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Competition and Competition Policy in the Austrian Electricity Market

A Critical Review Four Years after Market Liberalisation

Four years after the Austrian electricity market had been liberalised, the overall balance is contradictory: on the one hand, prices were initially cut for both small- and large-scale customers, yet on the other hand, the expected stimulation of competition has so far failed to materialise. Recently, the instability of the Austrian cartel of electricity providers ("Austrian Electricity Solution") has produced some savings for the end customers, but it appears doubtful whether the Austrian electricity market will be able to achieve a competitive market result on its own. With the "liberalisation dividend" obtainable only when a competitive regime is put in place and in view of the analysis as set out below, WIFO recommends that the Austrian competition watchdogs and regulators set about implementing a comprehensive programme to stimulate competition.

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Monopolistic market structures hamper competition and cause an inefficient allocation of scarce resources, attended by higher prices, inferior quality and a reduction in the variety of services as well as a shortage of innovation. Opening the markets for competition through liberalisation is generally seen as an effective remedy for such problems (*Böheim,* 2004).

In vertically integrated network industries (energy supply, telecommunications, railways, etc.), the elimination of institutional barriers to entry is a necessary but nevertheless insufficient condition for the establishment of "workable competition" through market liberalisation, because typically at least parts of the vertically integrated value chain refuse to be organised in competitive structures. Where such parts are essential facilities for downstream activities in which competition is economically feasible, access regulation is deemed to be an appropriate instrument for guaranteeing market entry for alternative suppliers and competitors (*Haucap – Kruse*, 2004).

Since such essential facilities within network sectors constitute natural monopolies characterised by increasing economies of scale and a market-specific irreversibility due to sunk costs, the prerequisites are in place to provide for access regulation. In both energy markets (electricity and natural gas), non-discriminatory access to the transmission and distribution network infrastructure as an essential facility is a conditio sine qua non for competition to work in these markets.

The basic research question motivating this paper is concerned with the interplay between competition policy and sector specific regulation in liberalised network industries. For an empirical foundation of the arguments presented here we draw on the rich and diverse experience acquired from the effort to liberalise the Austrian energy markets in the last four years.

Austria has decided to organise competition control in the energy sector by implementing a division of labour between two separate bureaucratic tracks. Whereas essential facilities for energy transmission are subject to ex-ante regulation by the E-Control GmbH, an independent sector-specific regulatory authority, ex-post su-

pervision concerning abuses of market dominating positions and cartels as well as merger control falls within the sphere of responsibility of the Bundeswettbewerbsbehörde (Federal Competition Authority)[1].

Although the division of labour between the two "competition watchdogs" seems to be clear and the Austrian Cartel Act obliges both authorities to co-operate in competition matters concerning the energy sector, competition in Austrian electricity markets is still in "dire straits". This paper intends to clarify why this is the case and how this unsatisfactory situation can be improved.

Definition of relevant antitrust markets for electricity

The definition of both relevant product and geographic markets is the starting point of every antitrust investigation, in order to identify those competitive forces that constrain market participants in their market behaviour. To this end, modern competition economics relies on the SSNIP test which checks what happens to the profits of an enterprise if a small, but significant non-transitory increase in (relative) prices (SSNIP)[2] takes place.

The standard SSNIP test

The SSNIP test asks what is the narrowest range of products for which a hypothetical monopolist of a group of products could permanently and profitably raise prices by a small but significant amount (e.g., 5 to 10 percent). This range of products constitutes a relevant market (*Bishop – Walker,* 2002, p. 356).

The standard SSNIP test proceeds with the smallest possible composition of products[3] as a first candidate market (CM1). For CM1 the effect of a SSNIP on profits is measured. If the price increase on CM1 is profitable, i.e., the increase in price outweighs the loss in demand, the firm is able to behave like a "hypothetical monopolist" and CM1 can be considered the relevant product market. If the price increase on CM1 is not profitable, CM1 has to be extended by including the closest substitute product. CM1 and the closest substitute product together constitute the second candidate market (CM2). Then for CM2 the same procedure is applied as for CM1 before. This market delineation algorithm is repeated until the relevant product market, i.e., the narrowest range of products for which a SSNIP is profitable, is found.

A modified SSNIP test for energy markets

Liberalisation has split the price of electricity[4] in two components, the price for the "pure" energy component on the one hand and network fees for using the power grid for the transmission of electricity on the other. The power grid may be considered a natural monopoly as it is not economically feasible to duplicate the transmission infrastructure. This means that in liberalised electricity markets demand substitution can only take place in the form of switching from the local public utility company ("incumbent") to alternative "non-local" suppliers of electricity concerning the "pure" energy component. Thus the incumbent as owner of the power grid will (and has to) continue to serve as the provider of transmission infrastructure even for customers who have switched for delivery of the "pure" energy component to "non-local" suppliers[5]. As a consequence, competition will only emerge concerning the delivery of the "pure" energy component of electricity whereas network fees will not be subject to competition and have to be regulated to guarantee non-discriminatory access to the power grid as an essential facility.

Because of the lack of substitute products for electricity[6], the standard SSNIP test needs to be modified for the purposes of market definition in the electricity[7] sector.

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[1] This discription of the institutional framework is somewhat over-simplified. 0For a detailed description and in-depth critical assessment of the "jungle" of competition policy institutions in Austria see *Böheim* (2003).

[2] "Small, but significant" in practice means a price increase in the range of 5 to 10 percent.

[3] For the definition of the relevant geographic market this algorithm is applied mutatis mutandis. Hence definition of the relevant geographic market starts with the smallest geographical area as the first candidate market.

[4] The same applies for natural gas as the other main energy market as well as generally for any other liberalised network industry, e.g., telecommunications, railway transportation, etc.

[5] The "incumbent" will keep this hybrid position as both infrastructure provider and energy supplier until the power grid and energy distribution have been "unbundled".

[6] See M.493 – Tractebel/Distrigaz (II), M.568 – EdF/Edison-ISE, M.931 – Neste/IVO.

[7] Because of the existence of substitute products for natural gas (e.g., heating oil) the SSNIP test for the gas sector has to take additionally into account that customers of natural gas can either shift their demand to

Using Price Elasticities for Market Definition

When using the SSNIP test, an estimate of the price elasticity of demand can give an indication of whether the demand curve for a group of products is inelastic enough for a 5 to 10 percent price increase above the competitive price to be profitable for a hypothetical monopolist. The profitability of the price rise is determined by two factors: the extent to which sales will fall after the price rise on the one hand, and the extent of any cost savings due to reduced sales and hence production costs on the other.

Under simplifying assumptions concerning the demand curve of the hypothetical monopolist, i.e., either a constant elasticity of demand curve or a linear demand curve, it is possible to determine a critical price elasticity ε_k which has to be undercut by the actual price elasticity of the hypothetical monopolist in order to make its SSNIP profitable. Either way the critical price elasticity formula is determined solely by the price-cost margin and the proportionate price increase.

The demand function at constant price elasticity is defined as follows:

$$\varepsilon_k = \frac{-(1+s)}{m+s}.$$

The linear demand function is

$$\varepsilon_k = \frac{-1}{m+2s},$$

m . . . price-cost margin, s . . . price increase ("small but significant non-transitory increase in prices" – SSNIP, e.g., +5 percent to +10 percent); Source: *Bishop – Walker* (2002, p. 361).

In absolute terms the critical price elasticity is the higher the lower the price-cost margin and the lower the price increase. Under the assumption of a linear demand curve the critical price elasticity is, ceteris paribus, always lower than (or equal to) the constant elasticity of demand. The assumption of a constant-elasticity demand curve thus causes the actual critical price elasticity to be overestimated and the market definition to be too narrow[1]. The gap between the two extremes will be the lower the higher the price-cost margin (*Böheim*, 2002, p. 3). Depending on the structure of its demand curve, the hypothetical monopolist's "real" price elasticity will be somewhere between the two bounds whereas the difference between the two extremes will be the lower the higher the price-cost margin.

[1] This phenomenon is also known in the literature as "reverse cellophane fallacy".

Table 1: Critical price elasticities of demand

	Variable cost	Price-cost margin	Demand function with constant price elasticity		Linear demand function	
			SSNIP = 5 percent	SSNIP = 10 percent	SSNIP = 5 percent	SSNIP = 10 percent
	Price units	Price = 1				
Price						
10	0	1.00	1.00	1.00	0.91	0.83
10	1	0.90	1.11	1.10	1.00	0.91
10	2	0.80	1.24	1.22	1.11	1.00
10	3	0.70	1.40	1.38	1.25	1.11
10	4	0.60	1.62	1.57	1.43	1.25
10	5	0.50	1.91	1.83	1.67	1.43
10	6	0.40	2.33	2.20	2.00	1.67
10	7	0.30	3.00	2.75	2.50	2.00
10	8	0.20	4.20	3.67	3.33	2.50
10	9	0.10	7.00	5.50	5.00	3.33
10	10	0.00	21.00	11.00	10.00	5.00

Source: WIFO calculations. SSNIP . . . small but significant non-transitory increase in prices.

The SSNIP test in modified form has to assess the impact of a 5 to 10 percent increase in relative prices of the "pure" energy component on the "switching behaviour" of electricity users. If an increase in relative prices for the "pure" energy component in the range of 5 to 10 percent according to the basic SSNIP rule is profitable for

"non-local" suppliers of natural gas or substitute products. The latter alternative is not open to electricity customers because of the lack of substitutes for electricity.

the incumbent, it can be deemed a hypothetical monopolist in its network area. As a result, the network area is the relevant antitrust market for the incumbent.

Using simplified assumptions on the structure of the demand function, critical price elasticities may also be used for delimiting the market. This method permits a quick test of the profitability of a price increase (SSNIP; see Box "Using Price Elasticities for Market Definition").

Relevant antitrust markets for electricity in Austria

Relevant product markets

For purposes of product market definition, substitution or "switching" elasticities, i.e., demand price elasticities of electricity users would be needed which reflect their willingness to switch from their local electricity supplier ("incumbent") to an alternative non-local supplier given a price increase of the incumbent. Since such estimates are not readily available for Austria[8] and estimation is beyond the scope of this paper, an approximation combining both quantitative data and qualitative evidence is used for appraising the profitability of price increases by incumbent electricity suppliers.

In principle electricity users can react to a price increase by the local supplier either by reducing electricity consumption (quantity reduction) or by switching to a cheaper non-local supplier (demand substitution). For Austria, however, there is strong evidence that both evasive strategies are pursued in practice by customers only to a very limited extent – if at all – which indicates that price rises by local electricity suppliers would have a high probability of being profitable.

Research on the price elasticity for electricity on the macroeconomic level[9] showed that demand for electricity is quite inelastic for both households and industry alike. Accordingly long-term aggregate price elasticities for electricity of households are estimated to be in the range of –0.25 to –0.30, whereas demand by commercial users and industry seems to be more elastic with price elasticity estimates of –0.35 and –0.38, respectively[10].

Since in the long term electricity consumption in Austria has been growing at an average annual rate of around 2 percent, quantity reductions due to higher prices up to that level are "automatically" compensated through an annual growth in consumption[11]. Quantity reductions will have an adverse effect on the incumbent's profits only if they go substantially beyond that level of "natural growth" which, however, seems not very likely given the (short-term) inelasticity of demand for electricity.

Since the first beginnings of market liberalisation, fewer than 5 percent of households and SMEs have switched to non-local electricity suppliers which might suggest the existence of high switching costs. "Switching costs" are all kinds of costs that customers have to discharge when they change their electricity supplier (search and transaction costs, costs due to advance cancellation of contracts, loss of loyalty discounts). The existence of switching costs has a substantial influence on competition in electricity markets since they represent barriers to entry for new competitors, i.e., non-local electricity suppliers. Switching costs enable incumbent suppliers to charge higher prices to existing customers since these will only switch to an alternative supplier if the price of the new supplier including all switching costs is lower than the price charged by the old supplier.

The switching rate of large electricity users is still low, yet somewhat higher than that of private households[12]. Households stick to their accustomed electricity supplier de-

[8] Given such conditions, the method involving critical price elasticities for market definition (see Box "Using Price Elasticities for Market Definition") cannot be applied.

[9] The aggregate price elasticity reflects the reaction of overall economic demand for electricity on a 1 percent price increase of all electricity suppliers.

[10] See *NIEIR* (2004) for Australia as well as *Filippini* (2000) and *Spierer* (1988) for Switzerland. Aggregate price elasticity estimates for Austria are not publicly available, there is, however, no compelling evidence that figures for Austria would show any substantial deviation.

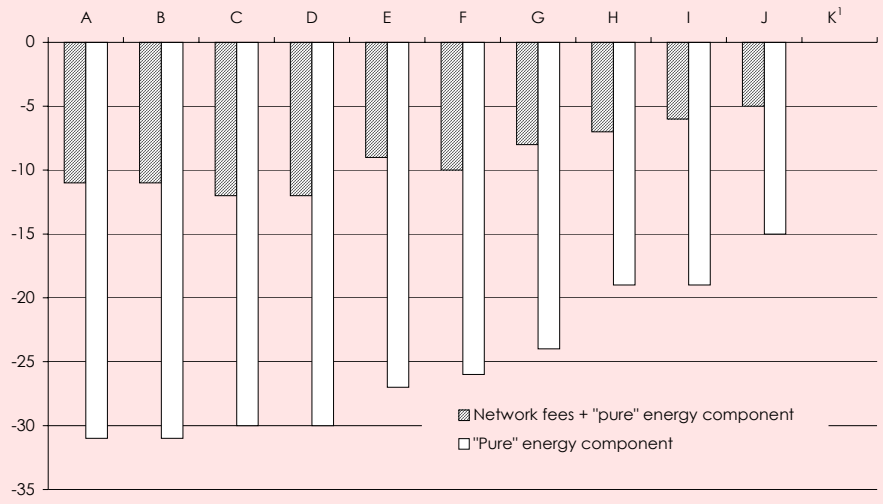
[11] With price elasticities between –0.40 (industry) and –0.25 (households), compensation of the average annual electricity consumption growth of 2 percent would imply price increases for electricity of 5 percent and 8 percent, respectively, every year.

[12] The savings to be achieved and thus the willingness of end customers to switch their supplier will increase with the quantity purchased: in the first year of market liberalisation (2001-02), more than 13 percent of the major users switched at least once; among SMEs the rate was about 4 percent, while just 1 percent of the private households made a switch (*E-Control*, 2003, p. 35).

spite substantial price differences for the pure energy component (25 t0 30 percent) because the gap is significantly lower (5 to 12 percent) when measured against the end customer price (i.e., including network fees) so that savings in absolute terms become negligible[13] (Figure 1). Incumbent suppliers, on the other hand, pursue a strategy of price differentiation vis-à-vis "industry"[14] where price differences to alternative suppliers are small or even non-existent.

Figure 1: Price difference between electricity suppliers to households

Price difference between incumbent and cheapest non-local supplier in percent



Source: *Bundeswettbewerbsbehörde* (2005A), p. 34. – [1] The "incumbent" supplier "K" is the cheapest supplier in this network area, hence the price difference between incumbent and cheapest supplier is zero.

These substantial differences in pricing strategies of local electricity suppliers according to customer groups – siphoning off consumer rents of small customers like a monopolist while setting prices competitively for large customers – is well reflected in the incumbent's gross margins. According to a recent public inquiry of the Austrian electricity sector by the Federal Competition Authority, gross margins for households and small commercial users are on average up to five times higher than for large industrial users (*Bundeswettbewerbsbehörde*, 2005A).

Different aggregate price elasticities together with substantial differences between "small" and "large" electricity users in both their own procurement behaviour as well as the pricing strategies of suppliers can be deemed sufficient evidence for the justification of delineating separate product markets for electricity according to two distinctive customer groups, i.e., "households and small commercial users" on the one hand, and "industrial users" on the other[15].

Relevant geographical markets

The geographical boundaries of the relevant product markets as defined above can be complemented by additionally analysing the trade flows of electricity by using the Elzinga-Hogarty test (*Elzinga – Hogarty,* 1973).

The idea behind the Elzinga-Hogarty test is that the relevant geographical market is characterised by both low aggregated inward and outward trade flows, whose threshold value is usually taken to be 10 percent. Accordingly two indicators are

[13] An average Austrian household (electricity consumption: 3,500 kWh) will save only around € 50 per year on its total electricity expenses by changing the supplier.

[14] "Industry" refers to industrial users with an annual electricity consumption of more than 1 GWh. These large key account customers manage their procurement of electricity through open tenders which limits market power of incumbent suppliers substantially.

[15] In the nomenclature of the Austrian electricity sector, the relevant product market for "households and commercial users" corresponds to network levels 7 and 6 whereas "industrial users" refers to network levels 5, 4 and 3.

specified[16]: while a high LIFO indicates that demand in a given region is primarily served by local production, a high LOFI implies that the majority of local production is used to serve the local market. If at least one of the two indicators is below 90 percent, it is assumed that the market power of local suppliers is effectively constrained by non-local suppliers. To identify the source of this competitive constraint, the "candidate" region is gradually expanded. The LIFO and LOFI tests are then repeated until both indices are at least 90 percent. The resulting region is the relevant geographical market (*Bishop – Walker,* 2002, p. 405).

Table 2: Defining the relevant geographical electricity market in Austria through the Elzinga-Hogarty test

2003

	LIFO "little in from outside" Network level 7: private households	LOFI "little out from inside" Network level 7: private households	LOFI "little out from inside" Network level 6: commercial users
	Production minus exports, as a percentage of consumption	Production minus exports, as a percentage of production	
Network area A	95.30	98.80	96.31
Network area B	93.25	94.53	100.00
Network area C	92.94	99.30	92.84
Network area D	98.86	99.59	92.40
Network area E	92.71	96.17	99.73
Network area F	91.75	.	.
Network area G	90.47	.	.
Network area H	96.87	.	.
Network area I	92.62	.	.

Source: *Elzinga – Hogarty* (1973); *Bundeswettbewerbsbehörde* (2005A), p. 50; WIFO calculations. Network areas A to I . . . anonymous stand-ins for actual network areas.

LIFO and LOFI calculations for both households (network level 7) and commercial users (network level 6) in Austria confirm that the relevant geographical markets for energy supply of households and commercial users are not wider than the incumbent's network area since both indicators are significantly below the 90 percent threshold for all network areas examined. Even energy suppliers which offer the best prices for households nationwide only export around 5 percent (network level 7) to 7 percent (network level 6) of their whole electricity production outside their own network area (Table 2).

When it comes to industrial users, incumbent electricity suppliers do not enjoy the position of a hypothetical monopolist. Since industries organise their electricity procurement almost always by way of open public tenders, at least potential competition for these large energy purchasers is more intense than for smaller customers. Incumbents follow a strategy of price differentiation resulting in smaller margins in order not to lose industrial customers which are significantly more price elastic than households. These differences point towards a wider market delineation than the network area of the local energy supplier. In this case, the relevant geographical market appears to go beyond the local energy supplier's network area and comprise the entire territory of Austria.

Table 3 summarises the results for both relevant product and geographical market definitions for the Austrian electricity sector.

Table 3: Relevant antitrust markets in the Austrian electricity sector

Relevant product market	Relevant geographical market
Private households and commercial users	Network area of the local energy supplier
Industry	National

Source: WIFO compilation.

[16] LIFO = [(Production minus Exports)/Consumption]; whereas LOFI = [(Production minus Exports)/Production].

Competition in Austrian electricity markets

Economic effects of energy market liberalisation

Together with the UK, Italy, Spain, the Netherlands and Germany, Austria has been one of the very first EU member states where both electricity (in Austria since 1 October 2001) and gas (in Austria since 1 October 2002) markets have been fully liberalised long before the final deadline (1 July 2007) set by the European Commission (*E-Control*, 2003).

Industrial users as well as households were able to profit substantially from the liberalisation of Austrian energy markets, the former group, however, significantly more than the latter. By applying a partial analytic model for the evaluation of the economic effects of deregulation *Kratena* (2004)[17] found for Austria that gross prices of electricity and natural gas are about 42 and 14 percent, respectively, lower for industrial users compared to a baseline scenario without liberalisation of energy markets. The corresponding price effects for households amount to less than –18 percent for electricity and just –4 percent for natural gas. This divergence in price effects might be taken as an indicator for different competition intensities in relevant markets for the respective consumer groups (Table 4).

Table 4: Partial analytical study of price effects produced by energy market liberalisation in Austria

2002

	Differences to the baseline scenario without liberalisation, in percent
Electricity	
Gross price (including taxes and surcharges)	
Industry	– 42.2
Private households	– 17.5
Price index	– 29.4
Natural gas	
Gross price (including taxes and surcharges)	
Industry	– 14.5
Private households	– 4.0
Price index	– 9.3

Source: *Kratena* (2004).

Even though up to 2001 market concentration greatly increased in the Austrian electricity sector (Table 5), chiefly due to the merger of five regional suppliers into a market dominating enterprise (EnergieAllianz, see below), prices of electricity have developed more favourably for both private and industrial end users than has been the case in many other EU countries.

Against widely-held expectations, increasing market concentration, at least until 2003, did not result in rising electricity prices for households (Table 6) and industrial users. However, since 2004, prices have been on a distinctive rise (Tables 6 and 7). Prices for natural gas in Austria emulated the pattern and are now roughly in line with the EU average (Tables 8 and 9). For both electricity and natural gas, and for private households as well as industries, the price time-series for Austria and those for the EU average show considerable correlation[18], i.e., energy prices in Austria move more or less in step with those in the other EU countries.

[17] In the *Kratena* (2004) model price effects from market liberalisation are measured as statistically significant deviations of price-setting behaviour from the average. Starting point of this method is a model of incomplete competition, where firms set their prices by adding on a mark-up to their marginal costs. Such price equations can be easily derived from models with production and cost functions (see *Hall,* 1988, *Roeger,* 1995). After liberalisation firms are incapable of pushing through mark-ups of the same dimension. The resulting difference between pre- and post liberalisation mark-ups, which is measured in Kratena's model by dummy variables, thus pins down (the magnitude of) the 'liberalisation effect' (*Kratena,* 2004, p.°39).

[18] The correlation coefficient for the time series for the period of 1996 to 2005 lies in the range of 0.73 to 0.83.

Table 5: Market share of the largest generator in the electricity market

	1999	2000	2001	2002	2003	2003
			In percent			1999 = 100
UK	21.0	20.6	22.9	21.0	21.6	102.9
Finland	26.0	23.3	23.0	24.0	27.0	103.8
Germany	28.1	34.0	29.0	28.0	32.0	113.9
Spain	51.8	42.4	43.8	41.2	39.1	75.5
Denmark	40.0	36.0	39.0	44.0	41.0	102.5
Sweden	52.8	49.5	48.5	49.0	46.0	87.1
Italy	71.1	46.7	45.0	45.0	46.3	65.1
EU 15	*57.8*	*55.3*	*55.9*	*57.1*	*54.2*	*93.7*
Portugal	57.8	58.5	61.5	61.5	61.5	106.4
France	93.8	90.2	90.0	90.0	89.5	95.4
Belgium	92.3	91.1	92.6	93.4	92.0	99.7
Greece	98.0	97.0	98.0	100.0	100.0	102.0
Austria	*21.4*	*32.6*	*34.4*	.	.	.
Ireland	97.0	97.0	96.6	88.0		.

Source: Eurostat, WIFO calculations.

Table 6: Electricity prices for households

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2005
					€ per kWh, without taxes						1996 = 100
Greece	0.0609	0.0619	0.0627	0.0622	0.0564	0.0564	0.0580	0.0606	0.0621	0.0637	104.6
Finland	0.0770	0.0727	0.0706	0.0656	0.0645	0.0637	0.0697	0.0738	0.0810	0.0792	102.9
Sweden	0.0675	0.0675	0.0673	0.0653	0.0637	0.0629	0.0701	0.0838	0.0898	0.0846	125.3
Spain	0.1092	0.1050	0.0946	0.0929	0.0895	0.0859	0.0859	0.0872	0.0885	0.0900	82.4
France	0.1022	0.1005	0.0962	0.0949	0.0928	0.0914	0.0923	0.0890	0.0905	0.0905	88.6
Demark	0.0646	0.0639	0.0673	0.0681	0.0718	0.0781	0.0865	0.0947	0.0915	0.0927	143.5
Austria	*0.1032*	*0.0984*	*0.0969*	*0.0979*	*0.0949*	*0.0945*	*0.0932*	*0.0926*	*0.0981*	*0.0964*	*93.4*
UK	0.0876	0.0971	0.1039	0.0966	0.1056	0.0996	0.1031	0.0959	0.0837	0.1015	115.9
EU 15	*0.1100*	*0.1081*	*0.1073*	*0.1050*	*0.1031*	*0.1027*	*0.1033*	*0.1034*	*0.1030*	*0.1074*	*97.6*
The Netherlands	0.0869	0.0877	0.0868	0.0884	0.0938	0.0978	0.0923	0.0970	0.1031	0.1102	126.8
Belgium	0.1237	0.1191	0.1186	0.1182	0.1171	0.1184	0.1137	0.1120	0.1145	0.1116	90.2
Ireland	0.0717	0.0816	0.0795	0.0795	0.0795	0.0795	0.0883	0.1006	0.1055	0.1197	166.9
Luxembourg	0.1090	0.1071	0.1060	0.1076	0.1056	0.1120	0.1148	0.1191	0.1215	0.1288	118.2
Portugal	0.1259	0.1278	0.1250	0.1201	0.1194	0.1200	0.1223	0.1257	0.1283	0.1313	104.3
Germany	0.1320	0.1270	0.1256	0.1277	0.1191	0.1220	0.1261	0.1267	0.1259	0.1334	101.1
Italy	0.1508	0.1671	0.1682	0.1570	0.1500	0.1567	0.1390	0.1449	0.1434	0.1440	95.5

Source: Eurostat, WIFO calculations. Annual private household consumption of 3,500 kWh, of which 1.300 kWh is overnight (standard dwelling of 90 m²).

Table 7: Electricity prices for industries

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2005
					€ per kWh, without taxes						1996 = 100
Sweden	0.0413	0.0430	0.0392	0.0348	0.0375	0.0313	0.0310	0.0666	0.0520	0.0462	111.9
Finland	0.0481	0.0414	0.0401	0.0389	0.0377	0.0372	0.0401	0.0566	0.0543	0.0527	109.6
France	0.0650	0.0635	0.0596	0.0583	0.0567	0.0557	0.0562	0.0529	0.0533	0.0533	82.0
UK	0.0544	0.0604	0.0627	0.0619	0.0664	0.0661	0.0614	0.0539	0.0478	0.0570	104.8
Austria	*0.0814*	*0.0765*	*0.0755*	*0.0763*	.	.	.	.	*0.0553*	*0.0621*	*76.3*
Greece	0.0571	0.0580	0.0588	0.0583	0.0571	0.0571	0.0590	0.0614	0.0630	0.0645	113.0
Denmark	0.0473	0.0467	0.0512	0.0485	0.0504	0.0558	0.0639	0.0697	0.0631	0.0646	136.6
EU 15	*0.0689*	*0.0679*	*0.0663*	*0.0636*	*0.0625*	*0.0644*	*0.0620*	*0.0647*	*0.0636*	*0.0682*	*99.0*
Spain	0.0756	0.0703	0.0620	0.0624	0.0636	0.0550	0.0520	0.0528	0.0538	0.0686	90.7
Belgium	0.0775	0.0746	0.0746	0.0739	0.0734	0.0752	0.0760	0.0764	0.0755	0.0695	89.7
Portugal	0.0756	0.0749	0.0712	0.0646	0.0643	0.0651	0.0665	0.0673	0.0684	0.0713	94.3
Luxembourg	0.0747	0.0737	0.0725	0.0736	0.0709	0.0632	0.0645	0.0675	0.0690	0.0752	100.7
Germany	0.0906	0.0845	0.0830	0.0791	0.0675	0.0669	0.0685	0.0697	0.0740	0.0780	86.1
The Netherlands	0.0608	0.0570	0.0566	0.0576	0.0669	0.0640	.	.	.	0.0806	132.6
Italy	0.0638	0.0713	0.0721	0.0646	0.0693	0.0919	0.0776	0.0826	0.0790	0.0843	132.1
Ireland	0.0615	0.0691	0.0662	0.0662	0.0662	0.0662	0.0836	0.0762	0.0787	0.0896	145.7

Source: Eurostat, WIFO calculations. Annual consumption by industrial consumers of 2,000 MWh at a maximum demand of 500 kW and an annual load of 4,000 hours.

Table 8: Natural gas prices for households

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2005
					€ per GJ, without taxes						1996 = 100
UK	5.52	6.32	6.75	5.98	6.65	6.27	6.63	6.56	6.52	6.46	117.0
Luxembourg	5.62	5.75	5.76	5.29	5.68	7.63	6.64	6.91	6.67	7.68	136.7
Ireland	6.97	7.64	7.23	7.35	7.28	7.28	7.27	7.27	7.93	8.80	126.3
EU 15	*6.64*	*7.22*	*7.34*	*6.81*	*7.24*	*8.49*	*8.42*	*8.37*	*8.31*	*8.80*	*132.5*
Belgium	6.86	6.92	7.03	6.46	7.44	9.45	8.34	8.58	8.39	8.85	129.0
Austria	*8.61*	*8.33*	*7.72*	*7.80*	*7.80*	*8.78*	*8.78*	*8.85*	*9.13*	*8.91*	*103.5*
France	7.27	7.23	7.67	7.36	6.99	8.44	9.19	9.06	.	9.00	123.8
The Netherlands	5.82	6.23	6.16	5.72	5.62	6.31	7.03	8.17	8.17	9.64	165.6
Germany	6.85	7.11	7.00	6.64	6.93	9.65	9.24	8.93	9.10	10.16	148.3
Spain	9.28	9.16	9.10	8.85	9.15	11.06	10.46	10.43	9.95	10.25	110.5
Sweden	.	7.21	7.24	6.79	7.63	9.13	9.63	9.85	10.01	11.72	.
Portugal	.	.	.	.	.	13.68	13.19	12.70	11.48	11.75	.
Denmark	.	.	.	6.01	8.95	10.96	7.53	8.33	8.45	12.58	.
Italy	7.80	9.00	8.84	8.05	8.79	11.07	9.95	9.86	9.74	.	.
Finland	5.01	5.48	7.12	6.58	.	.	.	.	.	.	.

Source: Eurostat, WIFO calculation. Annual private consumption of 83.7 GJ for heating, hot water and cooking.

Table 9: Natural gas prices for industry

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2005
					€ per GJ, without taxes						1996 = 100
The Netherlands	3.38	3.72	3.72	3.09	4.06	5.40	.	.	.	4.50	133.1
Spain	3.14	3.73	3.67	2.84	4.05	5.54	4.34	4.81	4.41	4.68	149.0
Belgium	3.97	4.16	4.25	3.46	4.42	6.32	5.25	5.42	5.28	5.27	132.7
UK	2.60	2.89	3.18	3.15	3.53	4.01	5.42	4.87	4.70	5.81	223.5
Denmark	3.42	4.03	3.59	2.65	4.59	5.99	4.49	5.26	4.61	6.01	175.7
Portugal	.	.	.	.	.	6.88	6.26	6.39	5.68	6.03	.
EU 15	*3.60*	*4.03*	*4.03*	*3.49*	*4.22*	*6.12*	*5.75*	*5.56*	*5.34*	*6.12*	*170.0*
Austria	*4.84*	*4.59*	*4.23*	*4.23*	*3.53*	*5.53*	*5.62*	*5.46*	*5.57*	*6.14*	*126.9*
France	3.39	3.58	3.70	3.39	4.29	5.94	4.93	5.46	5.16	6.22	183.5
Finland	3.15	3.98	3.62	2.51	4.53	7.08	6.18	6.37	6.25	6.43	204.1
Luxembourg	4.86	5.01	5.03	4.69	4.94	6.89	5.90	6.17	5.94	6.95	143.0
Germany	4.41	4.96	4.98	4.21	4.78	7.76	7.28	6.73	6.39	7.76	176.0
Sweden	–	4.86	4.59	3.37	5.07	9.53	5.93	6.80	6.40	8.08	.
Ireland	2.93	3.83	2.96	3.09	3.59	4.65	4.88	4.94	.	.	.
Italy	3.58	4.42	4.23	3.48	4.14	6.58	5.87	5.38	.	.	.

Source: Eurostat, WIFO calculations. Annual consumption of industrial consumers of 41,860 GJ and a load factor of 200 days (1,600 hours).

Whether the price increases over the last two years were, in the final analysis, due to "fundamental factors" (an increase in variable costs, e.g., the higher prices for crude oil) and/or the exercise of market power has not been fully clarified for Austria. A definite answer would require extended micro-econometric analyses which are not yet available for Austria thereby offering scope for further in-depth research.

Comparable investigations – using oligopoly models for measuring market power (see Box "Measuring Market Power with Oligopoly Models") – for Germany (*Müsgens,* 2004), the UK (*Wolfram,* 1999) and California (*Borenstein – Bushnell,* 1999) provide clear evidence for the assumed positive correlation between competitive constraints and price-cost margins for electricity. They also show that the utilities' market power (measured by the divergence of prices and variable costs) is significantly higher at peak load times than outside such periods of greater demand (*Müsgens,* 2004, *Borenstein – Bushnell,* 1999). Even though the incumbents set their prices clearly above their marginal costs it appears that they do not fully exploit their market power due to the low price elasticity of electricity demand. This (voluntary) price constraint points towards a preventive strategy intended at obstructing the market entry of competitors and/or avoiding interventions on the part of the regulatory authority (*Wolfram,* 1999).

Measuring Market Power with Oligopoly Models

For the purpose of market power analysis (in the electricity sector) two main approaches have been developed: concentration analyses and oligopoly models.

Concentration analyses are based on some form of indicator for market concentration, either concentration ratios or the Herfindahl-Hirshman Index (HHI). Until the mid 1990s this approach played a dominant role in regulatory proceedings over utility mergers (*Frankena – Owen,* 1994, *Joskow et al.,* 1996). Because of some general shortcomings – most important the poor representation of supply and demand elasticities – which are exacerbated when applied to the electricity industry (*Borenstein et al.,* 1996) alternative modelling approaches that make use of the abundance of published production cost data of the electricity sector have been developed.

Through the application of oligopoly models that explicitly model the strategic behaviour of firms much more insight about market power on electricity markets can be gained. Most oligopoly models follow the "supply-function equilibrium" approach which was first developed by *Klemperer – Meyer* (1989) and was then adapted by *Bolle* (1992), *Green – Newbery* (1992) and *Green* (1996) to model electricity markets. These studies use stylised representations of generators' cost to develop continuous cost curves. Players develop optimal continuous bid functions that give output levels for a range of prices. This approach tends to yield several positive equilibria, bounded above by the static Cournot[1] outcome. As a worst case (static equilibrium) scenario, the Cournot model is especially useful in indicating when competition policy should be most vigilant in scrutinising markets for possible exercise of market power (*Borenstein – Bushnell,* 1999, *Klemperer – Meyer,* 1989).

The Cournot equilibrium is calculated (iteratively) by determining the residual demand that is faced by the Cournot competitors in the relevant market, i.e. large quantity setting electricity suppliers. Individually small producers ("fringe suppliers") are modelled as price-takers, selling in the relevant market up to the point that their marginal cost is equal to the market price. Their individual marginal cost functions are combined to an aggregated "fringe supply function" *(1)*:

(1) $$S^f(p) = \sum_{i=1}^{F} S_i(p) ,$$

$S^f(p)$ . . . fringe supply function,

p . . . price,

F . . . total number of "fringe" firms,

S_i . . . supply of firm i.

To determine the residual demand $D_r(p)$ that is faced by Cournot competitors this "fringe supply" $S^f(p)$ at every given price is subtracted from total market demand:

(2) $$D_r(p) = D(p) - S^f(p) ,$$

D_r . . . residual (demand),

$D(p)$ . . . market demand function.

The resulting residual demand function is more elastic than the original market demand function. This is the demand over which Cournot firms are assumed to compete (*Borenstein – Bushnell,* 1999, p.°298).

The profit maximising output for each Cournot supplier is determined under the assumption that the production of the other Cournot suppliers is fixed. This algorithm is repeated for each Cournot firm until no supplier can profit from changing its output levels given the output of the other Cournot suppliers. At the Cournot equilibrium each firm is producing its profit maximising quantity given the quantities that are being produced by all other Cournot competitors in the market. Market power is then measured as the difference between the Cournot price and marginal cost (i.e., the price-cost margin or the Lerner-Index).

[1] While the Cournot quantity-setting paradigm does not correspond precisely to strategies in the electricity market, it seems nevertheless much closer to reality than Bertrand price-setting behaviour. Since firms face increasing marginal cost of producing electricity at a point in time and since generation capacities present significant constraints in electricity markets, an assumption of Bertrand behaves is not tenable (*Borenstein – Bushnell,* 1999, p.°289).

Competitive constraints

The favourable development of electricity prices due to market liberalisation (compared to the alternative scenario without liberalisation; Table 4 should, however, not obscure the fact that competition in Austrian electricity markets is still not working satisfactorily. Due to unresolved homemade structural problems, liberalisation has left incumbent electricity suppliers largely unchallenged in their position as quasi-monopolists which enables them to still earn substantial monopoly rents in some mar-

kets, thereby thwarting liberalisation. This unsatisfactory situation has been further complicated by a substantial increase in market concentration caused by horizontal and vertical mergers of public utilities.

Structural problems

Some specific structural features that have traditionally contributed to the high electricity price in Austria have proved especially detrimental to the establishment of functional competition and they constitute substantial barriers to entry for new competitors. They include the organisation of electricity transmission, conflicts of interest arising from public ownership and the price structure for electricity:

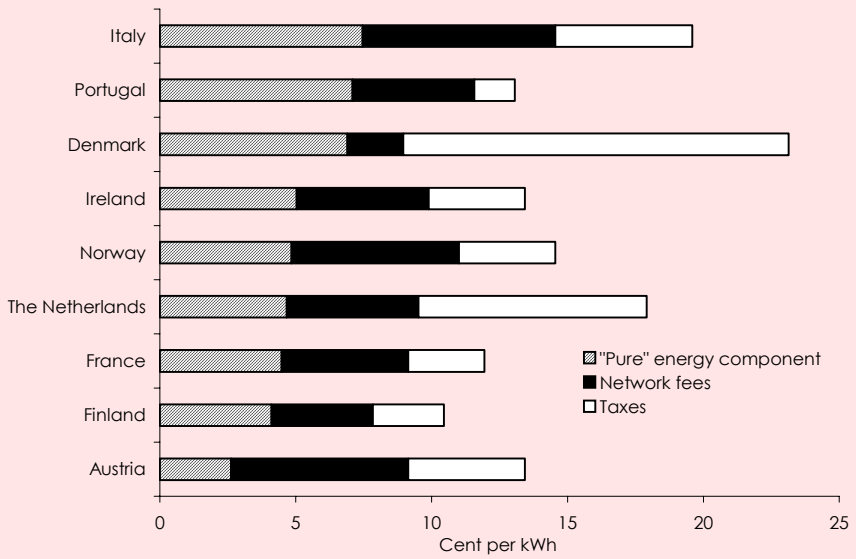
- First, the organisation of electricity transmission is far too costly in Austria and leaves plenty of room for efficiency improvements. In spite of the country's small size the power grid in Austria is organised in three regulative zones[19], where a multitude of energy producers and network operators appears on the market. Any market participant which intends to supply electricity throughout Austria has to set up an individual balance group for each regulative zone which involves substantial investment and sunk costs. Furthermore the proliferation of players in the market makes co-ordination very costly, since no standard for co-operation between network operators and non-local energy suppliers has been implemented yet.
- Second, the double role of the Bund and the Länder as both owners of public utility companies as well as legislative bodies responsible for the framework conditions for market liberalisation represents a substantial conflict of interest. While as public authorities they are obliged by Community law to foster market liberalisation which is directed towards margin decreasing competition, their interest as owners is to keep rents of the (former) monopolist suppliers high which demands protecting them from competition. This irreconcilable conflict of interests is the main cause for the delay in "unbundling", i.e., the separation of network operation and electricity supply (for more details see below). One way to solve this problem would be to privatise the energy supply part of public utility companies, while keeping public ownership of network infrastructure. The latter option would demand, however, legislative intervention at the level of the Austrian constitution, since the ownership structure (public authorities as majority shareholders) is protected by constitutional law.
- Third, the price structure for electricity has to be regarded as a substantial barrier to entry for alternative non-local suppliers because the "pure" energy component which is subject to competition in liberalised markets constitutes only a small part of the total price paid by customers. The major part of the price for electricity consists of network fees and taxes which are not subject to competition[20]. An international comparison of nine European states shows that Austria combines the lowest prices for the "pure" energy component with one of the highest charges for network fees (Figure 2). This price structure enables integrated incumbent energy suppliers to cross-subsidise energy supply through network operations, thereby deterring market entry of non-local suppliers. For the Austrian regulatory authority, the challenge is to define non-discriminatory network fees at a markedly lower level which will prove to be incentives for competition as well as for investments in the requisite infrastructure. This mandatory prerequisite for establishing a competitive regime that will be sustainable in the local energy markets should be set up as soon as possible.

[19] The Electricity Management and Organisation Act provides for an explicit requirement to subdivide the Austrian territory into three regulative zones (Section 22 (1) ElWOG). Vorarlberg and Tyrol each constitute a regulative zone of their own, while the remaining seven Länder together make up a third zone. The regulative zones are managed by Verbund – Austrian Power Grid AG, Tiroler Regelzonen AG and VKW – Übertragungsnetz AG, respectively.

[20] The ratio of network fees and taxes to "pure" energy is about 5 : 2 in Austria.

Figure 2: International comparison of electricity price structures

Private household with an annual consumption of 3,500 kW



Source: *Bundeswettbewerbsbehörde* (2005A), p. 68.

Unbundling

Non-discriminatory access to the electricity network infrastructure (power grid) has to be deemed the essential prerequisite for implementing competitive liberalised electricity markets. Since the power grid features all the characteristics of a natural monopoly and constitutes an essential facility, access regulation is necessary (see the argumentation above).

The conflict of interest faced by public utility companies which act on the market both as network operators and energy suppliers could be avoided if network operations were separated from energy distribution ("unbundling"). International experience has found that only independent network operators which are not bound by the interests of electricity producers and/or suppliers seem to be able to sustainably guarantee efficient and equal network access for all market participants.

Depending on the gravity of intervention, three levels of "unbundling" can be distinguished: unbundling of accounts, organisational unbundling, and legal unbundling.

The Electricity Directive 96/92/EC concerning common rules of the internal market in electricity, which marked the beginning of liberalisation of the national European electricity markets, already included some basic requirements for the unbundling of accounts as well as the beginnings of organisational unbundling. Directive 96/92/EC had been transformed into Austrian national law in 1998 through the Electricity Management and Organisation Act (ElWOG, Federal Law Gazette I 143/1998) which implemented an access regulation regime. An amendment to the ElWOG in 2000 (Energy Market Liberalisation Act, Federal Law Gazette I 121/2000) provided for the complete opening of Austrian electricity markets, i.e., free network access and free choice of electricity supplier for all customer groups, already by 1 October 2001 – almost six years before the end of the transitional period granted by the European Commission (1 July 2007), thereby ambitiously anticipating further developments at EU level.

The rudimentary unbundling requirements of Directive 96/92/EC proved, however, insufficient in practice to guarantee the independence of network operators. Upon recognition of the flaws of Directive 96/92/EC, the European Commission presented a package of measures which also included a proposal for an amended directive for the internal market in electricity[21]. The result of the consultation process was pre-

[21] See http://europa.eu.int/comm/energy/electricity/legislation/com_proposal_en.htm

sented as Electricity Directive 2003/54/EC concerning common rules for the internal market in electricity and repealing Directive 96/92/EC.

Directive 2003/54/EC provided the Community law foundations for implementing, at the national level, legal unbundling, i.e., the complete separation of network operations from other business fields of integrated public utility companies. It was transformed into Austrian national law by a further amendment to the ElWOG (Federal Law Gazette I 63/2004) which provided the legislative prerequisites for legal unbundling in Austrian electricity markets by 22 June 2004 – just in time before the deadline of 30 June 2004. Due to the federal structure of Austria, however, it is necessary to implement the amendment in the constitutions of all nine Länder.

Austrian Länder were granted another six months to comply with Directive 2003/54/EC by enacting the necessary state laws. Almost a year after the deadline of 31 December 2004 only a minority of the diets of the Länder has as yet passed the requisite law. As a consequence the key parts of the unbundling regulations are still not implemented. Such obstructive action on the part of the Länder can be clearly attributed to conflicts of interest due to their double role as owners of public utility companies and legislative bodies, and causes a substantial delay in the realisation of "workable competition" in already liberalised, but still monopolised electricity markets.

From the viewpoint of competition policy, this stalling tactics by the Länder deserves heavy criticism and has to be deemed very problematic, especially because the COMP/M.2947 – Verbund/EnergieAllianz merger was cleared by the European Commission only on condition that unbundling would proceed rapidly and completely[22].

Market concentration

Market concentration is another pending problem in Austrian energy markets in general and the electricity market in particular. Growing market concentration and an increase of market power might put the economic benefits to be reaped from liberalising the energy markets seriously at risk. Some public utilities were successful not only in preserving their position as quasi-monopolists but also in extending it in their network area beyond market liberalisation through vertical and horizontal integration of their value chain – a development that regulatory as well as competition authorities in Austria have so far failed to interfere with.

Table 10: Market concentration in the Austrian electricity sector

	EnergieAllianz merger		Energie Austria merger
	Before the merger (before 1 October 2001)	After the merger (after 1 October 2001)	After the merger (hypothetical)
Private households			
CR5	62.29	74.67	74.67
HHI	1,330	3,287	3,289
Industry			
CR5	67.6	86.7	92.3
HHI	1,153	2,680	3,918

Source: *Bundeswettbewerbsbehörde* (2004), p. 19. CR5 . . . cumulated market shares of the top five suppliers (percent), HHI . . . Herfindahl-Hirshman Index (sum of squared market shares of all enterprises).

Due to two major mergers in the electricity sector – the EnergieAllianz merger in 2001 and the Verbund/EnergieAllianz merger in 2003 both of which can be viewed as the result of a political effort to create "national champions"[23] – market concentration in the relevant antitrust markets has increased substantially.

EnergieAllianz is designed as a joint venture integrating the electricity trading and distribution businesses of five regional energy suppliers from Vienna, Lower Austria, Upper Austria and Burgenland[24]. In these regional markets the number of potential competitors and hence competition has been reduced substantially since electricity

[22] See COMP/M.2947 (145).

[23] See *Monopolkommission* (2004).

[24] Wien Energie, EVN, Linz AG, Energie AG Oberösterreich, BEWAG.

distribution is now organised centrally by EnergieAllianz rather than the five formerly independent suppliers. Market concentration as measured by the Herfindahl-Hirshman Index (HHI)[25] exploded in the electricity market for households from around 1,300 to 3,300, while it more than doubled for industrial customers from about 1,150 to 2,700 (Table 10). Both HHI levels and delta values after the merger are lying far beyond the threshold values for mergers which give no concern for the creation of market power (see Box "Screening of Mergers by Using the Herfindahl-Hirschman Index (HHI)")[26]. Despite HHI and delta values significantly above critical threshold values the Austrian cartel court decided for the clearance of the EnergieAllianz merger with no serious obligations.

Screening of Mergers by Using the (HHI)

Competition authorities worldwide use the HHI for a quick first screening of the effects on competition of mergers. For this purpose a one-sided test is applied, where low post merger HHI and delta values indicate that the merger will not substantially lessen competition in the relevant market, but high post merger HHI and delta values cannot be interpreted as indicators for the merger causing competitive problems.

Table 11 summarises three categories of post merger HHI and delta values applied by European, American, British and Irish competition authorities which are deemed to be unproblematic for competition. If post merger HHI and delta values fall below these threshold values, generally no further investigation of the merger is necessary. If the threshold values are exceeded the merger must not be automatically blocked but it deserves further in-depth investigation on its effects on competition in relevant markets.

Table 11: International comparison of HHI threshold values

	Category 1	Category 2	Category 3
EU	HHI < 1,000	1,000 < HHI < 2,000 and Δ < 250	HHI > 2,000 and Δ < 150
USA	HHI < 1,000	1,000 < HHI < 1,800 and Δ < 100	HHI > 1,800 and Δ < 50 (if Δ > 100: potentially problematic)
UK		HHI > 1,000 and Δ <100	HHI > 1,800 and Δ < 50
Ireland	HHI < 1,000	1,000 < HHI < 1,800 and Δ < 100	HHI > 1,800 and Δ < 50 (if Δ > 100: potentially problematic)

Source: WIFO calculations. Δ . . . difference between post- and pre-merger HHI (Herfindahl-Hirschman Index).

The Verbund/EnergieAllianz merger[27] into EnergieAustria (known as "Austrian Electricity Solution") was intended to further deepen co-operation between Austrian energy producers and distributors by vertically integrating the electricity trading business (including power generation) of Verbund with the energy supply to industrial users by EnergieAllianz.

As a direct consequence of this merger, Verbund was expected to withdraw from all markets for final customers (private households and – specifically – industry), which would have significantly increased market concentration in the electricity market for industrial users. In terms of the HHI, it would boost an already high value of 2,700 to 3,900 after the merger (Table 10). Considering that Verbund had engaged in only limited activities in the electricity markets for private households before the merger, the direct increase in market concentration due to the merger for this relevant product market would be comparably negligible. Nevertheless, the market-dominating position of the enterprises involved in the project would be further

[25] The Herfindahl-Hirshman Index is calculated as the sum of squared market shares of all enterprises.

[26] See EU Horizontal Merger Guidelines (2004/C 31/03) para 19 and 20; FTC Horizontal Merger Guidelines para. 1.5; OFT, "Mergers – substantive assessment guidance", May 2003; The Competition Authority Ireland, "Notice in respect of Guidelines for Merger Analysis".

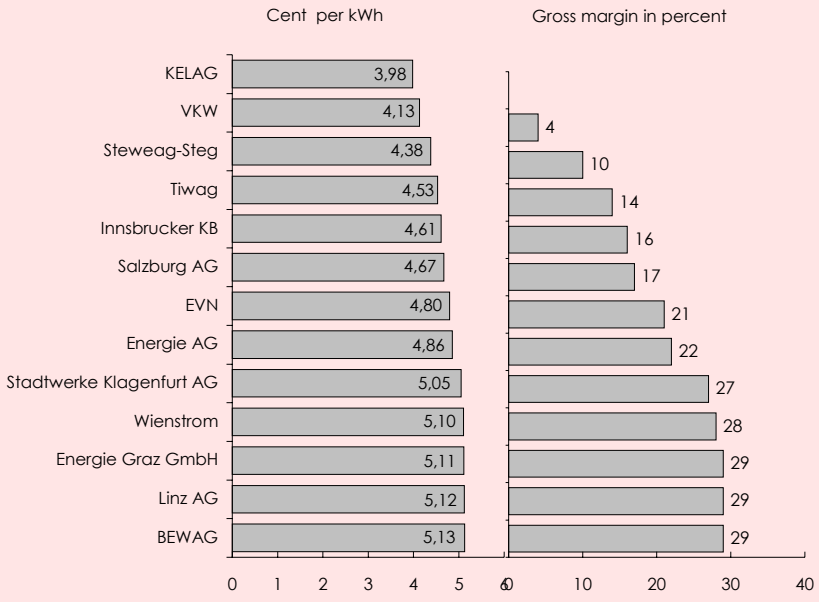
[27] This merger can be deemed the (failed) attempt of building a "national energy champion" which in reality is too small to be competitive on the world market, but still too big for the Austrian homemarket. It was heavily promoted by Austrian politics – thereby ignoring relevant evidence from Germany on the matter (*Monopolkommission*, 2004) – against the sustainable resistance of the Verbund management.

strengthened through their better access to power generation and trading markets which would in turn further reduce the already insufficient competition intensity in Austrian electricity markets.

Because of its severe impact on Austrian electricity markets, the European Commission cleared the Verbund/EnergieAllianz merger only under the assumption that the internal electricity market was about to transform itself from a mere vision to concrete reality[28]. Against the background of actual developments in European electricity markets, it is, however, expected that insufficient integration between national markets will be the main obstacle to the successful implementation of a competitive market for several years to come[29]. The European Commission itself noted the unsatisfactory development of the internal market in electricity and, in June 2005, launched upon an in-depth study of competition in the electricity (and gas) markets in order to identify and eliminate competitive distortions. The recently published interim report confirms the expected substantial competitive restraints and distortions in European electricity and gas markets which manifest themselves more or less in all EU member states (see *European Commission*, 2005).

Recent developments point, however, towards stimulation of competition on Austrian electricity markets. Even though the "Austrian Electricity Solution" had already been approved by the competition authorities, Verbund has increasingly shown signs of abandoning the original merger project[30]. In its alternative proposal (which is rejected outright by EnergieAllianz), Verbund suggests not going ahead with merging distribution activities to major accounts but rather, essentially, blending the electricity trading businesses of the two enterprises. According to Verbund, this alternative allows tapping the key synergies of the original project while at the same time intensifying competition.

Figure 3: Electricity price for private households and gross margins for suppliers



Source: *E-Control* (2005), WIFO calculations.

[28] See COMP/M.2947 para 103, 145 and 203.

[29] See press release IP/05/11 of 7 January 2005 ("Commission's report indicates that governments should do more to implement energy market opening measures").

[30] For economic theorists, the break-up of the "Austrian Electricity Solution" does not come as a surprise because cartels formed by partners of different interests and backgrounds (in this case specifically differences in access to production capacities) are typically unstable due to a heterogeneity in incentives motivating them.

Verbund has been signalling its intention to continue with its distribution business on its own by intensifying (since 1 July 2005) its efforts to sign on household customers. Even though actual savings to be achieved against alternative suppliers are small, its market entry provides a substantial competitive boost – the new, strong and aggressive competitor perceptibly affects incumbents in their margin for price increases.

In a further step in late August 2005, Verbund reported to the Austrian Cartel Court its intention to buy back and merge with its wholesale trading subsidiary Austrian Power Vertriebs GmbH (APC). By reintegrating APC into the Verbund group, the status prior to clearing the "Austrian Electricity Solution" is re-instated. Considering that selling APC to an independent third party (Istrabenz from Slovenia) was one of the stipulations imposed by the European Commission's DG Competition[31] for clearing the "Austrian Electricity Solution", its implementation as originally approved is virtually dead. With Verbund returning to the major accounts market and in view of its substantial production capacities, competition as desired by the EU's antitrust efforts can be expected to be invigorated in this segment as well[32].

By offering a stake in its household electricity business to Verbund, EnergieAllianz most recently proposed another compromise to safe the merger. At the moment it is unclear how the "Austrian Electricity Solution" – if at all – will proceed. Any variation on the original merger will, however, need another in-depth investigation by the European Commission DG COMP. Given the strong empirical evidence on the malfunctioning of the common internal electricity market[33], it is doubtful, if the "Austrian energy solution" would be approved a second time.

By 1 January 2006 a new regulatory regime will come into effect. According to the implemented incentive regulation network fees will be automatically reduced by an ex-ante known percentage which lies – depending on the individual network operator – in the range of 2 to 5 percent per year. Initially the new regulatory regime runs for four years (2006-2009). After a review a second four-year period (2010-2013) is expected to follow. Any cost reductions or efficiency improvements beyond the regulatory thresholds will remain with the network operators thereby offering them substantial incentives for effective restructuring. Together with the realisation of unbundling, incentive regulation is in principle appropriate to force down network fees in Austria to the European average. Whether this really results in fiercer competition in Austrian electricity markets remains, however, to be seen.

Extension of antitrust investigations to other energy markets

Now that the "Austrian Electricity Solution" as originally cleared is gone, the most urgent anti-trust activity appears to be an investigation of competition in the Austrian natural gas sector which has commenced lately (*Bundeswettbewerbsbehörde,* 2005B). Since OMV, EnergieAllianz and Oberösterreichische Ferngas merged their natural gas businesses into the "Austrian Gas Solution" (24 Kt 184/02 – Econgas) that sector is similarly dominated by quasi-monopolist market structures. Even though the emergence of a European gas market is not expected for years to come and Econgas boasts market shares of 86 percent in gas imports, 80 percent in the small-customers market, 78 percent in gas storage and 70 percent in supplying major customers, the Austrian competition authorities, rejecting clear recommendations by the energy regulatory authority[34], failed to issue any structural remedies and in this way preserving a competitive market structure.

Special anti-trust problems also arise from the interplay of the "Austrian Electricity Solution" and the "Austrian Gas Solution", considering that EnergieAllianz is a player in both quasi-monopolists, which makes not just for vertical concentration in the value-

[31] See COMP/M.2947, para 143.

[32] So far the repurchase of APC has not been approved by the supervisory board of Verbund where due to cross-shareholdings also EnergieAllianz managers have seats.

[33] See *European Commission* (2005).

[34] E-Control requested that EVN give up its share of 40 percent in RAG (Rohöl-Aufsuchungs AG), the only other large natural gas producer in Austria apart from OMV, that OMV sell its share of 50 percent in OÖ Ferngas, and that Energie OÖ AG dispose of its share of 26 percent in Salzburg AG (see *Böheim*, 2003).

added chain (production – sale), but also for a horizontal concentration of the two primary energy sources (electricity – natural gas). Given the strong horizontal and vertical integration of Austrian energy markets an integrated antitrust investigation covering all relevant energy markets (electricity, natural gas and also oil) is needed for extending the knowledge base for further competition policy interventions.

Summary and conclusions

Both industry and private households have profited substantially from the liberalisation of the electricity markets, the former, however, to a significantly greater extent than the latter, which points at different competition intensities in the two markets.

The favourable development of electricity prices – compared to an alternative scenario without liberalisation – nevertheless should not obscure the fact that competition and regulatory authorities have so far not been able to sustainably implement "workable" competition in the Austrian electricity markets, in spite of ongoing positive developments that aim to invigorate competition in the wake of the crumbling of the politically encouraged supplier cartel made up of EnergieAllianz and Verbundgesellschaft. Due to unresolved homemade structural problems, liberalisation has left incumbent electricity suppliers largely unchallenged in their position as local monopolists. This unsatisfactory situation has been further exacerbated by a substantial increase in market concentration caused by horizontal and vertical mergers of public utilities and the delayed implementation of legal "unbundling", i.e., the separation of network operation and electricity supply. The liberalisation dividend expected from opening the energy markets thus is in serious trouble of being thwarted.

Seen from a competition policy point of view, current developments in the final customer markets for electricity are to be unreservedly welcomed, since the abandonment of the so-called "Austrian Electricity Solution" and Verbund returning to selling energy to households and industry certainly constitute major steps towards workable competition in the Austrian energy markets. Nevertheless, a close watch needs to be set up to monitor whether this will sustainably ensure brisker competition.

In order to establish workable competition in Austrian electricity markets, a competition stimulation programme has to be implemented with all due promptness. In line with proposals by the competition and regulation authorities, this competition policy package should include measures for performing the following tasks (see also *Bundeswettbewerbsbehörde*, 2005A):

- Commissioning of an integrated antitrust investigation covering all relevant Austrian energy markets (electricity, natural gas as well as oil) by the responsible Austrian Ministry for Economic Affairs and Labour.
- Intensification of competition: implementation of legal unbundling without any further delay; establishment of competitive market structures for the Austrian energy markets (electricity and gas), while questioning mergers and alliances between Austrian electricity and gas utilities; fixing of non-discriminatory network fees at a lower level, to guarantee both incentives for competition and investment in necessary infrastructure.
- Betterment of customers: implementation of binding standards for transparency and comparability of services and rates of all electricity suppliers; reduction of the switching costs.
- Reduction of electricity distribution costs: installation of a central database which guarantees non-discriminatory access to customer data for all market participants; integration of the three regulative zones into one nation-wide zone.

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