

*Jean-Michel Glachant*

***“Electricity Single Market in the European Union:  
What to do next?”***

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*Groupe Réseaux Jean Monnet – ADIS  
at University Paris XI  
[www.grjm.net](http://www.grjm.net) & [www.sessa.eu.com](http://www.sessa.eu.com)*

## *Introduction*

We all know that there is no “Single Market” in the European Union. It is not a surprise. A reform of this type, seeking to create a single market for all of Europe from an industry which had been a monopoly in each country for decades, can only be implemented over a very long period. Thus, the pioneer of electricity reform, Great Britain, has only recently integrated the operation of its transmission grid and the functioning of its domestic market (BETTA: British Electricity Trading and Transmission Arrangement), fifteen years after the initial vote and legislation (the Electricity Act of 1989). In the United States, where the gas market has already been open for a long time, the impossibility of passing a federal electricity reform bill has allowed many states (about half!) to escape these changes and refuse to submit to the federal energy regulator’s ambitious plans.

Consequently, it is not surprising that the European Union’s “internal energy market” remains a work in progress. It is even possible its construction were to stall. Given current political, institutional and business conditions in Europe, there are no guarantees that the dynamics of this construction will not dissipate, as in the United States, or that the internal market will not fracture into “national blocks” that may be permanent or persist for a long time. This is exactly what this paper seeks to avoid. It suggests priority actions and secondary improvements to sustain the dynamics of construction of the internal market, from today to the few coming years. It tries too to explain the underlying rationale for these recommendations by describing several aspects of the present state of the construction of the internal market, why it has not yet been achieved in this or that area, and what factors are blocking or unblocking its progress.

Three main assumptions have been made to start thinking and writing this paper. First of all, we cannot expect having soon any “third package” of European directives & regulations to push for stronger convergence in the construction of the EU internal market. Second, the formal opening of retail competition in the entire EU in July 2007 will not bring any “earthquake” in EU markets dynamics. Third, minimal but sufficient dynamics of construction can be fostered by conscientiously applying the provisions of

the “second package” and by promoting reinforced regional cooperation agreements that will lead to the voluntary opening of some domestic markets to regional “mini internal markets”.

Furthermore, pursuit of the objective of building an EU internal energy market and its achievement do not rely on a single key factor, but rather on the interaction of several factors of different kind. These are principally: - the “rules of the market design”, - the “structures of the industry” and - the “authorities who define and implement the rules”.

The rules of the electricity market, or: *Market Design*, will be considered in our first two sections, whether applied solely within a Member State (Section 1) or directly to the whole of the EU (Section 2). The market participants are in fact actual builders of the EU internal market. Nevertheless they will be treated in this paper only for their dark side: as a threat to the competitive structure of the market, since the EU industrial structures condition the effectiveness of the rules of the market (Section 3). The last critical factors in the construction of the EU internal market are the authorities who define or implement the operational rules of the reforms. They are of course the regulatory authorities, but also those who manage the operation of the grids, such as the *Transmission System Operators* –TSOs- (Sections 4 and 5). Many other factors could have been treated (by example: Distribution Networks, Power Exchanges, Member States’ Governments or Courts, or the European Commission). This paper will not treat them because it wants concentrating on a “core set of tractable factors”. It is not a choice made for the clarity of the thinking but for the tractability of the policy proposed. It seemed that Distribution Networks and PXs (except Nord Pool) can generally be regarded as factors of secondary importance, while Member States’ Governments and Courts are not “tractable” in the sense they will not substantially change their behaviour because an Electricity Internal Market is still to be built.

At the opposite, the European Commission is on the forefront of this market building and could be seen as responsible for it. It makes the EC the natural recipient of this paper. It could look strange that a “Frenchman from France” takes care of this EU policy in the aftermath of the French refusal of the EU Constitutional Treaty (as fresh as May 29<sup>th</sup>: just one month ago). As everyone can notice, this refusal solved none of the

problems treated in this paper. Then it does not change the size or the content of the “core set of tractable factors”. Furthermore, French people are not only known for their history of riots and refusals. Academic economists know that F.A. Hayek, a Nobel Prize winner, called “*French disease*” the “*constructionism*”: an irrepressible inclination to elaborate rationale for hypothetical construction.

Unfortunately, it is not that easy to get that rational construction disease. Since so many factors impact on the construction of the internal market, there are of course several alternative policies that can promote this construction or deter it. As a result, the objective of this paper is only to draw a possible “minimal” platform that will allow to progress without precluding further policy changes at a later date. Then the length of the current phase is defined by the expected life of this European Commission: until 2009.

This paper will examine each of the five critical success factors in turn, over the five sections. Each section will indicate what makes this factor a key for the building of the internal market and what are the priority or secondary actions which could be useful to keep constructing an EU electricity single market from 2005 to 2009. To end, notice that this is a “discussion paper”. Therefore no review of previous academic works is provided and no bibliographical reference is given.

## ***Section 1***

### ***Improving the Market Design in Member States***

While the goal of the ongoing reform is the construction of an EU internal market, its first success factor is the market design in Member States. It is perfectly reasonable that remaking an industry that has been a monopoly on the national, regional, or municipal scale for decades must begin with the development of a legislative, regulatory, and professional framework within the Member States and by its adapting to the rules of operation necessary for a market open to all. Nonetheless, this national reconstruction, Member State by Member State, remains a source of diversity that is not always compatible, a priori, with ultimate convergence to a single European market. Keeping in mind that we do not look for having a few perfect “Member State Designs” but for going towards a EU single market, how to improve the existing designs in that direction?

#### ***1.1 The important characteristics of the factor “Market Design in the Member States”***

The EU national diversity is first and foremost a predictable result of the nature of the compromises between the Member States, formalized by the European Community in the first directive of 1996. According to the insightful commentary of our colleague, the legal scholar L. Hancher, this first directive allowed nearly everything (including “single buyer”), except ... an integrated internal market. The Second Directive (2003) and its regulations managed to reduce the scope of this diversity, but not eliminate it.

However, this diversity is also bred into the “genes” of electricity markets. Thus, quite outside the sphere of any “permissive” European directive, five pioneers, European and US, all voluntarily and independently implementing their own electricity reforms (Great Britain, Norway, California, Texas, and PJM—Pennsylvania-New Jersey-Maryland) opted for five completely different market design models.

Two techno-economic factors can explain this “natural” diversity of electricity markets. On one hand, by their very nature electricity reforms are modular. They comprise several modules, *in extenso* = several different markets, for example -the “Day-Ahead” market, organised or bilateral (bilateral = OTC); -the “Futures” market, organised or bilateral; -the reserves; -the balancing. But it covers too a variety of grid access modules, such as: -grid connection, and its pricing, along with the access fees for grid usage (which we will examine in Section 4); -grid capacity allocation; -congestion management; -imbalances settlement. These three latter grid access mechanisms (capacity allocation, congestion management and imbalances management) may also function as markets for electricity.

On the other hand, there is no agreement between engineers and economists as to what the ideal electricity reform would look like. All acknowledge that there are at least a few workable, though not perfect, ways to ensure that “competitive” markets coexist with “secure” transmission grids.

Thus, diametrically opposed choices can appear from one country to the next in terms of market design— even when countries willingly initiated competitive reforms. For example: an organised centralised wholesale market (England 1990 and PJM 1997) vs. a less centralised organised wholesale market (Norway 1991 and California 1998) vs. the absence of an organised day-ahead or forward market (Texas 1995 = exclusively bilateral wholesale market). This diversity in market designs may even appear within a single Member State: an organised centralised wholesale market (England 1990) vs. an exclusively bilateral wholesale market (Scotland 1990). We even find pronounced differences affecting various modules between countries sharing the same overall architecture (e.g. Sweden vs. Norway for managing internal congestion and the balancing market).

Of course, all these differences have consequences for the performance of the reforms, whether in terms of facilitating the competitive process, of economic efficiency, or of security of the grid and supply. However, we cannot describe all these differences here.

## ***1.2 The main issues in the “Market Design in Member States”***

The modular nature of competitive electricity systems makes irrelevant too general statements about “The” electricity market. We have seen yet that this “market” actually consists in a set of interdependent markets and complementary mechanisms. Nevertheless, among all possible modules of a competitive electricity reform in a Member State, five appear more important to us than the others for the successful implementation of an EU internal market. These five still exhibit today the wide diversity in market characteristics we witness in the competitive reforms.

1.2.1 First of all, these are *bilateral and OTC (over-the-counter) markets*, since that is where the bulk of energy wholesale transactions occur (up to over 95 %) while the compulsory centralised pool (such as the former English and Welsh Electricity Pool) has lost its position as a model.

1.2.2 Next are the *organised markets*, which are rarely compulsory (Omel, Spain). Most have taken the form of exchanges that are optional (EEX, Powernext) or semi-optional (Nord Pool, APX), where standardised contracts ranging from the very short term (day-ahead) to the medium term (1-month to 2-year futures) are traded. Within the European Union, these organised markets handle from several percent to 20 % (maximum) of the energy traded (in the Nordic EU members).

1.2.3 There are also *congestion management mechanisms*, which may function as “pure” energy markets (in a form known as “implicit auctioning”) for allocating transmission capacity (as in the Nord Pool), or as an organised, single-buyer market (the TSO purchasing on the balancing–“counter-trading” market), or in the form of a bilateral contracting with a single buyer (the TSO) negotiating a portfolio of contracts (“pure” redispatching).

1.2.4 There are also *balancing mechanisms*, which supply TSOs the means for real-time balancing of injections into, and withdrawals from, the transmission grid. These

mechanisms may rely on bilateral contracts negotiated by the TSO or on an organised market. If markets supply balancing to a single buyer (the TSO), and if imbalances from energy traders are discouraged by tacking a penalty on the cost of system balancing (for example, +20 % in the case of France), we speak of “balancing mechanisms”. If, on the other hand, energy is sold (upwards or downwards) at cost and if, in fact, several agents may be buyers (upwards or downwards), we speak of a “balancing market”.

1.2.5 Finally, we have *complementary markets*, such as *fuel markets* (especially the market for gas) and *capacity markets*, which may provide central markets with the means to ensure their functioning, facilitate the entry of new producers, or contribute to security of supply.

1.2.6 A sixth module, *retail markets*, is also an important element of market design. However, competition in the retail market will not be obligatory until July 2007 in the European Union, so there is still some time before this element will become a common preoccupation on the European agenda. Retail markets are also governed by a significant diversity of rules, not only in Europe (e.g. Great Britain vs. Norway vs. Germany) but even in the United States, where (provided they even exist) they are under the jurisdiction of local regulators and are not harmonised by federal bodies, who have no authority over retail markets. It should be noted that those European countries and US states that share a common wholesale market (e.g. the Nord Pool in Europe and PJM in the United States) have not structured their retail markets in the same way and have not striven for a uniform regulatory retail framework.

### ***1.3 Priority actions to improve today the “Market Design in the Member States”***

A significant diversity among Member States in terms of market design is not necessarily unsettling by virtue of its mere existence. As we explained, there are different “acceptable” ways to conduct a competitive energy reform. Logically, this diversity may be considerably greater at the beginning of the reforms, since the initial conditions under

which competitive markets come into being can truly vary between the Member States. Sometimes, the persistence of this diversity may remain tolerable during all the maturation phase of the competitive market. This can be seen in the case of England and Scotland, where it took fifteen years to unify their market design and the operation of their grids, even though there always were a single law and a single regulator in these two parts of Britain.

Nonetheless, however broad the range of tolerable diversities at the beginning or during the maturing phase of the reforms, an absolute minimum of competitive nature and openness must be ensured for these new markets. Several of the necessary guarantees already feature in the Community's legislation or in the Member States', so propositions will be restricted here to two high priority actions: "access to balancing services" and "access to fuel".

#### *1.3.1 Access to balancing services*

Balancing arrangements must absolutely be transparent, simple, and robust to allow all other energy markets to rely on a solid foundation of energy trading in the very short term and also to facilitate the appearance of new entrants in all these other markets. In the electricity sector, the balancing market is actually the only "true" market on which energy is traded. Indeed, all the preceding markets function as forward markets, though with ever diminishing time horizons, operating in a system with no storage.

These balancing provisions must not be discriminatory or handicap the arrival of new entrants or existing operators that are not vertically integrated. They should reveal to all what the level and evolution of the "actual" cost of energy is in the very short term ("real time") in a decentralised and competitive system. They should not allow firms with holdings in both transmission and in generation and sales to favour certain bilateral balancing contracts or certain balancing mechanisms that are not transparent and not open to all potential competitive offers.

#### *1.3.2 Access to gas supply long term contracts*

Gas supply markets should provide for contracts with sufficiently long and competitive terms, especially so that entrants into electricity generation (so-called CCGT

plants) are able to, at least partially, manage their operating costs: to manage the relationship between the purchase price of gas energy and the selling price of electric energy, the “spark spread”.

#### ***1.4 Secondary actions to improve the “Market Design in the Member States”***

Given the existing diversity of market designs, there are a large number of other actions that can be envisaged to foster convergence between Member States, their competitive opening, their economic efficiency, and their security of supply towards an EU wide internal market. However, to suggest too many first priority targets, may make unworkable to effectively reach all of them during the current period.

Therefore, the five other actions for significant improvement presented here, are really important but are not, however, considered as today first priority. This may be because it is up to Member States to voluntarily comply with the goals of a reform they voted for twice, or because the European Commission could return to them later in the current phase, by example from 2007.

##### *1.4.1 Terminating vested contracts*

Two types of “incumbent” vested contracts have persisted into the competitive reforms. There are bilateral accords (often vertical and sometimes initiated by the government in the immediate run-up to the beginning of the reforms) and “regulated” supply contracts to end consumers, frequently domestic but also businesses of all sizes (up to electricity-intensities of several tens of GWh per year).

The survival of these contracts is completely justified from the perspective of the transition from the old system to the new. These contracts can also provide a certain degree of protection to some consumers and operators while the system becomes sufficiently competitive. Thus, it is difficult to prescribe to each Member State on what exact date and in which exact form the transitional systems must be terminated.

It is no less obvious that perpetually renewing these old contractual provisions amounts to an unlimited extension of the old contractual integration between the

incumbent operators and their historical clientele (often at over 95 %, sometimes over 99 %). In such circumstances, what merit is there in refining the “market design” rules as long as the markets remain under the “custody” of the incumbent operators?

“Grandfathering rights” in interconnection capacity allocation, is a kind of these “vested contracts”. Nevertheless they will not be treated in this section because, firstly, they are international and not national; second, they have been said mostly “illegal” by the European Court of Justice’s decision in summer 2005.

#### *1.4.2 The link between the operation of Power Exchanges and grids*

European rules leave to the discretion of Member States or Business Initiative to establish an adequate functional link between the *Power Exchanges* (PXs) and the *Transmission System Operators* (TSOs). We may be glad that the European legislation did not enter into that level of detail in the competitive reforms. For this is very much a technical matter, in which “the devil (truly) is in the details” and we would take no pleasure in seeing them subjected to parliamentary or intergovernmental arbitrage (we will not soon forget the “technical” fate of the unusually consensual California reform...approved by 100 per cent of the State Senate and State Assembly, plus the Governor and all major Stakeholders!). Thus, this issue is better left to regulation than dictated by law: whether this regulation is a private initiative (bilateral or group *Pool* accords, Nord Pool, PJM, etc.) or public.

However, the functional link between the PXs and the TSOs remains a cornerstone of the workings of competitive markets—one we simply cannot ignore. Unless, that is, we ignore the very functioning of the markets, the very heart of the competitive reforms. How can exchanges promote trade in products if they do not know whether the transmitters are able to implement these trades? How can TSOs compute and allocate their transmission capacity without accounting for transactions negotiated on the exchanges? How can the balancing arrangement allocate volumes and values of balancing operations to the users of the transmission grid independent of the transactions effected on the exchanges? Etc. As said many times by Y. Smeers, to seriously build an EU market we really need to seriously deal with the constant interplay between market

trade outcome and actual grid flows' physics. That's exactly what economists call "an effective treatment of market externalities".

Thus, there exists a significant potential for concrete improvements in the functioning of competitive markets that would allow greater openness of all these markets to all operators, regardless of where they are from or when they entered the business.

#### *1.4.3 Incentive pricing of domestic congestion*

One of the keys to functional cooperation between markets and grids is the management of congestion, which is a typical "*externality*" and creates an obstacle to realising some transactions (whether concluded on PXs or bilaterally). Neglecting to provide any signal to market operators (and their corresponding uses of the grid) concerning the existence, cost, and value of congestion is not conducive to a smooth functioning of these markets.

Of course, a wide variety of methods exist for sending this signal. It may be a very precise hourly signal but only expressing a totally socialized cost on a half-hourly basis for all grid users (like in England), or a signal that is relatively detailed in terms of location but covering a long period (seasonal) and not associated with its own costs but rather with those of transmission losses (like in Sweden), or a daily zone-by-zone signal on the value of the congestion (like in Norway), or the value of the congestion at each node of the grid each five minutes (like in PJM in the US), etc.

It is, however, regrettable that several of the EU Member States, including some of the biggest, make no attempt to transmit an economic signal of congestion to the grid users. It is as if use of the grid always bore exactly the same cost, regardless of its effective availability and the actual behaviour of its users (= the spatio-temporal distribution of their injections and withdrawals). Furthermore, the irrationality of a grid fee structure with a single annual "*Postage Stamp including the cost of congestion*" is becoming increasingly obvious, especially in Member States confronted with new congestions occasioned by the large scale integration of renewable energy sources.

#### *1.4.4 Moving from "balancing mechanisms" to true "balancing markets"*

Alongside congestion management, balancing is the other main key to cooperation between markets and grids. Like congestion management, balancing management reconciles commercial transactions negotiated on forward markets (increasingly short term...as short as day-ahead or hour-ahead) with the real evolution of the flows on the grid created by actual injections and withdrawals. Thus, this is a provision that contributes directly to the security of operating the grid. But it is also a key economic mechanism for the functioning of competitive markets. All balancing mechanisms use an incentive fee structure for energy supply (upward and downward) applied to grid users or their business representatives (called “aggregators” or “balancing managers”, etc.). However, balancing “*mechanisms*” amplify this incentive aspect by charging more than the cost of the service rendered so as to dissuade market participants from planning to voluntarily use these energy trades in their injection and withdrawal programs.

When there are no other markets on which operators can trade energy amongst themselves (such trading can be done with implicit auctioning in the Nord Pool), on which these operators can thus establish a “real” price of energy and use it to complete the prices set on forward markets, and when the electricity systems of the Member States primarily consist of large, vertically integrated concerns, it would truly be unfortunate to adulterate or “close” the only energy market that can be open to all, the balancing market. Quite the opposite, existing “balancing mechanisms” should be nudged toward “balancing markets” to at least provide a price signal for the “real” energy available to all operators in the sector.

Close to this energy balancing area lies another mechanism that is vital to the security of the grid, that of “reserves” (reserve of power). We will not address this matter, despite its intimate proximity to the balancing mechanism. We will rather make the somewhat optimistic (!) assumption that all reserve mechanisms are well designed to help ensuring the security of the grid and to not interfere with the functioning of other markets.

#### *1.4.5 Implementing “capacity mechanisms”*

If we may make the heroic assumption that the functioning of “reserves” is neutral, this certainly will not carry over to “capacity mechanisms”. These capacity mechanisms

were explicitly designed to alter the functioning of competitive markets by modifying generators' incentives to invest. Mechanisms of this type were already used in the old Anglo-Welsh Pool, are still in use in Spain and PJM (in the US), and are in the final stages of evaluation for impending implementation in New England (in the US).

Extensions to such mechanisms within the European Union would require a thorough examination of the conditions under which they could reinforce security of supply by modifying the cyclical nature of generators' investments while not undermining the competitive functioning of wholesale markets.

## ***Section 2***

### ***Improving the EU Internal Market Design***

Naturally, construction of the EU's internal energy market began with the development of markets *within* the Member States and *by* the Member States. But that was only the beginning, and is not the final goal, of the European project. The goal is an internal European market that functions as a single market, with no “*border effects*” between Member States or between regional groupings of Member States. Of course, this ambitious goal cannot be achieved overnight, or even very rapidly. But that is, indeed, the final objective, stated and reiterated in the twenty years since the adoption of the European Single Act.

Clearly, this goal has political origins. And it is unlikely that even one of its negotiators ever questioned how it could someday be applied to the energy sector. Nonetheless, the goal of a single energy market is not utopian—it is technically and economically feasible, even if it never does assume the form of a complete merging into a single pan-European mechanism for the operation of all markets and all grids.

If, in accordance with the wish expressed in Section 1, all Member States had adapted their balancing arrangements to open them indiscriminately to all potential suppliers, which must necessarily include suppliers from outside national borders, and if they had similarly opened the borders to their domestic markets for fuel (especially gas) to competitive, long-term contracts (especially for electricity generation), then the main action to improve the EU internal market design could focus entirely on the issue of interconnection congestion management.

#### ***2.1 The important characteristics of the factor “EU Internal Market Design”***

Several contemporary examples show us various concrete ways in which the functioning of markets can be unified when it is impossible, or simply not desired, to completely merge the pre-existing markets. “*Border effects*” can be reduced to a *minimal*,

and thus acceptable, level if the various sub-markets operate as if they belonged to a market that is “single, but geometrically variable” or as a “quasi-single market”.

In Europe we have the examples of England-Scotland (contrasting markets between 1990 and 2004), and also of Nordic Countries (with an electricity volume comparable to the United Kingdom). The Nordic countries operate their day-ahead wholesale markets as a single market when the grids allow it, while a shared mechanism for allocating interconnections again divides them into distinct zones when the grids become overloaded. Within the United States we find more examples, including two different ones alone in PJM (electrical volume comparable to Germany). PJM has completely merged its markets with several neighbours, but only neutralized “border effects” with one neighbour (Midwest ISO) by creating a joint mechanism for managing that border. Finally, Texas (approximately the same size as France) provides yet another example. Here, a system operator (SO) has been put in place who does not own the transmission grid and who prevails over the vertically integrated incumbent companies to manage the flows of trades and congestions between the different zones within Texas from a single, jointly-organised energy market, the balancing market.

Thus, during the current phase, we must consider it real progress when clusters of European Union Member States use voluntary regional agreements to expand their reforms in their own fashion to move faster and further than the EU rules require. It is also in this manner, through local initiatives, that the major reforms in Europe (Great Britain, Scandinavia) and in the United States (PJM, New York, New England, Texas) have advanced to date.

The national diversities that exist or are appearing in the European Union are not necessarily disturbing. At least not as long as Member States, or regional groups of Member States, avoid getting stuck on market or grid-access mechanisms that are incompatible or grossly discriminatory toward third parties from other Member States or regional groups. D. Newbery has already launched an appeal to refrain from local market designs that could yield a “little extra” locally today while blocking future joint developments.

Nonetheless, when the European reform will have made it through the current phase (2005–2009), it is difficult to foresee further progress toward the final goal in the absence

of a defined minimum European “*Standard Market Design*”. One day we will need to adopt a few common processes with the capacity to reduce “border effects” between all Member States to a “tolerable” minimum.

## ***2.2 The main issues today in the building of the “EU Internal Market Design”***

Among all existing modules of competitive electricity reform, the five most important modules for EU internal market design have been yet designated in the Section 1 as the most important for the domestic market design of the Member States. They are: -a wholesale market that is bilateral (not organised); -organised day-ahead and futures exchange markets (PXs); -provisions for congestion management; -balancing arrangements; -markets for fuels and capacity mechanisms.

We know yet that the European reforms reveal a significant diversity for these five modules. It is, however, these five modules that are important if we want to verify whether or not intolerable “border effects” have been created between the Member States.

## ***2.3 Priority actions to improve today the “EU Internal Market Design”***

If the wishes expressed in Section 1 were reality, the push for an EU internal market design could focus entirely on the issue of interconnections’ congestion management.

However, although action on congestion management at interconnections appears as a priority, who could really push for it? The European Commission? Sorry, it cannot handle this on its own. Without a doubt, this is one of the greatest difficulties confronting procedures for constructing an internal market within the European Union. The Commission is not a European regulator, and does not have the power to directly advance Europe’s overall interests, even when these are calculable by techno-economic methodologies (as is the case with managing congestion at interconnections).

As we shall see in greater detail in Sections 4 and 5, the power to set rules necessary for establishing a real “internal European market” is in fact shared by the Commission, the regulators, and the TSOs of Member States...but mostly lies with the governments of the Member States. In principle, the crucial formal stage in the European process of adopting a common regulation of access to interconnections is consent of the Member States under the procedure known as “*commitology*”. Thus, an official definition of a European standard market design would assume that shared guidelines were accepted by the Member State’s Committee of Representatives provided for by the Second Directive of 2003.

Of course some extra help could come from appeals to the Courts and their subsequent powerful legal decisions, as we saw recently when the European Court of Justice “killed” the legality of “grandfathering rights” in electrical interconnection allocation. But the outcome of such appeals is rather unpredictable *ex ante*. So, while we can strongly build on it after the fact (*ex post*) we cannot count on it before the fact (*ex ante*).

Given all these constraints of the institutional framework, it appears very useful to promote today voluntary regional arrangements to “lead” the overall process of building a common European regulation. Such regional arrangements already exist in Great Britain (cf. the recent British Electricity Trading and Transmission Arrangement), between the Nordic countries (the Nord Pool accords), and are regularly announced between Portugal and Spain.

### *2.3.1 A single priority: congestion management at interconnections*

Today, one of the strongest protectionist forces on the EU’s internal market is that congestion management is exclusively, or predominantly, domestic or based on domestic criteria. In practice, congestion at the “borders” appears as the outcome of domestic decisions and priorities decreed separately in each Member State. There is no real comprehensive operational cooperation to minimise congestions at the borders or to maximise the capacity available at the interconnections.

After the decision against “Grandfathering rights” taken by the European Court of Justice, we could expect that “capacity auctioning” will spread in the entire EU as the main allocation procedure for interconnection capacity.

Unfortunately, using auctions to allocate interconnection capacities will not necessarily create a mechanism for cooperation capable of suppressing “border effects”. Auction mechanisms do exert competitive pressures on interconnection users, but they do not put any pressure on interconnection managers to maximise capacity. In particular, this is because auctions are usually based on a “veto” rule for defining interconnection capacity. It is no coincidence that this veto rule is adopted by the two parties of grid managers—nor is it based on altruism. Indeed, the “capacity veto” is the simplest means of administering interconnections when there is no desire to cooperate at the borders, in terms of either computing interconnection capacity or optimising this capacity by coordinated redispatching on the domestic market.

In practice, it would then be useful to see the Commission taken two decisions.

Firstly, to push national regulators and TSOs from their last holdouts in matters of voluntary improvements to provisions for managing congestion at interconnections, specifically by making each one clarify (under rules of transparency and non-discrimination): 1°the exact processes by which interconnection capacities are computed, and what has been done to render them compatible with the procedures of their partners on the various borders; 2°how domestic and foreign congestion factors are defined and calculated (= using reference scenarios and “power transfer distribution factors” –PTDFs-, for example); 3°what exactly are the procedures that guarantee equal and reasonable treatment of domestic and foreign congestion factors; 4° what provisions for cooperation are under study or in use to minimise congestion at the interconnections or maximise interconnection capacity.

The second useful decision would be to undertake a comprehensive technical and economic analysis of existing congestion management practices in the European Union so as to better distinguish best practices from bad and from those that aren’t so good, and to identify potential improvements.

### *2.3.2 A possible engine: voluntary regional agreements*

Given the existing institutional framework (to simplify: the *Commitology* with 25 Member States), it may not be that easy to rapidly push forward common procedures for cooperating in the management of interconnections. This is why it seems very useful to promote the signing of comprehensive voluntary agreements in a regional context.

We can even imagine that, in the current 2005–2009 phase, EU internal market design could be advanced mostly by the impact of a small, dynamic group of regulators, TSOs, PXs, and market operators seeking to build a consistent framework for a regional market. These regulators would benefit from bolstering the role of the market in guiding the behaviour and performance of the operators. These TSOs could increase the operational security of their grids by cooperating more extensively and could generate new margins of capacity without large investments. These PXs could play a new role, at least over time, in allocating interconnection capacities, for example in the form of coordinated auctioning in a market coupling context. These market operators, finally, would stabilise the framework of action for wholesale markets before the resumption of investment in generation and the opening of retail markets, all the while reducing the governmental and regulatory pressures made necessary by excessively dominant positions on markets that are too local.

This type of scenario could drive Western Europe (Netherlands, Belgium, France, with or without the RWE or E.ON control areas) or Central Europe (delimitation to be established), while Portugal and Spain finally implement their long-awaited agreement.

### ***2.4 Secondary actions to improve the “EU Internal Market Design”***

As a single priority action has been retained, there are clearly many other actions that can be envisaged and that would advance the “European” dimension of existing market designs. However, here again, it is not relevant to identify too many priority targets at one time. Thus, only five other actions for significant improvement will be considered, which are not yet considered absolute priority at the beginning of the 2005-2009 period.

*2.4.1 Harmonisation—especially regional—to open a European bilateral market (“European purchases and sales passport”)*

Quite aside from the congestion management issues discussed above, a minimum of harmonisation in the definition of contracts, clearing rules, rules governing declarations or nominations to TSOs, etc. would facilitate the creation of a “European energy transactions passport” that would allow supply and demand on a pan-European scale and thus open a large bilateral market. This harmonisation of bilateral market frameworks could doubtlessly progress more rapidly on the regional scale. It could be helped by the recent European Court of Justice’s decision to reject the legacy of “Grandfathering rights” on interconnections capacity. Then many incumbents will have to look more closely at actual trading conditions in the EU bilateral market.

*2.4.2 Harmonisation—especially regional—for reciprocated opening of organised markets (“virtual EuroPX”)*

In addition to a harmonisation of European bilateral markets, a minimum of voluntary harmonisation of the rules governing counter openings and closings, registration, transferring orders, guarantees, clearing, etc., between the principal Power Exchanges in Europe would go some way towards increasing their general attractiveness and reinforcing the “open” quality of the European market and overall liquidity. It may be that these advances will be easier on the regional scale, too, cf. OMEL becoming IberoPX or, for an example from another field, the integration of several Western European financial markets into Euronext. Similarly, do APX, Belpex, and Powernext not have some interest in offering the same service as a EuroPX, even a “virtual” EuroPX? May EEX and other Central PXs be next to proposing a virtual EuroPEEX?

*2.4.3 Harmonisation—especially regional—for reciprocated opening of balancing mechanisms (“Balancing club”)*

When national balancing mechanisms are no longer closed to supplies from abroad, why not reciprocally open balancing procedures while seeking a process that will preserve each TSO’s “security” properties while clearly making available to all TSOs

belonging to the same “balancing club” all supplies that may be accessible to them. Here too, it is likely that advances in harmonisation will be easier at the regional level (as we already see with the Nordic TSOs).

#### *2.4.4 Harmonisation—especially regional—of domestic mechanisms for fostering priority energy sources*

If energy is to circulate more and more freely between domestic markets without being subject to border effects, we must find a way to harmonise the impact “at the borders” of policies to foster priority energy sources on the national scale. No Member State government should be allowed to shift the burden of its national priorities onto its neighbouring markets and transmission grids.

#### *2.4.5 An information mission on the best provisions for opening retail markets*

We may believe that a closer inspection of the issues related to providing for the opening of retail markets is best left until the official date of July 2007. Or that the Commission cannot be everywhere, and competition in the retail sector does not necessarily appear to be a so decisive issue as of the official opening in July 2007. Or that this is really a subsidiary matter for the Member States.

However, we know that moving to competition in retail is costly in terms of regulatory provisions and the logistics of information management, and that there have already been several large-scale experiments with between six and ten years of experience (especially Norway, England, Germany, and Texas). Thus, it would be rational to take a look at best practices (European or US) in this area and to share them will all for informational purposes (= “*Sunshine Regulation*”), even if no more direct EU intervention is desired. A purely informative intervention can be extremely useful since, in Member States that have not yet opened their retail markets, the opinion of the public and the numerous stakeholders frequently has no reference or comparison points in this issue.

Moreover, the July 2007 date will be a formal rendezvous with European public opinion, if only because of its official nature. Thus, it would be wise to prepare for it.

Finally, we have to consider that by combining the recent initiative of ENEL in Italy (which equipped all Italian domestic consumers with smart meters costing only a few tens of euros), and the expertise of the Norwegian regulator (in the conception of a simple and inexpensive regulatory and computerized information system for retail competition) it will be possible to outline a European standard for retail competition that will also allow active demand management of household consumption (notably: “*demand responsiveness*”). Will we thus have an equivalent to the pan-European GSM standard in mobile telephones for retail energy markets?

### ***Section 3***

#### ***Improving the EU Industry Structures***

This section on European industry structures is the most difficult of the five sections in this paper. This is not because there is any mystery about why industrial structures are important for the construction of an internal energy market. Whatever the rules of this market, we know that its capacity to deliver the expected performance will crucially depend on its industry structures, and especially on achieving the right balance between competitiveness and an acceptable level of vertical integration (between the various activities in the value chain) and horizontal integration (defining the size of the firms on the local, national, and European scale).

However, while a variety of market designs are acceptable in a competitive energy reform, it is not possible to indiscriminately apply any one of them to just any industrial structure. A certain level of compatibility must always exist between the ground rules of the retained market design and the vertical and horizontal integration characteristics of the corresponding industrial structure. Of course, in some situations a few voluntary adaptations to the market design may remedy certain industrial designs that are otherwise inimical to competition. However, no finessing of the market design can remedy all industrial structures that are anticompetitive by nature. And then what can be done?

#### ***3.1 The important characteristics of the factor “EU Industry Structures”***

“Improving EU Industry Structures” is one of the main difficulties in the construction of an internal energy market. We can consider the European Commission as the agent leading the internal market implementation process, because the EC has the authority to nudge Member States, along with the European Parliament, toward “good” Community legislation and regulation. This legal frame will, in particular, circumscribe the scope and variety of “Euro-compatible” market designs for all and will define minimal criteria of acceptability for industry structures in grid and monopoly activities. However, the Commission cannot dictate any euro-compatibility criteria to Member

States in terms of the industrial structures of activities destined to operate on a competitive market, nor can it promote appropriate matches between market designs individually chosen by Member States and the industrial structures they retain. Thus, we have to proceed “*as if*”— as if there were no industrial structure for these activities that could ever be detrimental to the normal functioning of a competitive market (such as, for example, vertical and horizontal integration exceeding 50, 70, or even 90 %).

As has already been demonstrated by D. Newbery, and as D. Finon and J-M Glachant verified in the case of France, when confronted with extreme industry structures (almost complete vertical and horizontal integration on a huge scale: 450 TWh in France), there is no way to construct a robust market design that will, on its own, guarantee acceptable performance in terms of price, cost (choice of marginal plants), orientation of imports and exports, etc.

However, here we find that there are no arrows in the Community’s quiver beyond European competition policy—which cannot touch industrial structures except under agreements negotiated for the acceptance of mergers and acquisitions or, more exceptionally, for “large-scale” dossiers of State Aid (major sectorial restructuring with government help, which is more widespread in the air transport sector but has been reintroduced in Britain for British Energy). Member States are sovereign in defining the industrial structure of their “competitive sector” at the beginning of the reforms and, in practice, this sometimes also extends to negotiating later changes via intergovernmental dialogues on industrial policy. This is illustrated by the recent Franco-Italian agreement, in which the two governments, under coercion of an Italian Act that was eventually found to be groundless by the European Court of Justice established an industrial and financial framework of cooperation for their two “national champions”.

Furthermore, the industrial reference model for electricity reforms completely changed between 1995 and 2001. It has shifted from a preference for structures that are vertically disintegrated between generation, trading, and sales to final consumers toward a preference for vertical reintegration of production, trading, and final sales. Among the best illustrations of the changing “industrial paradigm” are the shifting attitudes of financial markets, financial analysts, rating agencies, and banks vis-à-vis disintegrated structures, especially concerning “pure” trading and “pure” generation (*Merchant*

*Plants*). Bankers and financiers have finally joined company with stockholders and managers of firms operating in competitive energy markets and concluded that vertical integration is the best protection against volatility and the cyclical nature of markets. Comparing the functioning of markets in the western United States (California) and in the east (PJM and New England), US economists like J. Bushnell have demonstrated that some forms of vertical integration may also limit firms' incentives to exercise market power.

In addition to this vertical reintegration, we also observed intense activity in horizontal mergers and acquisitions, the most significant examples of which are doubtlessly in Germany, where the ten biggest electrical and gas concerns that existed at the time the European directive was adopted in 1996 have become four today, and Great Britain, where fifteen firms operating in electricity and gas sales are now six. As in the German and British examples, integration and concentration between electricity and gas is another defining feature of this new "consolidation" phase in Europe's energy industry. Among the seven biggest electricity firms in Europe, Vattenfall and EDF have proven themselves to be anomalies because they are notably less involved in gas to date.

Finally, while gas wholesale markets and concerns have persisted in courting the entry of large European and North-American petroleum and gas companies, electricity wholesale markets, and electricity and gas retail markets, have not experienced any comparable influx. Thus, the upshot is a net "consolidation" of the industry on the pan-European scale, with an increasingly concentrated small number of international European firms in the sector, sometimes mockingly called the "seven brothers" in a transparent reference to the "seven sisters" of the international petroleum industry in the 20th century. Nonetheless, on a country-by-country basis, the European Union often comes across as juxtaposing domestic markets of monopolies or duopolies with a small competitive fringe in which one, two or three fringe new entrants operate.

### ***3.2 The main issues today in the handling of the “EU Industry Structures”***

Under these “grey” circumstances, which are accompanied today by rising wholesale prices (especially on the continent, where they are several tens of percentage points higher than their lows of 2000 - 2002), several urgent questions are being asked: by the experts, by consumers (including the largest consumers, the electricity-intense manufacturers that have been seriously hurt by these skyrocketing wholesale prices), by the public, and by political decision makers.

Will the progressive construction of an internal market expanded to several Member States be faster than the consolidation between firms in the sector, so as to allow normal competitive conditions to be established? Is the oligopoly that is being built strong or weak? Will it bring greater collusion or more rivalry? Will the “gas rich” seek to beat the “gas poor”? Will an oligopolist invest more, and faster, because of greater sectorial and temporal stability, or less, and slower, because of the absence of the spur of competition? Will all governments in the Member States mobilise their resources to defend “their” national champions, or more simply refuse to push for a broader and stronger competitive nature of the internal market?

Will Community or national competition authorities, and national regulators who hold the power, succeed in preventing *ex ante*, or contesting *ex post*, newly established positions of dominance or the perpetuation of its most disquieting manifestations from among the incumbents? Can they easily detect profitable exploitation of these dominant positions within each of the multiple “modules” of the competitive electricity reforms? Within the interior of each Member State, but also on “border effects” between Member States?

To put these questions into perspective, they must be examined in conjunction with the five most important issues in terms of “EU Industry Structures”.

#### ***3.2.1 Mergers and acquisitions***

Mergers and acquisitions should not be a major preoccupation. On the one hand, this issue is “old hat” in European competition policy and, on the other hand, it is an excellent lever for directly obtaining structural remedies on a European scale that would be

unattainable otherwise. If, nonetheless, certain “real” problems emerge, this more likely reflects on the deficiency of certain national rulings, especially when governments or judges can deliberately ignore the anticompetitive effects of their decisions. At the very least, this results in a lack of harmonisation between national decisions and those taken at the European level. The E.ON-Ruhrgas merger will remain a bone of contention and a source of confusion for a long time. However, we cannot see any simple solution. The recent strengthening of the harmonisation between national and European levels affects the competition authorities themselves, and not the other national third parties that possess real decision making powers.

Mergers and acquisitions that are properly controlled can still be seen as proactive means for opening national markets to new operators; sometimes even in the form of asset swaps between firms which thus directly trade market shares in their countries of origin. Naturally, this is contingent on a clear distinction being made between the potential for competition vs. “domination on the borders” coveted by national champions penetrating adjacent markets, or vs. a “reciprocated neutralisation through a proliferation of points of contact” effect. It appears that this verification presupposes a greater cooperation between national competition authorities and European competition authorities.

Under certain circumstances, the same may be said to obtain for the integration of electricity and gas, which could drive a movement toward joint supply of the two energies (“dual fuel”) that may reinvigorate inter-firm rivalry, as was the case in Great Britain where the incumbent gas supplier penetrated 40 % of the retail electricity market. Of course, such a rivalry cannot to be taken for granted, as a “collusive equilibrium of separation” between electricity and gas leaders may in fact emerge in an insufficiently competitive frame.

### *3.2.2 A European bilateral market between vertically integrated firms*

Owing to the aforementioned reversal of the “industrial paradigm” and the flurry of mergers and acquisitions in many countries, most national and European energy trades involve firms that are vertically integrated. Thus, it is no surprise to observe that organised wholesale markets (day-ahead and futures PXs) can remain quite illiquid and

exposed to the weight of dominant operators. These dominant operators are not particularly interested in seeing the organised markets develop and, in particular, in offering futures contracts that can facilitate the entry of new operators. This foot-dragging by the dominant operators can delay the transformation of balancing mechanisms (which are generally detrimental to new entrants) into balancing markets (which can be more propitious for them). Finally, this lack of interest on behalf of the dominants in a greater role for organised markets may also slow the transformation of interconnection management and the building of a new “borderless” cooperation mechanism between neighbouring TSOs.

### *3.2.3 Detecting market power and remedies*

The European Union appears to us to still be in its infancy in matters of detecting and remedying market power in the field of energy. In a few countries of the European Union (three or four or five, the exact number is irrelevant since it is, under any conditions, small) a more or less permanent arrangement exists for detecting market power on some of these markets—but never on all of them—and even more rarely an array of organised remedies. The implicit assumptions appear to be that either: that existing markets function sufficiently well that ongoing monitoring would be a waste of valuable time on a non-priority activity; or that detecting and correcting eventual anomalies is not very difficult, so that any problem will reveal itself spontaneously in a timely fashion.

These questions may not even be relevant to competition authorities, especially if they are not authorized to implement surveillance or corrective actions on their own. This appears not to be the case for the European Competition Authority, though, which has launched a sectorial enquiry “Energy”, nor for the Scandinavian Authorities, who met as early as 2003 to jointly tackle the area of energy—which they ultimately found quite difficult to understand and control.

Even in the United States, which today is viewed as a clear victim of various manifestations of the exercise of market power, nearly one year was required before the federal regulator realized that this was indeed the case in California, and then another year to recognise that this also applied to Enron (which had collapsed in the interim) and

El Paso gas. One of the difficulties arose because some of the ways in which “market power” was exercised could only be explained by deficiencies in the rules of the market. (The case of the “*DEC Game*”: the firm created congestion “on paper” only to sell the means to rectify it to the TSO: a “*Decremental Offer*”. The “DEC Game” was also played out in Texas under another type of market design).

In conclusion, it thus seems that detecting market power in the energy sector, and finding the remedies, are not significant problems when no one is looking, and only become truly challenging when they need to be dealt with.

#### *3.2.4 Coordinating investments in generation and transmission*

The usefulness of using investments in transmission for opening domestic markets within a more competitive European market was identified long ago in the European Union and expressed during the Barcelona Council. Nonetheless, as we shall see in the following section, this is a difficult goal to translate into an effective European policy. It is doubtlessly a very long-term target. In the United States, after seven years of competitive reform, the regional markets that are most satisfactory overall, such as the PJM, have not truly advanced in terms of rational expansion of the “competitive support” that the transmission grid provides. In practice, it is the federal regulator who recently forced PJM out of its inertia in that domain. It may be that this inertia is linked to how ISOs are governed in the United States (ISOs are run or largely influenced by committees of stakeholders dominated by integrated firms). In the European Union, expansion of the means of transmission, and in particular of interconnections, is the work of TSOs operating on a national scale, controlled by their national regulators or governments. Any accounting for the whole of the European Union is usually completely absent.

#### *3.2.5 Preparing for the “Great Internal Retail Market” in 2007*

The opportunity all consumers will have to choose their supplier as of July 2007 could provide the occasion for injecting a new dynamic into the Member States’ domestic markets and, under some conditions, for sketching out a European market of domestic consumers. However, past experience in several Member States (e.g. Sweden, where retail competition was opened up in 1996, and Germany, in 1998) has demonstrated that

retail competition is considerably less spontaneous and weaker than competition on wholesale markets—which is yet, itself, inadequate in some Member States. The Swedish and German experiences are intriguing because the structure of distribution and supply was not extremely concentrated, horizontally or vertically, in either country. In France, a highly concentrated market, initial evaluations of the opening of the “mass business market” in July 2004 revealed that the penetration of new entrants had attained less than one per cent (in numbers of clients) nine months later, while a “successful” rate for a mass competitive opening would be on the order of one per cent per month, at least for a while. Thus, it seems apparent that the 2007 deadline should receive some attention, so that the inherent difficulties facing retail competition are not compounded by national provisions that are inappropriate for this goal.

### ***3.3 Priority actions to handle today existing “EU Industry Structures”***

Despite the importance of the domain “EU Industry Structures” to the success of the internal energy market, it is difficult to design priority goals that are “realistic” enough to become truly operational. Nonetheless, the two following goals lie at the heart of the matter.

#### *3.3.1 Bolster the combined efficiency of the two tiers, national and the Community, of competition policy in the energy sector.*

Competition policy is one of the cornerstones of the European Commission power. The Commission knows it, and makes no bones about it. It may thus seem superfluous to articulate any suggestions on this particular subject. But it really has to be done nonetheless...if only on principle or as an early wish list for Santa! For it is truly indispensable that the level of cooperation between national competition authorities and national regulators, on one hand, and the Commission, on the other hand, rise to the challenge of proliferating cross-border operations and transactions and the concomitant implication of many opportunities for the exercise of market power.

One example to watch is the cooperation between the Nordic competition authorities since the summer of 2003 for sharing “intelligence entry costs” in this notoriously difficult sector. The Norwegian competition authority has also been training some of its experts with those of the regulator in this area.

Furthermore, it is true that some real actions have been undertaken by the Commission to bolster the effectiveness of competition policy: -a reinforcement of cooperation with national competition authorities has begun; - a comprehensive sectorial enquiry “Energy” has been initiated by DG COMP in collaboration with DG ENERGY.

If one could, nonetheless, reiterate three “fervent wishes”, they would be three. Firstly that the Commission pay particular attention to preventing increased market power springing from mergers and acquisitions between electricity and gas (owing to the risk of the fuel for generating electricity being difficult to reach)—but this has already been clearly articulated in the EC rejection of the “gas / electricity” merger in Portugal. Second, that the Commission be particularly watchful in the event of cross-border mergers and acquisitions, which may have the effect of closing competitive access from a neighbouring market—but this has already been clearly articulated in the corrective measures imposed on EDF’s entry into ENBW’s capital. Thirdly that the Commission promote “permanent” structural remedies (such as divestment) rather than “temporary” ones (like VPP) in the event of mergers and acquisitions involving operators that are already dominant.

### *3.3.2 Create a permanent team of experts to oversee the competitive nature of markets and access to grids*

A further, truly new, priority action could make a very useful contribution to the domain “EU Internal Market Design”. The DG Energy is already conducting a very influential “Sunshine Regulation” exercise in the form of annual benchmarking of the progress toward an internal market. This work is very effectively enhanced by another, the quarterly publication of prices.

A supplementary action in the area of “EU Internal Market Design” could be the creation of a permanent team with diverse competencies (engineers from the energy sector, specialists in computerized database management and data analysis software, and

economists with expertise in modelling markets and conducting econometric tests). The purpose of this team would be to give the Commission its own, internal expertise, if only to help it better mobilise external sources, for example to stimulate or capitalise on work undertaken at the national level by regulators and other competent authorities.

By way of comparison, the US federal regulator's permanent market oversight team (called OMOI) consists of more than one hundred individuals, while each US ISO has its own team of from five to twenty members. Below a certain level of permanent surveillance activity, there is no internal expertise to be had on difficult subjects. Given the current European environment of generalised price hikes, there have been and will be an increasing number of referrals to the Commission and requests for intervention from the Commission (cf. the large electricity-intensive firms, for example—also, as of July 2007, all retail markets will be open...at least “in principle”).

### ***3.4 Secondary actions to improve the “EU Industry Structures”***

Several of the potential paths for improving “EU Industry Structures” correspond to entries in other sections (\* opening balancing mechanisms or transforming them into balancing markets, cf. Section 1; \*\* creating larger regional markets by extending the voluntary harmonisation between domestic markets, cf. Section 2; \*\*\* launching a study to forecast the state of generation & transmission in the European Union of 2012, cf. Section 4). There remains, however, one other secondary path for improving the evolution of the construction of the internal market in this domain.

#### *3.4.1 Harmonisation—regional(?)—of the collection of, and access to, TSO's databases on markets, grids, and interconnections*

TSOs are *de facto* inescapable intermediaries in the realisation of transactions on energy wholesale markets. This is why it is important to guarantee their strict neutrality by separating them from all other activity in the sector. To perform their function, TSOs need to collect and process large amounts of detailed information on generation, injections, market transactions and the corresponding grid access requirements. This

information is thus vital to the authorities responsible for overseeing the competitive nature of the operation of markets in this sector.

Nonetheless, quite aside from any shortcomings in domestic legislation or regulation attributable to a failure to anticipate that the new markets may not be immediately or sufficiently competitive, TSOs themselves are not necessarily aware of the social usefulness of their function as data collectors or of the interest the public may have in this function.

Conversely, in some countries (the United States, Norway) TSOs or ISOs—whether integrated into Power Exchanges (PXs) or not—are direct auxiliaries of higher market oversight authorities. Without wishing to push the European Union in this direction, since it appears detrimental to some regulators and competition authorities and incompatible with the tenuous independence of some European TSOs vis-à-vis the incumbent operators, it would nonetheless be useful to open a voluntary framework for harmonising TSO's data.

On the regional scale, harmonising the procedures for gathering, storing, and querying TSO's data would allow market monitors to fully engage in their mission of overseeing all operations with a cross-border dimension, which are increasingly common. This harmonisation should also facilitate greater cooperation between adjacent TSOs who will one day have to, let us not forget, operate their grids with no “border effects” (cf. Sections 1 and 2).

## ***Section 4***

### ***Improving the “Transmission and TSOs’ Governance”***

First, to state the obvious... the functions exercised by TSOs are vital—they can in and of themselves determine the success or failure of the construction of the European internal market. It is because they manage the vital and really “essential” facilities of the electrical industry and of the electricity markets.

But second, whatever we wished, these infrastructures of the European internal market are administered by organisations for whom the internal market is not the principal or normal mission or performance criteria and who have no explicit incentive to establish close operational cooperation with neighbours to facilitate a unified functioning of the market.

At the beginning of the current phase 2005–2009, no powerful lever appears to exist that is capable of directly shaking up the status quo on a European scale. Conversely, we may be able to count on some regional subsets of TSOs being more interested in creating improvements with this or that reinforced procedure for regional cooperation and more motivated to exchange their veto power for a real improvement with their neighbours.

#### ***4.1 The important characteristics of the factor “Transmission and TSOs’ Governance”***

##### ***4.1.1 A vital contributor to the success or failure of the internal market’s construction***

Yes the TSOs’ functions are vital and can determine the success or failure of the construction of the European internal market. Incidentally, there is asymmetry between success and failure—their functions are necessary, though not sufficient, conditions for success, but sufficient conditions for failure This is not only a matter of large-scale blackouts, of which the summer of 2003 was, however, a cruel reminder in Italy and the eastern United States and Canada. In the western part of continental Europe several very difficult situations have sounded the alarm in recent years, though ultimately they were (by good luck or good management!) successfully dealt with.

However, TSOs do not passively manage the security of grid operations, they also actively intervene in the flows, and thus by extension in the corresponding market transactions. Managing the “technical” linkage between injections into, and withdrawals from, the transmission grid is often equivalent to intermediating between supply and demand on the wholesale market. To accomplish this mission, TSOs have access to a large volume of data expressing the outcomes of these transactions, encompassing the “nominations” of the gas transmission system users and injection and withdrawal schedules of electricity transmission grid users.

Furthermore, TSOs also manage a wholesale market (or a “quasi-wholesale market”), the balancing mechanism, where they are the “single buyers” of indispensable services for balancing and compensating all other wholesale markets, all of which are “futures markets” whose energy transactions are in fact cleared on this balancing mechanism. In the electricity sector this linkage, which is both technical and economic, is extremely powerful in the chain connecting the different wholesale markets. Since electricity cannot be stored, no “real” energy can be exchanged before the moment of balancing. In the case of gas, this linkage can be relaxed because gas is storable. Gas, along with its historic price, can be “physically” carried over time. If gas storage facilities are accessible and inexpensive, then not even the balancing mechanism can be monopolised by the TSO and it works in fact as a real “market for balancing energy”.

Finally, TSOs are *de facto* administrators & managers of the Union’s internal market. Notably, it is they who define the maximum and minimum extension of the internal market, in terms of size and volume, since they manage its entry and exit points, which are none other than the interconnections between Member States. They thus define the conditions for access to the “internal market” as they define the criteria for using the interconnections.

#### *4.1.2 The governance of the TSOs is essentially national*

And now, another reminder of the obvious... all TSOs are, “at best”, national, and sometimes infra-national (Germany, previously Denmark). Their legislation, their regulation, their regulators, their owners, their staff, their experience, their internal procedures, their performance criteria, etc., are all essentially national. TSOs are thus

national bodies, organised and regulated on the national scale. But they in fact manage the core essential facilities of the European Union's internal market. Logically, this poses a series of problems related to organisation, coordination, and incentives.

These problems did not arise during the competitive reform in England and Wales, owing to the superposition of the domestic market, legislation, regulator, Pool, and TSO. These problems can be found to some extent in the Nordic countries where the common wholesale market (Nord Pool) presides over four countries that have not integrated their legislation, regulators, or TSOs. Some of these problems have been readily solved, however, since the rules of the Nordic wholesale market include a mechanism for the coordinated allocation of interconnections that manages congestion on all of their shared borders. Nevertheless this common wholesale market is Norwegian in Norway, and thus is not directly subjected to authorities from the other countries. Yet, since the non-Norwegian TSOs are all direct stockholders in the common wholesale market company (the Nord Pol company), they all directly participate in its governance.

Matters become more difficult for these Nordic TSOs when they need to harmonise anything other than their common wholesale market. For example: calculating interconnection capacities; attributing congestion-creating events to domestic flows or the interconnections; rules of the domestic balancing and counter-trading markets (= domestic management of congestion deemed internal by the TSO); establishing connection and access fees (level and distribution in G / L); joint planning of the expansion of domestic lines and interconnections, etc.

#### *4.1.3 The US "System Operator" (SO) formula suppresses historical transmission zones, but does so by relying on the existence of a federal regulator*

The United States invented a novel solution for suppressing the organisational and administrative borders dividing the incumbent transmitters' historical zones of control; e.g. there were several zones within California and Texas, and within each zone each transmitter was vertically integrated with the incumbent operator... like in Germany.

Ownership of the transmission assets remained with the incumbent operator. But all of the use of the assets and the operation of the grid were entrusted to a new institution, especially created for the occasion: the *System Operator*. The appearance of this new SO,

who is *not* a TSO, has thus eliminated all the old borders between the historical zones and allowed the rapid creation of wholesale markets that are totally functionally integrated across the newly configured “regional” areas, whose electrical size varies between that of Spain and England (Texas and California) and Germany (PJM). To emphasise their independence, these American SOs are called “I”SOs (“I” for *Independent*). They are, in fact, entities with no ownership links to the incumbent operators. Their large size, covering several previous transmission zones and sometimes several states (as in the case of PJM and New England), is underscored by calling them *Regional Transmission Operators* (RTOs). They always correspond to a wholesale market that functions as a unit on the regional scale (reserves, balancing, congestion management, PX, bilateral transactions, etc.).

These ISOs-RTOs are not regulated by the states in which they are active (except in the case of Texas), but rather by the federal regulator, the FERC, which, in practice, delegates a number of regulatory functions to the ISOs themselves, after approval, while retaining the right to challenge their processes and decisions. These ISOs are thus largely “self-regulated” organisations (SROs), as are stock and commodity exchanges in the United States.

After having monitored several experiences with the establishment and expansion of System Operators, the US expert and MIT professor P. Joskow states that one of the main practical conclusion is that all issues of network harmonisation and operation, traditionally presented as difficult to the point of being intractable, disappeared in the wake of the constitution of the ISOs. Thus, this is a powerful tool for unifying the functioning of market “infrastructures”.

In Great Britain, the English TSO (the company NGC today named NGT) also recently became the SO of Scotland by taking over the tasks of the incumbent Scottish TSOs in order to achieve unification of the British domestic market. One of the principal economic downsides of the US organisation of ISOs is that they do not own the grids and thus cannot be submitted to an “incentive pricing”, unlike the English TSO which, in its SO functions, must share with its clients the residual costs –or benefits- of operating the system (notably vis à vis a congestion costs and losses costs’ target). However, this will

not be an issue in the remainder of the European Union since, to our knowledge, the main European TSOs are not subject to incentive pricing in their functions as SOs.

The other disadvantage to the US formula is the separation between the function of SO and the function of investor in transmission assets (the TO aspect). This will prove all the more worrisome if it handicaps investment in strengthening or expanding the grid. Recent empirical work by P. Joskow suggests that it is not so much a problem of financing (finding the funds and the investors) that hampers ISOs' investments in expanding the grid, but rather the preparatory planning. ISOs do not always play an active role in planning the expansion of their own grids (i.e. conducting systematic analyses of potential and desirable investment projects from the perspective of operating the grid). It seems that the federal regulator has succeeded in restarting this planning process. It is possible that ISOs were lulled into complacency by the incumbent companies, who had no interest in a formal and transparent procedure that could reveal all the new opportunities liable to appear following the expansion of the grids. If this is confirmed, the disadvantages of the ISO structure for investment would not add a problem in the European setting, where all grid planning processes essentially remain national and do not account for any interests other than those existing within the historical zones of control.

However, a very important practical obstacle to implementing the ISO formula in Europe (by creating a few European SOs beyond the old borders) is the complete absence of a European regulator (cf. Section 5).

#### ***4.2 The main issues linking the “Transmission and TSOs Governance” and the building of the Internal Market***

In the European context, where the infrastructures of the internal market are administered by national TSOs who engage in only the most limited range of cooperation, several important questions arise for the construction of the internal market.

#### *4.2.1 Independence of the TSOs*

While it is true that, in principle, the second directive & package “Internal Energy Market” enhanced the independence of the TSOs, this question remains a central one. There can be no credible European internal market if all TSOs are not truly independent of the other industrial, commercial, and financial interests in the sector. Thus, we continue to wait to see how formal (*legal*) independence will be implemented in the Second package implementation by Member States.

We also need to know how effective decisional independence will work. Indeed, there is reason to fear that the first “structural” obstacle to the construction of a competitive energy market (being the collusion between the transmission grid manager and the incumbent operator) will be quickly followed by a second “behavioural” obstacle to building a competitive, pan-European, market: collusion between the transmission grid manager and the “national interests”.

This problem has already been seen in the Nordic countries, in the context of their shared management of Nordic interconnections that, we recall, simultaneously defined the effective size of their common market and the volume of energy allowed to transit between the sub-markets during periods of Market Splitting. The Swedish TSO, which is not really a firm but a government body, is apparently obligated to prioritise Swedish interests when they conflict with optimal usage of the Nordic common market.

This Swedish example has the advantage of transparency—when things are stated with such clarity among partners sharing a common wholesale market. However, what would become of the construction of the European Union’s internal market if each European TSO would behave like that in practice, systematically putting the interest of its “stakeholders” ahead of any need to optimise the internal market as a whole?

A similar question arises in Germany, though on a local scale this time, since the TSOs are averse to nationwide management of their transmission grids and operation of their electrical systems (included reserves and balancing). Are we to conclude that the local interests of the stakeholders of each of the four zones take precedence over that of Germany as a whole, and that only “leftovers” are dealt to the national level? And that, consequently, virtually all room to manoeuvre and adapt will already have been

exhausted within Germany before any consideration is given to optimising the European internal market?

#### *4.2.2 Coordinated operation of electrical systems*

It would be useful for TSOs to be truly independent of incumbent operators and, moreover, not entirely dependent on only national interests. However, it would not be good at all if they were all independent of each other.

It is true that some TSOs depend only on themselves (Ireland, Cyprus, Malta, Great Britain, etc.) or on a small number of neighbours (Portugal-Spain), but most of them manage many more borders, and thus many more interdependencies.

However, TSOs can run their existing fiefdoms like autonomous zones, only adding rules of “good neighbourliness” at the borders, where they become interdependent. *A priori*, this does not violate any rule of the secure operation of these grids, which have functioned like this for decades. But this arrangement does preclude, *a priori*, obtaining the most from the potential of the EU internal market.

As we observed in Sections 1 and 2, if interdependencies between zones are not managed in a highly coordinated fashion, then each TSO will need to supplement its own “internal” scenarios with in-house estimates and its own protection against unknowns and uncertainty liable to arise from the interdependencies at the border. Unfortunately, it is by definition the domestic TSO who is the most incompetent and poorly placed to define, calculate, or forecast what might come at his borders from the outside. Neighbouring TSOs are better placed to tell what may eventually come from within them. Finally, in a too poorly cooperative game, none of these TSOs, wherever they are located, can truly predict the full array of new interdependencies on their own. Since these new interdependencies are the outcomes of the interplay of multiple events and scenarios from various origins. Objectively, all TSOs should invest together in jointly exploring their new interdependencies so as to optimise their operational behaviour without imperilling their security.

Increased interdependence, spurred on by liberalised trade, could push TSOs to cooperate much more intimately. However, they will also be able to manage this additional interdependence in a more limited fashion. Even though this would clearly be

suboptimal at the EU level, some TSOs may prefer to refrain from investing in new methods and processes for comprehensive cooperation that could undermine their independence...from other TSOs.

If truly reinforced cooperation is to emerge, it is to be hoped that it will involve technical cooperation (information, data, scenarios, algorithms, criteria, etc.) but also economic cooperation (costs, prices, investment incentives, economic efficiency decision criteria, etc.).

#### *4.2.3 Coordination for the expansion of interconnections*

The Maastricht treaty already foresaw the need for a “large trans-European grid” infrastructure that would, however, be conditional on each Member State having a veto right over any intervention at its borders or in its interior, and within a budgetary framework only determined by the European Council. The Barcelona summit more recently launched the idea of bringing the interconnection capacity between Member States to a minimal value (10 per cent).

This cannot conceal the fact that the investment procedures in effect in Member States typically remain national. As a rule of thumb, one TSO studies the grid on its side of the border, and the other TSO studies the other side. Each one has its own methodology for combining the capacity and the direct costs of the interconnection with the other interdependencies specific to its grid. Using its own criteria, it evaluates the technical consequences (especially on security) and the economic consequences (if at all!) exclusively in the context of its own transmission zone. Then, on each side of the border, the resulting investment projects are submitted to the nationally competent decision makers (stockholders, regulator, and minister) who decide on the basis of the domestic interests they represent. If the two national decision chains coincide up to the final decision, then each TSO assumes all the costs incurred on its side of the border.

There is nothing about this process that evokes any structured cooperation for expanding the European grid.

#### 4.2.4 *The harmonisation of grid access fees*

Transmission grids are natural monopolies and “essential facilities”: indispensable, but non-duplicable, installations for accessing the market. Since they are so important to the functioning of markets, these grids are subject to far-reaching regulation of their activities that includes, aside from numerous managerial and behavioural criteria, at a minimum the designation of an administrator who is under oath (the TSO) and a sectorial regulator (at least since the Second Directive).

Given this very structured framework, one may expect the pricing of services rendered by TSOs to be a key element of the joint construction of the internal market. In fact, the opposite is true. It is rather energy prices, per MWh on wholesale markets, that are one of the major elements. And this is what everyone is watching as a signal for the progress of convergence among national markets. And yet, the fees set by or for the “regulated” monopolists, their level and structure, the costs that underlie them, etc., remain a nearly impenetrable maze (cf. the spadework performed by I. Perez-Arriaga for the DG TREN in 2002: *Benchmark of Electricity Transmission Tariffs* ).

In practice, it is the same countries that have progressed quite far in creating competitive markets (Great Britain, Norway) that have also progressed in the development of incentive pricing structures, in which the grid access fee no longer consists of an annual postage stamp covering all the TSO’s expenses (except the costs of balancing) and in which access to the grid is no longer free for generators. Conversely, in the two biggest electrical countries of the Union (Germany and France = 1000 TWh) it still seems to be conventional wisdom that the electricity grid functions like a mailbox. And this mailbox’ cost function is seen as so simple that one cannot find any logical or economic reason for the sender (the generator) to buy a stamp (or half a stamp), since the mailman can easily make the recipient (the consumer) pay for the whole service.

It is nevertheless true that we can leave the network monopolies outside of the economic sphere of market incentives at the early opening of competitive markets, but it is difficult to imagine how a competitive market can function smoothly in the long term using such costly infrastructures (60 per cent of the wholesale price of energy) without delivering appropriate economic signals to the market operators.

Of course, upward harmonisation (= collecting from those who have not paid at all; by setting  $G > 0\%$ ) is more difficult to implement than downward harmonisation ( $G = 0\%$ ,  $L = 100\%$ ), which quite “spontaneously” spread across the continent. In light of the importance of transmission costs (especially costs associated with infrastructure facilities, congestion, losses, and reserves) to generators operating on highly interconnected markets, we must seek a harmonisation of TSO’s fee structures at least within regional zones.

#### 4.2.5 *The harmonisation of connection fees*

What was just said regarding grid access fees is also true, *mutatis mutandis*, for grid connection fees—another of the main “regulated” functions of the transmission monopolies, and another of the “mazes” confounding the internal market.

Independent of the diversity of TSO’s technical prescriptions and variations in the cost of the same technical act of creating a new connection, there exist a wide variety of pricing formulas that range between two extremes: “*Deep cost*”, in which the user being hooked up pays all costs incurred (though the constituents remain to be defined!) and “*Shallow cost*”, its opposite, in which a large proportion of these costs are socialized (= integrated into the overall grid access price).

Consequently, in countries using both the “Shallow Cost” and the integral “Postage Stamp” with  $L = 100\%$ , there is no grid-based economic signal transmitted to the generators. It is as if the grid was free, or the behaviour of the generators had no impact on the availability or costs of the grid. However, when there is no payment, there may be queues that the TSO manages using “House” criteria for prioritising connections—which is hardly conducive to transparency in the choices.

For as long as TSOs are far removed from any “investment boom” in generation, the choice between methods of price setting for connections has few practical consequences. In Europe, England is the only case that combines a lengthy period of competitive reform with a high level of investment in electricity generation (the equivalent of 40 per cent of the original base). The Scandinavian countries are themselves just about to arrive at the investment phase.

The English TSO, when confronted by the resumption of investment, requested and obtained a more incentive-based fee structure for transmission. However, the connection fee was not adjusted, since the regulator preferred keeping it low to encourage the entry of new generators. It was the grid access fee that ended up being highly “zoned”, with more than ten different price zones from the north to the south. It was thus some subsets of generators and consumers who—finding themselves in the “wrong” zones under the new fee structure—supported the entry costs of new generators. Unlike in England, on another reference market (namely PJM in the United States) the connection fee remained of the “Deep cost” type. The user being hooked up pays all the costs, and there is no connection-fee based incentive to help generators’ entry.

#### ***4.3 Priority actions to improve today “Transmission and TSOs Governance”***

##### *Shake up the status quo, or let it be?*

Whatever we wished, the infrastructures of the European internal market are administered by organisations for whom the internal market is not the principal or normal mission or performance criteria and who have no explicit incentive to establish close operational cooperation with neighbours to facilitate a unified functioning of the market.

At the beginning of the current phase 2005–2009, no lever appears to exist that is capable of directly shaking up the status quo on a European scale. Conversely, we may be able to count on some regional subsets of TSOs being more interested in creating improvements with this or that reinforced procedure for regional cooperation and more motivated to exchange their veto power for a real improvement with their neighbours.

Naturally, all the factors that contribute to stonewalling and veto rights at the level of the whole Union can also exist at the regional level, but they may be more malleable if progress has already been made by some TSOs. Such progress is also more likely to be shared by corresponding PXs and the regulators in an environment in which market operators (generators, suppliers, or traders) can derive a commercial or regulatory benefit from them.

The case of the United States reveals that competitive reform can sometimes create an interesting dynamic of business interests for the participating firms (cf. the expansion of the PJM zone, the evolution of ERCOT in Texas). The Iberian example reveals that the opposite is not always beneficial: the postponing of the implementation of the Iberian market was clearly not favourable to the merger of the two Portuguese national champions.

This suggests that a push could be expected from the “interested” building of a few voluntary regional cooperation agreements much more than from the “institutional” discussion held in the “mini Fora” process.

#### *4.3.1 Encourage the negotiation of reinforced regional cooperation agreements between TSOs (creating “virtual RTOs”)*

During the current phase, some TSOs should be encouraged to take, or retake, the initiative in creating reinforced cooperation. They could be looked upon as so many components of a “virtual” regional ISO.

This clearly applies to the TSOs of the Iberian Peninsula. And, in light of the high degree of interdependence and the exchanges of flows in the western part of the European continent, this process could also begin between the TSOs of Benelux and France, who could sketch out a “western RTO”, which would, of course, only be “virtual”: consisting only of greater voluntary cooperation. The abutting zones of RWE and E.ON could also join, either as parties to the accords (which presupposes they would put their veto rights on the negotiating table) or as simple users, according to their legitimate commercial and institutional interests.

#### *4.3.2 Seek criteria for evaluating Europe’s interest in grid interconnections*

What is needed is to weave the strands of the European interest from all threads of national interconnections. Again, the most realistic way to achieve this is probably to focus on smaller arenas, where the interests of one and the other are more easily reconciled through more precise targeting of the negotiations (Netherlands’ connections with Norway or Germany, Belgium or Spain connections with France, etc.).

Nonetheless, there may be some pedagogical utility in reminding ourselves that an internal market exists above and beyond bilateral negotiations covering individual points on borders. We could seek objective criteria for evaluating the European interest in grid interconnections or issue a call for proposals for such criteria, and then submit them for discussion amongst stakeholders in interconnection projects. It would doubtlessly be useful to reposition national bilateral interests, legitimate though they be, in a broader context of the Community's interest in the EU internal market.

#### ***4.4 Secondary actions to improve the “Transmission and TSOs’ Governance”***

The domain of TSO's transmission activities and governance could benefit from other improvements, though these would remain secondary at the beginning of the current phase (2005–2009).

##### *4.4.1 Recommend extending the independence of TSOs to include ownership of transmission assets*

Compromises between the Member States resulted in the Second Directive specifying that vertical integration of electricity transmission and generation do not conflict with the establishment of a competitive market, provided that transmission activities are independently managed by arm's-length subsidiaries. However, in the long run this vertical integration with “restrained” ownership is not compatible with a normal functioning of the internal market.

We have seen that TSOs have a natural tendency to prioritise their historical zones over the interests of other zones within the internal market. The maintenance of a direct linkage, in capital and stock value, between TSOs and the generators in their historical zones of vertical integration ensures that the coalition of local interests versus the interests of other zones is cemented. This further perpetuates the veto rights of generators over any subsequent grouping of transmitters into ISOs or RTOs, real or virtual, responsible for the functioning and expansion of the internal market's infrastructures.

Thus, it would be preferable to encourage generators to realise the value of capital invested in transmission assets by separately listing transmission firms and selling their capital. These stock-exchange offerings might make it possible for TSOs to subsequently establish capital links between them strengthening their regional cooperation or the “virtual” RTOs they could create.

*4.4.2 Encourage harmonisation of grid access fees, and*

*4.4.3 Encourage harmonisation of connection fees*

As we see from the example of the Nordic countries, it is not necessary to unify grid access fees (or connection fees) to jointly manage a common wholesale market. However, these fees must show a modicum of compatibility if they are not to impede the normal functioning of this market.

We may, thus, expect generators to call for a basic level of harmonisation from regulators and/or TSOs, and perhaps further harmonisation subsequently. However, what generators cannot be expected to do on their own is to extricate themselves from an established system of “downward” harmonisation, in which access and connection is free to all generators in all transmission zones. In this event generators will be hard placed to request subsequent harmonisation, and TSOs will need to take the initiative and submit the first proposals for change. It would, moreover, be in their interest to do this before the resumption in investment that is on the horizon on the continent. It would truly be a waste to miss this existing window of opportunity and enter into the investment phase without having corrected the fee structure with its specious “freeness”.

*4.4.4 Encourage TSOs to develop joint forecasts and planning*

For coordinating the evolution of their operational procedures and the development of their grids, TSOs must have access to shared forecasts and planning elements. Thus, they should be encouraged to become involved in these cooperative efforts, which are clearly of greatest interest on the regional level and which could be the first elements of some of the “virtual RTOs” envisioned earlier.

## ***Section 5***

### ***Improving the “Regulatory & Regulators’ Governance”***

Of course there is an established European legal framework of Directives and Regulations sustaining the construction of the EU internal market. Nevertheless, globally, regulation in the European Union is decentralised, with fundamentally national roots. A Member State establishes a nationally-based regulatory authority that is administered by nationals and regulates access to the national TSO’s grid and operating system, and all this in keeping with the laws of said country and with recourse to its courts.

If there was only one way to implement competitive reforms, or only one way to transpose the First and Second EU Directives in Member States’ legal framework, this decentralisation would simply capture economies in transaction costs: regulators like referees are better and more cost-effective if they remain on the field until the end of the game, rather than changing country at each halftime. However, we saw in sections 1 and 2 that there are several legitimate paths to competitive reform. And there are yet other paths, if less legitimate then still legally possible, owing to this very institutional decentralisation and the “flexible” compromise that is characteristic of the European directives.

Nor does the European context feature a centralised regulator who could create additional, complementary, rules to drive national ruling or behaviour toward convergence, or a federal regulator with the power to legitimise national operational rules *ex ante* or launch *ex post* reviews to national decisions taken on the ground.

Thus, pan-European convergence between national blocks is to be reached by other means.

## ***5.1 The important characteristics of the factor “Regulatory & Regulators’ Governance”***

Even though the functions exercised by energy regulators lie at the very heart of the competitive reform process, some reforms have in fact begun in the absence of a regulatory authority for energy. Then is it really better having one than none? And of what kind?

### *5.1.1 Can we start competitive reforms without a regulator?*

For seven years Germany (1998–2005) has operated thus, with no terrible consequences—of the California’s kind—or blackouts in Germany. The same applies to Sweden, though differently: The initial Swedish law assigned almost equal authority to the TSO and the regulator, but over clearly distinct domains. Simplifying, the Swedish TSO is the operator-regulator for transmission, connections, interconnections, congestion, reserves, and balancing, while the Swedish regulator concentrates on entries into generation (of which there have not been any), renewable energy, energy efficiency, distribution networks, and retail competition.

For several years England also refrained from meddling with its own “Swedish” self-regulatory block...though it never advanced this as a fundamental principle of competitive reform. Indeed in England & Wales, all rules and all decisions pertaining to congestion management, reserves, losses, and balancing, as well as all dispatching decisions from all generating units, were made in the framework of a private arrangement amongst registered stakeholders (only the generators and the suppliers)—the regulator OFFER had no direct decision-making power. These are the “Electricity Pool of England and Wales” agreements.

More generally, as we have already seen, the Nord Pool, which is the heart of the Nordic market design, is much more a private arrangement between the TSOs being joint stockholders of this regional PX than a structure regulated by energy regulators. Since the Nord Pool manages all access to the interconnections and their congestion, these are, in fact, outside the purview of domestic regulators.

### *5.1.2 Can competitive reforms be conducted in a self-regulatory framework beyond the start-up phase?*

Sustainable self-regulation is widespread in the United States. In the United States, competitive reforms partly consisted of suppressing (!) the power of the state regulators (the *Public Utilities Commissions*) over electricity transmission and wholesale activities in their states (except in Texas). They also involved transferring the elaboration of rules and the corresponding decision making to new public or parapublic institutions that manage transmission grids (the *Independent Systems Operators*, ISOs) presented above, or independent exchanges, such as CA-PX (in California, 1998-2001), or independent “ISO & PX”, best represented by PJM.

These American ISOs are self-regulating under the auspices of the federal regulator, the FERC. In terms of ownership links, they are most assuredly independent of the sector’s operators. However, they are all led by boards or committees of stakeholders representing all interests in the energy field (even though new “independent” boards are becoming the norm, stakeholders retain the regulatory committees).

To transpose the US formula to the European context, imagine in each country a “National Forum of Florence” governing a special kind of TSO (half like the former Italian GRTN owning no transmission assets, and half Norwegian, owning the organised wholesale markets). And this “TSO-Forum” would determine the rules applicable to transmission and wholesale trade in its region, subject to approval by the federal regulator.

Thus, the self-regulatory dimension of transmission and wholesale markets is quite pronounced in the US competitive reforms. But this framework remains characterized by the constant presence of a strong federal regulator (strong regulatory powers, strong administration: 1200 employees—more than DG TREN which covers both energy and transportation!—and an annual budget of \$200 million for regulating electricity, gas, and oil pipelines).

### *5.1.3 The Second European Directive’s challenge to self-regulation*

The Second Directive suppresses self-regulation as practised in Germany. It also raises questions regarding Swedish-style “bi-regulation: TSO-regulator”. Furthermore,

the regulator's own powers can no longer be confined to *ex post* intervention, in which the grid manager takes the initiative on the rules and the fees and the regulator can only object after the fact.

Nonetheless, only the actual implementations of the Second Directive will show whether or not the changes are decisive, for the regulator may very well feel overwhelmed by the highly technical nature of the operational rules of transmission and the functioning of the wholesale market, preferring to rely on suggestions from experienced professionals (TSO & PX). This suggests that the regulator's financial and human resources are as important as the institutional framework. The cost of creating competent regulation covering the entirety of transmission and wholesale markets include many fixed costs. These regulation "production" costs are not proportional to the volume of electricity traded in the country, and make regulation relatively more expensive in small and medium-sized countries (Luxemburg and the Netherlands) than in large countries (Spain and Germany).

#### *5.1.4 The exhaustion of self-regulation benefits in the long run of competitive reforms*

But the German experience has lasted long enough to demonstrate that stakeholders' capacity to self-regulate diminishes over time. As the reforms persist, the leeway of the principal professionals in the sector (TSOs, generators, distributors, and suppliers) diminishes, while the competence and the appetite of the large consumers increase.

Furthermore self-regulation may never work well: in Germany large consumers were never satisfied with the arrangement for gas though they were quite amenable to the set-up for electricity (at least until the last round of negotiation).

On the other hand, self-regulation may prove somewhat satisfactory in the areas of transmission and system operation in the case of large consumers, since they have the ability to invest in an organised defence of their interests. But self-regulation has never been found truly satisfactory for other consumers, in particular small and domestic consumers who "recover" all the transmission costs that large consumers succeed in dodging by participating in the negotiations (the deal was rooted in the preferential use of

the “power” component over “energy” component in setting the grid tariff); while the generators have already obtained a free ride with  $G = 0\%$ .

Self-regulation has also proven inadequate in the areas of distribution network and retail competition (with hundreds of incumbent integrated distributors-suppliers in Germany). This difficulty in Germany is also consistent with the behaviour of the Swedish regulator, who has become increasingly interventionist in these areas.

Finally, self-regulation almost gives a free hand to the small group of integrated incumbent operators & TSOs in their choice of fundamental domestic structures (especially: division into zones, access to reserves and balancing markets, grid use and connection procedures, congestion management, planning the extension of grids, etc.). This free-hand is even more extreme in the external interconnections that each zone manages. Between the various zones of a single country, self-regulation agreements do create a kind of shared framework of practices, since the managers of the neighbouring zones are also parties to the same national negotiations. While in interconnections with foreign TSOs each zone finds much more autonomy in managing its interface with the foreigner; all agreements starting from a cruder bilateral veto power. Then for interTSOs’ relationship, the global effect of self-regulation is to increase the “national” character and the fracturing of foreign borders by an order of magnitude, since local self-regulation amplifies the gulf between internal and external negotiation processes.

#### *5.1.5 European regulatory governance: a decentralised framework that is essentially national and an incomplete process of convergence*

Globally, regulation in the European Union is decentralised, with fundamentally national roots. A Member State establishes a nationally-based regulatory authority that is administered by nationals and regulates access to the national TSO’s grid and operating system, and all this in keeping with the laws of said country and with recourse to its courts.

If there was only one way to implement competitive reforms, or only one way to transpose the First and Second EU Directives, this decentralisation would simply capture economies in transaction costs. However, we saw in Sections 1 and 2 that there are several legitimate paths to competitive reform. And there are yet other paths, if less

legitimate then still legally possible, owing to this very institutional decentralisation and the “flexible” compromise that is characteristic of the European directives.

Nor does the European context feature a centralised regulator who could create additional, complementary, rules to drive toward convergence, or a federal regulator with the power to legitimise national rules *ex ante* or launch *ex post* reviews to decisions taken on the ground.

Thus, pan-European convergence between national blocks is sought by other means. The best known is the process of voluntary agreements between the stakeholders: the Florence Forum, the Madrid Forum. This is a self-regulatory process, but different from the German one since it integrates national regulators. Competent authorities and stakeholders voluntarily meet to establish principles or rules that, though not binding, delimit a “code of good conduct”. Nevertheless, when the underlying dynamics appeared to lag, the Commission sought to reboot it up with a Second Directive (and regulation) to contain national divergence and bolster convergence.

Nonetheless, in the absence of a central or federal regulator, these new shared rules or regulation have no outlet in technical and operational provisions that are uniform and ready to use. Simple guidelines stand in for regulation, laying down general principles susceptible to various implementations that are neither equivalent nor mutually compatible. Notably, new common rules must always be approved (= negotiated) in advance by the Member States under the rule of the qualified majority (Council of Ministers, or *Commitology*). This particular approval process always makes possible any “unified” block of “national interests” to veto convergence on some points it deems “vital” and adverse to its interests—or what it believes to be its interests, since no national lobby can truly know all the consequences of all the variations on the different possible changes.

#### *5.1.6 European Regulatory Governance: greater convergence in a regional framework that remains non uniform or decentralised?*

The process of European convergence is incomplete by nature. This is of no consequence, and thus ruffles no feathers and threatens no interests, in the case of “national blocks” that trade little with others or that are already ahead of European

regulation. The classic example is Great Britain. Britons rarely have the opportunity to verify the existence of this European-style regulation, since Great Britain manages energy systems that are (have been?) largely self-contained and has a good lead on the competitive content of the EU regulation.

This situation is almost exactly reversed on the continent, where despite the overlap of energy systems, their meshed infrastructures, and the persistently reiterated need to adapt national regulatory frameworks to bring them up to a European standard, implementation of a uniform framework for the competitive functioning of the grids and markets has proven impossible.

However, since a truly “seamless” functioning between Member States cannot be directly created by regulations emanating from the EU, it remains to attempt a voluntary organisation among regulators on a regional basis. Of course, nothing guarantees that “regionalisation” of the actions of regulators will actually reinvigorate the construction of the internal market. It is also necessary that TSOs, PXs, and mostly “market forces” find their interest in building “regional internal markets”, even *à posteriori*. But without regulators, the institutional feasibility of a renewed regional dynamics for building the internal market could fail to materialize.

The principal interest regulators could find in pushing to the regionalisation of their domestic markets would be to create “market dynamics” and the concomitant “market discipline” that would facilitate the exercise of their jobs and the achievement of their goals. Without a vibrant market, the regulator is responsible for everything...and can be held responsible for anything. The regulator also spends a lot of time arbitrating “trading” between the national champions and domestic political authorities. On a more active market, market players assume their responsibility more directly, and regulators theirs. There is more clarity and less ambiguity. The dream competitive reform scenario for a regulator is that market forces do most of his work while he can claim all the merit for being such an excellent regulator.

## ***5.2 The main issues today in the “Regulatory & Regulators’ Governance”***

In light of its institutional role, this “Regulatory Governance & Regulators” element combines with the former TSO element to constitute the two essential engines for building a wider and deeper internal market during the current period. Therefore, the five main questions to be faced are the following.

### *5.2.1 Implementation of the Second Directive: independence and means*

So far we have assumed that the Second Directive would be implemented by the Member States, but this is, in fact, one of the major concerns in this area. Before proceeding any further, national regulators are a must. Will these national regulators have a sufficiently arm’s-length relationship with their governments, will they have the powers and resources to fulfil their missions? In each Member State it is vital to draw out the regulatory competencies that can be put to work building the internal market.

### *5.2.2 European mobilisation of national regulators*

The competencies of national regulators must absolutely be mobilized for the construction of the internal market. This is essential because the Commission lacks the institutional means, the resources, and the relevant information to do it all alone.

The “*Council of European Energy Regulators*” created by the Second Directive is a structural incentive to rejuvenate national regulators’ interest in building the internal market. This is especially true if the dynamics of construction can be sustained or extended by the Commission. In the absence of such a dynamic, national regulators may be tempted to limit progress on the European front to make their work easier on a strictly domestic level. In a worst-case scenario a few regulators could find an institutional interest in protecting their “national blocks” of interest...against other blocks or...against the European Commission itself (= “*All united against Brussels’ bureaucrats!*”)

### *5.2.3 Regionalisation of the construction of the internal market*

During the current phase, construction of the internal market could continue to advance in a decentralised framework in which national regulators could play a key role.

We may consider that the problems of the internal market can best be addressed where they actually arise, which is what regulators already know how to do within their “national blocks”. Problems of unification and convergence between Member States are most pertinent where trade is greater, interconnections most sought after, and wholesale market prices already tend to converge. Voluntary regionalisation of convergence between some pioneering “national blocks” thus appears to be a promising step in the right direction during the current phase (2005–2009). In the best case it would work so well that some institutionalisation of the convergence could be achieved within the existing “mini Fora”. In less successful cases deeper regionalisation will grow apart of existing “mini Fora”. In the worst cases nothing will emerge without any “external” push to be discussed in the coming years.

Notably, regulators could bring their institutional competencies to bear on this, which would be particularly valuable for successfully combining potential regional advances with the existing state of affairs at the national level and selling it to their respective governments and public opinions. This would also be a useful experimentation with the exercise of the Council of European Energy Regulators’ new function of advisor to the Commission, where regional initiatives could inject elements of dynamics and innovative “best practises”.

#### *5.2.4 The regulator–competition-authorities combination*

In light of their function of creating, or allowing the creation of, competitive markets, and in light of the interminable questions surrounding the competitiveness of European markets, regulators are confronted with questions and tasks that resemble or overlap with the competencies of the competition authorities. Not all regulators have powers in these areas, but the basic “market oversight” tasks (at a minimum: gathering data on the markets, their quantitative and qualitative analyses, informing the public of the results of these analyses, and communicating any observed anomalies to the competition authorities or courts) are all meeting points of the missions of sectorial regulation and competition policy. A more systematic approach to oversight activities combined with an examination of the complementary regulator\_competition-authority

relationship thus appears to be central to the construction of the internal market during the current phase.

Furthermore, many of these competitive oversight tasks pertain to adjacent markets being or not subject to Market Coupling–Market Splitting. These cannot be adequately dealt with unless there is cooperation over the entire affected zone, which will frequently include several interconnections. Thus, efficiency will often require that several regulators from a “region” or “potential regional market” cooperate amongst themselves and with various competition authorities.

#### *5.2.5 Concerted professionalisation of regulators’ personnel and regulatory milieu*

Regulation of the electricity sector is not a temporary phenomenon. Owing to the fact that its infrastructures retain an “essential facility” character, a sustainable form of regulation will need to be practised for a long time. Regulatory functions thus become ongoing professional activities, even though the individuals who exercise them may come and go.

Across Europe, if we include professionals performing regulatory activities within regulatory bodies and DG TREN, regulated bodies, various consulting firms on one side or the other, many EU or national professional associations, and large firms in the energy sector and large consumers, there are probably about 2000 professionals.

Furthermore, as we see energy challenges become increasingly intense and intractable worldwide and in the European Union, the competitiveness of the European economy and the welfare of its residents will depend more and more on real efficiency in the regulation of the energy sector.

The moment is thus opportune for enhancing the professionalism of this milieu throughout Europe, so as to help national regulators and create a truly common professional knowledge in European regulation. While it may be too expensive for a single regulator to invest in the professionalisation of human resources on the scale of the nation, with approximately constant fixed costs this investment could be very profitable on the pan-European scale. Then a concerted investment in European regulation improvement would appear to be a very “constructive” way to pursue building the internal market during the current period.

### ***5.3 Priority actions to improve today “Regulatory & Regulators’ Governance”***

It would be bad policy for the future of the construction of the internal market to take a simple “*laissez-faire*” approach in which national interests continue to operate in a framework that is unchanged at the level of the entire European Union. Clearly, national interests are legitimate. However, if these are the only interests that come into play, the construction of the internal market could grind to a halt when confronted with the constitution of “national blocks” that cement each country’s regulator, TSO, industrial and commercial “national champion”, and government. This is the situation today in the US electricity sector, where about half of the states have suspended competitive reforms and the construction of a common internal market.

European national regulators have every interest in voluntarily seeking to expand their domestic markets to develop the competitive dynamics that are very difficult to build on a purely national basis. They also have all the competencies required for finding the means to realise new advances that are compatible with the unique characteristics of the energy system and the reform in their country.

In this context, the two possible priority actions aim to encourage initiatives from the regulators to stimulate new steps in the voluntary construction of the internal market.

#### *5.3.1 Encourage bilateral and regional harmonisation agreements between regulators (Rules for reserves and balancing, access to interconnections and congestion management, compatibility of access and connection fees, joint approval of investments in the grid, etc)*

On the bilateral and regional scale, regulators should be encouraged to examine (within their fields of competence) the minimum conditions for expanding their domestic markets into wider markets: For example, harmonisation of the rules to share access to a pool of reserves or of supplies for balancing mechanisms, rational management of interconnection capacities and their congestion, case-by-case adjustments of access fees

and connection fees to facilitate cross-border entry between the countries, shared procedures for approving investments in the grids, etc. Those having already reached this level of reciprocated openness could address other issues like the compatibility of rules for retail markets—especially information management processes—and for metering equipment (specially *smart meters*).

### *5.3.2 Develop a pan-European regulatory knowledge and training in the European Union.*

Owing to the high cost of creating efficient regulation, especially the cost of investing in the professionalisation of human resources, it would be useful to invest on the scale of Europe to develop an efficient knowledge and professional training. A “rule of thumb” suggests that in all of Europe at least half of the professional issues that regulators deal with are common. Furthermore, this proportion should increase as Europe’s regulatory framework converges, especially as implementation of the Second package (directive & regulation) makes itself felt. Also, as has already been demonstrated—especially in studies by the World Bank—many of the human capital costs to regulators are fixed costs that would be less onerous if they were spread out more among regulators.

Finally, the European Union is constructing a regulatory framework that has no equivalent anywhere in the world. Thus, it would be particularly opportune to develop a corresponding knowledge and training, while constantly seeking to increase the professionalism and effectiveness of this regulation.

One institution already exists within the European Union that has participated in the dynamics of Europe’s regulation since the beginning and has already begun this labour in collaboration with European regulators: the *European University Institute* in Florence. It would be worthwhile to encourage it to offer an ambitious program to be fully operational before the end of the period.

#### ***5.4 Other actions to improve “Regulation & Regulators’ Governance”***

Many improvements have already been proposed in previous sections, since regulators exercise direct authority in matters of the Member States’ market design and that of the internal market (cf. Sections 1 and 2), in the area of transmission and TSOs (cf. Section 4), and may also play a role overseeing industrial structures and competitive processes (cf. Section 3). However, one final improvement could be useful.

##### *5.4.1 Associate national regulators with the Commission’s evaluation activities*

Since national regulators possess competencies and direct information in the Member States and have collectively become the Commission’s advisor in matters of regulation, it would be useful to permanently associate them with the design and implementation, depending on the case, of the Commission’s evaluation activities. Especially for the annual benchmarking reports and the major progress report of 2006.

A new, specific contribution that the regulators could bring to the table would be the progressive achievement of a regional “status and outlook” report, using the same template as those for regional internal markets. One strength of this new contribution could be that it would permit periodic identification of blocking and unblocking factors, as perceived by regulators in the exercise of their missions on the regional scale.

Another interesting aspect of this association would be to open up a space in European public opinion for challenging evaluations and healthy emulation among national regulators, the regional groupings they constitute, and the Commission itself.

## *Conclusion*

We have no electricity “Single Market” in the European Union. But we could have one. Not tomorrow but within a decade. Electricity industry is an intensive capital industry whose infrastructures and facilities constrain for a very long time the actual size and shape of its markets. However an EU single market is actually feasible in technical and economic terms, even if it never does assume the form of a complete merging into a single pan-European mechanism for the operation of all markets and all grids. The workable type of “Single Market” we can reach is an internal market that functions with no or with limited “*border effects*” between Member States or between regional groupings of Member States.

Then the core difficulty faced by this goal is not being unfeasible but being attractive enough and for a long time. Since competitive reforms are modular by their very nature. Since many modules have to be harmonized to make an EU internal market work and to make it robust. It results in a reform which is very demanding over a rather long period.

As the European Commission is institutionally unable to push it alone, many allies in Member States are needed. Will sufficiently strong allies be there all the time all along the path? Can we take for granted that the two core engineers of competitive reforms (the energy regulators and the TSOs) will agree walking more and more until the “Promised Land”? Will large consumers from electricity-intense industries keep pushing, or start retreating towards “soft” Member States’ aid (including aid to the renewal of “national” nuclear)? Will the other core electricity stakeholders keep moving so deep and so long? Will Member States’ Governments be more sensitive to competitive outcome than to national championship? Or will all these actors split into smaller “national blocks” they think they could control more or manage better? Then, will the very few number of energy companies that operate on a larger European scale see more benefits in the expansion of a “no border internal market” or in the internalization of their unrivalled skills in handling the remaining borders?

Other tough competitors are challenging this long term goal of constructing an EU internal market: new energy priorities are growing. In UK it is now commonplace to say that “competitive market building” is the priority...of the past: the last decade of the former century; while the Government new priorities are “Environment & low carbon economy” and “Security of supply” (British gas abundance is over). The same could become more and more true for the European Commission’s own agenda. Even when fox hunting was undoubtedly legitimate it was said uneasy to run after many foxes with a single horse.

Since so many factors influence the construction of the internal market, from technical and economic modularity to institutional dynamics and policy mix for energy through legitimate self-interest seeking, there are several alternative policies that can promote this construction, delay or deter it. The objective of this paper was only to draw a possible “minimal” platform allowing to progress without precluding further policy changes at a later date. As said a very famous Cambridgian economist in a very neutral—neither optimistic nor pessimistic—assertation on long term forecasting: *“In the very long run we only know that all of us will be dead”*.