Developing a Capacity Payment Mechanism in Italy

Italy now has a short amount of time to solve its capacity problem with a uniquely Italian solution to this Italian problem. Two possible ways of implementing the capacity payment scheme envisaged in recently drafted legislation include a capacity price method and a capacity obligation method.

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The Italian electricity system is in urgent need of capacity, as shown by blackouts that affected residential customers at the end of June 2003 and by the emergency plans established by the transmission system operator (GRTN) in July. Unlike the subsequent blackouts in Italy in September and the blackout in the U.S. Northeast, which were caused by transmission system problems, the Italian blackouts in June occurred because there simply isn’t enough generating capacity. According to official estimates of GRTN, net installed capacity was 76,950 MW in 2002. But a more realistic industry measure of national capacity indicates that only 48,950 MW is actually available. The difference is largely the historical capacity of old plants that can no longer be brought into service, and which has not been removed from the official estimates. If import capacity (6,300 MW) is added to actual national capacity, the total available capacity is 55,250 MW. Such capacity must meet peak demand.

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(currently running above 52,000 MW) plus a reserve margin for unexpected events and/or errors in demand forecasts. Given available capacity and peak demand, the resultant margin for Italy has proved to be insufficient to cover the system needs.

Ensuring security of electricity supply is very important to every economy and the Italian government is moving to fix that country’s problem with a capacity payment scheme. Numerous capacity schemes have been developed and implemented around the world in the past few years. Some have been failures; others appear to be successful. Each addresses a specific set of problems of the country or region concerned, and none of them were designed with Italy’s exact situation in mind. Italy cannot afford to use a “cookie cutter” approach which simply adopts a model from somewhere else, but needs a scheme designed for Italian conditions.

I. Legislative Progress

A draft law to reorganize the electricity sector and mandate the scheme has recently been approved by the Lower Chamber—the so-called Disegno di Legge (DDL) Marzano. In his speech to the Lower Chamber introducing the discussion of the draft law in June 2003, the Minister of Productive Activities stated that:

… the draft law envisages the introduction of capacity payments.

The current regulatory framework remunerates capacity only through the reserve. Current remuneration, however, might be too low and unable to remunerate investments in new plants and might lead in the medium term to problems in matching demand and in stabilizing market prices. I believe that the explicit remuneration of capacity will provide the system with adequate capacity, including the reserve margin, and will avoid leaving the signaling of capacity scarcity only to market prices—when prices signal capacity scarcity there is not enough time to put in place any remedy, as happened in California. Moreover, explicit remuneration can make new entrants owning more efficient plants enter the market thus increasing capacity supply and enhancing competition. In order to have an efficient capacity payment mechanism in place, I believe that competitive schemes enhancing competition and with the lowest impact on prices should be preferred among all schemes. The issue is rather difficult and there are several feasible options. For this reason we chose to leave the choice to the Government, that will issue an ad hoc decree.

The DDL Marzano states that the Government will issue a decree within six months of the approval of the law, in order to guarantee that adequate capacity is achieved and maintained. It requires that:

- Capacity be remunerated on the basis of a competitive scheme;
- The scheme must apply to existing capacity as well as to new capacity; and
- A system of guarantees to be provided by producers and of penalties to apply to producers in case they do not meet their obligations.

The discussion of the DDL Marzano at the Higher Chamber is expected to take place in the very near future. As a result of the September outages, the Government has given a fast track to the capacity scheme, by introducing it in a draft law under final approval by the Lower Chamber.

If the Lower Chamber confirms the text in the draft law, the creation of the capacity scheme will become one of the priorities in the legislative agenda.

II. The Need for a Capacity Payment Scheme in Italy

At the current time many other countries are grappling with the issue of how to ensure adequacy of electricity supply and protect against undue price volatility. While addressing in part a common problem, the reasons giving rise to this concern are quite different throughout the world and include concerns as varied as retail prices that are set by gov-
ernments far below the cost of new entry, and the need to establish capacity revenues that compensate for politically imposed price caps in energy markets.

The objective of any capacity payment scheme should be to provide incentives that result in sufficient capacity being available to meet an acceptable level of reliability, i.e., an acceptably low level of loss of load probability (LOLP) both once the electricity market is up and running, and also in the transition to that state. The capacity should be provided through an efficient mix of new capacity (at the right time and of the right type) and increased availability of existing capacity. Also, price signals from the new electricity market for the financing of new capacity should not result in extreme price spikes when more capacity is needed and should not result in unacceptable economic impacts. The scheme should not be susceptible to gaming and the costs of the scheme should be applied fairly among the participants to the value chain.

However, the relative importance of these objectives changes from country to country. Many countries place the highest weighting on reduction of price volatility. Reliability is the highest priority in Italy. Further, Italy is characterized by an electricity market in its formative stages. The pricing mechanisms that have been adopted until now have been quite unsuccessful in driving long-term investment decisions in new generation. There is not yet a stable wholesale market price from which investors and potential investors in merchant generators can make an informed decision regarding potential market revenues in the future; rather current prices are for the most part set administratively. Plans exist to put a set of energy market trading arrangements in place, but the revenues that could be expected from this market and the exact nature of the trading arrangements are quite uncertain at this time. The retail market for non-eligible customers is also in its early development. Retail prices are set at levels that do not yet support the development of wholesale competition from new generator entry. They do support limited competition in the form of imported energy but this competition is a function of the rules used to allocate scarce transmission import capacity; it is not an indication of a thriving and competitive market. For these reasons, capacity solutions that have worked in other countries might not be easily implemented and might not be suitable for Italy.

International experience has shown that capacity schemes are either quantity-based or price-based. In the former case, central planners predetermine a quantity obligation and let the market determine the price of capacity. In the latter, the market is left to determine how much capacity will be built, given the predetermined price.

III. Capacity Obligations Methods

Capacity obligation methods have precedents in the Northeast U.S. jurisdictions of PJM (Pennsylvania—New Jersey—Maryland), New York State, and New England. PJM, New York, and New England are also now working to integrate their capacity markets. This experience does provide useful guidance for Italy because the schemes have been up and running for some time and they exist within the context of a competitive electricity market. Two aspects, which have been shown to be critical and which are currently under review are: (1) the length of the capacity contract; and (2) the length of the lead time for capacity procurement.

There are concerns that, when providers of new reserve capacity must be induced by the scheme, the relatively short contract lengths will translate into a requirement for accelerated capital cost recovery (i.e., high
capacity prices). This tendency would be driven by the uncertainty that capacity providers would place on post-contract capacity revenues, and hence the discounting of the expectation of those revenues as a means of offsetting capital costs. In order to reduce this uncertainty, the notion currently under consideration is to extend the contract length so that fixed costs are spread over more time so that contract providers have more certainty.

Also, the lead time should be sufficient to accommodate new generators, whose entry might be contingent upon obtaining a contract. The developments under way in the Northeast U.S. suggest a lead time greater than one year.

IV. Capacity Price Method

The main example of an existing simple capacity price method is in Spain. The Spanish experience provides useful guidance that this scheme can be feasibly implemented as well as useful guidance on the detailed rules that would be required if such a scheme was implemented in Italy. If Italy was to adopt a capacity price method, there would be two main questions: How to set the capacity price, and what criteria have to be met to qualify for payment.

In Spain, the methodology behind the capacity price is not known and seems to be influenced by political decisions. The capacity price, set on a yearly basis, does not appear to be determined by investment costs, since it has been lowered without explanation by administrative decisions in spite of narrowing capacity margins, and investment has not kept up with demand growth. Uncertainty about future levels means that the incentive is not trusted by investors, although it has provided sufficient incentives to keep old existing plant open, which has helped to maintain reliability in the face of substantial demand growth.

The rules for allocating the capacity payment should be structured so that the efficiency of the short-term energy dispatch is not diminished. That is, on the one hand, in the quest to get capacity payments, providers of reserve capacity should not have to run so much that they distort the economics of the dispatch. On the other hand, they need to offer a sufficient demonstration that they are able to produce energy if called upon. Spain has modified its position on this tradeoff twice since opening its market.

V. Proposal

Italy now has a short amount of time to solve its capacity problem. It has the opportunity to learn from the successes and failures elsewhere but ultimately it will need to find a uniquely Italian solution to this Italian problem. The decision on the scheme to choose—whether based on quantity obligations or payments to units of capacity—should rely heavily on which one will work best in Italy. The adopted scheme should allow generators to recover the full value of capacity, i.e., the annu fixed costs of the marginal plant.

In order to provide useful guidance for Italy, we will briefly highlight two possible ways of implementing the capacity payment scheme envisaged by the Draft Marzano Law. As each scheme has different practical implications, Italy should choose the one which best fits its objectives (mainly the reliability of the system, but also efficient price signals for long-term investments, fairness, and incentive-compatibility).

A. Capacity obligation method

GRTN would determine the total capacity needed to meet a predefined reliability standard and would procure it (at market or auction prices) on behalf of all...
entities purchasing wholesale energy to serve final load (although those entities would be able to arrange capacity so as to effectively self-supply if they wanted to). GRTN purchases would be funded by a levy applied to load-serving entities in the load year. Capacity providers would enter into capacity contracts with predetermined and standardized terms and conditions.

The optimal contract length would be more than one year and should be estimated by comparing the benefits and costs of a range of contract durations, then picking the level that minimizes expected overall cost. To prevent capacity prices from rocketing immediately to unacceptable levels due to the current capacity shortage, the scheme would have to provide scope for new, as yet unbuilt, capacity to bid for contracts. However, in order to ensure security of supply, the allowed lead time would still need to be relatively short. As a consequence, potential new providers of capacity would need to have planning approval already for the proposed plant at the time they commit to providing that capacity.

**B. Capacity price method**

Because the energy market is relatively undeveloped in Italy, a capacity price method would need to be quite simple. For example, the GRTN, with the support of the regulator, would determine a single Euro/MW predetermined capacity price with a medium-term view—possibly for a multi-year period. In this framework GRTN would also be the buyer of capacity from generators. Existing generators would respond by demonstrating a sufficiently high output over a predetermined time period. New entrants would not qualify until they are already operational and have demonstrated their ability to produce in the same way. GRTN’s purchases would be funded by a levy applied to load-serving entities on the basis of actual load. The setting of the price should be—and should remain—to be independent from influence by market participants and from governmental manipulation. Ideally, GRTN would use transparent rules and simplified modeling tools to predict changes in capacity investment as a function of capacity price. Broadly, when those rules predict future deterioration in aggregate capacity below a target level, the price should increase so as to attract more capacity to the market. When the rules predict future surplus capacity, the price should decrease, signaling that capacity is not needed at that time. In designing such a scheme, transparency and predictability of returns to investors is more important than trying to “second guess” the future market value of capacity.

Italy needs to promote long-term investment in the electricity generation and the market framework must provide a reasonable prospect of cost recovery. To achieve this aim, it will be important to devise an objective and transparent scheme (whose parameters can be adjusted in the light of evidence), rather than aiming for performance valuation of capacity in the first instance.

**Endnotes:**

1. The requirements of the capacity scheme are the ones envisaged in the DL Marzano, with the exception that the deadline to issue the decree has been shortened to two months.

2. The decision to implement any capacity payment scheme should be conditioned on an expectation of unacceptable market outcomes in the absence of such a scheme, for example, a politically unacceptable high LOLP, or unacceptably high energy price volatility (price spikes). On this basis, a capacity payment scheme is welcomed in Italy.

3. The value of capacity in Italy: An indicative estimate of the value of capacity in both schemes is around Euro 60/kW-year. This estimate derives from the assumption that, due to the current scarcity of capacity in Italy, new open cycle gas turbines will be the marginal provider of capacity in Italy. The capacity price will be set at or around their assumed annual fixed cost (including capacity cost) of around Euro 60/kW-year.

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