Elements for a Critical Analysis of the Current Organisation of Electricity Commerce

After several years' experience, electricity market deregulation has led to many aberrations. It is increasingly difficult to put these down to adjustment failings in new commercial mechanisms or to teething troubles in new regulatory methods. The situation is especially worrying for industrial consumers. The current functioning of wholesale markets is a major factor of economic uncertainty for consumers and is damaging to their competitiveness. These fears are all the more justified, as a balancing crisis can be expected in Europe's electricity sectors in the foreseeable future. This crisis is currently only deferred by the existence of overcapacity inherited from the past and by the fact that markets are not yet completely open. The analysis proposed below provides the basis for a better assessment of the excesses of the current organisation of electricity trading across Europe.

I. Summary and Conclusions

Whereas deregulation was heralded as a driver of economic efficiency, the prevailing mechanisms have certainly not produced the expected results. The analysis set out in this document of the organisation and current functioning of wholesale markets allows the following conclusions to be put forward.

1. THE ORGANISATION OF WHOLESALE TRADE, INTENDED TO PROVIDE FREEDOM OF CHOICE OF SUPPLIER, HAS NOT IN ANY WAY LED TO HEALTHY COMPETITION THAT BENEFITS THE CONSUMER.

As regards production, no signs of dispersal can be seen. Quite the opposite: the various mergers and acquisitions made by the leading European electricity producers have made the sector more concentrated without any new independent producers emerging.

In parallel, the development of a purchase & resale activity has not led to the more diversified offering seen in some other products. The constraints inherent in electricity as a product leave little room for independent traders seeking to become the preferred contacts for producers or

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consumers. Far from it: the integration of a trading-type commercial approach has enabled major producers to increase their market power.
Moreover, no sign of greater competition between major producers can be observed, while the lack of diversity in the consumer offering in given zones raises fears of possible territory sharing.

All in all, a clear upward trend in prices and, above all, the power to transfer production risk on to the user point to the absence of real competition.

2. ANALYSIS LEADS TO THE CONCLUSION THAT THE PREVAILING MARKET FOR ORGANISING THE SECTOR'S DEREGULATION IS UNSUITABLE AND INCOHERENT

A model that is only relevant to basic products or other energy products such as oil was followed relatively implicitly. No one checked whether electricity could be adapted to such a model and insufficient attention was given to the necessary conditions for transposing it.

When applied to electricity, this model does not provide for effective price adjustments and even leads to a decrease in consumers' withdrawal capabilities.

If adapted to homogenous, storable products in a context where players have no power over the market, the model results in prices with high information content and great consistency over time. It is completely irrelevant to electricity which, unlike such products, is not storable, of course, is economically very heterogeneous and is not substitutable – all in a context where producers are likely to wield substantial market power.

In this situation, the prices resulting from wholesale markets are inconsistent over time and have no information content. Therefore, they do not have any of the essential characteristics of market markers. In addition, the existence of market power and the specificities of the constraint of real-time adjustment make it easy to manipulate prices.

The impossibility of making adjustments through efficient price formation, together with the extensive compartmentalisation seen on wholesale markets, leads to extremely variable pricing, which entails a considerable risk. No real risk management instrument has emerged in response to this situation, particularly because of the market's lack of "financialisation." This failure chiefly results from the unsuitability of the model, which does not provide for interaction between consistent, clearly identifiable mechanisms that financial players can use as a basis for planning ahead. This situation is a factor of economic uncertainty with, in addition, a major systemic risk.

3. AN UNSUITABLE, INCOHERENT MARKET MODEL WITH DETERIORATING CONDITIONS FOR INDUSTRIAL CONSUMERS

Faced with a commercial environment that is not suited to their needs, industrial consumers have no negotiating power for their purchasing strategies, whereas the supply trend is for short-term products that do not allow them to manage their supply efficiently.

This is all the more serious as the wholesale market is completely lacking in resilience (with very low volumes likely to lead to significant price changes), which leads to disproportionate transaction costs.

This deterioration in the purchasing environment of industrial consumers, who have no leeway and no real choice in terms of timing for meeting their needs, is all the more serious as trading practices mean that the price conditions for the supplies they require are highly contaminated by price conditions for adjustments, a completely different function.

Finally, wholesale electricity prices resist any attempts at fundamental analysis and are completely out of touch with reality, especially as regards taking changes in fuel prices into account.

The model's swift collapse, therefore, means that another method of trade must be sought that gives the sector the real industrial consistency that is crucial to long-term adjustment of capacity to changing needs.

II. The Illusion of an Open Market

Lack of deconsolidation in the electricity sector

1. The electricity sector reform process undertaken in continental Europe is fundamentally different from the process implemented in English-speaking countries, where it was characterised by the prior deconsolidation of production activities. In some countries, almost every large power plant became an independent producer. In Europe, while deconsolidation does not solve every problem, the United Kingdom appears exemplary and the production capacity of the three leading companies was reduced to approximately one-third of the total. On the continent, nothing of the sort occurred. Quite the opposite: various operations, such as the spectacular merger of Veba/PreussenElektra with Viag/Bayernwerk, giving rise to the German giant E.ON, have increased consolidation in the sector.

No increase in competition through trading

2. The starting point was the ready-made idea that the development of a trading activity could lead to diversified supply, as is the case for some specific commodities (box 1) but not for electricity.

Box 1 *TRADING AND SUPPLY DIVERSIFICATION*

Trading only leads to the diversification of supply in specific situations where it enables consumers to expand their supply sourcing options, either to deal at lower cost (e.g. by optimising logistics), or to have access to an origin that was previously unavailable (financial terms, performance risk, etc.).

In parallel, by enabling producers to diversify indirectly their outlets, trading becomes their preferred channel as it is always potentially the best buyer, insofar as it is in a position to serve any market.

Trading can only play its full role if there are risk management instruments that provide for hedging of price risks arising from the differentials in the conditions and timeframes at which consumers wish to trade.

This situation does not exist in the case of electricity:

a) the producer is not in theory tied to its outlets and can always make the same offers as a pure trader. In addition, compared with a trader, the producer's performance risk is lower as it is structurally long;

b) the consumer is not restricted in terms of physical supply sources, apart from exclusive control of access to interconnections, which regulations and not trading are intended to prevent;

c) pure traders cannot easily reconcile differences in conditions and timing between their purchases and sales, especially as there are no real instruments for managing an exceptionally high price risk, which considerably limits their role as market maker and, consequently, as risk bearer because they have no possibility of transferring the risk.

Historically, competition only came into play on the system's balancing function during the set-up of a wholesale market with traders whose business was concentrated on that level at the time, as customer offerings remained the prerogative of marketing entities. It should be pointed out that, given the performance risk, pure trading cannot really exist. As a result, newcomers have sought to control production assets to no great success, because in the electricity business, major players are unwilling to sell off production assets – except perhaps for the least efficient facilities. To resolve that situation, some banks wishing to develop an activity on the electricity market have tried to forge partnership ties with existing producers; this model has remained the exception and the few agreements entered into are not designed to last.

The balance of power between independent traders that have to join forces and producers that adopt a trading approach in their relations with consumers is far too asymmetrical. Whereas the

activity of independent traders may have been a temporary factor in diversifying and reducing prices, albeit for very short periods and for low volumes, major producers soon saw that their interest lay in adopting the instruments developed by independent traders, limiting the latter to a role that prevents them from wielding any real competitive power on prices.

A change of supplier does not mean a significant change in prices.

3. The argument that x% of eligible consumers have changed suppliers, which is traditionally put forward to equate deregulation of the wholesale market with opening it up to competition is unfounded, except perhaps in the United Kingdom. In the case of France, stating that EDF has lost "x% of the open market," implying that competitive pressure is a current commercial reality, leads to confusion and in no way proves that market share has actually been lost.

In the current situation, with a trading-focused market, electricity production volumes in Europe are regulated by the screen prices set by the trading departments at EDF-T, E.ON-T and RWE-T, etc. End customers such as manufacturers have no negotiating leeway and have to accept these prices, which are the same regardless of supplier. The customer only negotiates the peak load supply, i.e. the load curve monitoring service, which now represents a very small share of manufacturers' electricity bills (box 2).
Electricity supply *per se* (the sale of blocks) is provided by the dominant producer through the sales it makes on the wholesale market. These sales are used to supply indirectly customers it has allegedly lost or to increase the flow of its cross-border transactions. Consequently, there is no actual loss of market share for EDF, just a loss of mark-up. The "lost" x% in no way reflects an x% decrease in output.
In reality, the only significant change in terms of market share for EDF is the substantial rise in its export volume. The interconnection with Germany is now structurally saturated, which was not the case before. Not only has EDF not actually lost any French customers, but is has also won wholesale market share in Germany through production from its French plants.

Box 2 *PEAK LOAD SUPPLY*

The only negotiable area will be restricted to peak load supply. The producer may seek to give up this function by taking action to reduce the compensation related to these activities. Take the example of an eligible consumer that buys a 5MW 2004 annual block on the wholesale market. As its consumption will definitely not correspond to the use of 5 MW every hour in 2004, the consumer will provide the seller with its profile for monitoring. In practical terms, the seller will break the block down into 8,760 hours and, based on the information provided, take on the surpluses and deficits with respect to the 5 MWh x 8,760 initially bought. Its activity will consist in leveraging these differentials, i.e. diversifying its peak load supply portfolio to draw maximum benefit from the trade-offs made possible by the diversity of its customers' consumption profiles in order to limit the differentials to be hedged on the market.
This has two important consequences:
-the search for such an expansion effect explains its aggressive sales approach and, consequently, the low prices related to peak load supply (the seller will make up for this by its mark-up on block supplies)
-once the buyer's profile is entered into the supplier's portfolio, any subsequent modification will affect its net position and, therefore, increase its risk. In this case, the supplier will set penalties, which reduces consumers' withdrawal options and, consequently, limits possible demand-side responses to market pressure.
It should be noted that the peak load supplier can never entirely balance out differentials, despite the diversification of its portfolio, given certain structural characteristics of consumption (weekend, nights, holidays, etc.), independently of the specificity of residential consumption. At particular times of the week, the supplier is always at odds with the market and so takes a significant risk that is difficult to cover, given the lack of effective risk management instruments. A reduction in the number of providers of this peak load service in France should be expected.

Control over interconnections limits competition

4. Cross-border transactions are assumed to contribute to the exercise of competitive pressure. But that depends directly on the allocation procedures for interconnection capacities, which are still a subject for debate. We shall simply mention that for some borders in continental Europe, the adopted procedures do not have the intended virtuous effect in the slightest. Concentration

of production, grid and trading interests within the same entities can lead them to restrict rather than develop interconnection capacity. The substantial sums received through the auction systems that have been set up are not ploughed back to end consumers' advantage.

The VPP mechanism offers no alternative

5. Can access to production capacities - as organised by EDF in the form of assignments of contracts giving rights to energy produced by Virtual Power Plants (VPP) – create competition? There is no practical difference between these transactions and straightforward sales on the wholesale market. As a result, auctions lead to virtually the same process as those observed on the market. It should be noted that these auctions have not provided eligible consumers with a more diversified offering. In practice, given that a large share of volumes has gone into the flow of exports, they have not enabled potential new suppliers to make offers that are adapted to consumers' needs. Quite the opposite: the auctions have primarily led to the sale of short-term products (blocks with less than a year's duration) that industry does not require. A system including the obligation to sell multi-year products would definitely have been more effective, as auction prices would represent a real benchmark on the wholesale market that interests industrial consumers.

No emergence of independent producers

6. Without analysing the structure of the electricity sector, which is not the aim of this report, the absence of development of independent production in Europe should be noted. The rise of Independent Power Producers (IPP), which long symbolised the liberalisation of the US electricity sector, has not occurred. From that perspective, Germany is a typical case with projects for gas plants that are usually unable to finalise their business plans for want of pricing visibility. Market dysfunctions act as an entry barrier, enabling the dominant players to swallow up projects that were initially developed independently.

What competition is there between major European producers?

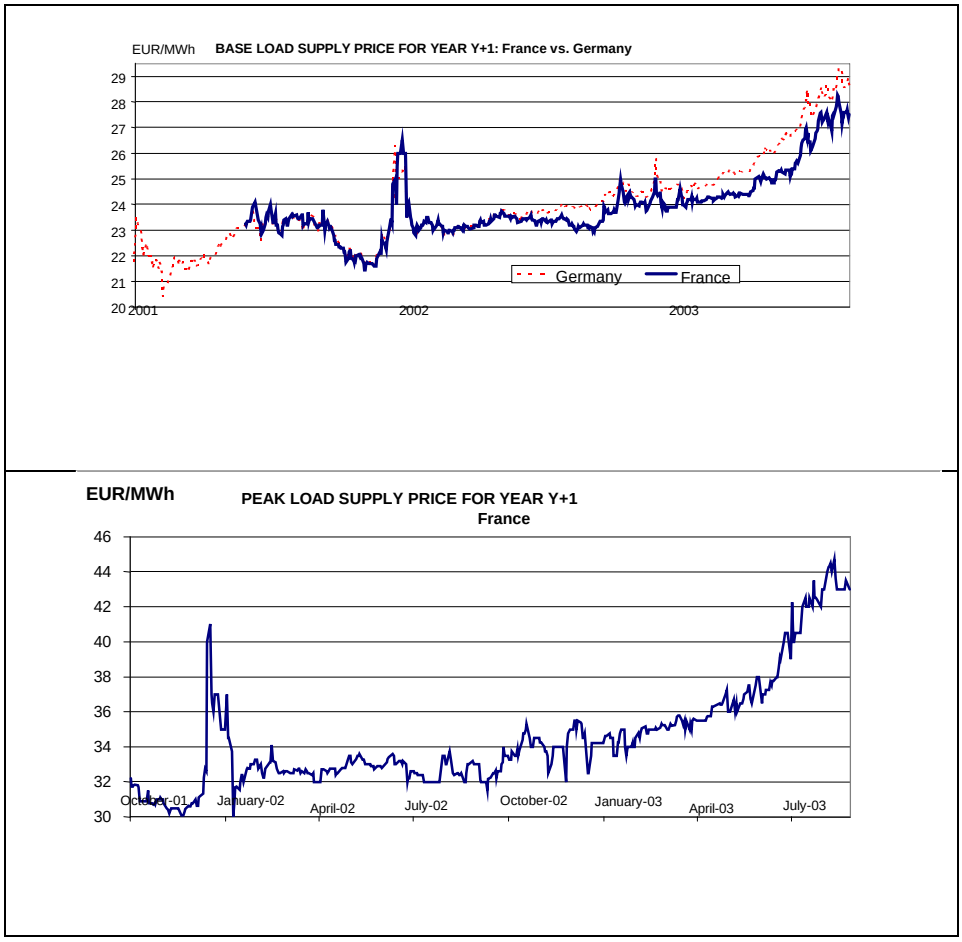
7. Contrary to the statements of European bodies that believe competition will result from the setup of a single European market, industrial consumers' purchasing experience inevitably gives them the impression experiences that the widespread adoption of a single trading system comes with some kind of territory carve-up between major European producer-traders. Similarly, a major continental producer that exports substantial volumes to another European country does not actively seek the business of a major national industrial group that is looking to supply its foreign production sites. Vice versa, its foreign subsidiary does not significantly increase its sales to end consumers in the parent company's country. In any case, business reality, as described later in this document, discredits the idea that a foreign supplier with import capacities is automatically a vector of competition and lower prices.

Independent traders on life-support systems

8. The structure of the trading sector has been weakened considerably by the sudden withdrawal of ten or so American companies from the European scene. The independent traders that live on, mainly originating from the banking sector, acknowledge their difficulties and a consensus for keeping them alive can be assumed. The result is a relatively conventional market structure where marginal firms coexist with dominant companies that manage prices to enable the former to survive.

Price rises after Initial decreases

9. A great many arguments show that wholesale kilowatt-hour markets no longer leave room for the competitive pressures observed when they were set up three years ago. These well-founded arguments are borne out by a substantial upward price trend, as shown in the graphs below on the cases of France and Germany.



All risks borne by the consumer

10. Commentators on the deregulated electricity market too often make the customer an economic abstraction, leading to an inaccurate appraisal of the new economic reality. In the following three situations, all observed on European wholesale markets:

- a price that is occasionally multiplied fivefold due to a weather incident,
- a price that temporarily triples, on the grounds of maintenance work on a line or a particularly plant,
- a price that doubles on a lasting basis due to underinvestment in production,

price risks are transferred from the producer to the consumer.
This transfer means:

- loss of competitiveness for the customer, whose energy costs rise sharply,
- a windfall profit that improves the producer's income.

Many other examples could be put forward to show that this transfer of risk to the customer can be on an excessive scale never seen in other markets. Electricity calls for a smoothing-out of prices, especially as producers have access to instruments (insurance, weather derivatives market) that they alone can use and which allow them to manage their risk rather than pass it on to the consumer.

Not only are customers unable to bring competition into play, but they bear all the risks related to the situation of the electricity offering – as regards production plants as well as transmission lines (underinvestment, overmaintenance, etc.) – despite having no responsibility for that situation. Deregulation has led to total inequality to the detriment of users, with the risk of

electricity sector players avoiding their responsibility and of significant deterioration in industrial consumers' purchasing environment.

III. The Irrelevance and Inconsistency of the Market Model

Ineffectual adjustments by prices

1. Unexpectedly, trading took on a major role due to the intention of making prices crucial to the adjustment process. An entire trend in Anglo-Saxon economic thinking supported this[1]. Price was made sacred as an adjustment variable without sufficient thought being given to pricing mechanisms. The prices formed on the wholesale market are wrongly perceived as economic markers. The fact is today that the American regulator is still looking for the "right" market model, gradually realising that demand response is often absent, despite being one of the major goals of deregulation. Two-thirds of States in the USA have decided against opening up their electricity market, largely for that reason. Spiralling prices can be observed, (100, 200, 500, 1000, 2500…) without adjustment volumes increasing accordingly. In reality, the observed scale of these price movements in reaction to the slightest imbalance is clear evidence of the lack of response in demand, whereas several pricing systems in the world, including the French system in particular, had successfully developed such responses.

The commodities model is not relevant to electricity

2. The concept of a market, usually defined as the point where supply meets demand, corresponds to a wide variety of situations, of which direct confrontation on a stock exchange-type market is just one mechanism, resulting from the characteristics of the product in question and the organisation of the sector. Apart from financial assets and certain storable raw materials (including oil and gas), such direct confrontation does not usually exist, which does not mean there is no market or no competition. This point is developed in Appendix 2.

More or less overtly explicitly and through the use of incorrect semantics, players on the wholesale electricity market (developed under the Scandinavian Nordpool model) refer to a commodities market model, in which both trading and price adjustments play an essential role. The question of such a model's relevance, given the specificities of electricity, has never been truly addressed. As a result, the sector's workings are unsuitable and incoherent, making recurrent crises likely, with devastating effects for industrial consumers in particular.

Electricity does not have the characteristics of a commodity

3. The specific market model for commodities is closely linked to the characteristics of basic products such as crude oil or primary metals, which are very different from the characteristics of electricity.

[1] The economic tradition as regards electricity in English-speaking countries, unlike the French tradition, did not include notions of marginal cost. The creation of incorrectly named "spot" markets was seen as a way of evolving in that direction, without weighing up the pitfalls of a regulation system for electricity commerce that was not based on the volume variable.

Generally speaking, regardless of its storability, a commodity is both:
a) a technically heterogeneous product, despite very homogenous economics, and
b) a product that is not initially marketed in a form that meets the requirements of the end user (box 3).
Action by industrial and commercial intermediaries, who reconcile the forms, conditions and timeframes in which the product is sold by producers and bought by users, is then essential. Working with all players, these intermediaries buy and sell in a trading function, provided that competition imposes highly consistent prices at every point in the circuit.
Conversely, electricity is perfectly homogenous in technical terms and so its marketed at the production stage in a form that is suited to the product's uses.
Nothing prevents direct relations between established between producers and users, apart from the question of transport. However, the transport network seems to be a natural monopoly with regulated conditions of access, and trades on the wholesale market are conventionally made before transport. In these conditions, there is no need for an intermediary.

Box 3: *THE CRITERION OF PRODUCT HOMOGENEITY IN THE COMMODITIES MARKET MODEL AND THE ROLE OF TRADING*

The competitive organisation of commodity sectors (metals, oil products, gas, major agricultural produce) gives the market a central role through complex mechanisms that are directly related to the products' characteristics. These commodities are homogenous, storable goods that are not directly suitable for their end purpose. However, this homogeneity is far from perfect and each commodity has its specificities:

-Qualitative features providing close substitutes (API degree or sulphur rate for oil, origin of cocoa beans, quality of gluten for wheat)

-Varying degrees of processing to meet the requirements of end use (concentrate, ingot or cathode, wire or profile for a metal).

High homogeneity makes any differentiation strategy ineffective. Therefore, competition is essentially on price. Conversely, because of heterogeneity factors, direct relations between producers and users remain marginal, as each party wishes to deal on specific terms and timeframes. A trading activity develops in order to make those terms and timeframes compatible. Moreover, industrial and commercial conversions adapt the commodity to users' requirements in most cases. These operations are carried out under the pressure of competition in a context of highly consistent prices. They can therefore be considered as purchases for resale (e.g. purchase of concentrate, initial conversion, sale of ingots).

Overall consistency is ensured through:

a) The emergence of a reference corresponding to the price that results from the widest possible matching of supply and demand in relatively standard conditions, which limits any possibility of market manipulation and gives sellers (with respect to buyers) the widest possible outlets (with respect to the largest supply sources). The benchmark price for copper, for example, is the price formed on the cathode market.

b) Spot transactions on specific products on the basis of that benchmark price and a price differential reflecting:

- *the intrinsic specificities of the product,*
- *its degree of processing,*
- *any specific tensions that may occur at that point in that circuit,*
- *the particular contractual clauses that define the transaction.*

These spot transactions can be made on a full price basis or at a price indexed on the benchmark and fixed at a later date. In the latter case, only the differential is defined in the contract.[2]

The heterogeneity of electricity as a product

4. Despite this perfect technical homogeneity, electricity is highly heterogeneous in economic terms. What users require is a flow of electrons, of course, but a flow that corresponds to a given power for a given operating period according to a demand forecast, with timeframes stretching from several years to a few minutes. These three parameters lead to widely varying needs. Each user requires an adapted offering, if a particular type of supply cannot be substituted for another (see box 4). As the product is not storable and is subject to the physical constraint of real-time balance in terms of the transport network, the offering can only be adapted through direct capacity commitments and not by purchase/sale-type transactions.

[2] The traditional opposition between over-the-counter transactions and transactions on a regulated market (stock exchange) leads to several current errors of interpretation. A more relevant contrast is between totally standardised transactions (which, until 20 or so years ago, were mainly carried out through organised markets (futures)) and conventional commercial transactions, based on contracts with clauses that are freely negotiated by the parties according to their respective needs. The emergence of OTC derivatives led to the confusion. These are totally standardised products that differ little in practice from stock market products, which are used in completely different ways from commercial transactions which, by their nature, are always executed by the transfer of goods from seller to buyer.

Furthermore, traders have no comparative advantage over a producer with a similar approach. Quite the opposite: producers can always operate without a direct price risk by an adapted response through a pool of power plants that enables them to trade off production cost levels against the flexibility required by the diverse needs they serve.

Box 4 *THE HETEROGENEITY OF ELECTRICITY AS A PRODUCT AND THE POWER-ENERGY DIALECTIC. In extreme cases, this heterogeneity is seen in the dialectic between power and energy at the centre of electricity economics. Industrial consumers present a relatively stable need that can be known well in advance and which is expressed in terms of the energy they regularly consume. Conversely, domestic consumers are unable to voice a similar need. The quantity of energy they consume depends entirely on last-minute and therefore unforeseeable conditions. The need voiced in advance is the overriding requirement of real-time access to the necessary energy. The amount of that energy cannot be planned ahead because of the variables that affect consumption. The need is therefore to reserve power, regardless of the quantity of energy consumed. The duality of power and energy was fundamental in former pricing practices, as symbolised by the two-part tariff.*
On the production side, the development of generating capacity comes under the same dialectic. The producer seeks to develop capacities:
- either to meet recurring foreseeable needs that guarantee saturation,
- or to meet a need for power reservation, regardless of the duration of use of the new capacities and, therefore, of the quantity of energy they will produce.
This two-sided rationale calls for a highly specific regulation mechanism. It is unrealistic to think that the market can call into play intelligible mechanisms that provide any consistency in meeting such fundamentally different needs.

It can, of course, be argued that nothing prevents traders from selling at the terms required by users and hedging their risk by buying on the corresponding supply on the market. However, this argument is only admissible if the market corresponding to that type of flow exists. Given the great diversity of needs stated on the basis of the three above-mentioned criteria, the problem of the market's incompleteness will inevitably occur, making it impossible for traders to operate without bearing direct price or performance risks, unless of course they control production assets. This incompleteness means that arbitrage is impossible between the various products traded on the markets, which consequently tend to compartmentalise, each following a specific rationale without any overall consistency emerging. Contrary to appearances, therefore, electricity is anything but a homogenous product. The heterogeneity of needs plays a crucial role here, but one which is made worse by the impossibility of storing the product.

Price consistency over time and product storability

5. Unlike electricity, commodities markets impose consistency in prices over time with respect to product delivery dates and the needs expressed for those dates, through clearly identified mechanisms related to storage (box 5).
In the case of electricity, prices for different dates are inconsistent as they are formed on heavily compartmentalised markets with no clearly identifiable mechanism for establishing a rational basis for arbitrage.[3]

[3] This does not mean that traders do not carry out such transactions. However, they are arbitrages in name only and are closer to a bull operation for the bought product, combined with a bear operation for the sold product. The lack of any mechanisms for making the related prices consistent makes these transactions both pointless and dangerous, and probably explains the disappointments encountered by some traders.

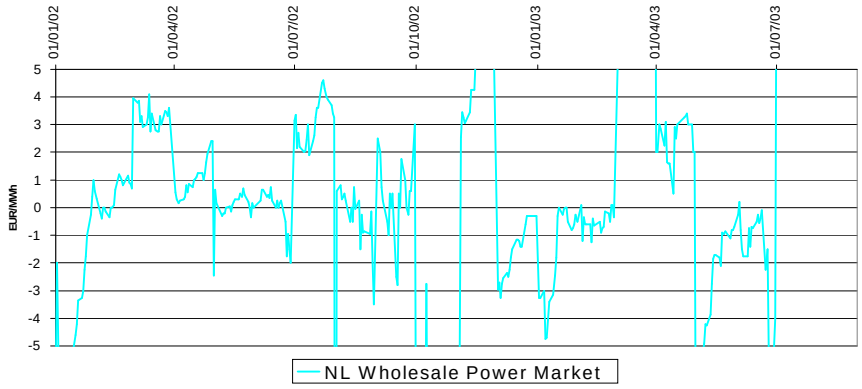
Box 5 *MARKET MECHANISMS AND COMMODITY PRICE CONSISTENCY OVER TIME*

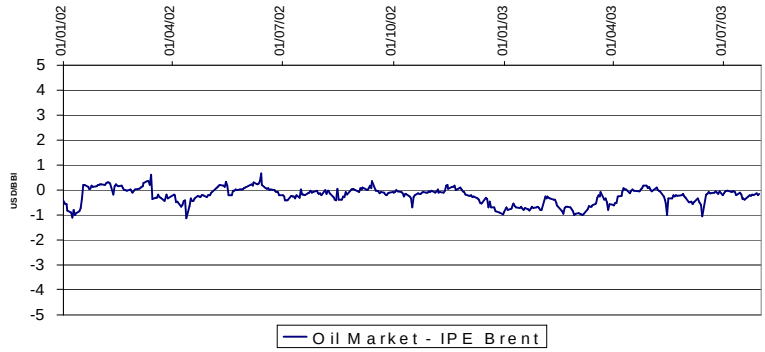
At any time, a commodities market provides the conditions for arbitrage on available products that can satisfy immediate needs, or future needs through forward purchases. In the absence of pressure on immediately available product, the differences between spot and future prices reflect the physical and financial conditions of storage. If there is a surplus of supply over immediate needs, the market fully compensates any operator who bears the cost of carry in order to satisfy future demand. Any pressure on available supply, on the other hand, will come with a reduction of that differential by an amount perceived as an availability premium. Variations in that premium represent essential markers for the various players' decisions to build and reduce inventory in response to the needs expressed on different dates and on the basis of the conditions for achieving future balances.

Prices, therefore, respond to changes in forecasts resulting from new information on the conditions for the market's future balancing, while their relative levels for different dates (market structure) express inter-period arbitrage conditions for satisfying needs on these dates.

At any given time, prices, whether in terms of their levels or relative values, reflect all available information on future balances and, through the arbitrage conditions they impose consistency in both space and time on all the economic decisions that affect the product. These efficiency criteria are generally borne out by empirical tests.

The two graphs below show the essential difference between electricity and other basic products. They represent price differentials between two consecutive months on the Dutch wholesale electricity market and on the Brent market. For crude oil, there is consistency over time and the differential cannot rise above the cost of storage from one month to the next, while any backwardation reflects pressure on immediately available product. No mechanism of this type exists for electricity and calendar spreads fluctuate significantly with nothing to pull them back in. The markets for M and M+1 blocks operate totally separately and no arbitrage is conceivable.





Real-time adjustment and the risk of market manipulation

6. More seriously still, the unstorable nature of electricity, together with the requirement of real-time balance, gives the near-real-time adjustment function a central role in the workings of electricity systems resulting from deregulation, with the emergence of last-minute markets governed by unknown quantities in terms of both consumption (weather conditions) and production (plant failures). Furthermore, on these markets, prices are very unresponsive to demand and supply is in part highly inflexible. Consequently, the price movements needed for these adjustments can only be large-scale and, in stretched periods, hourly rates fluctuate to unimaginable extents, reaching levels that are unheard-of on any other market worldwide.

In addition to the specificity of the procedures implemented to provide for real-time adjustment, which are necessarily centralised under the control of the grid manager, new day-ahead hourly rates have emerged with all the features of an adjustment market on which prices are formed with no information content and with excessive volatility.

This situation has some extremely important repercussions.

- The response to the consequences of unknown last-minute factors through a supply/demand rationale gives some players – producers, of course - exorbitant market power;
- These producers are all the more tempted to exercise that power as the scale of the resulting price fluctuations represents substantial financial opportunities;
- Their business strategy then loses out to an activity that should only be marginal but which, quite the opposite, contaminates the entire commercial system;
- By representing recourse to trading as the final marketing channel, these markets will further tip the balance of power in favour of producers, making long offers scarce;
- This situation has given credibility to the idea that day-ahead hourly rates could be established as the electricity benchmark price, whether as they stand or as a daily average.[4] These prices have none of the essential features of a benchmark:

  i) As an adjustment price, at best they only respond to last-minute accidents and have no information content on which operators could base their decision-making.

  ii) Formed on narrow markets, especially as a large part of the transactions carried out on those markets are unpriced orders[5] that play no part in supply-demand interplay, prices are highly vulnerable to any attempt at manipulation.

  iii) Producers' great market power rules out the idea that these prices, despite their lack of information content, could at least reflect marginal production costs.

  iv) Finally, day-ahead hourly markets are usually organised within Power Exchanges which, particularly in Europe, use a pricing method that is particularly conducive to market manipulations (cf. box 6).

  The above statements are backed up by some end users' reports that their suppliers tell them openly that they prefer the option of not supplying them in order to sell on very short-term markets, particularly day-ahead hourly markets. First of all, this fails to take into account the fact that the very low liquidity on these markets should be reflected in significant price cuts. But, above all, it reflects traders' speculative outlook, which leads them to consider that future supply prices can be seen as bets on average balancing prices.

[4] It should be noted that Powernext, the managers of the hourly market in France, no longer give credibility to this idea but ambiguity remains widespread in continental Europe.

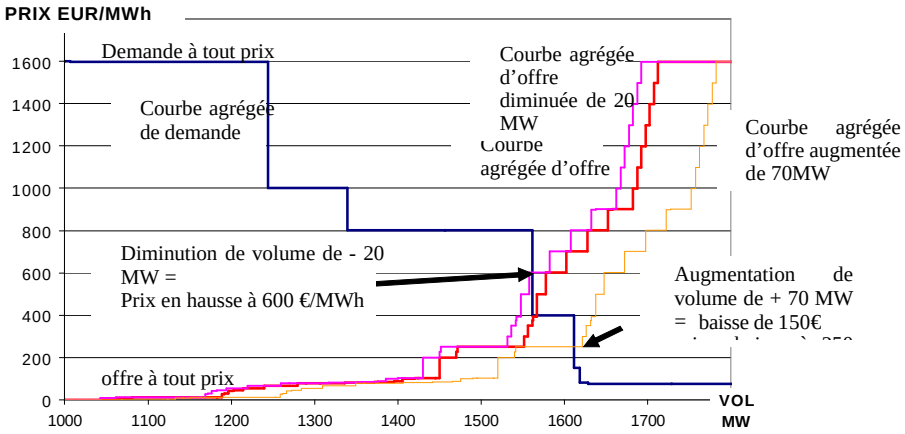
[5] Electricity markets often use pseudo-derivatives as supply mechanisms. These instruments provide for the payment of the financial difference between a negotiated fixed price and a variable reference, usually linked to the hourly day-ahead price quoted on a power exchange. To bring about effective delivery, they infer unpriced purchase and sale orders that are automatically carried out on the day-ahead market without the corresponding volumes, which are cancelled out by construction, actually playing a part in the supply/demand match.

On their own behalf and not on behalf of end customers, these traders are encouraged to go long on long-term products with the hope of making a profit by reselling the products on very short-term markets. Given the extent of very short-term price fluctuations, the transaction can be beneficial, even if the purchased product is occasionally not sold on. At the end of the day, regular supply prices become anticipations of balancing prices. This seriously distorts pricing for end users, particularly industrial consumers, once again giving cause for concern over possible manipulations of these balancing prices.

Box 6 *UNIFORM PRICE AUCTION SYSTEM AND MARKET MANIPULATION*

Any very short-term market is vulnerable to the risk of manipulation, as it covers immediate needs with little sensitivity to prices. But in the case of electricity, given extremely rigid demand and the product's specificity, much can be gained by restricting offer levels to push prices up. In that context, arrangements for pricing day-ahead hourly contracts on power exchanges are a further incentive for producers to reduce quantities or play on discontinuities in the marginal cost curve of their plant pools to stagger their offers. This is all the more true as production costs are low, so producers can make offers at relatively low prices with the certainty that they will be taken up. They will not, of course, behave in the same way for every hourly slot. Potential gains are low at off-peak times and a capacity saturation rationale tends to prevail. On the other hand, maximum gains are possible for peak slots with significantly lower risk of failure. In these conditions, offers on the day-ahead market are governed by intervention strategies in which a cost-based rationale plays a secondary role that varies from one hourly slot to another. We should not, therefore, expect the pseudo-supply curves drawn up by power exchanges to be anything like all or part of the short-term marginal costs curves that characterise actual capacities. In that respect, the opinions voiced in opposition to this viewpoint can be surprising. While some commentators continue to claim that prices reflect marginal costs, this is obviously not the case and the clear majority of traders acknowledge that offers are formulated according to the opportunity of the moment, in relation to last-minute information on participants' relative positions. It can also be noted that such a pricing method, by favouring manipulations on the hours when demand is most stretched, intensifies the variability in hourly prices, which can reach extreme levels that are unknown on any other market.
The example shown in the following graph is a good illustration of this viewpoint.

Formation du prix sur la bourse d'Amsterdam (APX) :
Exemple du 10/01/2003 – 18h : prix atteint de 400 €/MWh



APX pricing: Example of 10/01/03 – 6 pm: 400€/MWh price reached
Demand at any price – Aggregate supply curve minus 20 MW
Aggregate demand curve – Aggregate supply curve – Aggregate supply curve plus 70 MW
20 MW volume decrease = price rise to 600€/MWh
70 MW volume increase = 150€ price drop
Supply at any price

It reflects the situation of the Amsterdam Power Exchange (APX) on January 10th, 2003 for the 6pm slot[6]. The price reached 400€/MWh following the matching of aggregate supply and demand curves. A 20MW reduction in supply out of a balanced total 1,560 (i.e. 1.3%) increases the price to €600, whereas a 70MW fall cuts prices by 150€. The clear staggering of offers by 20MW tranche, or at least for €100 price gaps, can also be seen. The daily average is €73.28 and the January average €50.

[6] APX was chosen for this example as the exchange publishes all the orders it receives for non-participants, unlike POWERNEXT. As the pricing method is based on the same technique, it can be assumed that similar examples could be

The failure of financialisation and the impossibility of setting up risk management tools

7. The product's specificity and the different operating characteristics of wholesale markets provide insight into the reasons why such markets cannot be financialised (box 7). Given the size of price fluctuations on wholesale markets, it was believed that such a situation would attract investors likely to take positions to facilitate risk transfer and improve market liquidity, as is the case on commodities markets. This hope was soon dashed and the commodities exchanges that set up electricity contracts soon removed them.

Box 7: *DERIVATIVES AND FINANCIALISATION.*

There is no reason why the matching of users' forward buys and forward sales by producers seeking to guarantee their future revenue should lead to a price that is consistent with anticipations of future balances. This skew is corrected by the intervention of financial operators (often called speculators) that respond to any differential between the future price and the anticipated price by buying or selling forward. This intervention is based on three conditions that are usually met for major commodities:

1. The market cannot be manipulated,

2. Performance risks and constraints for these transactions are limited,

3. There are clearly identifiable market mechanisms on which anticipations can be based.

In addition, the reconciliation of the timing of producers and users' sales and purchases via trading and arbitrages on available product creates the need for price risk management instruments. In their simplest form, these are futures that:

1. Provide for forward transactions on a totally standard basis,

2. Can be offset against each other at any time up to their due date, so can always be reduced to a financial difference between a purchase price and a sale price,

3. Present no counterparty risk.

The processes formed on these markets tend to establish themselves as benchmarks.

Any type of tangible transaction can be paired with a transaction on the corresponding future, making it possible either to cancel out its price effect if the price is fixed, or to fix the price if it is index-linked. This flexibility, which meets a wide variety of needs, leads to the duplication and high concentration of traded volumes through a standardised contract with characteristics that are essentially financial and, therefore, well suited to speculators' needs. Consequently, these markets cannot be manipulated, which is the first quality needed for the emergence of a benchmark price.

Any participant using this price as a market marker for making any decision that commits the future is always able to fix the financial consequences of the decision without having to buy or sell the product physically (i.e. without the obligation to deliver or take delivery on the due date). Therefore, the result of matching supply against demand as expressed on the market reflects every impulse concerning the traded product. It thus reflects all available information, which is the criterion for both a good benchmark and an efficient market.

To summarise, the commodity sector's competitive organisation leads to markets that call on complex, transparent mechanisms that, for the product sphere in question, ensure that all related economic decisions are consistent in terms of both space and time. The only limit on efficiency arising from these market mechanisms concerns the timeframe for the transactions made on it, which may be shorter than required for some decisions of this kind, particularly as regards investments.

Let's look at the example of the United States. In April 1996, the New York Mercantile Exchange (NYMEX) opened two futures contracts on electricity. One concerned a delivery point on the California-Oregon border (COB) and the other was for the Palo Verde, Arizona interconnection. The choice was based on the size of the Californian electricity market, with the hub accounting for 20% of the electricity sold in the USA. In 1999, these two contracts represented volume of 1,000 lots per day, a derisory amount compared with other energy futures (134,000 lots/day on average for the crude oil contract the same year). That volume soon fell. In

presented for the French market, even if its structure is different and limits the scale of this lack of resilience.

February 2002, against the backdrop of the ENRON affair, NYMEX decided to delist all such contracts. With a more modest objective and no longer the goal of attracting massive investment from hedge funds, a new contract was launched in mid-2003, offering flexibility to participants on a specific market (PJM) with a real-time price reference. Volumes are very low.
Australia provides another example with the Sydney Futures Exchange (SFE), which brought in a Nobel Economics Prize-winner to design its electricity contract, but has not succeeded in attracting liquidity. In Europe, the attempt by London's International Petroleum Exchange (IPE) was rapidly called off.
It is clear that wholesale electricity markets are unable to create real derivatives.
Confusion remains between paper and tangible product. In practice, the paper that is the basis for volume duplication and market financialisation does not exist and transactions always end with effective delivery, whether by direct performance (OTC calendar blocks market) or by the automatic launch of procedures that lead to the production of unpriced orders on the physical market (Futures on EEX) that acts as a reference.

However the absence of real instruments providing for intervention by strictly financial operators able to take and carry positions on the product is not the sole explanation. A more important factor is probably the absence of information content in prices, of consistency between different terms over time and of transparent, easily identifiable pricing mechanisms that operators can use to take positions and draw on their own anticipations. In addition, there is the suspicion of manipulation and the substantial performance risk borne by anyone without production assets. The three essential conditions for a market's financialisation:

-absence of manipulation,
-limited performance risks and constraints,
-existence of clearly identifiable market mechanisms for forming anticipations,

are not met for the electricity market, unlike the commodities sector.
This non-financialisation is closely related to the very nature of electricity and the resulting consequences for the functioning of wholesale markets built on the basis of a totally unsuitable model.

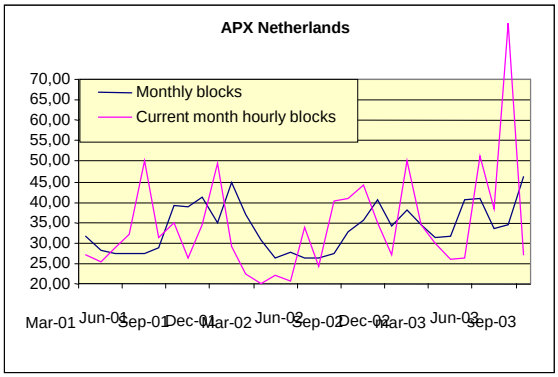
The end result is a critical situation that reveals the total inconsistency of the choices made concerning such a model. On one hand, the way wholesale markets work increases risk and, on the other hand, it prevents the setup of instruments for managing that risk. This leads to extremely serious economic insecurity that especially affects major industrial consumers.

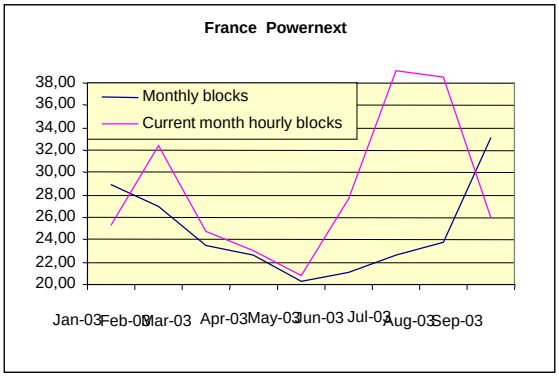
The presence of systemic risk on energy markets

8. The incompleteness of markets and the lack of consistency over time lead to extremely dangerous trading practices (box 8), creating a systemic risk that hangs over the sector. The scale of the losses it can cause could result in a series of bankruptcies by participants. The situation of independent suppliers in the Netherlands is a case in point. Their business model, based on bearing the wholesale price risk themselves and, therefore, offering customers fixed prices (or fuel-indexed prices, but not on the wholesale market), has proved a failure, with some firms bankrupt and others bought out by major operators.
It is best not to imagine the consequences for traders and their industrial clients of extended outages for part of the European plant pool, like the incidents in Japan in 2003.

Box 8. *THE SYSTEMIC RISK IN SOME TRADING PRACTICES*

Open interests are commonly closed on calendar blocks of a given type via a different type of block or, for monthly blocks, on the hourly market. The two graphs below, drawn up for France and the Netherlands, compare price months for a monthly block and the average hourly price during the corresponding month, enabling differentials to be measured.





Furthermore, the financial issues involved in extreme price variability lead operators to conceal any information that would reveal an unbalanced position, particularly the need to buy in order to hedge a short position. In parallel, the constraint of balancing means that the system manager must have the most complete set of information possible, at the risk of seeing the system collapse. This contradiction, resulting from deregulation, makes electricity systems significantly more vulnerable, as recent accidents in North America or Italy attest.

IV. A Worsening Situation for Industrial Consumers

Consumers have no negotiating leeway

1. Observation of the workings of electricity markets and buying practices clearly confirms the analysis of an inconsistent market model. For industrial consumers, the result is a worrying purchasing environment, made worse by disastrous commercial policies based on marked-to-market mechanisms that rule out any negotiating options for buyers on the main part of their electricity bill.

The lack of liquidity, the shift in the offering towards short-term products out of step with industrial consumers' needs and the markets' incompleteness are in no way due to the model's teething troubles but to its irrelevance to the reality of electricity trading.

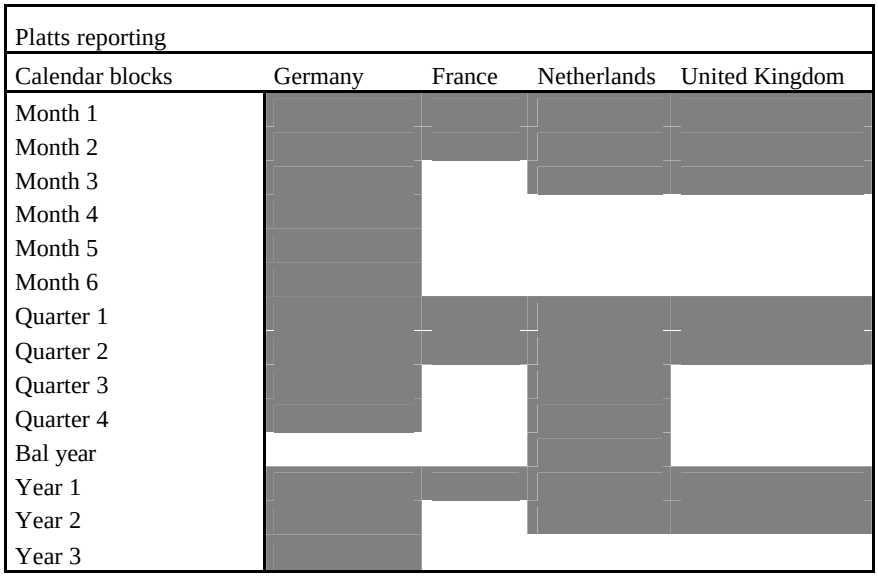
A commercial environment unsuited to consumers' needs

2. With the need to cover recurrent needs that are known well in advance, industrial consumers first come up against offers with very restricted prices in terms of both the diversity (box 9) and the volumes they can expect to trade. The very few markets in existence are mostly characterised by a clear lack of resilience. On market segments with little depth and liquidity, no one can hope to trade the right volumes at the right time.

Box 9 *THE CALENDAR BLOCK MARKET: NO ALLOWANCE FOR INDUSTRIAL CONSUMERS' NEEDS*

In particular, offers correspond to a few standard products in the form of monthly, quarterly or annual blocks, with differentiation between night & weekend hours and daytime hours (24 hours per day vs. 8 or 12 hours, depending on the case). In that respect, a clear snapshot of the market is provided by Platts, the agency that is currently the benchmark in Europe (even if other block reporting resources are emerging with sketchy knowledge of the volumes traded on these blocks, each of which is a different market).

The following chart shows the prices that are displayed daily (which does not mean that prices are stationary within a given day or price), on the basis of which buyers are encouraged to place orders.

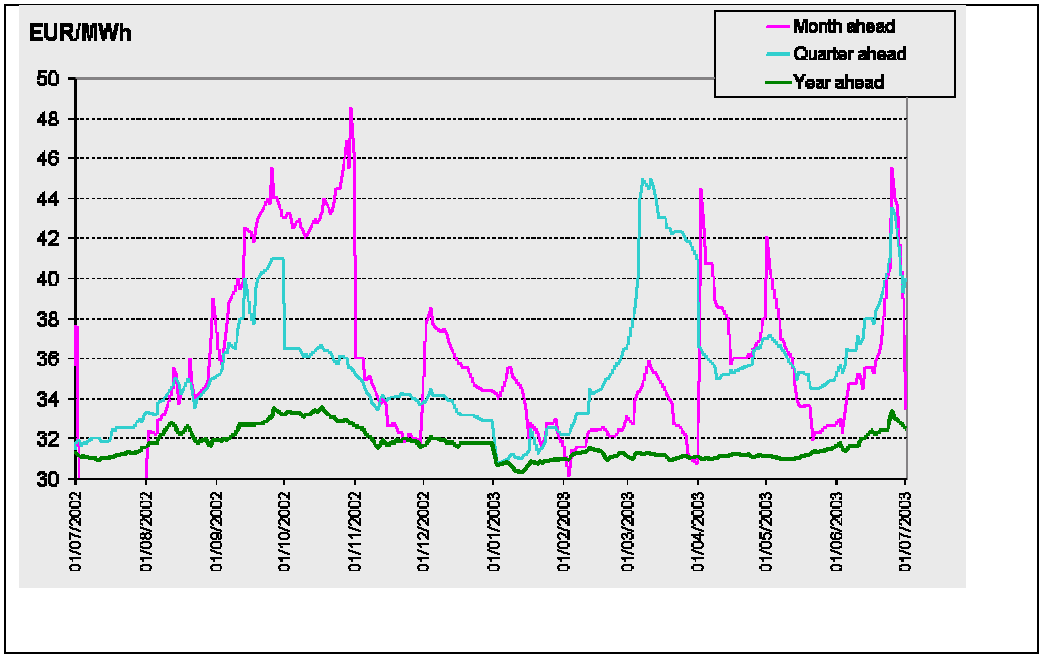


In France, for example, on a given date, only annual blocks for the following year are really available, whereas prices for three consecutive years are displayed in Germany. For monthly blocks in France, only two months are displayed, which makes the practice of buying at the average of these references extremely unattractive.

Traders will always argue that they are there to offer what the customer asks for and that a supply for a given period can always be considered, even if the corresponding block is not usually traded. In practice, this makes very little sense. In a highly compartmentalised market environment, buyers have no credible price references for their purchasing decisions and, therefore, run the risk of paying too much. This puts them off organising their purchases on these bases, which are different from Platts' bases.

Whatever the case, this market snapshot clearly shows that industrial consumers are unable to cover adequately their needs, which are not limited to purchases one or two years ahead, but come under much longer timeframes.

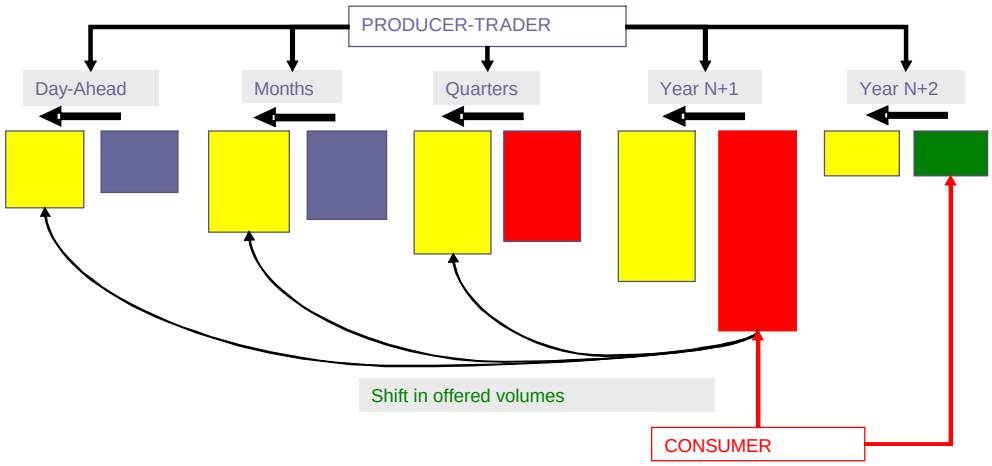
Each product corresponds to a heavily compartmentalised market that obeys a specific rationale, with no mechanisms for providing any price consistency whatsoever, as the following graph on the Dutch market shows.



The shift in offering towards short-term products

3. While liquidity on annual blocks may seem adequate, unlike for quarterly or monthly blocks, this type of offer is heavily restricted, as the diagram below shows.

In order to take advantage of premiums on the shortest calendar blocks, driven by greater volatility on this product type as the graph in box 9 shows, producer-traders tend to shift their offers to the detriment of annual blocks, which are better suited to the needs of industrial consumers, who are penalised in terms of both volumes and prices.



It is public knowledge that meetings are held in the major producers' offices, usually weekly, bringing together production asset portfolio managers and traders. The former, working under a capacity saturation rationale, would like to offer the longest possible blocks, whereas the latter, armed with charts, show that they achieve much higher margins by limiting the length of blocks to a month or a quarter. Saturating production capacities, the very basis of electricity economics, is of no interest to the traders. A capacity saturation rationale is being relinquished in favour of market manipulation strategies.

Under a capacity saturation rationale, forward prices should logically be in backwardation because of the risk of being unable to sell on, as the competition can always saturate demand in a context of overcapacity. As demand is highly or totally inelastic and supply is concentrated among a limited number of players who are subject to little competitive pressure, producers are systematically in a winning position as they have no real risk as regards outlets. Consequently, market backwardation is almost systematic (the 2004 block is cheaper than the 2005 block [7]).
The following argument can be put forward. For a producer, selling an annual block forward means ruling out its subsequent sale or the sale of monthly or quarterly blocks, for which prices show increasing volatility with lower liquidity, making manipulation strategies possible. Therefore, forward selling also means selling the call option on the other blocks, which have high volatility premiums. This is factored into the forward price, which structurally explains the observed backwardation.

Lack of real price references, excessive transaction costs

4. Industrial consumers have no leeway in their purchasing practices.

In terms of prices, the only references that end customers can use come from information in surveys intended to determine the average price of completed transactions. This reporting method, based on journalistic reports, raises problems as only transactions completed with an identifiable counterparty are taken into account so that the announced price can be checked. As in the specific case of the wholesale electricity market, around two-thirds of orders are carried out through electronic platforms that ensure participants remain anonymous, most volumes cannot be taken into account, so the survey's coverage is extremely low. In general, serious doubts exist as to the quality of this type of reporting.[8]

Customers have no choice but to buy on these bases, and must also bear excessive transaction costs that can be estimated at up to 7% on on-standard products, which is astronomical compared with the cost of sales teams trading in conditions that match needs, and 3% for standard products, which is out of proportion with transaction costs on other commodity markets or on currency markets, for example (where relative transaction costs are 100 times less!).

Armed only with agency information[9], the consumer that places an order with a trader obtains an offer with increasingly limited validity (in some cases valid for the precise moment only) and, therefore, has no time to think and has to accept while severe restrictions on volumes. Any market consultation is only intended to ascertain whether the liquidity exists. In addition, it is sensible to buy small volumes and not consult several suppliers. [10]First of all, they would quote the same price.[11] Secondly, it would be dangerous as, without any market depth, contacting

[7] On other commodity markets, the forward curve usually has a very different structure and a basic phenomenon can be observed from the viewpoint of risk management: prices move back towards the average, i.e. a trend value is posted.
[8] The announced price ranges are high –lows, but in market practice are treated as bids and asks, which significantly increases transaction costs.
[9] If, in the future, some end customers gain access to brokerage platforms to see the orders book, it would lower transaction costs but would not correct dysfunctions.
[10] A trader never directly takes the initiative of calling a consumer, but waits for consumers to show their hand. The 'Platts' reference almost automatically becomes the obligatory basis of negotiations, which is extremely twisted.
[11] Quotes are made on the basis of the highest bidder principle, which is applied in an extremely twisted way in the case of this wholesale market, given its totally unbalanced structure.

several traders would almost always lead to a rise in prices through higher demand pressure. Finally, the buyer would lose the ability to hide a short position.

Inconsistent prices with little information content

5. Beyond the buyer's slight negotiating leeway, the most serious point is the incomprehensible nature of the prices offered, which prevents any analysis of the scant information available. It can be argued that if electricity trading practices are a caricature of what exists on other markets, the lack of time to think over an offer and, in some cases, restrictions on volumes, are also true with other products. That is not where the essential different lies. For oil or metals, for example, buyers have real benchmarks that at any time enable them to judge the relevance of an offer in relation to the offers that could be made in the future. In addition to the fact that prices contain available information about the future, any new information can be interpreted, as it is likely to trigger clearly identified mechanisms that guarantee the sector's overall consistency at a given time. This ability to analyze offers means that buyers can choose the timing of their intervention by accepting or refusing an offer made to them.

No such system exists for electricity. Market compartmentalization, the inconsistency and low information content of prices[12], not to mention the manipulations that prevent them from reflecting costs, all make attempts at fundamental analysis irrelevant.

Consumers are always in a situation where they know that, by refusing an offer when they have shown an interest in buying, they risk being unable to find the volumes later and having to pay more as the term gets closer, whereas the seller knows how well covered they are.

A one-sided situation penalising the consumer

6. The relative situations of consumers and producers are highly asymmetrical. While consumers can in no circumstances change the nature of their needs and must meet them whatever it costs, producers can easily break the basic rules of electricity economics by putting all their production tools under a trading rationale that imposes a false consistency to the detriment of consumers.
All major electricity producers have given up conventional electricity marketing methods in favour of their trading subsidiary which, against consumers' best interests, only seeks to optimize short-term financial results based solely on the market power that this type of organisation gives them.

Electricity supply prices contaminated by adjustment prices

7. As we emphasised in the second part, the entire system is, to some extent, subservient to the last-minute adjustment rationale that is becoming the electricity market's centre of gravity.

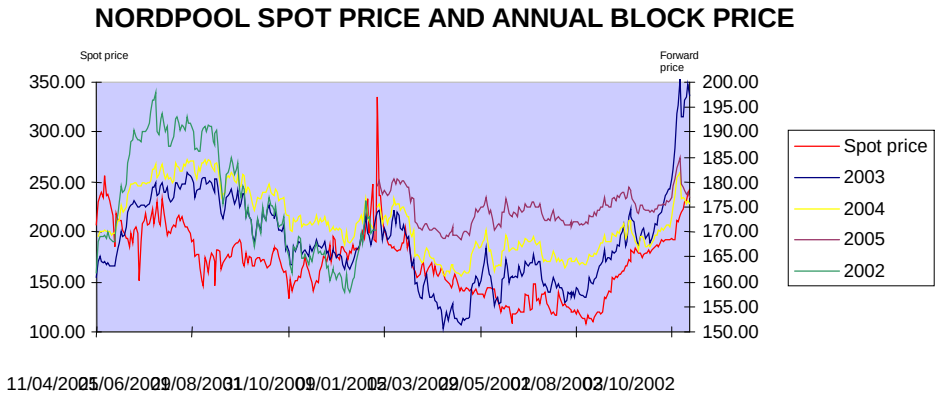
Against all logic, calendar prices are contaminated by day-ahead prices (box 10). It is difficult to understand why adjustment prices on a given date, which essentially depend on unknown

[12] While prices have no information content, the various specialise agencies are involved in a real information war. The few traders that are independent of major producers are keen to have all possible data on the slightest plant breakdown or on maintenance conditions. The idea that markets would be more manageable with more information is sustained. This is an illusion. These trivial news items are of little use, particularly for improving the forecasting possibilities for the price of calendar blocks.

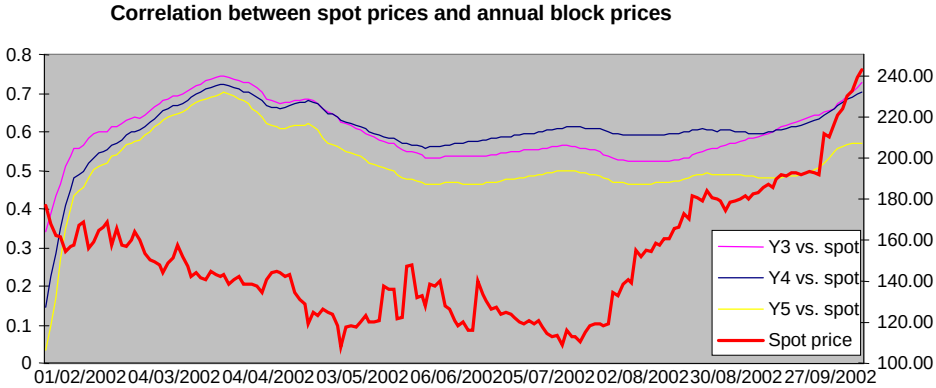
factors affecting last-minute balances, should have any effect on supply-demand balances corresponding to recurrent needs expressed several years in advance.

Box 10: *CONTAMINATION OF ANNUAL BLOCKS BY DAY-AHEAD PRICES*

The following graph shows the relation between annual block prices and day-ahead prices on Nordpool for the period April 2001- October 2002.



For 2002, the correlation between the spot prices recorded from the beginning of the year and the price of the corresponding annual block trends is as follows:



Four remarks can be made concerning these graphs.
The further ahead, the higher the price for annual blocks. This is easily explained by the fact that as producers have a greater number of opportunities to sell volumes corresponding to far-off annual blocks, they will have higher price expectations than for annual blocks at a closer date.

Contamination of the spot price can be measured by correlations. For the January-October period, contamination is more than 70% for the 2003 and 2004 blocks.
These correlations tend to decrease when the spot price falls and increase when the opposite occurs. When the spot price rises and when it is used as a reference, the forward selling opportunity is reduced, unless a higher price can be obtained. This constraint does not apply systematically and the spot price's restoring force has a lesser effect.
It could be argued, for example, that the chosen illustration proves nothing, insofar as the Scandinavian market is dominated by hydroelectric supply, making the product indirectly storable. The results obtained by Ele Gjolberg and Thore Johsen (2001) show that such an objection is unfounded.[13]

The ongoing illusion of providing the market with risk management tools

8. Without allowing for the impossibility of achieving the electricity market's financialisation (box 7) - an essential prior condition for the emergence of true risk management derivatives -, the illusion prevails that creation of such products is possible, as long as day-ahead prices or a similar reference are recognised as a benchmark[14] (box 11).

Box 11: *THE DAY-AHEAD REFERENCE AND THE CREATION OF DERIVATIVES.*
The day-ahead market, which is clearly a preadjustment market, cannot answer the concerns of industrial users with needs that are, on one hand, relatively stable and, on the other hand, expressed months or even years in advance. Under no circumstances can it be considered as a price reference for indexing supply contracts.
The situation is very different for oil and base metals. Commercial contracts are conventionally indexed on spot prices that apply on delivery. This reference is justified if spot prices are perfectly consistent with prices as a whole for any term and, therefore, reflect available information on the future.
A complete set of derivatives can be built on those bases, providing risk management instruments in the form of firm products (swaps, forwards, futures) or option products.
Let's take the example of a manufacturer looking to fix the price for fuel oil consumption of 5,000 tons per month in 2004. To do so, he will use a swap negotiated today on the basis of $156, which will give rise to monthly payment of the difference between the fixed price of the swap and the variable reference, in this case the monthly average spot price for the month of delivery. In parallel, he buys his fuel physically through a contract stipulating delivery of 5,000 tons per month with a price indexed on the same reference (monthly average of spot price for the month of delivery).
For example, at the end of March 2004 the swap will lead to payment of the difference between $156 and the average monthly price for delivery month P, i.e. (156 –P) x 5000. The purchased energy will be invoiced on the basis of P, i.e. Px5000. In total, the energy consumed on that date will cost [(156 –P) – P] x 24x 10, i.e. $156, the price fixed today. The same will apply to every month in 2004 and the system will meet his expectations.
It is claimed that this mechanism can be transposed to the case of electricity. Yet this does not make sense. The operations made by industrial consumers with respect to their supply are never indexed on day-ahead prices but are carried out at a firm price. Furthermore, even the futures proposed by power exchanges such as EEX are only pseudo-derivatives in practice, as they lead to physical delivery by linking an automatic purchasing procedure to any price on the spot market.
The need for fixed prices for monthly, quarterly or annual energy blocks is expressed as such and certainly not through the use of derivative markets aligned on a day-ahead reference. To state those

[13] Ole Gjolberg and Thore Johnsen "*Inventories and price relationship at nordpol"* Department of Finance and Management Science, Norwegian School of Economics and Business Administration, (Nov 2001). They conclude, "*Nordpol forward prices have periodically exceeded the theoretical limits of arbitrage. In addition, forward prices and the base are skewed and seem to be poor predictors of future spot prices and their variations, respectively. Forecasting errors are systematic and forward prices do not appear to factor in available information. Alternatively, the results may provide evidence of producers' circumstantial market power."*

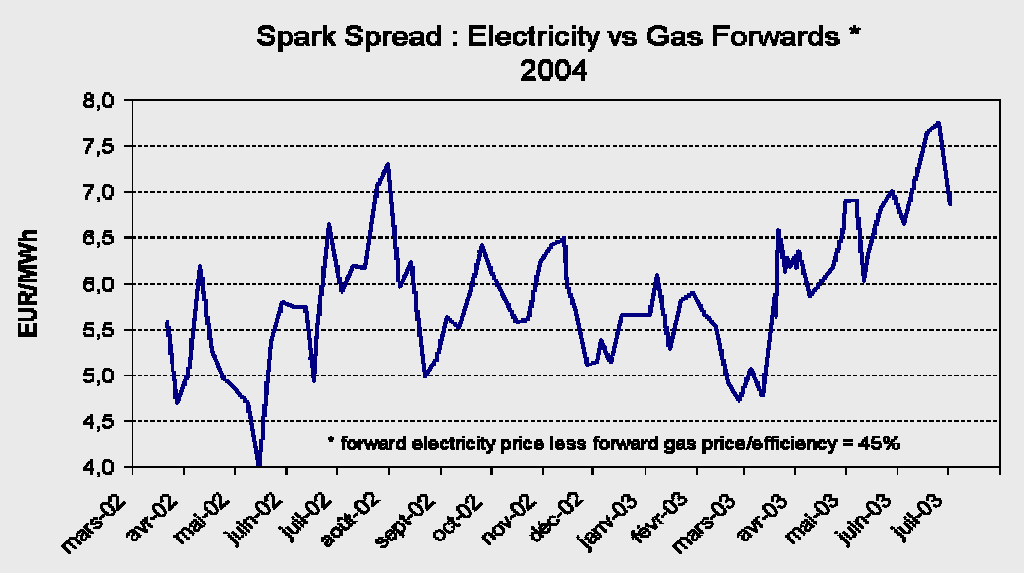
[14] To avoid criticisms of the adjustment price's worth as a reference, the use of indices based on OTC transactions for the day, week or even month ahead has been proposed. The inconsistency between prices for two consecutive periods rules out building a relevant forward curve of this kind.

needs, no price reference exists that can make the related supply decisions the slightest bit rational. They are completely subject to the offers made by producer-traders on the basis of incomprehensible prices that contain no information on the electricity market's future balances and are extensively contaminated by adjustment prices, despite there being no economic grounds for this state of affairs.

It should also be noted that on marketplaces where this kind of product has been set up, even greater contamination of calendar blocks by hourly adjustment prices can be observed.

Prices disconnected from fundamental factors

9. In the current electricity market environment, wholesale markets resulting from deregulation, which are clearly block markets,[15] operate in a state of uncontrolled drift, as they are not anchored in reality by a price reference with a minimum of economic meaning. Moreover, incessant fluctuations for no reason in these prices mean that buyers eventually lose any references they might otherwise have on reasonable levels for buying electricity. Fuel price trends are not adequately reflected and spark spreads[16] behave absurdly. The graph below illustrates this with the case of the Netherlands, a country producing electricity from natural gas.



The need for real industrial consistency

10. Great diversity of needs in terms of volume, duration, time to implementation and stability for a non-storable product leads to high market segmentation on the demand side. In parallel, production is carried out through tools that are also highly diversified in terms of their technology and flexibility. Consequently, there are different types of production. Flexible but costly tools meet adjustment or preadjustment needs, while others have the right characteristics for meeting stable long-term needs. Instead of the market model that the advocates of deregulation have sought to impose, resulting in total inconsistency in time, a more relevant regulation system for the electricity market can be advocated, based on the objective of

[15] The volumes traded on day-ahead markets that actually contribute to price determination are derisory in relation to total consumption, even if only eligible consumers are taken into account.

[16] Differential between the price of electricity and the price of fuel used to produce it, based on the energy yield of the production tool used

industrial consistency, the only way of enabling capacities to adjust to trends in needs over the long term. .

*
* *

A whole set of assumptions support the belief that the companies controlling the electricity production sector in continental Europe see trading as a way of concealing their dominant position.

The decision to design a wholesale electricity market along the lines of prevailing commercial practices for storable commodities leads to an absurd price determination mechanism, as the recurrent crises and various accidents that occur wherever this type of experiment takes place all go to show.

The specificity of electricity rules out the organisation of healthy competition through prices and the diversification of offers through a trading activity. This type of market organisation cannot fail to result in:

- greater market power for producers,
- deteriorating commercial relations with users,
- extremely serious economic insecurity for consumers.

If people were taken in by the gradual development of liquidity on the wholesale market and the appearance of new suppliers during the set-up phase, that time is now over. No one can still believe, with the model's rapid collapse now apparent, that corrective measures can still be taken.

Producers are caught in their own trap. In adopting a trading approach and using their market power to improve their short-term results, they underestimated the risk to themselves of an incoherent pricing system that not only makes their own commitments more and more difficult to manage, as the situation in the summer of 2003 showed, but also prevents them from determining the long-term strategy for adapting their production capacity on a rational basis.

For industrial users, the situation is becoming dramatic. The weight of the electric bill in their production costs explains their vulnerability to the system's erratic behaviour. This is becoming a major factor of economic insecurity, affecting their short-term results, their competitiveness and even the development of their production assets.

Tomorrow, the supplier-distributors will have to address the market's erring ways by guaranteeing residential consumers prices that they will be unable to honour for want of adequate risk management tools, unless they overcharge their customer for the supply or impellent a vertical integration strategy, which in the end will result in the reconstitution of the former monopolies.

More generally, some trading practices entail a systemic risk that hangs over the entire sector.

The electricity market rationale can only be a total energy rationale, in which the place of electricity must be a primary energy conversion activity and market mechanisms make conversion margins intelligible. This assumes a very different electricity sector regulation system from the model that the trading subsidiaries of major producers have imposed, about which questions must be raised urgently.

Appendix 1 THE THREE PHASES OF ELECTRICITY MARKET DEREGULATION: THE DESCENT INTO HELL.

	ANNOUNCEMENT AND SET-UP OF MODEL	PLAYERS' STRATEGIC REPOSITIONING	COLLAPSE OF MODEL
Public authorities Regulators	-Changes to national legislation -Accounting separation or dismantling of historical monopoly -Network access rules	-Network regulation -Loss purchasing terms - Interconnection procedures -Approval of hourly market rules	- Market monitoring failure, particularly for OTC - After-the-event introduction of mechanisms that make dysfunctions worse
Historical producers	New rules come into force	-Change of commercial policy -Integration of trading model -International diversification and acquisitions of foreign assets.	-Adoption of a marketing approach based solely on trading offers -Capacity saturation rationale abandoned in favour of market manipulation strategies -Takeover of interconnections -Appearance of undue profits
Independent traders	-Market penetration -Search for alliances with producers	-Unrealised alliances -Commercial aggressiveness -Product design and offering	-First difficulties, withdrawal of some traders. -All-out search for arbitrage possibilities -Greater and greater risk-taking, search for guarantees
Financial players		- Participation in new trading platforms - Development of new products	- Little success for new products - Underdevelopment of activity
Industrial consumers	-Relatively unconcerned, as supplies are still covered by former long-term contracts -Begin to be prospected by traders.	-Set-up of market units -Efforts to optimise purchasing -Test of trading approach	-Severe downturn in buying terms -Lack of visibility, incomprehensible prices -Markets with no depth. -Rise in transaction costs -No risk management instruments -Awareness of the relative failure of the trading approach for managing supply -Worsening of adjustment charges
Power exchanges	-Set-up of a day-ahead market	-Announcement of set-up of alleged derivatives	-Difficulties in setting up derivatives -Increasing disappointment -Difficulties in establishing quoted prices as references
OTC markets	-Standardising of sales procedures	-Gradual increase in volumes -Spread of electronic brokerage platforms	Deterioration in volumes
Prices	- Downward trend	- Increasing volatility	-Upward trend - Irrational, dangerous movements - Inconsistent prices

Appendix 2 MECHANISMS FOR MATCHING SUPPLY AGAINST DEMAND, QUESTIONABILITY OF MARKETS

The concept of a market, usually defined as the meeting point between supply and demand, corresponds to a diverse range of actual situations, of which direct matching, as practised on stock exchange-type markets, is just one particular mechanism in line with the traded product's characteristics and the sector's organisation.

Apart from financial assets and raw materials (including oil and gas), such direct confrontation does not usually exist, which does not mean there is no market or no competition. Supply and demand are then expressed through the strategic decisions (for a long-term outlook) or operating decisions (for the short term) made by companies, factoring in the various aspects of the supply/demand match, including any market power they may have or the likely responses from the competition.

Decisions on setting up capacity take into account factors relating to long-term demand and production cost trends. If the market is questionable, price and volumes will be determined for a capacity with the minimum average cost. In the short term, operating decisions with respect to production plans factor in demand trend forecasts and data on production costs according to the utilisation rate of the installed capacities.

The results of these decisions cannot be adjusted constantly but lead to the determination of the sales price through a mark-up procedure. Marketing the product at that price can in no way guarantee that the exact output will be sold. Depending on the residual inventory volume, measures will be carried out to take up the surplus through price cuts or, above all, sales actions or decreases in the production plan for the following period (or for the current period when order levels are concerned). This organisation method results in a secondary role for prices in the adjustment process. On the contrary, this process involves directly adapting quantities through inventory, order books or the development of new capacity, possibly by new market players.

In the case of direct matching of supply against demand, adjustment mechanisms are very different. The prices resulting from this continuous confrontation are so many markers that are seen as relevant for decreasing purchasing volumes, production schedules or inventory levels, taking into account available information on future balances, which are partly (or even wholly in the case of "efficient" markets) reflected in the market price.

In most cases, there is no need to make a decision between these two concrete origination methods, as the choice stems from objective factors such as product homogeneity, transaction costs, business volumes and logistical constraints. In other words, the relative efficiency of each system decides the issue. There is little point in setting one system against the other.

Unfortunately, an unhealthy trend can be observed of only conceiving a market through an organisation directly matching supply against demand, without any real concern for the relevance of such a system or even for compliance with important criteria in terms of competition. These indicators for assessing the market's questionability include free entry to and withdrawal from the industry, the presence of market authorities, the existence of excessive profits and the extent to which supply is concentrated. Against all logic, mark-up-type procedures – accused of every evil under the former monopolies – are advocated as if they formed prices through the real competition that stems from a stock market model, whereas this only concerns a very limited number of products.