



No. 3: Electricity markets - time to worry?

Christoph Tönjes, July 2003

During several workshops and conferences a variety of concerns and even fears about the future state of electricity markets surfaced, related to the ongoing liberalisation process. Criticism on liberalisation policies is mostly aimed at imports, market power and prices as well as on security of supply. But is there indeed reason for these concerns? In other words, is it time to worry about the future state of the electricity markets?

Imports – dirty and unsafe?

International trade should bring benefits to the exporters as well as to the importers. Liberalising electricity markets makes the more sense the more consumers can choose between suppliers, including foreign ones. But particularly in the Netherlands concerns are being expressed about becoming too dependent on imports. Two arguments are regularly brought forward: first, in the event of a sudden crisis foreign producers might cut off customers in the Netherlands from electricity supplies in order to maintain supplies to their domestic customers. Current import contracts and legislation provide for this option. Secondly, imports might replace relatively clean, gas-fired Dutch electricity production by ‘dirty’ lignite electricity from Germany and publicly undesired nuclear energy from France.

Turning to the first point, everybody buying electricity abroad should be aware of the risks, which are connected to it. If foreign supplies are interrupted, the importer might not be in any case cut off due to the technical properties of an interconnected electricity system. The importer will however face strong financial consequences due to the imbalance charges he will have to pay. It appears that importers value this risk lower than the cost benefit they realize when buying abroad. However, it might be necessary to formulate strict rules about which customers get disconnected when foreign supplies drop to such an extent that compensating is no longer possible. Such rules make it more visible who actually bears the physical risk.

The main quality of liberalised markets is that consumers can choose which product they want to buy. If consumers do not like lignite electricity or nuclear energy, they should not buy it. Green energy companies have emerged manifold with the liberalisation of the green electricity market. When the rest of the market gets liberalised, customers can even more discriminate against importing suppliers on the basis of their preferences. By the way, imports of electricity also mean that domestic greenhouse gas emissions from power generation are reduced. The exporting countries usually are committed to emission reductions by the Kyoto Protocol. If they sell electricity for export, these countries have to make sure that this complies with their emission obligations.

To which extent electricity imports are possible depends on the interconnection capacity with neighbouring markets. Member States of the European Union may consciously choose not to increase interconnection capacity— especially if they are already relatively well connected. This provides some protection for the domestic companies and limits the imports of lignite and nuclear power (but also of foreign ‘green’ electricity). However doubtful this might be with respect to economic efficiency, it is certainly not contradicted by current legislation and might be political adequate if public opinion perceives imports as e.g. an environmental threat.

Large international conglomerates rule the market and drive up prices?

There is a market based upper price limit for electricity. A recent report of AER/ECN suggested that it is worth while for incumbent utilities to follow a pricing strategy that establishes wholesale electricity prices in between the short-run marginal cost and the long-run marginal cost of generation. This way, they could extract considerable profits from their depreciated base-load generation assets. At the same time, new entrants are kept away from the market since prices cannot cover their capital cost. However, just as the report acknowledges, as long as demand grows and generation assets have a finite lifetime new power plants will be constructed someday. Those projects will only be realized if investors expect prices which cover their long-run marginal costs. Thanks to their experience, incumbent companies may also for new plants have lower marginal costs than new entrants, so that they will be the ones to actually build the new capacity. However, despite the above it is important to note that as long as network access is non-discriminatory, the threat of new entry effectively limits the power of incumbent utilities to raise prices excessively over competitive levels. The power of large consumers in this respect should not be underestimated: if they perceive electricity prices as being too high, they might individually or in a joint effort take care of generation themselves. An example can for instance

be found in the gas market: When BASF persistently was unsatisfied with the gas supply terms provided by Ruhrgas, it established WINGAS and started organising gas supplies itself.

The timing of new investments however remains an issue. New investments have lead and construction times in between 6 months and 6 years. The shorter the construction time, the more expensive the electricity generation will be. One of the obvious lessons of the California electricity crisis was that timely investment is essential to prevent (temporary) price hikes on electricity markets and to keep a reasonably structured generation park. In California, shortage of generation capacity was one of the reasons, which drove up prices in the summer of 2000. Those price hikes, on the other hand, led to the construction of some fast-to-realize, but in the long run expensive generation assets as well as to the conclusion of very highly priced long-run supply contracts, leaving supply companies and customers with high electricity bills for the years to come.

The new electricity directive of the European Union – just like the old one – does not hinder member states to create market conditions which assure timely investments in generation capacity. There is a variety of options which can be implemented in national legislation. They all have their own particular drawbacks and uncertainties, but all of them would provide more certainty than when nothing is done. Parliaments, ministries and regulatory authorities need to make choices, to give companies some certainty on the conditions they have to work in during the years to come.

Generation capacity will not be built sufficiently, causing blackouts?

Security of supply can be hampered at two levels: generation and transportation. Although there virtually has been no supply disruption in Western Europe caused by the insufficient construction of new power plants, concerns have increasingly be formulated about the adequate provision of generation capacity. Whereas traditional regional monopoly electricity systems invested in generation acting according to required quantities, investments in liberalised markets are triggered (or not) by current and in particular expected price levels. Current wholesale price levels and the general uncertainty about future price levels make investment in new power plants appear not economically viable. Rising demand consequently reduces generation reserve margins. Although reducing excessively high reserve margins and thus making better use of invested capital was one of the objectives of liberalisation policies, observers get worried that margins may become too small. In case of technical failures in some power plants not enough reserve capacity might be available to make up a shortfall in supply. These concerns are

augmented by the already mentioned scepticism about the reliability of imported electricity. The Netherlands for instance imports significant quantities of electricity. Should these imports in case of a disturbance in the supply system of the exporting countries stay away, domestic generation capacity might be insufficient to meet domestic demand.

Security of supply and the fear of strongly increased prices as discussed above are eventually two dimensions of the same problem. Insufficient investment in generation assets creates shortages on markets and leads to high prices and in the end to blackouts. Timing is essential to prevent the problem. If governments do nothing, in the long run a classical investment cycle is likely to evolve: shortages will lead to high prices, these will lead to new entry and new investment, probably overinvestment, this will lead to low prices and subsequent underinvestment and so on.

Smart market design can prevent this volatile cycle. However, decisions need to be taken:

- Does the government want to set standards at all and if, will these standards refer to technical figures like reserve margins?
- If the answer is yes, instruments need to be established how to implement the objectives. With regard to reserve generation capacity there is a variety of market based approaches to give incentives for new generation capacity, e.g. the requirement for supply companies to have a certain amount of reserve capacity contracted or the introduction of call options on electricity.
- If you consider imports as 'unsafe', make clear decisions on how to handle a shortfall of imports, i.e. say which consumer groups should be affected in case short falling imports cause problems for the stability of the domestic system. For instance, given the desire of governments to protect small consumers, the Transmission System Operator (TSO) could get equipped with legal and technical abilities to cut off large consumers in case of a supply disruption in order to maintain supplies to domestic customers. Establishing clear criteria how to handle import disturbances, especially whom to cut off, might be tricky, given technical restrictions of an interconnected electricity system. However, once these rules are established, market participants can adapt to them.

Liberalisation of electricity markets is not a bad thing as such. It brings new risks, but certainly new opportunities for consumers as well. The risks are manageable. Exploding energy bills and supply disruptions have a strong psychological impact on citizens and voters. Politicians and

governments therefore have a strong interest in facilitating a smooth working of the market. Ministries and regulatory authorities are usually busy with preparing appropriate rules and are more innovative and open in their thinking than some people assume. So far, California has been the only case where market reforms brought significant damage to consumers; it served as a wake-up call for other countries still asleep about market regulation in 'deregulated' markets.

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