destroy their reputation. Therefore a sufficient amount of storage capacity may represent an entry barrier in a liberalised gas market. Incumbents also need storage capacity as the flexibility they obtain from alternative sources is hardly sufficient to satisfy completely the wide share of market demand they are accustomed to accommodating during peak times.

### ***5.2.1 Basic Issues concerning storage regulation***

Gas storage is not a natural monopoly. Scale economies in storage may be relevant. However their extension with respect to storage demand are not such to give rise to a sub-additive cost function. A priori any new entrant in the gas market could build its own storage facility. Therefore in principle storage may not be an essential facility. However storage plants require huge investments and a long time span before any new storage capacity is available. Moreover there are natural (geological) restrictions to the number of sites that may host a storage field in any country. Even gas utilities that could

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<sup>16</sup> The amount of “working gas” that can be injected, distinguished from the amount of “cushion gas” - that is the never extracted - which assures the necessary pressure to withdraw “working gas” when necessary.

afford this kind of investments need TPA to storage at the start of liberalisation, while they wait for their own plants to be available.

Therefore storage plants may initially represent an essential facility for firms competing in the gas market. However storage to storage competition can be feasible and is already working in the UK, where the storage industry is just controlled by competition authorities.

The new European directive imposes access to storage independently from access to the transmission network and requires administrative unbundling of storage activities. Single countries can opt between regulated and negotiated TPA. Importing Countries can also keep “strategic storage”, which means the amount of gas reserves allocated to supply security (to compensate for accidental interruption of imports for technical or political reasons). Because of its purposes, strategic storage is managed by central governments through their energy policies, but it obviously affects storage regulation having liberalisation goals.

### **5.2.2 Access to storage in Italy**

In Italy storage remains a *de facto* monopoly. The implementation of the European Directive did not set out any obligation for the former integrated utilities to give up some of their storage fields in order to create some competition in the market. Therefore ENI, through its subsidiary STOGIT, controls 98% of gas storage capacity in Italy. The only provision to create some storage to storage competition concerns the allocation to new entrants of further storage concessions in order to let them exploit some exhausted gas production fields (though less efficient with respect to those already allocated to the incumbent). However the assignment of these concessions has not been completed yet. Therefore the opportunities for competition are delayed.

Access tariffs to storage fields are regulated by AEEG. In the first regulatory period, storage tariffs were multinomial with two capacity charges, one related to the reservation of storage space and the other one related to the maximal withdrawal rate required by customers, and a commodity charge dependent on gas flows injected and withdrawn from storage plants. Previous unregulated storage tariffs were set by the monopolist on the basis of a price discrimination strategy: the level of charges was dependent on the period of injection and withdrawal without any reference to storage costs. In contrast, regulated tariffs are cost reflective. Since Italian storage plants consist of old exhausted production fields, which are larger than existing storage fields in Europe, both the duration of residual amortisation periods and the economies of scale imply comparatively lower storage costs. Considering also the valuation given to cushion

gas (the main asset of a storage firm) storage tariffs are rather low in Italy (the lowest in Europe<sup>17</sup>).

However, in order to encourage new investment in gas storage by new entrants and to foster competition among them, during the first regulatory period new storage plants were exempted from tariff regulation, at least initially when marginal costs are increasing. Moreover, access pricing was regulated as far as standard services are concerned, with a single cycle of gas injection in summer and gas withdrawal in winter. Special (short term) storage services giving rise to multiple cycles of injection and withdrawal or to gas parking were left unregulated in order to give storage firms the incentive to develop innovative services capable of satisfying the growing demand for short term flexibility in a liberalised market.

Beyond storage devoted to seasonal and day peak requirements, one must consider also strategic storage. As Italy is dependent on huge gas imports from outside the EU, and in view of the (geo-political) risk connected with gas purchases from Russia and Algeria, supply security is warranted also by imposing on importers the obligation to store a percentage (10%) of their gas purchases. Strategic Storage tariffs are regulated too and include a charge on gas renting, so importers can profit from the huge amount of gas already stored by the incumbent in existing fields in order to satisfy their obligations. By allowing gas renting from the storage firm, the regulator enables importers to devote the entire amount of gas purchased abroad to the wholesale or the retail market with greater benefits for new entrants who have lower amounts of gas available than the incumbent. Were the opportunity of gas renting not available, new entrants would experience a further reduction of gas available for sale.

During the first regulatory period demand for storage capacity appeared to be greater than supply<sup>18</sup>. Some rationing took place and, for example, storage capacity was insufficient to cover the increasing demand for storage related to industrial customers and power generation. Access to gas reserves devoted to strategic storage had to be granted in order to satisfy final demand during the last winters. Furthermore, rationing of regulated storage services implied that gas sellers had to resort to unregulated special services in order to satisfy their storage requirements. Short-term storage services represent also the main tool shippers can use for balancing their flows in the gas network and typically were sold at competitive prices with respect to unbalance penalties. Therefore the storage monopolist could exploit its market power by supplying unregulated services - sold at

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<sup>17</sup> Such a comparison can be found in the website of the storage monopolist: [www.stogit.it](http://www.stogit.it)

<sup>18</sup> During the thermal year 2005-2006 storage demand by shippers amounted to 10 Gmc while available storage capacity (measured as storage space) amounted to 7.5 Gmc (excluding strategic reserves).

higher prices with respect to regulated tariffs - while restricting regulated storage services by not investing in storage plants.

Multiple issues are then at stake when considering the scarcity of storage capacity in Italy. One issue is related to national rules (set by the Ministry of Industry) concerning the amount of strategic storage necessary to assure supply security (until 2005 strategic gas reserves amounted to 5,1 Gcm versus 7.5 Gcm available to shippers for seasonal modulation purposes). If storage devoted to seasonal fluctuations requirements is scarce the opportunity cost of keeping huge amounts of gas reserves devoted to strategic storage increases. Another issue concerns the very cautious rules (also set by the Ministry of Industry) about the withdrawal requirements that should be satisfied by the gas system in the (infrequent) event of exceptionally cold winter days. These rules affect the amount of gas that should steadily be kept inside storage plants in order to assure the right gas pressure even in the event of an exceptional peak day. That is why in Italy an amount of “pseudo-working gas” (4,5 Gcm) adds to the cushion gas (9,4 Gcm.) steadily kept in storage fields. Even these kinds of national rules contribute to reducing the amount of capacity available to wholesalers for commercial purposes. A careful assessment of social costs and benefits related to the implementation of these cautious rules would be worthwhile, but has never been undertaken. Huge amounts of gas reserves also creates private benefits for the incumbent when it negotiates the price of gas in the international market. Moreover the availability of storage space affects the ability of importers to cope with their take-or-pay obligations.

Another critical issue concerns the way storage capacity (with the exclusion of strategic storage) is allocated by the regulator in case of congestion. At present requirements from the TSO - for physical balancing purposes – and from production units must be completely satisfied. The remaining capacity is rationed on a pro-quota basis considering the market share<sup>19</sup> held by each gas seller requiring access to storage facilities in order to satisfy the public service obligations placed upon him. However this rationing rule is not optimal, considering that some gas utilities may have access to alternative flexibility services that reduce their storage needs, while some others can only rely on access to storage in order to satisfy their demand for flexibility. However they all pay the same price for a unit of storage capacity granted following the rule described above.

With respect to the latter mechanism, resort to competitive auctions would allocate scarce storage capacity more efficiently, on the basis of its value, which

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<sup>19</sup> The market share that is considered concerns customers consuming less than 200.000 mc per year i.e. those customers that once were non eligible for competition, i.e. the household market and small firms.

structurally differs across bidders<sup>20</sup>. As storage has some substitutes in the market for flexibility and considering that these substitutes are asymmetrically distributed among gas sellers, resorting to auctions in case of congestion<sup>21</sup> means that scarce storage capacity can be assigned to those bidders that value it most (i.e. new entrants with less flexible supply sources than incumbent utilities). In the long term any gas seller will be induced to increase its availability of alternative flexibility sources if the price of storage rises, thus reducing pressure on scarce storage resources<sup>22</sup>. Relying on auctions to allocate scarce storage capacity implies that the unit price of storage rises with respect to the case of regulated cost reflective tariffs. Only workable competition in the wholesale and retail market can put a “cap” on storage prices as shippers won’t bid too high a price if storage costs cannot be recovered in the final market because of fierce competition that reduces profit margins. Implementing storage auctions without effective competition in the downstream market may lead to the risk of rising final prices. However, the weight of storage costs on average final prices does not exceed 3% in Italy. Incremental storage revenues resulting from auctions could then be allocated to the expansion of storage capacity.

Actually no investments either on the expansion of existing concessions or on new ones<sup>23</sup> have taken place during the first regulatory period, thus exacerbating the problem of rationing. In 2006 AEEG defined tariff criteria for the second regulatory period. The introduction of competition in storage has been delayed and priority has been given to the subsidisation of investments by introducing a very high rate of return on new assets (11%) and the exclusion of 80% of new storage capacity from TPA, according to new EU principles concerning the financing of new infrastructures<sup>24</sup>. With such provisions the regulator hopes to remove storage bottlenecks in the long-term, at least concerning storage space. In fact, a shortage of capacity concerning the maximal withdrawal rate required by storage customers is likely to persist, even considering new investments currently planned by the incumbent and by new entrants. In order to remove

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<sup>20</sup> The UK experienced the allocation of storage capacity through auctions before introducing ownership unbundling and completely relying on competition and regulation ex-post of this sector (See Hawdon and Stevens, 2001)

<sup>21</sup> According to a recent report most European countries lack enough storage capacity. See ERGEG (2006)

<sup>22</sup> In order to avoid capacity hoarding by the incumbent or by any other gas seller an upper limit on the total amount of storage assigned to a single firm should be introduced. Otherwise there is a risk of competition distortions in the wholesale market.

<sup>23</sup> Two new concessions had already been allocated to the incumbent even before liberalisation but were not developed until recently when Italy was threatened with a gas shortage.

<sup>24</sup> Beyond these provisions new storage tariffs include a further charge for injection capacity and eliminate the distinction between regulated and unregulated storage services. For example injections are allowed at any time of the year if injections capacity is available. Moreover injection flows during withdrawal time (cold season) just pay the commodity charge insofar as they produce a collective benefit consisting in easier peak withdrawals from storage fields.

also these last bottlenecks some LNG peak shaving plants are required and explicitly encouraged by the regulator that extended to them the subsidies described above.

In spite of these subsidies, the growth of investments in storage may remain uncertain. By considering strategic issues affecting the investment behaviour one may conclude that the reluctance of the monopolist to develop new storage capacity in the last few years was not due to the low tariffs<sup>25</sup> but rather to the fact that any new investment could benefit more new entrants than the incumbent itself that has storage substitutes available to it. As the storage monopolist is still completely controlled by the dominant firm in the wholesale market a conflict of interest arises insofar as profits from gas sales are much more higher with respect to those offered by the storage market. Therefore the incumbent may find it convenient to limit storage supply if this strategy contributes to its keeping a large market share and high profits in the wholesale market. On the contrary by implementing ownership unbundling, a new storage firm independent from the incumbent would be induced to maximise its profit by increasing storage capacity, being neutral with respect to the wholesale business.

### **5.3 Regulation of Distribution Networks.**

In Italy, gas distribution is separated from gas transmission. In the former vertically integrated industry distribution was bundled with retail sale and there were about 700 local gas undertakings providing both services within municipal limits. Fragmentation still remains a main handicap for this segment of the gas chain, preventing the full exploitation of scale economies that characterise the local distribution network and are usually extended beyond municipal limits<sup>26</sup>. However due to mergers and acquisitions the number of active firms was reduced to 480 in 2004.

Following the requirements imposed by the liberalisation process, distribution has been separated from retail sale, with legal unbundling. Beyond vertical unbundling between distribution and gas retail sales, most utilities were also affected by horizontal unbundling from the administrative point of view, as they frequently provide also other local services like electricity and water distribution, public transport or waste collection. Horizontal unbundling was necessary to get separate accounts for gas distribution activities in order to improve tariff regulation.

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<sup>25</sup> According to the regulator the profits of the storage monopolist at present amount to 33% of sales value. See Autorità per l'Energia Elettrica e il Gas (2006).

<sup>26</sup> Empirical analysis concerning the pre-liberalisation period showed a marked profitability but a low growth in total factor productivity of distribution firms (Erbetta and Fraquelli, 2003).

### ***5.3.1 Distribution tariffs***

Due to the structural features of distribution (a local natural monopoly), gas distribution tariffs (inclusive of sale charges) have always been regulated. A reform of gas distribution tariffs has been implemented by AEEG in 2001 with the aim of increasing productive efficiency in the distribution industry. Due to the high number of existing firms, some yardstick competition is feasible in this industry and regulation has tried to define distribution tariffs with capacity and commodity charges based on cost parameters obtained from a sample of the most efficient firms, in order to create incentives to improve productive efficiency and eventually exclude inefficient distribution units. However some distribution firms appealed to the courts against this reform, claiming that companies subject to balance sheets audits should be able to impose tariffs based on the asset value resulting from their accounts, instead of linking tariffs charges to estimated cost parameters. As the courts accepted this claim with respect to capital costs, the decision of the regulator was partially reversed, because only operating costs could be estimated through yardstick competition to the extent most distribution units operate now as companies subject to audit obligations concerning their balance sheets. The regulatory conflict is continuing in the second regulatory period: AEEG resorted to the price-cap as the only instrument able to affect productive efficiency, by increasing the efficiency factor (X) of the price-cap formula and new claims the courts again reversed the regulator decision. This conflict has produced continuing revisions of the distribution tariffs and considering that such tariffs structurally show an excessive variance at national level, the result is an increasing uncertainty about the access price of distribution networks.

### ***5.3.2 Distribution concessions***

In order to increase efficiency in the gas distribution sector the implementation of the first European directive in Italy also introduced competition in the market, to the extent that municipalities should organise auctions to award gas distribution concessions every twelve years. Before liberalisation, distribution concessions were generally awarded by municipalities for decades and then renewed without following competitive rules, thereby excluding any market contestability. However even after liberalisation the existing distribution system operators (DSO henceforth) continue to hold their local monopoly as the start of auctions was delayed by the central Government. Such a delay keeps economic and financial benefits either for municipalities - still holding total or partial ownership of local distribution companies – or other local stakeholders (mainly trade-unionised workers) involved in this business. However delays were initially granted only to firms undergoing partial privatisation or involved in merger and acquisition

operations that extended the dimension of distribution units<sup>27</sup>. As auctions were definitely supposed to start in 2005 a few municipalities have already had resort to them to renew gas distribution concessions (before a new postponement was introduced by the Government). The results were astonishing from the economic point of view.

In view of the fact that distribution tariffs are defined by the regulator by fixing the revenue constraint of any DSO operating in a distribution area, bids mainly concerned the rent that contending firms promise to pay to the municipality to get the monopoly franchise (the revenue constraint set by AEEG being the upper bound of bids). Winners committed to pay rents that amounted in average to about 50% of revenue constraints, with peaks reaching as high as 80%. Since firms that are able to pay such high fees are supposed to be characterized by the lowest distribution costs, productive efficiency is likely to be achieved by the auction mechanism. However if a distribution business could be run with such a net revenue one wonders about actual distribution costs and the cost reflectivity of tariffs defined by the regulator<sup>28</sup>. Anyhow, welfare benefits deriving from resort to auctions accrued only to municipalities as they could not affect either access prices to the distribution networks nor final prices paid by gas consumers.

## **6. Competition in Importing Countries: the Italian case**

In Italy, the demand for natural gas is mainly covered by imports, amounting to 84,8% of total supply in 2005. Imports mainly come from Algeria (37,4%) and from Russia (31,8%) followed by The Netherlands (10,8%), Norway (7,8%) and Libia (6,1%). The remaining share of imports comes from other countries of the EU (4,5%) and from other non European Countries (1,5%). Almost all gas imports take place via pipelines, exception made for a small share of Algerian gas and some negligible spot cargoes that are traded in the unique LNG terminal controlled by ENI and accounting for about 3,4% of total imports in 2005<sup>29</sup>. National production is steadily declining (from 23% to 13,9 % of total supply during the period 2000-2005<sup>30</sup>) also due to heavy national and local regulation that imposes excessive costs and risks on new entrants in exploration and production activities<sup>31</sup>.

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<sup>27</sup> In fact privatisation of firms providing local public services and the increase of concentration in these industries have always been considered an important aim of reforms implemented since 1990 and concerning not only gas distribution but also other local public utilities.

<sup>28</sup> It was also noticed that in many cases the winners were not traditional distribution firms but companies involved in contiguous sectors (like pipelines laying) characterized by lower operating costs (for example lower wages due to a different collective working contract) and presumably a low propensity to invest in network expansion.

<sup>29</sup> Data in AEEG (2006) p. 83

<sup>30</sup> Idem

<sup>31</sup> One should consider that the “time to market”, i.e. the time span from the start of exploration activities to the commercial exploitation of production fields, ranges from 90 months (at present) to 120 months (due to a new law which extends the political power of regional authorities in the energy field).



### ***6.1 Competition and ex-post regulation in the market for gas imports***

The dominant firm is still the most important national producer (84,1 % in 2005). Considering that new investments in production were not expected to be relevant in the near future<sup>32</sup>, when implementing the first European Directive the Government tried to introduce effective competition in the Italian market through liberalisation of gas imports jointly with antitrust ceilings, imposing on the dominant firm a reduction of its share of total imports to 70 % initially and then gradually to 61%, within 2010.

Despite antitrust ceilings and the growth in the number of importers after liberalisation, the market for gas imports still remains highly concentrated. Between 2000 and 2005 18 new licences have been granted by the Ministry of Industry to import gas from outside the EU and among these only 15 have actually give rise to import flows. Communications to the Ministry of Industry concerning gas imports within the EU amount to 128 but they mainly concern negligible flows related to spot contracts<sup>33</sup>. In 2004 gas imports by the dominant firm amounted to 62% of total gas imports in Italy - which is consistent with antitrust ceilings - but ENI market share is even larger because part of the gas imported by its competitors derives from gas sales carried out abroad by ENI itself, before gas flows reach the entry points at the Italian border.

In the liberalisation law nothing was said about the implementation of antitrust ceilings. They could in fact lead either to competitive auctions for the sale of gas belonging to the incumbent (gas release) or to bilateral negotiations with new entrants. ENI chose to sell part of its gas abroad, to a small set of firms under long run contracts (expiring exactly in 2010)<sup>34</sup>. For example in 2002 the market share of the dominant firm formally accounted for 72% of total imports, but considering also the sales made abroad to its national competitors this percentage increased to 83% of total imports. In addition, as far as national production is concerned, in 2002 ENI still controlled about 93% of gas supply in Italy.

This result shows the failure of antitrust ceilings as an instrument to introduce competition in gas markets dominated by imports. Gas release programs like those carried out in the United Kingdom and in Spain could probably perform better with respect to the aim of promoting competition in the wholesale market for gas. Antitrust ceilings cannot be considered equivalent to the extent that the dominant firm has formally complied with them while being able to partially compensate the loss of sales in the Italian market with an equivalent transaction up-stream. Under this transaction the

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<sup>32</sup> Due also to regulatory barriers imposed by national legislation.

<sup>33</sup> AEEG (2005), p. 219

dominant firm supplies gas to its competitors for resale in the domestic market, exploiting its access to cheap gas abroad to impose a mark-up that reduces the profit margins of new entrants.

However the Italian Competition Authority established ex-post that ENI was abusing its dominant position in the gas market to the extent that exclusive gas sales abroad to selected new entrants were coupled with proportional capacity reservation in international (transit) pipelines, so as to exclude any other firm from directly supplying the Italian gas market with independent imports in the near future<sup>35</sup>. In fact liberalisation policies failed to consider that ENI continues to hold exclusive property rights or transmission rights concerning transit pipelines located outside Italy and which the incumbent contributed to building when it was a vertically integrated monopolist.

Therefore unbundling the national transmission network from the former integrated utility may not be sufficient to introduce competition if the utility still keeps the control of all the essential facilities located abroad<sup>36</sup>, which are furthermore exempted from the principle of non discriminatory TPA, being devoted to gas transit. Hence, the incumbent was asked by the Italian Competition Commission to expand its foreign network facilities to allow incremental gas imports by new entrants. Failure to comply with such a request meant that the incumbent faced both a heavy fine and an obligation to carry out a gas release program (1,7 Gcm) under the control of the Commission. However such a program was ineffective with respect to the promotion of more competition as it just implied a pro-quota sharing of the additional gas available among new entrants at a fixed price.

Considering the amount of import capacity booked at interconnection entry points of the Italian transmission networks one finds that capacity appears to be completely exploited. The only exception being Sicily, characterized by some spare capacity (87% of capacity utilization in 2003) at the interconnection point with the Mediterranean pipeline (Transmed) connecting Tunisia with Italy to allow gas imports from Algeria. However even in that case additional imports of gas cannot take place because of the lack of capacity in Tunisia, where the incumbent still controls the transmission facilities.

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<sup>34</sup> It was an amount of gas that the dominant firm imported from Norway and was then sold wholesale at the border between France and Germany to four new entrants in the Italian gas market

<sup>35</sup> See the decision of the Italian Competition Commission (decision A329 –BLUGAS-SNAM, November the 11<sup>th</sup> 2002 [www.agcm.it](http://www.agcm.it)).

<sup>36</sup> At present ENI controls the TENP pipeline crossing Germany to import gas from the Netherlands, the TAG pipeline crossing Austria to import Russian gas and the TRANSITGAS pipeline which crosses Switzerland and is connected both to TENP and to the French network in order to import both gas from The Netherlands and from Norway. Outside Europe ENI controls the TTPC pipelines in Tunisia and the connected TMPC offshore pipeline that crosses the Mediterranean sea and reaches Sicily to import gas from Algeria. A new pipeline crossing the Mediterranean and connecting Libia with Sicily is also controlled by the incumbent and gas imports through it began in 2004.

Recently the Italian Competition Authority established again that the incumbent was abusing its dominant position in the Italian gas market by failing to carry out the investments aimed at increasing import capacity in Tunisia, thereby preventing the expansion of gas imports from Algeria, despite the fact that some contracts between the Algerian exporting company Sonatrach and some gas suppliers had already been concluded<sup>37</sup>. Such behaviour was effectively preventing new entrants from importing more Algerian gas to Italy (and eventually to other European Countries) by by-passing the incumbent intermediation. Although some expansions of capacity have now been completed, further barriers to trade have recently been introduced by the Tunisian Government<sup>38</sup>.

In the past few years the incumbent claimed that its opposition to capacity expansion in transit pipelines was due to its forecast of an excess supply of gas in Italy (literally a “gas bubble”), as some new entrants were trying to by-pass the existing bottlenecks by planning to build some new LNG terminals to supply the Italian market with natural gas imported from other Countries<sup>39</sup>. The incumbent prophecy was definitely denied in 2006, when Italy was threatened with a gas crisis due to its structural lack of import and storage capacity, dramatically highlighted by the accidental reduction of gas imports from Russia<sup>40</sup>. At present only one of the planned LNG terminals is expected to be working by 2008 and the required expansion of capacity concerning transit pipelines owned by the incumbent has been carried out only in Austria (TAG pipeline).

## ***6.2 Competition in the wholesale and retail market***

After liberalisation antitrust ceilings also impose on the incumbent not to exceed a market share of 50% in national sales. In order to assess the degree of competition in the Italian wholesale and retail market for gas we analyse both the evolution of market structure and pricing policies.

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<sup>37</sup> See the decision of the Italian Competition Commission (process A358 – ENI-TRANSTUNISIAN PIPELINE, February the 11<sup>th</sup> 2006, [www.agcm.it](http://www.agcm.it) )

<sup>38</sup> This government imposes the obligation to conclude importing contracts with the Algerian Company Sonatrach to get access to the infrastructures located in its territory, preventing then separate access to the pipelines for shippers without such a contract. See the warning by the Italian Competition Commission to the Italian Government: process AS366 “Trasporto internazionale di gas tramite il gasdotto TTPC”, October the 19<sup>th</sup> 2006, Bulletin n.41/2006 [www.agcm.it](http://www.agcm.it)

<sup>39</sup> At the moment only one of these LNG facilities is expected to operate starting from 2008.

<sup>40</sup> During the 2005-2006 winter the crisis of gas supplies was worsened by large withdrawals of gas from storage in order to increase electricity production because higher electricity prices at the French power exchange suddenly made electricity exports from Italy- where electricity prices were lower -economical. In order to safeguard households consumption for space heating it became necessary to ration industrial consumptions and switch power plants to fuel oil. Resort to large gas withdrawals from strategic storage was necessary too.

### 6.2.1 Market structure

The evolution in the structure of the wholesale market since liberalisation can be seen in the following table

| <b>Table 1</b>                               | <b>2002</b> | <b>2003</b> | <b>2004</b> | <b>2005</b> |
|--|-------------|-------------|-------------|-------------|
| <b>Number of operators (#)</b>               | 55          | 40          | 41          | 60          |
| EniGas&Power                                 | 1           | 1           | 1           | 1           |
| Wholesalers with sales greater than 10 Gcm   | 1           | 1           | 1           | 2           |
| Wholesalers with sales between 1 and 10 Gcm  | 4           | 4           | 6           | 8           |
| Wholesalers with sales between 0,1 and 1 Gcm | 17          | 20          | 19          | 29          |
| Wholesalers with sales lower than 0,1 Gcm    | 32          | 14          | 14          | 20          |
| <b>Amount of sales (Gcm)</b>                 | 85,2        | 90,6        | 95,9        | 110,5       |
| EniGas&Power                                 | 52,3        | 51,3        | 53,6        | 58,0        |
| Wholesalers with sales greater than 10 Gcm   | 12,9        | 17,8        | 16,3        | 27,0        |
| Wholesalers with sales between 1 and 10 Gcm  | 15,8        | 15,6        | 18,4        | 14,0        |
| Wholesalers with sales between 0,1 and 1 Gcm | 4,0         | 5,6         | 7,6         | 10,8        |
| Wholesalers with sales lower than 0,1 Gcm    | 0,2         | 0,2         | 0,1         | 0,7         |

AEEG (2006), p.96

Despite the growth in the number of wholesalers and in the amount of sales due to new entrants the wholesale market remains highly concentrated. Considering the sales of the first four firms (Eni, Enel trade, Edison and Plurigas), their cumulative market share still accounted for 80% in 2005 (AEEG, 2006).

As for the retail market one should remember that before liberalisation final sales were bundled with distribution activities at the local level. Each firm was a local monopolist in one of the 5.700 municipalities with a distribution network. Beyond the 300 municipalities that directly supplied gas to final customers there were about 300 private firms and about 150 public or mixed firms operating on the basis of local concessions. After liberalisation sales activities had to be unbundled from distribution activities. But just legal unbundling was required and in most local markets the distribution system operator and the retail company share the same ownership. However the liberalisation process had the merit of boosting a concentration process that is still in progress. Firms involved in gas sales tried to reach the critical dimension required either to be able to import gas or to exercise some market power when purchasing the commodity at the wholesale level, thereby increasing their dimension. The most active municipal firms created a few companies capable of carrying out gas imports independently from the incumbent. Some new entrants like Gaz de France or E.on (Rhurgas) expanded their market shares by acquiring distribution assets, to pursue

vertical integration downstream and extend their control to the local retail markets connected to the related distribution networks. Other companies like Edison, beyond directly supplying some retail markets pursued a different strategy by subscribing participation agreements in local municipal companies, thereby becoming their wholesale gas supplier. The incumbent traditionally operated downstream through its control of the distribution company ITALGAS. After legal unbundling, the incumbent increased its vertical integration downstream firstly through a buy-back of ITALGAS shares in order to gain complete ownership of this company and then incorporate it within the commercial division “ENI Gas&Power”.

Despite the reduction in market fragmentation, in 2005 there were still 409 firms holding the sale license now required to operate at the retail level. AEEG has carried out a survey on the retail market whose results are shown in table 2<sup>41</sup>.

| <b>Table 2</b>                            | 2002 | 2003 | 2004 | 2005 |
|---|------|------|------|------|
| <b>Number of sellers</b>                  | 504  | 432  | 353  | 257  |
| Firms with sales greater than 1000 Mcm    | 2    | 5    | 4    | 4    |
| Firms with sales between 100 and 1000 Mcm | 42   | 40   | 37   | 40   |
| Firms with sales between 10 and 100 Mcm   | 222  | 176  | 149  | 102  |
| Firms with sales lower than 10 Mcm        | 237  | 211  | 163  | 111  |
| <b>Amount of Sales</b>                    | 26,6 | 33,0 | 31,4 | 24,9 |
| Firms with sales greater than 1000 Mcm    | 7,5  | 15,8 | 14,6 | 8,5  |
| Firms with sales between 100 and 1000 Mcm | 11,2 | 11,1 | 11,6 | 11,8 |
| Firms with sales between 10 and 100 Mcm   | 6,8  | 5,2  | 4,6  | 4,2  |
| Firms with sales lower than 10 Mcm        | 1,0  | 0,8  | 0,7  | 0,3  |
|   |      |      |      |      |

Source: AEEG (2006), p.100

The persistent fragmentation of the retail market is not only due to the slowness of the concentration process but also because the latter did not involve small gas sellers located in the south of the country.

### ***6.2.2 Competition and prices***

Before liberalisation not only were household gas prices regulated but also prices for industrial users were subject to negotiations between ENI and trade associations. Price controls coupled with legal monopoly at the wholesale level implied some cross subsidies

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<sup>41</sup> However one should be cautious when examining these results as about 40 licensed firm are no longer active in the market and also many other firms did not reply to the survey.

among consumers. When the gas network was extended to the South of Italy, the low consumption of households due to a warm climate implied too high average distribution costs to support natural gas diffusion. By spreading most of the commodity costs on consumers located in the coldest regions of the country – where average distribution costs were lower – natural gas became available at competitive prices all over Italy. Even in the industrial market gas intensive industries were subsidised by firms with lower consumptions due to a regressive tariff structure (including transmission charges at the time).

When the market was completely liberalised, the end of legal monopoly in the wholesale market meant that cross subsidies were no longer sustainable and therefore some consumers experienced price increases. Gas intensive industries lost their benefits considering also that regulated transmission tariffs are less regressive than before.

Wholesale contracts<sup>42</sup> show that after liberalisation gas prices are determined on a cost-plus basis and depend on the stand-alone cost characterizing each customer plus a profit margin. Stand-alone costs are affected in turn by the geographical location and the load curve of the customers. Geographical locations affect the stand-alone cost through regulated transmission and distribution costs, which decreased after liberalisation. Therefore competitive advantages in the wholesale market mainly depend on the weighted average cost of gas supplied, i.e. commodity costs plus international transmission costs. New entrants are then at a disadvantage with respect to the incumbent either because they generally bear higher import costs or because they cannot dispose of independent gas supplies and have to resort to the incumbent itself to purchase the commodity.

Considering the price (on a *Cif* basis) of gas imports in some countries of the EU (Belgium, The Netherlands, France, Germany, Spain, UK and Finland) in the period 1994-2002 one obtains values between 10,8 eurocent/cm and 15,8 eurocent/cm. The weighted average cost of gas imports in Italy in 2002 was about 12,8 eurocent/cm. However the final price of gas for industrial users (without taxes) in the period 1997-2003 has almost always been higher with respect to the prices prevailing in the seven European Countries quoted before. Household prices were among the lowest for the smallest customers and among the highest for larger customers (due to a cross subsidy among households which has now been removed)<sup>43</sup>.

Therefore even after liberalisation the competitive advantage enjoyed by the incumbent (being the main importer) in the international market has never been passed on

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<sup>42</sup> The following analysis is based on an investigation jointly carried out by the Competition Commission and AEEG to assess the results of energy markets liberalisation until 2004.

<sup>43</sup> More recent price comparisons are difficult to carry out because since 2003 Italian prices no longer appear in official statistics published by Eurostat.

to final customers in the retail market. The Competition Commission found that the incumbent offers lower prices with respect to new entrants as far as industrial customers and power stations are concerned. New entrants can hardly offer lower prices with respect to the incumbent but for the decrease of transmission and storage costs resulting from regulation. Their market share appears to be the simple effect of the imposition of antitrust ceilings rather than a result of competition. Concerning the wholesale price paid by local retail firms operating as suppliers of the household market it was ascertained that new entrants may offer more attractive contracts with respect to the incumbent. But this may be due to the fact that ENI can directly supply the household market after the incorporation of its subsidiary ITALGAS (see last subsection) and therefore can concentrate its competitive effort in the market for industrial users and electricity generation.

The strategy pursued by the incumbent allows an increase in its profits margin with respect to new entrants. Both the congestion of import facilities and the difference in antitrust ceilings (70 % for imports - going down to 60% within 2010 - and 50% for the sale of gas) allows ENI to be a supplier of its competitors in the wholesale market. As the incumbent benefits from a lower cost of imports due to its first mover advantage in the international gas market, it can obtain a supplementary mark-up by selling gas to new entrants, whose profit margin is significantly lower.

The distortions of competition in the wholesale market affect the retail market where even after complete liberalisation a market structure dominated by local monopolies still persists, due to market segmentation. The rate of household consumer switching is negligible (less than 1%) and we know of no more convenient offers to households than that of ENEL, which is also the dominant firm in the electricity market<sup>44</sup>. Due to the lack of competition and in order to protect small consumers from the market power of the local monopolist, the regulator continues to impose tariff regulation for small consumers.

As the lack of competition in the wholesale market is apparently due to the congestion of infrastructures devoted to imports and storage, it would seem to be wise to require the incumbent to remove congestion through new investments in order to enable new entrants to be able to avail of supplementary quantities of cheaper gas to be negotiated independently from ENI. Moreover subsidisation of new investments (described in sections 5.1 and 5.2) and exemptions from TPA – fostered by the European commission - can be explained by the need to eliminate any bottleneck in the gas chain

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<sup>44</sup> However one should be cautious about these offers insofar as ENEL continues to operate as a monopolist in the household market for electricity, where customers will not be eligible for competition until January 2007. Therefore lower gas prices may simply be the result of a cross

(considered a pre-requisite for competition), as were interventions ex-post by the Competition Commission. However even creating a level playing field in the wholesale market between the incumbent and new entrants does not necessarily lead to price competition and to a decrease in retail prices.

### ***6.2.3 Take-or-pay Obligations and Entry without Competition***

The development of competition in gas importing countries may require further changes as market segmentation and the persistence of a local monopoly at the retail level could also depend on the influence of long term contracts characterised by Take-or-Pay (TOP) clauses. In 2005 95% of natural gas imported in Italy came from long-run contracts, most of which were subscribed by the incumbent in the last decade or even as far back as the eighties and the seventies<sup>45</sup>. Contracts lasting more than 30 years accounted for more than 50% of the annual contracted quantity in 2005, followed by contracts lasting 15-25 years that accounted for 33%. The residual length of long-run contracts in 2005 was between 10 and 15 years.

Long run contracts impose a heavy financial burden on gas importers due to the respect of TOP clauses and such a burden may affect the development of competition in importing countries. Polo and Scarpa (2002) show that importers – due to their TOP obligations - face a structure of costs providing for huge fixed costs and negligible marginal costs. To the extent that the demand in the wholesale market is covered with gas imported through long run contracts with TOP clauses, neither the incumbent nor the new entrants can bear a price war to achieve wider market shares, as Bertrand competition would drive price to (very low or null) marginal costs and firm revenue would not be sufficient to cover fixed costs. Therefore aggressive price policies to expand market share after entry are not credible. In such a framework firms are better off maximising profits through segmentation of local markets, where they are able to impose a monopoly price (the reservation price) due to the lack of credible entry threats. The result of liberalisation is then free entry without price reductions for consumers. Such a conclusion seems to be consistent with the Italian experience - the most advanced liberalisation experiment in an importing country –as new entrants have expanded their market share by acquisitions of local distribution assets or by participation in local municipal firms in order to gain access to the corresponding retail markets.

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subsidy coming from the electricity market and be part of a strategy concerning the dual fuel (gas-electricity) market

<sup>45</sup> The Competition Commission has also pointed out that two of these contracts were signed by the incumbent just before the issue of the first liberalisation directive by the European Commission inducing the suspicion of a pre-emptive strategy in the market for gas import and transmission capacity. Even the project of a second offshore Mediterranean pipeline connecting Italy to Libya built by ENI dates before the liberalisation of the gas market and was completed in 2004 when import flows started to take place. Also in this case ENI shares capacity with some new entrants.



This theoretical result can be generalised and applied to any importing country where supply takes place through long run bilateral contracts with take or pay clauses. Real progress in competition could only be achieved if new entrants could obtain access to a sufficiently developed and liquid spot market for gas at a virtual or physical hub. In that case purchase conditions in the wholesale market for gas would change as operators would avoid the heavy burden of TOP clauses and face a homogenous gas price depending on demand and supply and then working as a signal of the scarcity of gas resources.

### **7. Perspectives for Gas Hubs in Italy.**

At the moment a centralised spot market for gas exchanges does not exist in Italy and there are no physical hubs for this purpose. However a virtual hub for bilateral negotiations *Over the Counter* has been launched by the national TSO (SNAM RETE Gas) through an electronic platform, following the earlier experience of the National Balancing Point (NBP) in the UK. Such a market is known as PSV (*Punto di Scambio Virtuale*). Transactions takes place in a virtual point of the national transmission network and therefore they concern gas flows that have already entered this network (from production, storage or entry points at the border). Due to the fact that negotiations are bilateral, price information is not disclosed by any official source. Gas exchanges at the PSV have steadily been increasing - reaching a peak of 845,9 Mcm in November 2006 - but have not displaced spot transactions traditionally taking place at entry points of the national transmission network. Most transactions concern amount of gas between 50.000 and 100.000 cm. Considering the total amount of gas exchanges in any point of the transmission network, exchanges taking place at the PSV accounted for 28% in 2005 (AEEG 2006, p.99).

Though the PSV can be used by shippers for spot transactions, at the moment it is difficult to resort to it for balancing reasons. Due to the fact that new entrants lack independent sources for gas imports, all shippers can end up having excess gas in summer and being short of gas in winter so that gains from trade for balancing reasons are difficult to envisage. That is why resort to short term storage services in order to avoid balancing penalties is necessary (see section 5.2). Therefore the evolution of the spot market also depends on the removal of bottlenecks characterising gas imports in Italy (see subsection 6.1). In the meantime, if sufficient investments in new infrastructures were made, Italy could be qualified also for launching a physical hub for gas exchanges in the Po Valley where the most important pipelines (carrying gas from Northern Europe, Eastern Europe and North Africa) cross close to huge storage fields and to national production fields. Italy could exploit its geographical position and turn itself into a transit

country for gas flows and then dispose of incremental amounts of gas for exchanges outside long-term contracts. The liquidity of a market localised at this physical hub could be such to allow the transformation of the current OTC market at the PSV into an On-the-day Commodity Market (OCM) similar to that characterising the NBP in the UK (Juris 1998; Wright 2006). The mechanism of price formation in the wholesale market could then change radically, as would the retail market.

## **8. Conclusions**

The aim of the European liberalisation process was to create a common energy market in the EU. However, not only is the implementation of liberalisation principles in European Countries asymmetric but the lack of interconnection capacity and the exemption of transit pipelines from regulated TPA has proved to be a strong barrier to gas trades in the EU. While in gas producing countries like the United Kingdom or the Netherlands competition in gas markets may follow from the implementation of liberalisation principles, in countries that are net importers of gas regulation for liberalisation is a necessary condition for competition but is not sufficient. The case of Italy shows that even regulation ex-post by the Competition Commission until now has not been effective in removing bottlenecks. Barriers to competition are outside the national network and are likely to require regulation ex-ante at a European level. But unfortunately a European Regulatory Commission does not exist yet. At present only the intervention of the European Competition Authority has tried to remove barriers to gas trade by eliminating destination clauses characterizing long run import contracts. The European regulation on gas exchanges<sup>46</sup> (approved in 2005 by the European Parliament and the European Council) could partially amend this gap but not completely, as some of the international pipelines that carry gas within Europe are localised outside the EU.

The main barrier to competition in the Italian gas market appears to be the lack of incremental import and storage capacity to carry supplementary amounts of natural gas independently from the incumbent, which is responsible for capacity and gas shortages. Therefore by-passing transit pipelines with LNG imports appears to be the obvious solution to foster gas to gas competition. However financial considerations lead firms that are expected to invest in new infrastructures to ask for exclusive capacity reservation for a very long period of time (even for as much as twenty years). In the case of new LNG plants, 80% of the new capacity is going to be reserved to import flows controlled by subsidiaries of the company financing the new infrastructures. Investments in new infrastructures are encouraged as they are considered necessary to reach competition goals. However, in order to carry out these investments gas utilities obtain exemptions

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<sup>46</sup> Regulation n.1775/2005, 28 September 2005

from TPA rules that are at odds with liberalisation principles pursued by the EU in the last decade. Furthermore, new LNG imports will also be carried out within long term contracts with TOP clauses, which in turn are likely to prevent price competition in the final market. New long-term arrangements hamper the growth of liquidity in the spot market to the extent that only a small fraction of new import flows are likely to be sold within a liquid spot market.

The EU commission did not contrast long term contracts with an interventionist policy as the US did when pursuing the liberalisation of their market. While recognizing that gas purchases through long term contracts may represent a barrier to competition (especially considering the weight of incumbents) the EU also considered their importance for supply security and relied on the market mechanism concerning the evolution of contracting. With the growth of gas to gas competition and price discovery in liquid spot markets, long term arrangements are expected to coexist with short term transactions. Moreover some re-contracting could take place and price indexation clauses may evolve to follow price fluctuations in the spot market for gas, thereby losing their link with the oil market (Creti and Villeneuve 2003). However, such expectations risk remaining unrealised when considering that at present Europe needs investments in new infrastructures to face the continuing growth of gas demand. Such an environment is quite different from the contingent situation that the US were experimenting when liberalising their gas market, to the extent that both gas demand and oil prices were lower.

Exemption from TPA given to new investments is itself a demonstration that regulated tariffs may not be sufficient to stoke the growth of infrastructures. Due to the fact that investment in pipelines or other gas infrastructures represents a case of “dedicated asset”, every time a new commercial relationship starts the need to minimise transaction costs leads to long term arrangements. As both gas producers/exporters and importers are locked in a bilateral relationship they try to avoid the hold up problem by using long run contracts. Therefore short-term transactions may continue to represent a negligible amount of gas trades, thereby threatening the development of a liquid spot market in importing countries.

In Italy, exemptions from TPA are coupled with subsidies to new investments that neglect the strategic reasons explaining the behaviour of the former vertically integrated utilities as far as new investments in infrastructures are concerned. Only very recently the European Commission has declared its intention to further amend the liberalisation directive in order to pursue ownership unbundling between essential facilities and utilities involved in gas sales. Without ownership unbundling the former vertically integrated utilities can use their control of companies managing transmission and storage to limit capacity in order to preserve their dominant position in the wholesale

market. In fact this strategy is consistent with profit maximisation by holding companies, as profits obtained in regulated activities are not of the same magnitude as gains obtained by incumbents in the wholesale market. On the contrary, ownership unbundling should induce new owners of transmission and storage infrastructures to consider capacity expansion independently of the wholesale and retail business.

Though we are supporting the thesis that a good implementation of liberalisation principles is not sufficient to introduce competition in gas importing countries, there are however specific shortcomings that contributed to liberalisation failures in Italy. We recall that introducing competition by antitrust ceilings has proved to be useless, considering the reactions of the incumbents, while gas release programs carried out through auctions reserved to new entrants or through sales in a centralised gas market could probably perform better with respect to the aim of providing new entrants with cheap gas. Moreover, even the allocation of production and storage licences from the incumbent to new entrants could structurally reduce market power, but such a strategy has never been pursued. In addition regulatory reforms concerning the distribution sector have failed. Gas distribution in Italy is still affected by inefficiencies due to excessive market fragmentation and monopoly rents protected by municipalities. The disappointing results of liberalisation policies are also due to privatisation strategies pursued in the same period. Only partial privatisations have been pursued by central and local Governments. In Italy, the National Treasury still controls 30% of the dominant firm and can share the financial benefits of market power with private shareholders. Such benefits are very important when one considers public finance requirements in a Country like Italy, with high budget deficits and overwhelmed by a huge stock of national debt. Actually politicians can avoid unsustainable tax increases and public expenditures cuts by cashing high dividends from their stakes in energy companies.

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