The Balancing Market Maker: A Tool to Enhance Liquidity in the French Balancing Mechanism

The development of a more competition-oriented and less concentrated market structure in France is colliding with the functioning of the balancing market. The authors offer a proposal to improve the balancing market system, with a view to achieving a more flexible, transparent, and competitive structure, which in turn should lead to more efficient and cheaper service, without compromising the bedrock need to maintain system security.

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I. Introduction

The liberalization of the electricity sector in France commenced with a law in February 2000 which succeeded the European Directive of 1996 and inaugurated an unbundling of activities, the establishment of an independent regulator (the Commission de Régulation de l'Energie, or CRE) and an independent system operator (Réseau de Transport d'Electricité, or RTE, owned by Electricité de France, or EDF, but managed separately and supervised by the CRE), and the gradual opening of the retail market with full eligibility expected by July 2007.

From then on, the structure of the market has not significantly changed.[1] The wide interconnection capacity with neighboring systems has been the rationale put forward to avoid questioning the dominant position of the former monopolist EDF. Publicly owned EDF[2] is the

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largest European power utility. Its share of the generation market in France is around 90 percent. Its main local competitors are CNR and SHEM – controlled by Electrabel – whose market share is around 3 percent, and La Snet – controlled by Endesa – whose market share slightly exceeds 1 percent, with a significant portion of that linked to a contract with EDF.

The major step forward on the generation side had to do with the energy releases – so-called virtual power plants, or VPPs – that were required by the European competition authority in exchange for greenlighting the acquisition by EDF of a stake in the German company EnBW. These VPPs are blocks of energy that EDF was compelled to offer in a series of public auctions. The VPPs cover a total of 6,000 MW, going into effect in January 2002 and continuing at least until the end of 2006.[3] The liquidity provided by these auctions, together with activity through interconnections with neighboring countries, was key to allowing proper development of the organized power energy exchange called Powernext.

The trouble is that this progress in the energy market in France, and in particular the development of a more competition-oriented and less concentrated market structure, is colliding with the functioning of the balancing market. A lack of liquidity and high prices pose a key entry barrier for the necessary promotion of new players.

Since the design of balancing markets is a key issue in the development of a more competitive single market for electricity across the whole of the EU,[4] the French balancing market design has been reconsidered. In its deliberation of June 22, 2006, the CRE approved new rules which went into effect on July 1, 2006.[5] The CRE indicated that the redesign of the rules is not yet complete, and demanded that the RTE study additional measures to improve the functioning of the balancing market.

The trouble is that this progress in the energy market in France is colliding with the functioning of the balancing market.

In the next section, we outline aspects of the current balancing market design that are hindering the development of new actors in the French energy market. Next, we discuss some regulatory alternatives that in principle could help mitigate one of these problems, the lack of liquidity. We conclude by proposing an alternative that could do much to achieve a well-functioning balancing market.

II. The Current Functioning of the Balancing Mechanism in France

A. Main issues in the balancing market

Taking into consideration the rules in force at the moment in France and market activities observed recently, two main issues are having a negative impact on the overall development of the French power market structure: The dual imbalance settlement procedure, which will not be discussed in this article[6] but which represents an entry barrier for potential new actors, and illiquidity of the balancing market, which is the motivation for our analysis.

While the energy market's functioning – supported by the proper performance of the Powernext power exchange and several regulatory measures, including the VPPs, that were intended to enhance the startup of market activity – is properly fulfilling its role as an energy price revealer, the French balancing market appears to be still far from what, in principle, should be necessary to adequately develop overall power system efficiency.[7]

Currently, if a participant realizes, after the energy market closes, that it is going to have a deviation from its energy program, it can try to self-adjust its imbalance—a problem that becomes more complicated in proportion to how small that participant is. Alternatively, there

are mainly two options to resolve it through the market: the bilateral intraday market or, more directly, to let the transmission system operator (TSO) resolve it through the balancing market.

On the one hand, as reported by many market participants – mainly the smaller ones – the levels of liquidity of the OTC intraday market are not enough to cope with the adjustment needs. This is leading to high prices and high penalties for the smaller players when an imbalance happens. Additionally, balancing prices are far from energy prices, i.e., the balancing spreads currently are very large. **Figure 1** shows, for the month of January 2006, the balancing market price when the imbalance was in the positive range – i.e., when energy was sold in the balancing market – and the corresponding Powernext prices at these points in time. A simple calculation on the spread between the Powernext prices and the ones resulting from the balancing market for the first semester of 2006 allows us to quickly draw the conclusion that the average value is around 50 percent, implying that there is a high penalty for an imbalance. With the volume of hydro energy traded in the French balancing mechanism rather significant,[8] there is a consensus that this spread is high—certainly higher than what we should expect from a cost-based scenario.

There are some concerns that larger system players might use the timing of power sales as a strategic variable to exercise market power. Indeed, these agents might tend to conduct most of their operations on the forward market, thereby avoiding any relevant participation on, or barely submitting reasonable offers to, the intraday market. This means that if a smaller player, after negotiating a long-term power sales contract, encounters short-term deviations, it will be unable to find players willing to sell the energy needed at a reasonable price, and will have to pay a very high price for the energy required to cover such deviations. Larger players, by contrast, can offset this type of deviation at reasonable cost by drawing from other generators in their portfolio. It is clear, then, that the lack of short-term liquidity is ultimately a way of penalizing smaller players.

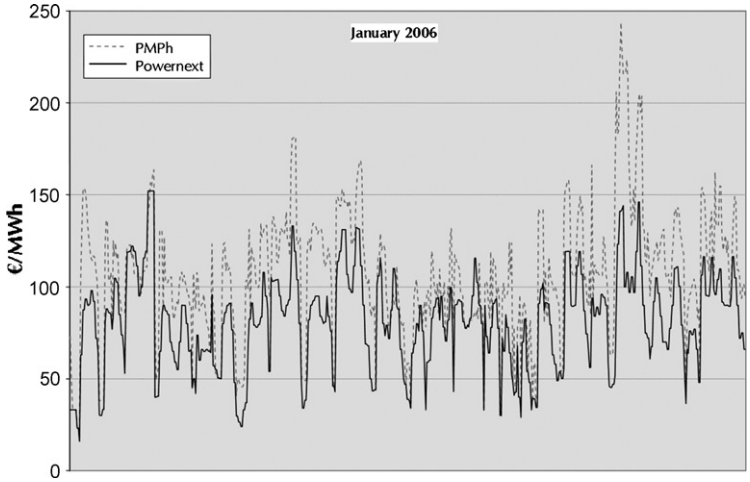

Figure 1: Balancing Prices with Positive Imbalance and the Corresponding *Powernext* Ones

B. Market structure and the intervention of the regulator

The market structure and regulator's intervention are fully complementary issues. In a fully non-concentrated, competitive, and thus perfect market, the fewer the rules designed by the regulator – i.e., the smaller the regulatory intervention – the better for the overall efficiency of the service and the business. Conversely (and unfortunately), the further away the market structure is from a perfect market, the larger the need for adequate rules to support market development. The lacks derived from an inadequate market structure have to be necessarily complemented through regulation.

A good example of this is the aforementioned VPPs. In a context where the market structure inherited from the past was at the very other end of what in principle is required to induce any market development, the VPPs have played a key role to allow the needed new entrants to enter into the new market and to start their businesses. Nevertheless, further measures are now required to proceed with the market development. The

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energy releases helped in solving the primary problem of giving the new entrants a tool to have energy to supply their new portfolio of clients. To proceed to the next step, to continue their businesses development these new – and thus still small – actors require a liquid market not only at the day-ahead level, but also at the balancing market level.

A balancing market (unjustifiably) illiquid, volatile and therefore expensive is a major hurdle for these new agents. No competition can be offered if there is no chance to have easy access to the balancing services at fair prices, particularly when this competition is expected to come from comparatively small new entrants.

Next, we discuss some regulatory alternatives that in theory could help to mitigate this counterproductive aspect of the current market functioning, the lack of liquidity, but which we find of limited help. We will afterwards conclude by proposing a design we consider more appealing, the balancing market maker.

III. Analysis of Some Alternatives That Are Not Fully Satisfactory

Since it is a key element for the overall development of an electricity market, the availability of flexible and non-expensive balancing services has been a common concern of power regulators. Depending of the particular characteristics of each power system, regulators and system operators have come up with some ideas to allow players access to the best and fair prices available.[9]

A. Organized intraday markets

One of such proposals is the sequence of organized intraday markets as they are implemented in the Spanish (Iberian) market.[10] The purpose of intraday markets is to allow for whatever adjustments that may be necessary in the daily viable schedule. From the moment the ''final daily viable schedule'' is published – once the daily market session has finished and the system operator has studied the technical viability of the operation schedule for the next day – the first of the intraday market sessions (currently six over 24 hours) starts to take place. Market agents may act as sale and purchase bidders if they have participated in the corresponding session of the daily market. In addition, each production unit which has notified the system operator its unavailability prior to the closing of the daily market, but which becomes available again, and even those agents which had previously communicated to the system operator the existence of a bilateral contract for the hours included in the corresponding intraday session, may present sale bids on the corresponding session of the intraday market.

Organized exchanges occur on their own when conditions are suitable to gather a relevant trading volume.

However, organized exchanges occur on their own when conditions are suitable to gather a relevant trading volume. Conversely, if they do not occur naturally, we can conclude that the market simply does not meet the basic conditions to turn this initiative into a profitable attempt. Therefore, if no further rules are designed, no improvement in the level of liquidity should be expected just by implementing an organized intraday market.

These further rules usually have to do with making the market compulsory. This way, if any agent needs to change its predetermined program, it must do so by submitting transparent offers and bids in this organized marketplace that would be available for other agents. This rule implies an improvement in market transparency, and certainly, it might give the opportunity for every agent in the market to benefit from these offers and bids.

However, as shown by the Spanish experience,[11] these advantages are not sufficiently relevant to justify

such a market intervention and the cost derived from implementing an organized marketplace. Balancing markets are conceived to solve deviations in the very short term. An agent that might not be interested in enhancing the liquidity of the currently bilateral intraday market would not have to change its strategy by just being compelled to solve its deviations through an organized power exchange. The agent could just submit bids and/or offers into this market when needed to solve its own deviations, which would not yield a significant liquidity improvement for its competitors, since they would not have any guarantee that these bids and/or offers would be there when they might suffer an unexpected imbalance. Indeed, there are some transparency gains as this kind of anticompetitive behavior could be easily monitored and punished by the regulatory authorities, but in our view, one should not expect dramatic changes between the operations of the balancing mechanism and the intraday market. Structural problems are difficult to solve just by artificially implementing financial marketplaces, and consequently we would not recommend adapting this approach to try to fix the current balancing market trouble in France.

B. Long-term contracting of reserves

In some power markets, the solution chosen to avoid the risk of lack of liquidity and volatility in the short term, and also to ease the task of the system operator, is to allow the latter to contract these services over the long term, either bilaterally (as in the U.K., Denmark,[12] and the Netherlands[13]) or via public auction (as in Nord Pool). In principle, if the market structure is adequate, this is a rather reasonable solution that could imply some advantages.

Balancing markets are conceived to solve deviations in the very short term.

First of all, it is a market-based solution that lightens the regulator's interference. In principle, as previously stated, if there are no good reasons against it, the more light-handed the regulation is, the better for market efficiency.

Second, compared to buying the service on a daily basis, it could even open the scope to additional participants.[14]

Also, it reduces dramatically the volatility of the cost related to ancillary services. Even it may not solve the problem of prices being unjustifiably high – which depends on the actual market structure and the potential impact of market power – small agents can at least make a good estimation on the future costs of their imbalances, and therefore they could incorporate them into their offers to their clients, compensating for potentially heavy losses that might damage severely their financial positions. If these costs due to potential market power abuses would be too high, they could simply choose not to compete, but the market power issue would show up more easily.

Finally, if the way the services are acquired – better via an open auction – and their costs are sufficiently transparent, it provides a good clue about the actual impact of the cost of these services on the whole business of buying power energy in the market. It is much easier for the regulator to ponder to what extent these costs might be a real issue to care about. Currently, since they are bought on a daily basis, it is much more complicated to follow and monitor.

However, there are also arguments against implementation of this alternative. First, this option, commonly chosen for its ability to also solve a security-of-supply concern, breaks the marginal pricing paradigm. This paradigm states that the way to recover the investment costs of the system units is through the marginal prices set by the peaking units (and even by the non-served energy prices). If these units are set aside from the energy market, the rest

of the plants might face a problem of cost recovery.

Also, the major drawback is that this option does not provide any particular support to solve the problems derived from a concentrated market structure. If a dominant position is affecting the final balancing prices, contracting for the long term does not overcome it at all. Moreover, it could turn into a good occasion for the dominant player to consolidate its dominance.

Therefore, although this alternative involves certain advantages, it does not appear to be sufficiently effective for the French case, as the concentration problem would again yield a very high price for flexibility, even if it is determined one year or several months ahead. A market structure characterized by such a degree of concentration unfortunately requires a less light-handed regulation if the actual objective is progress towards a competitive and therefore efficient market.

C. A balancing soft price cap—an external reference

Another potential remedy is to set a balancing soft price cap similar to the one implemented in Belgium. Elia pays positive imbalances at 90 percent of the APX hourly price, currently the reference price, and the access-responsible parties pay Elia for negative imbalances at 110 percent of this reference price.

This way, in an almost fully concentrated market, the regulator is able to set a reasonable limit on the energy reserve price. We could then think that a measure of this nature might be a good solution in the French case, but the current differences between both systems are too large to support this statement. The basic idea is to link the payments of this energy to some reference market that

cannot be controlled by the incumbent. But this external reference is not easy in the case of France. In the Belgian case, the small size of the power system compared with the APX volumes provides certain guarantees that the dominant player will not have the chance to manipulate the reference index. On the contrary, in the French case this would not be so if the index chosen is the Powernext energy price. Moreover, implementing a soft price cap indexed to this price could even have a negative impact for the Powernext energy market, since some undesired and damaging incentives might appear—i.e., arbitrage opportunities for players that could have the ability to control market prices.

To solve this problem, we could think of choosing an alternative energy market as a reference, but taking into account the large size of the French power system, it does not appear easy to find a market large enough to be free of these problems. On the other hand, one could think of a regulated price for balancing energy, independent of any other market, and determined by the regulator, but such a price would surely be too low in some instances to compensate for the production costs of the generators. The opportunities of abnormal arbitrage between the day-ahead market and this price will surely arise and will create incentives for distorting market behavior.

We believe the French balancing market requires a more ad hoc solution to overcome all the drawbacks described up to this point. Next, we develop our proposal aimed at providing liquidity and reasonable prices for the French balancing market.

IV. The Balancing Market Makers

A. A tool to enhance liquidity

A quick review of the state of the art of the theory of financial market design takes us straight to a very simple conclusion: the way to diagnose whether a market is

properly and efficiently functioning is by just checking the healthiness of two market issues, liquidity and bid-offer spreads.[15] A well-functioning market has to be characterized by a high level of liquidity as well as by small bid-offer spreads. If this is not the case, the future of the market would be in severe danger.

Getting these two indicators to an adequate level is not always obvious, particularly in the period that follows the opening of the market. Unfortunately and commonly, liquidity does not ''come by itself,'' though it is sufficiently proven that it is the key characteristic needed to assure adequate development of a market. In certain cases, the structure of the agents that already trade in the asset is such that liquidity arises naturally. When this is not the case, market managers try to resort to the person of the so-called market maker.

In the financial literature, a market maker is generally defined as an exchange member firm which is obliged to make a continuous two-way price, creating the bid and ask prices for a given security. Since this agent is willing to make a price, i.e., it is willing to satisfy any requirement of the market agents, no matter how much the quantity sold or purchased might be, it thereby helps to create a liquid market. The market maker generally maintains inventory and stands ready to buy and sell the security at the quoted price to keep an orderly market.

This alternative could be easily adapted to the French balancing market, and it would undoubtedly provide a transparent and efficient solution to its current liquidity and price concerns. The mechanism would be as follows:

The regulator would designate the agent or agents that should play the role of ''balancing market

makers.'' What we are calling a ''balancing market maker'' would be an agent that would have the commitment to submit bids that automatically would be linked to offers determined by a predetermined bid-offer spread.

The regulator (or the system operator or both) would first agree and establish the value of this fixed bid-offer spread, s [p. u.],[16] and therefore, the market maker should be willing to always accept any bid which price would be lower than its own bid times the inverse of $(1 + s)$.

Finally, as we mentioned before, in standard financial markets, market makers generally maintain unlimited inventory of the traded asset, i.e., they are willing to satisfy any requirement of the market agents, no matter how much the quantity sold or purchased might be. In the case of a power balancing market, it is rather obvious that this aspect requires a special design, which roughly speaking consists of limiting in some way the volume the market agent has to put at the market disposal. An extended discussion of this issue occurs below.

For example, suppose that the agreed bid-offer spread is $s = 0{,}10$; then, if the balancing market maker submits a bid such that is willing to sell 100 MWh at 110 €/MWh, it is also automatically submitting an offer to buy the same 100 MWh at 110/(1,10) = 100 €/MWh.

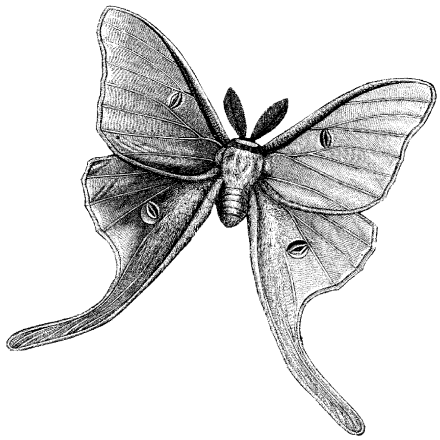
B. Main features of the balancing market maker proposal

Assuming that the reason behind the current lack of liquidity of this market is not an adequacy problem but just a non-sufficiently developed structure – i.e., a market power matter – this balancing market maker mechanism appears to be a very suitable alternative. A market agent enjoying a dominant position could not easily bid artificially high prices since it would be threatened by the risk of having to accept its competitors' bids. Its dominant position is not fully eliminated, but at least its market power is sharply curtailed.

Also, due to the nature of these existing facilities in the French power system, the bid-offer spread determined by the regulator should not have to be too large. Taking into account the significant volume of hydro availability, it would be difficult to justify why a participant joining the balancing market could not afford a reasonable bid-offer spread affecting a not relevant proportion of the capacity that can bid into the balancing market. As mentioned and further discussed in Section D (''Quantity thresholds'') below, the volume the market agent has to put at the market's disposal is limited to a small percentage of its available capacity.

This rule would be a very efficient way to tackle the current problem, since it would allow the regulator to enhance market efficiency through a regulatory design that does not require setting administrative prices. Also, this regulation, unlike the long-term reserve acquisitions of Sweden or the U.K., does not set a level for the energy price, but just for the bid-offer spread, implying that the market laws are deeply respected and the regulator's intervention is reduced to the minimum. None of the decisions that the regulator has to make interferes at all with the economic operation of the system; rather, its role is limited to deciding which is the proportion of the market agent's (or agents') balancing portfolio(s) that has to take the form of market maker bid and which are the bounds of a reasonable bid-offer spread in this French balancing market.

We hope the foregoing presentation is a good way to open a discussion of how the balancing market maker proposal can be structured. As with every innovative regulatory proposal,



implementation details will need to be painstakingly worked out. Although it is important to note that implementing this proposal cannot occur without an exhaustive analysis – which is beyond the scope of this article – we will now proceed to approach the most relevant aspects to consider: the different formats through which an agent could finally turn into a balancing market maker: through a bilateral negotiation with the regulator/system operator, through an auction, or through some regulatory obligation. We will also examine additional measures that would help avoid potential gaming behavior.

C. Criteria used to designate the balancing market makers

The first element of the design that has to be determined is obviously the way to designate the agent or agents that play the role of balancing market maker. We distinguish three main alternatives.

1. Via public auction

Under this alternative, the regulator and/or system operator call for an auction in which agents ask for the compensation they require to play the role of balancing market maker.

The cost derived from the auction, which can be interpreted as the cost of achieving an adequate level of liquidity in the balancing market, is allocated uniformly to consumers via the access tariff. Any alternative consisting of an *ex post* reallocation among generators would bypass any positive effect of the mechanism, since the generators would incorporate into their bidding strategies both the income derived from the balancing market and the income derived from the *ex post* adjustment. This way, at least the barrier that illiquidity represents for new entrants will be significantly weakened.

However, what in principle appears to be an advantage of this auctioning alternative – the fact that it is undoubtedly the most market-based – turns out to be a problem in the French case, since it does not avoid the

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potential costs derived from an imperfect market structure. In other words, the auction would not prevent market power from being exercised; the potential cost of any dominant position would just be moved from the daily basis to the long-term auction.

2. Via bilateral agreements

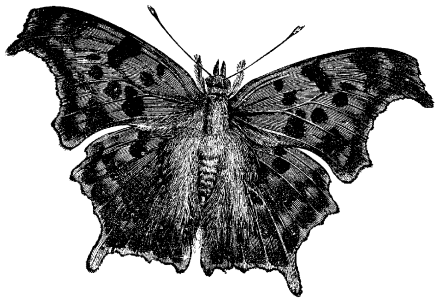
The system operator could seek bilateral agreements with certain market agents, negotiating the compensation considered suitable. This agreement should be closely supervised by the regulator in order to guarantee the fairness of the measure. This should allow for a tighter control of the potential abuses by the authorities and should provide lower prices than the previous auction.

Besides, the other distinctive attribute of this option with regard to the previously mentioned is that it would allow the system operator to obtain tailor-made solutions adapted to the different agents. The flexibility that comes from not having to acquire a standard product (which would be an imperative constraint of a public auction) might result in some cases in a different allocation of responsibilities and maybe some cost savings for the system, and thus for consumers.

3. Via a regulatory obligation

Under the present regulation of reserve markets in France, every agent is compelled to bid all its spare capacity once the energy programs are submitted. The regulator, with the aim of supporting market efficiency and development, might unilaterally impose the obligation on certain or all market agents to participate in some extent in the balancing market as market makers.

Of the alternatives analyzed here, this is the only one that



allows the regulator to protect consumers from bearing the cost stemming from potential market power abuses. Since there are concerns on the prices that the larger players may ask for this service, the better way to obtain flexibility is with some administratively determined prices. In fact, the regulatory obligation could affect just those agents that the regulator might consider to hold a dominant position due their market share in the balancing market, for instance, EDF.

However, in order to avoid charges that such an arrangement is discriminatory, a general obligation on every balancing market agent could be conceived. The idea could be enunciated as follows:

- Once the energy programs are already submitted, market agents submit their bids and offers for the balancing market for all their free (non-programmed) capacity, as it is being done up to date.
- Then all market agents that have (or want) to participate in this market have to put at the market disposal a proportion (determined by the regulator) of the total capacity they manage at the administratively limited bid-offer spread.

This rule would apply to every agent joining the balancing market. Therefore, agents participating from neighboring power systems would also have to offer a proportion of the energy/capacity they decide to bid in the market at its cheapest bid price plus the predetermined bid-offer spread.

Let us illustrate this with an example: a French market agent whose available capacity is 2,300 MW submits its energy program to the system operator and declares that for a particular time period it expects to be operating 1,800 MW. Therefore, it has to set selling prices for its remaining 500 MW for the balancing market. The balancing market maker rule would imply that, for instance, 10 percent of this capacity, that is, 50 MW, would be offered at the cheapest price bid minus a fixed spread (i.e., 10 percent) predetermined by the regulator.

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More precisely, if the agent bids its 500 MW in three capacity/price blocks such as: 100 MW@60 €/MW, 200 MW@70 €/MW, and 200 MW@80 €/MW, it would automatically submit an offer to buy 50 MW at 54 €/MW.

Finally, as we next describe, it would be probable that this rule could not be feasibly applicable to certain generating agents due to their small size, suggesting that the system operator should define a minimum size required to be affected by it.

D. Quantity thresholds

In standard financial markets, market makers generally have to maintain unlimited inventory of the traded asset, i.e., they must be willing to satisfy any requirement of the market agents, no matter how great the quantity sold or purchased might be. In the case of a power balancing market, it is obvious that this aspect requires a specific design, which roughly speaking consists of limiting in some way the quantity the market agent has to put at the market's disposal.

One of the cases where these exceptional limits could be justified is for very small generators that would have to bear a very high cost for providing this flexibility. In general, generation firms under a certain volume – say, 500 MW of installed capacity – should be left outside of these arrangements. Another problem case has to do with a producer with a very steep cost function (for instance, owning several cheap gas generators but a few very expensive fuel ones). In those cases, providing flexibility with the expensive generators generally would not be suitable. Therefore, we suggest excluding the very expensive units from these market maker obligations.

While other problems can be identified that are related to the specific nature of the generation units, in any case this should not change the general design of the mechanism.

E. Ad hoc rules to avoid potential gaming

Finally, although this is still research in progress, ad hoc rules should be taken into consideration in order to avoid potential gaming behavior of a balancing market maker. This is, trying to bid in such a away that its market maker obligation is minimized. The main strategy to be prevented has to do with the balancing market maker agent self-netting its own quantity affected by the administratively fixed bid-offer spread, in order to withdraw it from the market, in such a way that it would not be available for other agents when needed.

To continue with the example previously described, the agent who has to submit an offer for 50 MW@54 €/MW (since it bid 100 MW@60 €/MW, 200 MW@70 €/MW, and 200 MW@80 €/MW) could almost instantaneously offset this position by artificially declaring a negative imbalance of, say, 60 MW, removing the energy affected by its market maker condition from the market.

To prevent this behavior from taking place in order to preserve the integrity of the balancing market maker mechanism, we envision two alternatives that we will outline shortly. In any case, though, the objective is to remove the incentive that a dominant player playing the role of market maker might have to curtail liquidity, hindering the success of the balancing market maker mechanism.

The first alternative would be to allow the market maker to physically but not financially resort to its own bid or offer if it is the cheapest available in the balancing market. In other words, if the market maker declares an imbalance, it can self-correct it with its own resources, but it is compelled to keep the same amount of standing bids and offers linked to its balancing market maker

role, as if the imbalance had not taken place. Therefore, if in the same time interval any other market player needs to solve an imbalance in the same direction, it could make use of the balancing market maker bid-offer, since the balancing market maker cannot remove its bid-offer. This implies, somehow, that the market maker cannot make use of its own bids (only those linked to the market maker obligation) to correct its own imbalances.[17]

Another potential alternative would be to set a kind of fee to penalize this gaming behavior. This way, if the balancing market maker declares an imbalance, it can resort to its own bid-offer but has to bear some kind of penalty for the imbalance.■

Endnotes:

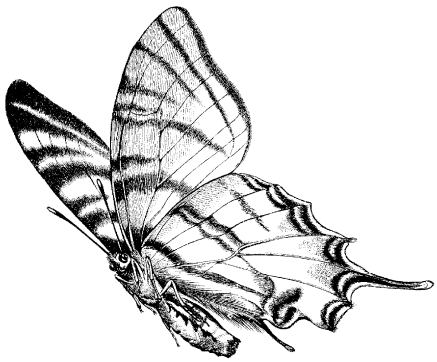
1. For a schematic relation of the main data describing the French power market, see J.H. Couvelaëre and C. Monrose, *The French Electricity Market*, British Embassy, Paris, Dec. 2004.

2. In November 2005, the French government privatized with great success 15 percent of the company. Recently it announced that, at least in the medium term, it will not privatize more than 30 percent.

3. See J.M. Glachant, *A Competitive Fringe in the Shadow of a State Monopoly: The Case of France*, Contribution to SESSA Conference in Cambridge, July 2004. See, also, L.M. Ausubel and P. Cramton, *Auctioning Many Divisible Goods*, J. EUROPEAN ECON. ASSN., No. 2, April–May 2004, at 480–493.

4. From June 8 to August 3, 2006, there was an ERGEG public consultation procedure on the draft Guidelines of Good Practice for Electricity Balancing Markets Integration (GGP-EBMI); see ERGEG, *Draft Guidelines of Good Practice for Electricity Balancing Markets Integration for Public Consultation* (June 8–Aug. 3, 2006), Ref. E05-ESO-06-08, June 7, 2006.

5. RTE, *Rules Relative to Programming, the Balancing Mechanism and the Recovery of Balancing Charges, Section 1, in Rules Relative to Programming, the Balancing Mechanism and the Balance Responsible Entity System*, Version applicable as of July 1, 2006.



6. For an analysis of the effectiveness of this policy in the Dutch case, see, e.g., A. Boogert and D. Dupont, *On the Effectiveness of the Anti-Gaming Policy between the Day-Ahead and Real-Time Electricity Markets in the Netherlands*, ENERGY ECON. 27 (2005), at 752–770.

7. See, e.g., D. Finon, *Introducing Competition in the French Electricity Supply Industry*, in J.M. Glachant and D. Finon, COMPETITION IN EUROPEAN ELECTRICITY MARKETS: A CROSS-COUNTRY COMPARISON (Cheltenham, UK: Edward Elgar, 2003), at 257–284, for a good review on the particular concerns about competition issues in France back in year 2003, and check how at that time, ''the issue of pricing the balancing service under EDF's quasi-monopoly was also raised.''

8. RTE, *Balancing Mechanism Reports*, RTE Media Library, 2006.

9. See ETSO, *Current State of Balance Management in Europe*, Dec. 2003; and ETSO, *Current State of Trading Tertiary Reserves Across Borders in Europe*, Nov. 2005, available at European Transmission System Operators Web page.

10. Operador del Mercado Eléctrico (OMEL), *Electricity Market 2005*.

11. See J.I. Pérez-Arriaga, C. Batlle, C. Vázquez and M. Rivier, *Diagnosis of the White Paper for the Reform of the Regulatory Scheme of the Power Generation in Spain*, IIT Working Paper IIT-06-041I, 2005.

12. See, e.g., *Manual Regulating Reserves: Call for Tenders for February 2007*, Document No. 618-07, Energinet.dk.

13. See, e.g., R.J.L. Beune and F. Nobel, *System Balancing in the Netherlands*.

14. For instance, a thermal unit might decide to devote its customary operation to the tertiary reserve service, by bidding in the SO auction part of its output for tertiary reserves, say, 25 percent of its capacity. If it wins, it would have the chance to play in the energy market (bilaterally or in the day-ahead market) with the 75 percent it has left.

15. See D. Newberry, N.-H. von der Fehr and E. van Damme, *Liquidity in the Dutch Wholesale Electricity Market*, Den Haag, May 2003, for a good discussion of the impact of an inadequate level of liquidity on the Dutch power market.

16. In order to eliminate potential incentives to artificially raise prices, one might also consider settling this fixed bid-offer spread as a fixed amount (expressed in €/MWh), but this would pose some problems linked to the asymmetric impact of it when prices happen to be low or high.

17. This obviously does not mean that the market maker cannot resort to its cheaper physical facilities to solve its own imbalances, just that, if that were the case, it would not be released from the financial obligation derived from the bid-offer spread.