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From the Editor

In July 2003 the Ministry of Productive Activities issued guidelines on the “Sistema Italia 2004”, the design of the Italian power exchange due to open on 1 January 2004. This is the latest step in the long debate on the structure of the new Italian electricity market that dates back to 2000, when the regulator first issued a market design.¹ Since then, a long and lively debate has involved politicians, market operators, academics and the regulator in arguing whether any pool had to be compulsory and to what extent it should allow bilateral contracts. The debate led to a partial revision of the original scheme that turned a “gross pool” (centralised spot market) into a “net pool” (NETA-like contract market with balancing regime on the margin).

Below, we discuss the proposed market structure and the current debate on its implementation. We conclude that Italy can learn from foreign experience, but will have to develop unique solutions based on economic principles.

Graham Shuttleworth, Director

“Sistema Italia 2004”: New Electricity Market Design Questions for Italy

by Francesco Lo Passo and Marcella Fantini

The Background

Legislative Decree 79/99 enacted the EU Directive on the internal electricity market and set out guidelines for design of the Italian electricity market. Initially the guidelines required a pool where the bulk of electricity was to be traded; bilateral contracts were allowed but were subject to the regulator’s approval.

The market was initially scheduled to open on 1 January 2003 “at the latest”. The opening of the electricity market was instead delayed many times along with the reorganisation of the electricity sector in Italy, which is now under way.

The structure of the electricity market proposed and approved in 2001 included (1) a day-ahead market (2) two further trading sessions for adjusting day-ahead trades and (3) three markets for ancillary services (congestion, management balancing and reserves). The Market Operator (GME) managed all these markets, but only managed the ancillary service markets on behalf of the Transmission System Operator (GRTN), which determined who had access to those markets.

The day-ahead market and the adjustment markets were each to adopt a “system marginal price”, i.e. a common market-clearing price for all trades. The price in the ancillary services markets was to be use the “pay-as-bid” rule.

¹ AEEG, Delibera 137/00, “Osservazioni e proposte dell’Autorità per l’energia elettrica e il gas al Governo per la disciplina del mercato elettrico di cui all’articolo 5 del decreto legislativo 16 marzo 1999, n. 79”.



At that time, a pool trading the bulk of electricity would fit the market better in its early stage as: (i) a economic central dispatch would enhance competition among generators, thus lowering the cost of supply; (ii) the system marginal price rule would set prices in a simple and transparent manner and would facilitate detection of market power abuses; and (iii) operation of the energy market would be simple and would offer market information to all on an equal basis, thus facilitating market access for small operators.

However, the experience of the old England and Wales Pool and the “OMEL” in Spain, among others, changed the views of the Italian Government and the Italian regulator.

Criticism of the Market Model and the “Sistema Italia 2004”

The proposed market organisation was criticised by several operators, mainly large consumers. They felt that being obliged to buy electricity on the pool would not allow them to use their bargaining power (as in bilateral contracts) and that a pool would allow the incumbent to use its market power to set prices higher than otherwise. They thus recommended the

adoption of a market structure where participants traded electricity through bilateral contracts, as in the NETA system with which the UK was replacing the Pool.

The main argument for a NETA-style market was the fall in prices observed on the UK market when NETA replaced the Pool. However, many commentators failed to notice that the fall in prices was due, to a large extent, to the abolition of the Pool’s availability payments, given to generators as an incentive to keep plant available in times of system stress. NETA has been in place since the end of March 2001. Although it is too early to estimate the long-run impact of the new market structure on prices and on capacity adequacy and system security, forward contract prices have now risen back to the level seen under the Pool, greatly weakening this argument.

However, the criticism based on short-term movements in UK power prices induced the government to shift to a market organisation that would allow (or require) producers and customers to negotiate contracts. Bilateral contracts are no longer to be subject to the regulator’s approval, although

some standard terms would apply. Asymmetric pricing of imbalances will remain, but the centralised wholesale market is to be simpler (no second adjustment session). The markets for ancillary services (congestion management, balancing and reserve) will be combined into one Market for Dispatching Services. The market will make capacity payments to plants providing reserve service.

At this stage, published details on the new market structure are quite limited. The GME has just approved the new version of the “Electricity Market Rules” - technical regulations that will govern transactions on the markets for electricity and for green certificates. The regulator has not yet (end-2003) issued the technical and standard terms that would be part of each bilateral contract or the rules on pricing imbalances. However, Italy may be able to learn how to solve these problems from international experience.

Lessons for Italy?

A market like the one envisaged for Italy (where a non-compulsory wholesale market and bilateral contracts co-exist and where imbalances are

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measured as differences from previously notified volumes) is rather complex and its implementation raises some concerns on fundamental issues such as:

- Prices
- Market power
- Pricing of imbalances
- Remuneration of capacity

Prices

European countries where non-compulsory electricity markets co-exist with bilateral contracts (like APX in the Netherlands, EEX in Germany, Powernext in France and the Nord Pool) have seen low prices immediately after liberalisation.² However, it is not possible to assess what the long-term effect of these market rules will be. In all cases, liberalisation takes place in conditions of excess supply that will not persist. Low prices eventually cause a reduction in generation capacity and rising demand results in supply scarcity and higher prices in the future. Forward

contract prices under NETA have recently returned to “pre-NETA” levels, which suggests that the change in market rules did not permanently lower prices.

Market Power

Replacing a centralised pool with several exchanges and brokers reduces liquidity and transparency in the short-term. Liquidity is split at first between several markets and price reporting procedures take time to develop credibility. In the meantime, increased price volatility and reduced price transparency make anticompetitive behaviour by large players less evident.

Market power is important in markets where a large incumbent has a dominant position for historical reasons. In a wholesale market using a system marginal price rule, use of market power is relatively simple to detect by comparing generators’ offers with their marginal or avoidable costs (though it is harder to ascertain when

such behaviour is an abuse). In a “pay-as-bid” contract market, no such simple standard applies. In an illiquid market, it is also harder to monitor discriminatory practices.

Pricing of Imbalances

Imbalances arise whenever the actual power flows differ from contractual flows. Imbalances are real power flows that must be priced and settled. Every electricity market settles imbalances through compulsory mechanisms. All market participants must join these mechanisms, which may be attached to a centralised market (pool) or run alongside bilateral contracts.

The Sistema Italia envisages a dual price for imbalances, i.e. the price paid for a deficit will be higher than the price received for a surplus. As under NETA, these imbalance prices will depend on the sign of the system imbalance as a whole, so that participants who offset the system imbalance are not penalised (relative to

² On the APX prices decreased of about 10% between 2001 and 2002. In Germany, where the market opened in 1999, competition among large generators led to a decrease in prices, especially for industrial customers. Prices raised again the following year to levels close to prices before liberalisation.

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market prices) for their surplus/deficit. The dual prices for imbalances, however, cause inefficiency. Suppose the price for a deficit imbalance is much higher than the price for a surplus imbalance. Many market participants (especially renewable energy sources) cannot predict exactly their sales to customers or their generation output. The dual imbalance prices do not allow market participants to hedge the “ex post” risk of imbalances through hedging agreements. Instead, market participants have an incentive to buy more electricity than actually needed (or to sell less than actually generated), to reduce the chance of running an unforeseen deficit. This permanent tendency to over-generation is inefficient.

Ultimately, these considerations will drive rule-makers back towards imbalance prices set equal to a system marginal price or market-clearing price.

A dual price for imbalances has been adopted by the NETA and in the Netherlands. In the Netherlands, the margin between the two prices has been changed several times. In the UK, the Balancing and Settlement

Panel has recently been considering a modification to the rule to replace the dual price with a single price.

Remuneration of Capacity

Remuneration of generation capacity is a hot issue in many countries, especially after black-outs struck several countries during the summer (even if the causes did not lie in shortage of generation). Italy is no exception. The Sistema Italia 2004 states that a capacity payment will be paid to plants providing reserve service. However, efficiency will require that capacity payments apply to all available capacity.

If Governments adopt a rule (as currently proposed in Ireland) that they will offer capacity payments to selected generators when they deem projected investment to be inadequate, no-one will be prepared to invest in independent power producers. Any time a shortage is likely, government intervention will promote investment and stop prices from rising high enough to reward other capacity. Governments will then have to offer

financial support to more and more plant, until eventually all plants are covered by the scheme.

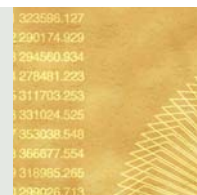
In the aftermath of the Enron fiasco, international investors are reluctant to invest in more generation capacity. However, even in the past, there were few examples of successful generation investment programmes in competitive markets with no capacity obligations or payments. The reason may be that investors were reluctant to rely on energy market prices, if they feared governments would cap such prices when they rose above a certain level. Markets with capacity payment schemes have a de facto cap in place already, but at least such price caps are stable and transparent.

In December 2003, the Government passed a decree, which says that the capacity payment scheme will be implemented within six months. In the meantime, a temporary regime will remunerate almost all available capacity² and may extend to interruptible customers. The Regulator must set out the temporary capacity scheme within thirty days.

³ The decree excludes (i) subsidized CIP 6 plants, (ii) non-dispatchable renewable plants and (iii) plants with bilateral contracts.

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So far, no details of the scheme are available. The proposed reliance on bilateral contracts makes it difficult to adopt schemes like the “LOLP.VOLL” addition to energy prices in the old England and Wales Pool, and similar schemes in the Argentine wholesale power market. One alternative might be the relatively simple scheme applying in Spain, in which all available capacity shares in a sum raised from consumers via a fixed levy on electricity sales (built into final consumer tariffs). The main risk with the Spanish system is that the capacity levy is set too low to encourage investment in capacity, so energy prices have to rise more than the authorities find “acceptable”.⁴ Another alternative would be to impose a decentralised capacity obligation on each retailer,

defined in quantity terms, like those in parts of the US. However, the incentives offered by such a scheme depend heavily on the size of the penalties for being short, and there is always a risk that the penalties are set too low. Recently, some US Pools have been considering a move back towards a centralised scheme, in which the TSO would be in charge of procuring capacity.⁵

large operators might use their market power to prevent newcomers from entry, the pricing of imbalances and the remuneration of capacity. There are still many details missing from the final picture. International experience may provide a useful guide on some of them but the combination of features selected by the Italian market is unique. Making the market work will require the application of sound economic principles.

Conclusions

The opening of the Italian electricity market would mark a step forward in the liberalisation of the Italian electricity market. Its implementation, however, raises several issues such as the impact on prices, the extent to which

⁴ The Italian Government’s decree of December 2003 says penalties will be between EUR 25,000 and EUR 50,000 per MW per annum.

⁵ For a recent discussion of US-style capacity obligations, see [“Capacity Obligations”] by G. Shuttleworth, which is available on the website of the UK Department of Trade and Industry at www.dti.gov.uk/.

Our Practice

NERA is at the forefront of the continuing transformation of the energy industries worldwide. We have pioneered in developing approaches for introducing competition in segments such as power generation (where competition is workable) and for improving the regulation of sectors (where it is not). We work with companies and governmental bodies worldwide to design competitive power markets and to develop tariffs and rules of access for regulated transmission and distribution systems for electricity and gas and transport of oil and oil products. With industry restructuring, we also help companies develop strategies for exploring new opportunities and minimizing new risks, including issues related to climate change and other environmental initiatives.

We help our clients to develop new regulatory strategies and, when needed, support our clients with analysis and testimony before regulatory commissions, antitrust and competition policy agencies, and domestic and international courts. Our economists help clients to decide which lines of business to pursue; to divest assets no longer consistent with their strategy; to identify and evaluate opportunities for mergers, acquisitions and investment; and to develop bidding, trading, contracting, and marketing strategies and organizations. Our work also includes designing and conducting energy auctions, providing strategy and valuation, advice on mergers and acquisitions, the financing of energy companies, and the financial restructuring of distressed companies.