

In search of the perfect electricity market

Nearly twelve years after the first electricity directive (Directive 96/92/EC), the European electricity sector is still fragmented along national borders. Within national or regional markets, competition has generally not developed as much as had been expected. Energy market experts Laurens de Vries and Aad Correljé of Delft University of Technology argue that progress is possible, but that we also have to learn to accept the inevitable imperfections of the integration process.

| by *Laurens de Vries and Aad Correljé*

The European Commission recognizes that the integration and liberalization of the EU electricity market is far from finished. In the Third Package, published last year, the Commission has announced it wants to increase interconnector capacity in order to facilitate integration of national markets, and to improve the competitiveness of the markets.

An important obstacle to trade is the wide divergence in market designs that currently exists. This increases transaction costs and creates inefficient economic incentives. While the EU is moving on with its proposals for TSO unbundling and coordination of regulators and TSOs, there are many more aspects to market design ("the rules of the game") that are relevant for market players. This raises two questions

which we will address in this article. Why is every market designed in a different way? And how can the integration of European power markets be furthered, given the current diversity of market designs?

A simple explanation of why markets are different is that people want different things. While the theoretical underpinning for liberalization is based on the view that competitive markets are more efficient than hierarchically organized monopolistic utilities, in practice many other considerations play a role in the restructuring of power markets. From Margaret Thatcher's antipathy to labour unions to French politicians' deference to unions (e.g. in not privatizing certain state-owned

companies), from the desire to curb gold-plating to the need to attract foreign investment, from a deep-felt faith in the economic benefits of markets to willy-nilly implementation of European directives, European countries vary widely in their attitudes towards restructuring. While in some countries liberalization was guided by a strong faith in the social benefits of a competitive electricity market, many other European countries only restructured because the European directives forced them to.

Trade-offs with other policy goals may also affect the restructuring process. In the case of the Eon-Ruhrgas merger, the German government decided that having a national champion with buying power in international fuel markets was

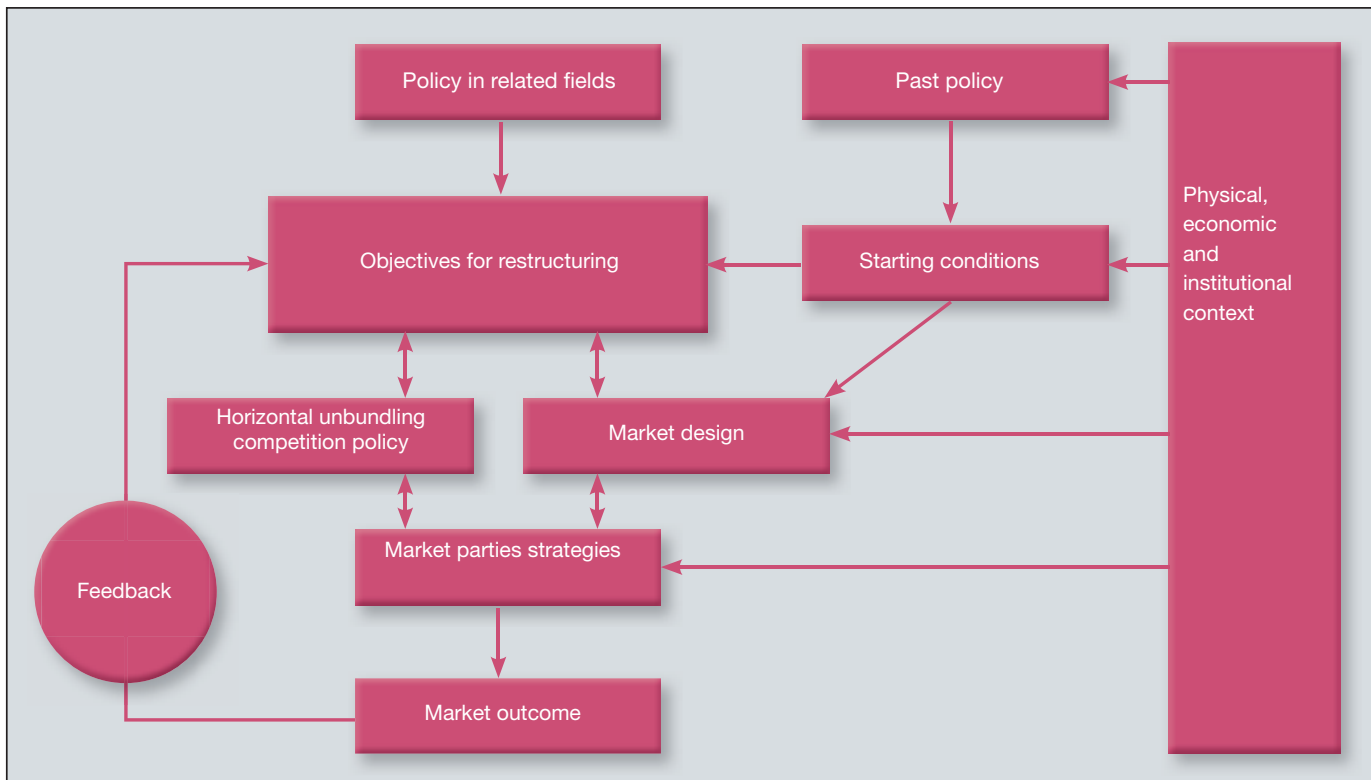


Figure 1: Policy model for the restructuring of the electricity market. Source: Aad Correljé and Laurens de Vries

more important than domestic market liquidity. Similar sentiments can be observed in a number of other countries. As electricity markets are related to fuel markets, especially the natural gas market, and also to the CO₂ market, it is only to be expected that policy goals for natural gas and CO₂ affect the regulation and performance of electricity markets.

Policy goals aside, one may wonder how much potential there is for effective wholesale competition in a country like France, where the great majority of electricity is generated in nuclear plants. British Energy, the company that inherited Britain's nuclear plants after restructuring, did not fare well in the competitive British market and had to be propped up by the government with a large financial injection in 2002. Currently, British Energy benefits from high gas prices, which determine the electricity prices for a large number of hours. Such a benefit would not be available to any successor companies of EdF, if the French government would split EdF up in order to accelerate the development of competition in the French electricity market. Besides the political unlikelihood of such an act,

it would not make sense economically. If different privatized nuclear power companies were to compete on price, prices would drop towards their variable costs, which are so low that they would not recover their substantial fixed costs. This situation would not be sustainable, leading to bankruptcies, consolidation or, like in the UK, renewed government participation.

Cultural factors |

So we see that in addition to political motivation and the power of key actors such as unions, the situation at the outset of restructuring affects the possibilities for introducing competition. In France, it is the dominance of nuclear power, which can be traced back to the development of the nuclear force de frappe under De Gaulle, but economic and institutional factors may also play a role. In the Netherlands and Norway, the presence of many small power companies made it relatively easy to introduce competition. In the UK and to a lesser degree in Italy, public ownership made it possible to reduce the market share of the incumbent national utility, whereas in countries like Spain and Belgium the dominant position of the incumbents

cannot be reduced easily because they are private firms.

Other factors cannot be influenced at all through energy policy. These range from physical characteristics that may also affect the potential for competition, such as the presence of hydropower and the lay-out and capacity of the electricity networks. So the restructuring process is shaped by a variety of goals and limited by path dependency – the options are limited by past decisions – and partly by objective constraints, such as natural endowments. As both the goals and constraints differ from country to country, it is not surprising that the outcomes of the various restructuring processes are different, too.

Finally, even at the theoretical level there is no consensus about key market design choices. The current European debate about ownership unbundling of TSOs is an example. While the need for unbundling is undisputed, the degree to which it is, is not. The Anglo-Saxon attitude of doing whatever is necessary to encourage competition led to the creation of a completely independent National Grid Company

in the UK. On the Continent, on the other hand, 'workable' (or oligopolistic) competition is the norm, in which the drive for competition is balanced with realism (or defeatism?) about the oligopolistic nature of electricity markets and the desire to have strong national companies. Other unresolved market design questions are whether to implement a capacity mechanism in order to secure investment in generation capacity (the American model) or to rely solely on electricity prices, as is common in Europe; the debate about integrated (mandatory pool) wholesale markets (prevalent in the US) or bilateral markets (most common wholesale market design in Europe); and how to manage transmission congestion.

The restructuring process is sketched in Figure 1. Next to market design, competition policy is a policy area that has a major effect on the market. Given a certain market design and competition policy, market parties develop their strategies. Policy makers evaluate the market outcome and adjust their policies accordingly. The feedback is often slow, incomplete and often contested. It may take years, for instance, to evaluate whether the investment climate produces the desired outcomes. The complexity of electricity markets makes it difficult to interpret the feedback unambiguously. Being able to prove, for instance, whether a price spike was due to scarcity or to market power requires an extensive investigation that can only be completed if exhaustive economic and technical data is available. There is also a shorter feedback cycle in the form of lobbying, but the quality is also limited because it is ex ante, and therefore speculative, and

inherently colored by the interests of the lobbying parties.

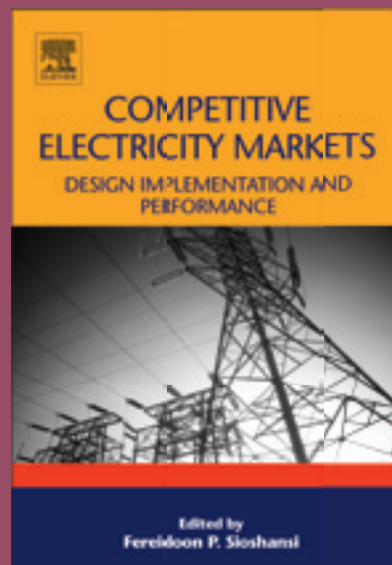
The nature of this process – long lead times for investment, long life cycles of assets, slow and incomplete feedback on the performance of policy measures – has as a consequence that there is a strong path dependency. Decisions that are made now strongly affect future options. This implies that care should be taken that short-term actions do not thwart long-term goals. With respect to competition policy, national markets are often considered as the 'relevant markets', or otherwise a regional market at best. However, if integration on a larger scale is the goal, then the effect of cross-border mergers and takeovers upon the wider market (outside the current relevant market) should also be considered. The price for accepting the domestic market power of companies like EDF and Eon could be a restriction on takeovers in neighboring countries in order to limit their market share in a future integrated West-European market, even if for now the relevant market would be national.

Different markets |

While the ongoing restructuring process is complex and difficult to fully comprehend, an obvious consequence is

that every market is different. We may categorize them roughly into three groups. A first group consists of markets with a single incumbent monopolist that still dominates. Belgium, France, Portugal and Greece are in this situation. A common factor in these countries is that the faith in the merits of competition in electricity is not strong. The small island countries of Malta and Cyprus are too small for effective wholesale competition; the same may be true of Ireland. Estonia, Latvia and Slovenia also fit in this category, perhaps because they do not have the institutional resources or the political willingness to open up their markets. Due to their limited size, real competition would require close integration with neighboring markets.

In the second group the market is moderately concentrated. The countries have opened their markets fully, but the degree of network unbundling varies and in some cases price regulation is applied. This group is fairly heterogeneous and includes new accession countries such as Hungary, the Czech Republic, Poland and Lithuania, plus long-standing member states such as Germany, Spain, Austria, Italy and the Netherlands. These countries are characterized by the fact that their electricity industry have always included multiple companies.



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The third group of countries, consisting of the UK and the Nordic countries, are the most liberal, with low market concentration, integrated markets (in Scandinavia) and retail competition. These countries have deliberately chosen, on an ideological basis, to liberalize their power systems, by dismantling their former monopolies and restructuring their industries. The strength of these countries appears to be their relative independence from imports and their access to a variety of fuels, which has ascertained their belief that the process of allocative decision-making can be trusted to the “internal” market.

Harmonization |

These differences in policy goals, current situation, external conditions and policy options should be recognized in the process of integrating European electricity markets; otherwise, it should not be a surprise if the integration process stalls. The key will be a differentiated approach, where accepting the inevitable in some cases does not lead to complacency with respect to inadequate market designs or further market concentration.

The EC’s Third Package is an attempt to fix two of the main areas in which European electricity markets differ from each other. It is intended to overcome the differences between the regulators, who vary with respect to independence, authority, resources, skills and approach, and to reduce the differences in how the transmission networks are unbundled. However important harmonization is, it may not be possible on all fronts. For instance, we may need to accept that some markets will continue to be highly concentrated and that the pace of market reforms varies between countries.

The diversity between the countries also has as a consequence that harmonization of market design rules is not always possible, as the EC has been forced to realize in recent years. However, from our analysis it follows that the shift in focus to regional integration, rather than pan-

European market integration at once, is a rational response to the complexity of integrating such very different markets that are governed by diverging goals. Thus, the establishment of the regional markets and “minifora” as a successor to the Florence process most likely is a necessary phase in an evolutionary process. It also facilitates a learning effect, in which solutions and instruments are



Photo: Claudius/zefa/Corbis

“tested” in one area before being adopted in others. This does imply that regional differences in market design and structure will continue to exist for considerable time and should be accepted as a fact of life. Organizations that operate at the European level, such as the new Agency for Co-operation of Energy Regulators (ACER) and European Network of Electricity Transmission System Operators (ENTSO) will need to acknowledge this and allow for regional variations in their policies.

Regulatory changes are inherent to these dynamic markets. Therefore we may expect the regulatory framework to be changing continuously. Even if we could agree on a certain market design, the energy policy goals and environment of the electricity market would continue to change. The emphasis of policy goals has shifted between security of supply, economic efficiency and the environment (including climate change) and will shift again. Related markets, in particular the natural gas market and the market for tradable CO₂ emission rights, will continue to affect the electricity market. As the process of making the electricity industry more sustainable will at least take multiple decades, we will simply

have to learn to live with continuing change.

This has important implications, because the regulatory stability for which investors have been clamouring for more than a decade now will not be forthcoming without help. This means that the expectations at the outset of the restructuring process in the 1990s will not be met. The idea was that the government should simply determine the rules of the game and provide for a stable environment. Given the right incentives and the efficiency of a competitive market, the actions of the market players would automatically lead to a socially optimal outcome. Such stable conditions are unlikely to arise when the electricity sector is involved in a decades-long process of change towards sustainability and adjustments to shifts in primary energy markets.

As the continuing changes discourage investment, additional measures are needed for achieving public goals such as a reliable supply, more renewable energy and a reduction of greenhouse gas emissions. In the market for renewable energy this is recognized, but there, too, there is a problem of a multitude of policy instruments that distort international trade. For the reduction of greenhouse gas emissions it will be necessary to implement additional policy measures. One may think of creating a flexible tax on greenhouse gas emissions that guarantees a minimum price to protect investors against a possible price collapse of emission rights. As the purpose of such policy measures is to reduce investment risk, they must be reliable. Paradoxically, however, these measures will also be subject to the kind of dynamism that is depicted in Figure 1. This could lead to a feeling among investors that the regulatory framework might not allow recovery of the required investments after all. Policy should therefore be aimed directly at reducing regulatory risk, while continuing with the pursuit of the Holy Grail of a perfect and perfectly stable market design. ■