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CHALLENGES AND RESULTS OF EUROPEAN GAS MARKET LIBERALIZATION

PhD Dissertation Theses

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1. ORIGINS, STRUCTURE AND OBJECTIVES OF THE RESEARCH

The European Union has early declared its intentions about creating the *common/internal market*, in the Treaty of Rome. Several factors – development of technology, increasing trade of services and the liberalisation of internal service markets in the most developed countries – have led the European Union to *open its markets of services*. With the services market liberalisation and the approval of services directive (2006/123/EC) in 2006, the EU has reflected the objective of bringing the advantages of a competition-determined services market closer to everyone.

Opening up these markets to competition means higher efficiency and welfare. Its essence is to provide/assure the same conditions to all suppliers/actors of a service market. Competition and market-based services can help the internal market and also EU competitiveness. So the aim is to assure that the quality and prices of *public services* – as input providers to other sectors – is determined by competition. Thanks to these processes fundamental changes took place in the structure and function of *European energy markets* in the last decade.

The success of energy market liberalisation is proven by several international examples. Argentina, Australia, Canada, New Zealand, the United States and the United Kingdom are all markets where convincing advantages like *possibility of options, better quality of services and lower prices* prove the idea of market opening. European roots of gas market liberalisation can be found in the restructuring of the British market. Having seen its success the European Economic Community has also chosen this path. Although a decade has already passed, the market opening and the creation of gas market competition is still in progress/ongoing owing to the basic conditions and characteristics of the sector. Moreover, several factors oppose the liberalisation. This is a sector where we cannot forget national interests, it has network-based structure, gas service is an originally non-competitive public service, where still several vertically integrated company has dominant position. The regulation of this specific sector is sometimes too complicated or just follows the trends. There is a lack of compelling tools on EU-level, and we find low political commitment owing to the differences and lower investment appetite because of the economic crisis. These conditions, characteristics and opposing factors are standing in the centre of my research. The tracking/mapping of good direction is challenged by new institutions in the regulation, by the liberalisation process pushed by Brussels, as well as by uncertainties of supply.

During liberalisation we must keep in view that besides the well-functioning/prospering internal market and consumer welfare, the EU's energy policy must provide global competitiveness and freedom of investments to European energy companies. With the help of correlation and cooperation the EU must start conversation with producing/extracting countries. Interconnecting the importing and member state networks would make the internal gas market more flexible and adaptable, and could also pool member states stronger.

1.1. ABOUT THE TOPIC

My interest toward the topic rose when I wrote a teaching material about competition, industry and trade policy of the EU in 2006-2007 within the framework of an EU-funded project. In my opinion gas market liberalisation and the intention of creating common European energy market reflect the good combination of these three policies. Energy market liberalisation requires the cooperation of several traditional common policies. Malfunctioning internal market conditions and the rising dependence of EU member states appear increasingly in energy services. Disorders appearing in one country's energy supply have immediate and direct effects on neighbouring member states because of the structure organised on network basis, or rather because of its shortcomings. Member states shall create and follow common policy/answers to the questions of *sustainable energy supply, security of supply* and *competitiveness*.¹ European energy policy integrates/settles/focuses all necessary steps into three main objectives: *getting over the challenges of climate change (1), limiting the EU's external vulnerability to imported hydrocarbons (2), and contributing to the growth and jobs objectives in long term within this policy as well (3)*. According to the EU's intentions these objectives shall be fulfilled by the help of stable energy supply on affordable prices that evolved by competition on the energy markets (CEC 2007). From the wide topic presented above I've decided to concentrate especially on the challenges of *gas service sector liberalisation*.

Furthermore the narrowed topic has different levels. In my research I used the approach of Marján (2007), and I have created at least three main sequentials which are interlinked. There is a broader scale that contains *the global challenges of gas market*. From the energy policy objectives addressing climate change belongs here. The questions of energy

¹ However energy market and geopolitical conditions have changed basically since the signing of the Treaty of European Coal and Steel Community (1951) and the Treaty of European Atomic Energy Community, the common action in energy policy is of higher importance than ever (CEC 2007).

policy and environment will be mentioned only superficially. I rather examine in detail the effects of the 2008 economic crisis on energy sectors, since the tools – affecting energy efficiency, green energy management and the results of liberalisation – used for crisis management in the past three years may redefine the frameworks and future of EU energy policy.

The next scale of the topic is the *Pan-European level of energy policy*. In my view serious *questions of common energy policy* – so the second objective, the decrease of reliance on imports of gas – *belong here*.

Finally the basic scale of the topic is *the condition of the sector or markets*. Every characteristic that determine the upper levels' efficiency belong here. Fixed, original technology, slightly changing market structure, barriers to entry and distorted conditions of competition are all making it more and more difficult to achieve the third energy policy objective, the stimulation of growth and jobs.

The aim of gas market liberalisation is to provide natural gas within/through the same competitive conditions, on prices that became set under competitive market mechanisms. The European Union plans to create these conditions in three steps. The first is the separation of different activities of supply chain (unbundling), the second is to provide the access of third parties to the naturally non-competitive transmission systems and the third will be the regulation, supervision of prices and tariffs.

For the first challenge – the separation of different activities (extraction/production, transport/transmission, storage and sale/supply) – we must know the structure of gas markets. Natural gas market doesn't belong to the competitive structures of economies. Unbundling is an essential tool for introducing competition into those segments of the market where it is possible.

The second step is to provide third party access (TPA). Regulation must pull down market entry barriers in order to let new entrants appear on markets. 98/30/EC directive contains the necessary steps in connection with the entrance possibilities and competition regulation provides the non-discriminatory background.

The third step, the question of prices and tariffs is not emphasised in my dissertation. The reason for this is that prices and tariffs have more national relevancy up till now, it does not belong to EU level challenges yet.

1.2. THE OBJECTIVES – HYPOTHESES

The principal background of the experiments of creating competitive conditions through the opening of gas markets seems to be stable, but its success in practice could be questioned. EU-level guidelines, factors and interests introduced in my dissertation highlight some open questions.

Sometimes already outdated regulation can first yield the place to up-to-date regulation that establishes competitive framework and then to market mechanisms anywhere where liberalisation is possible and so dynamic development may be foreseen. During the examination of liberalisation process I searched whether market mechanisms can take place from regulation or in this field of economies regulation shall be maintained by all conditions.

Hypothesis 1: Several factors may appear during the re-organisation of network industries, especially in the natural gas sector that can render or make impossible the introduction of market mechanism. So the time when regulation is giving place to market mechanisms may not come along.

The examination of the paths/routes of different member states also belongs to the evaluation of the success of liberalisation process. But during the examination we must not forget about the different take-off/starting conditions and the possibilities stemming from them. My research is based on the fact that huge differences can be revealed among the energy profile – for example in gas market structure, state intervention, security of supply or other factors – of the member states (Hira – Amaya 2003, Pointvogl 2009). My basic assumption that member states are not on the same level either in their gas market or in their future possibilities can be originated from the Tindemans Report in 1976. The conception of two-speed Europe appeared later also in connection with the introduction of common currency, the euro and with the Schengen Area (Csaba 2006, Marján 2007). But today in the debates over currency and/or fiscal union and the overall future of the European Union this conception seems to be more actual than ever (Merkel: *kétsebességes...* 2012). So I think that if *liberalisation process* comes off, it will not directly bring more intensive competition and does not directly mean the appearance of new entrants, since only *the establishment of competitive conditions is the aim of the process*.

Hypothesis 2: In view of knowing the different gas market conditions the follow-up of liberalisation milestones will not automatically bring competitive gas markets.

The growing number of competition distortion cases related to the energy markets refers to that competitive conditions are able to change the plans over competitive gas markets as well. The cases and decisions made by the Commission or national authorities support the liberalisation process in the creation of competitive sub-markets. Are these cases single examples, which do not require further explanation or they appear en masse within national markets and are part of a longer rearranging process? In my point of view the European Union further deepens already existing differences/gaps between member states with the maintenance of three options on vertical activity unbundling.

Hypothesis 3: Different levels in the commitments towards gas market liberalisation and the establishment of options in unbundling may be able to maintain or even generate serious differences within the EU.

Beside energetic companies, the approach of member states determines the success and results of the liberalisation process. It seems that the *efforts of the EU and the results in the unbundling and third party access* are highly determined by national gas market conditions at the very start of the restructuring. The question rises whether it is able to enforce gas market competition through liberalisation, or over EU-level regulation some other factors may be necessary as well.

Hypothesis 4: It seems that adversary incumbents or even national-level political or governmental groups may resist with improper adaptation or application of EU level regulation. This way they are able to influence regulation procedure in long term.

Finally, I examine how energetics have survived the economic crisis that became even more serious for European states. Has the crisis touched, if yes in what ways the natural gas and generally the energetic sectors? I've searched the different tasks devoted to energy sectors within EU-level or national crisis management.

Hypothesis 5: Energetics was also hit by the crisis, but the turmoil has not have only negative effects on it.

Assuming my hypothesis is true, my question is: *how national gas markets showing huge differences can provide appropriate basis to the EU-level energy cooperation, and how can these separate markets meet legal, competitive and future efficiency challenges coming also from the liberalisation process?* My aim is to chart/map/examine the results of gas

market liberalisation up to now, the new conditions and possibilities coming from competition and the crisis. I further amend this with an empirical research.

1.3. THE STRUCTURE OF THE DISSERTATION

The dissertation has three parts. In the first chapter I introduce natural gas supply as one of the public services. I describe its characteristics, since these determine the liberalisation process significantly. Later I examine the conditions that come from its network structure. I further concentrate my view around the product, which is the basis of the whole industry. I draw up the supply chain, its separable segments and their structure in general.

After the introduction of the basic liberalisation principles, objectives and its necessity I deal with the difficulties of public service market opening and its regulatory obligations. Finally I introduce the potentials of gas market liberalisation and its effects on energy policy, security of supply and environmental policy.

The second chapter contains the market opening scenario drawn by the European Union. Here those national or company level reactions are introduced which influence the sector's liberalisation process and so the desired competitive conditions. I describe the possible options of unbundling offered by the European Union for companies. At the end of the chapter I highlight those new challenges faced by competition control that come from recently created competitive conditions, their handling methods and the problems in connection with them.

The third part of the dissertation contains the empirical research that I have made using the latest accessible, 2007-2009 data.

1.4. THE METHODOLOGY OF THE RESEARCH

During my work I have used different methodologies. First I have examined the natural gas sector by the help of economic theory and its analysing measures. I've created the combination of economic perspective examination and policy perspective based on market analysis.

The theoretical analysis is supported by an empirical study. I prove with statistical data that according to different reasons – for example the differences in the level of national gas market liberalisation, in the basic market structure or the options in unbundling offered by the EU – after more than a decade of market opening we cannot say that liberalisation and so principles of competition define market developments.

During the empirical research those indicators remained where the source was reliable and as far as possible contained information about every member state. I could collect data in connection with 23 member states.² Finally, I had to compress the applied indicators into factors that reflect national characteristics, and aggregated them into three groups. One refers to the basic conditions a country must face, which can be changed only in longer term. The second group of factors deals with market structure. By the help of the third group we can assess the level of governmental interventions and the legal barriers of market entry. I admit that I agree with the opinions of Jamasb and Pollitt (2008) and Pointvogl (2009) about that although these factors can be interpreted individually, because of their interaction we shall not handle them irrespectively from each other.

In view of the factors I first chose multidimensional scaling (MDS), since in this data reducing method the result shows not only a rank of development, but I could receive information about the position of examined countries related to each other. Later on it was obvious to aggregate member states according to the artificial factors, so I have used the method of hierarchical clusters.

2. THE RESULTS OF THE RESEARCH

Energy market status in the 21st century shows higher interdependence, which appears both in the energy supply, the stabile energy market and even in climate change determined by energy consumption. The European Union has a definite position for the interconnection of these phenomena. This is the application of new technologies inspired and provided through the objectives of gas market liberalisation (competitiveness, sustainability and security of energy supply). Thus by the liberalisation process well-functioning, competitive markets can develop, the diversification of supply can evolve beside the decreasing effects of energy consumption on surrounding environment.

Thesis 1: Through the examination of gas market regulation I've found that in spite of every damage caused by regulative mechanisms, *liberalisation in this sector will not mean deregulation, but the reform of regulation*, so re-regulation.

The EU's gas market liberalisation, the creation of competitive conditions is not a single action but a process and we have not yet reached its end. Liberalisation and competition evolve easier on those public service markets where technology helps or induces

² Almost every studies and market analysis missed Bulgarian and Romanian data at that time. The reason is that the natural gas consumption of the latter two countries is around zero (EC 2009).

the changes. The gas services, in the centre of my research, can be a counter-example, since on a market defined by long-term supply/input contracts, constructed by network structure and bound by stable market entry barriers, creating competitive markets is a slow and difficult process.

Gas market does not belong to those network industries where liberalisation and dynamic development is easy to achieve, and so simple early type regulation that substituted competition can give its place to an up-to-date and complex version and later even to market mechanisms. I have found several factors that render it more difficult and on some segments even impossible to complete this process. Regulation must handle these factors both for competitive and integration purposes, because competitive conditions can be created and the security of supply can be assured only by the help of this artificial way. Some characteristics that make re-regulation indispensable:

- the *original non-competitive nature* that comes from the product characteristic and so the organisation of gas market sub-segments;
- the *public service nature* of the market and the supply activity, because of which the state is likely to be unable to leave the operation of gas market in short term, especially in case of a liberalisation process induced from upper levels;
- the *network structure* of the sector, and all its consequences that determine sub-markets and their competitiveness;
- the general devolutive nature of different gas market players;
- and finally the necessary establishment of new institutions with supranational authority for the common natural gas market purposes. Where *supranational level enters* as a new aspect, regulation does not seem to be avoidable, but it will be an uncompletable process.

Regulation is changing and developing constantly since new circumstances and challenges – like the liberalisation process, crises or security of supply problems – always appear and they need continuous reaction. The precession/development of liberalisation process brings more and more challenges for regulators. That is why although regulation is developing, owing to the long consultation processes and the complicated EU decision-making it seems that it is only following market changes, instead of the original intentions to induce competition.

Thesis 2: Even the best possible regulation seems to be useless, if *the possibility to create competitive background is not given to all member states*. It looks like the creation of this background is *impossible until more input options develop for all*.

Member state or service provider dependency – coming from the low number of supply or input possibilities – hits more countries from the EU, like the Baltic states, Finland, Sweden and some Central and Eastern European countries as well. Among such circumstances liberalisation, market opening and so the development of competition-based prices seem to play second fiddle. Such deficiencies of the gas market structure are of elementary importance, and they determine the support, the success and the results of liberalisation process. Although more member states are dependent from one single natural gas importer, those mechanisms and interconnection that may provide security and solidarity between member states in case of an energy crisis are still missing. The following measures may provide options for the majority of member states:

- *further interconnection of already existing transmission systems* may provide the better allocation/exploitation of cross-border capacities, would assure the connection to “new” root/extracting markets, and intensify input competition;
- *input diversification*, the increase of options in the sources of natural gas, through the investments of questing and establishing new importing markets.

The handling of the above-mentioned deficiencies and the future success of liberalisation got new impetus with the establishment of Gas Target Model (GTM).³ This could be a key measure to exploit advantages of gas market opening for those countries, which until now could not feel its positive results because of their physical conditions and supply possibilities. The further interconnection of importing, long-distance transmission and national distribution networks would not only result more flexible and adaptive internal gas market but could also league countries with similar interests.

Input diversification must be mentioned because of the security of supply. This contains the possibility of competitive intermodal or substituting inputs, thus *technological demonopolisation* as well. In longer term, establishing the substitution of different type energy sources (or the same from different origins) may decrease the energy import dependency even of the whole European Union.

³ The conception of the Gas Target Model was accepted by European Gas Regulatory Forum, so called Madrid Forum in March 23, 2012 (Beckman 2012).

Thesis 3: Considering the competition cases of gas market (or in general the energetic sectors) the *liberalisation process does not bring the appearance of new actors automatically*, since its aim is only to create the possibility of competition. But with *the unbundling options* provided by the EU, gas market *concentration may also be a consequence* of European gas market opening.

Gas market organised by network structure is determined by numerous market entry barriers. In an industry where complementariness and compatibility is necessary, where expensive patents and security is of highest importance, where costs of conversion and lock in effects appear, and only reaching the level of economies of scale could help surviving in longer term, the appearance of a new competitive actor/player needs more and more time. In turn the length of the period of successful market entering is an important determinant from the aspect of the structure and the competition of an industry. On European gas markets the physical accessibility of sub-segments is not even equal, which means a natural market entry barrier. Beside this elementary difference the technology, the missing demand replaceability, the information asymmetries and the lack of market transparency are all structural market entry barriers for newcomers. After defining and handling strategic – and in favourable situation natural – market entry barriers, the EU considers the three options of unbundling the activities of vertically integrated companies as the engine of liberalisation. Beside the risk of the obligate separation, the provided options also render the establishment of EU-level competition more difficult. This way it became possible for active, vertically integrated incumbents to survive the liberalisation process. We can see it on several sub-markets of natural gas supply that instead of more competition, the original situation has remained or markets have become more concentrated.

Other consequence of the unbundling options introduced for separation is that earlier vertically integrated European companies that chose ownership unbundling weakened. Not only the wealthy-in-capital European actors recognized new investment possibilities, but separated companies became defenceless targets for supplier companies (Gazprom, Sonatrach, Statoil) outside the EU as well. This means that even if concentration indicators decreased, the ownership background of the separated companies may not represent the same process. The ownership networks and the interlocking of affiliated companies hold information for further research.

It seems to be controversial, but energy market concentrations are logical consequences of liberalisation process. Market players seek efficiency through economies of

scale and economies of scope to avoid uncertainty and price volatility. Moreover the sense of liberalisation is to reach an even more integrated and common energy market within the EU. Bigger market means bigger companies, who are able to be more efficient. Accordingly there is a constant pressure for the authorisation of mergers and fusions. Examination of each case and the commitments related to the approvals try to handle those competition-distorting situations which are not covered by regulation. European control over energy markets and the numerous decisions in each case complete the regulation of energy market opening.

Thesis 4: Beyond the early conditions and the EU’s commitments, the possibilities of single actors in influencing and sabotaging the obligate market opening will determine the level of energetic supplier competition on each market.

My empirical research verifies this thesis. In short and middle terms the indicators that determine the national-level conditions of competition depend on member state/governmental decisions. In Table 1 I introduce those indicators that are involved in the research.

Table 1: The indicators of the research

Indicators of basic conditions	Indicators of market structure	Indicators that are barriers to effective competition
Energy consumption per capita	Market structure	Scope of public enterprise sector
Gas import dependency	Number of Transmission System Operators (TSO)	Governmental involvement in network industries
Possibilities of import diversification	Number of ownership separated TSOs	Price controls on gas markets – regulated tariffs
	Number of gas producer/importer companies with over 5% of market share	Legal barriers to entry
	Share of 3 biggest companies (by available gas)	Antitrust exemptions for public enterprises
	Number of Distribution System Operators (DSO)	Entry regulation in Gas industry
	Number of legally separated DSOs	Proportion of gas market open to competition
	Number of ownership separated DSOs	Vertical integration in gas industry
	Number of nation-wide suppliers	
	Number of companies with market share over 5%	
	Share of 3 biggest companies in whole retail market	

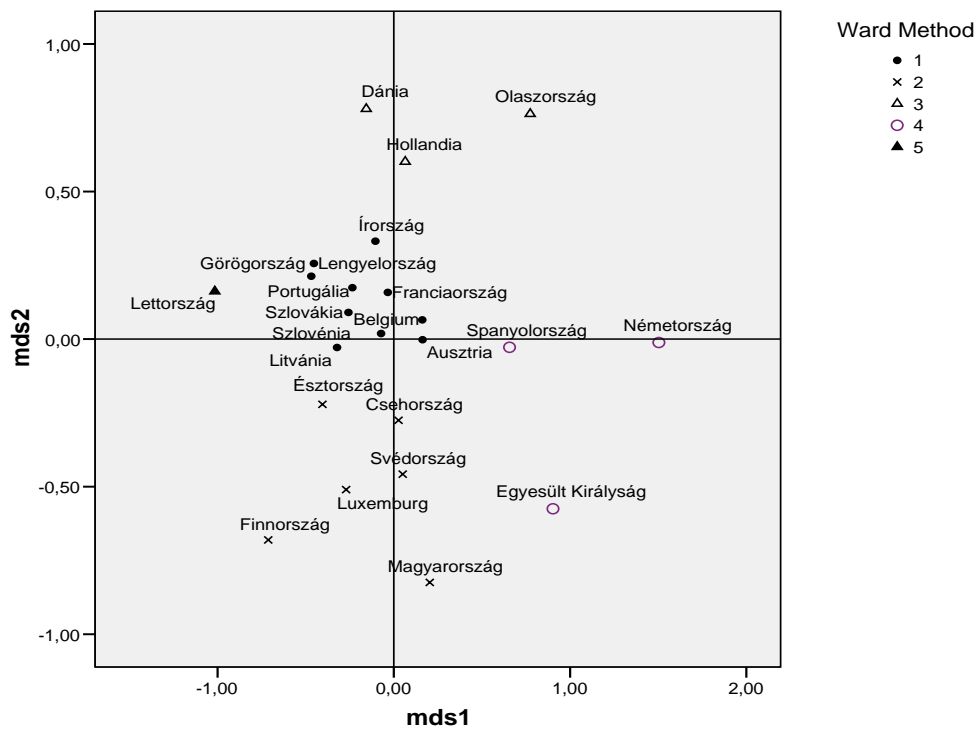
Source: Own edition.

Basic conditions are those which are not able to change in short or middle terms. The indicators that determine *market structure* must be supervised by national authorities according to EU regulation. But the three options for separation give big freedom for energetic companies. The third group of indicators shows those circumstances that can be kept irrespective of the objectives of the EU. Although not in the above-mentioned separation,

but these indicators show the national positions in the range of development by gas market liberalisation.

I could create 5 hierarchical clusters (Figure 1) according to the artificial factors by the national results in gas market liberalisation and by governmental activity in the sector.

Figure 1: Spatial representation of member states made by gas market liberalisation and governmental involvement



mDS1: Competitive market, mDS2: Level of government involvement

Explanation: Different symbols show the members of the 5 clusters.

Explanation: Ausztria=Austria, Csehország=Czech Republic, Dánia=Denmark, Egyesült Királyság=United Kingdom, Észtország=Estonia, Finnország=Finland, Franciaország=France, Görögország=Greece, Hollandia=The Netherlands, Írország=Ireland, Lengyelország=Poland, Lettország=Latvia, Litvánia=Lithuania, Magyarország=Hungary, Németország=Germany, Olaszország=Italy, Portugália=Portugal, Spanyolország=Spain, Svédország=Sweden, Szlovákia=Slovakia, Szlovénia=Slovenia.

Source: Own edition based on the SPSS output.

The results represented on Figure 1 give good explanation to understand different interests of member states in the disputes over common energy policy, their standing point and the level of acceptance of EU level energy regulation. During the empirical examination of member states' gas markets it became verified that those countries show the highest level of liberalisation which are able to cover their energy demand from more sources – like Germany and Italy – or those who have significant inland natural gas production – like Denmark, the Netherlands and the United Kingdom. The countries following them can be

considered mature in liberalisation, since competition can be revealed both in the imports/supply and in retail service segments. In the second half of the development rank – where countries like the Czech Republic, Estonia, Finland, Greece, Lithuania, Poland and Slovakia take place – countries are able to cover their energy demand from less, maybe only from one source. This couples with concentrated and vertically integrated market structure and average governmental involvement. For them the connection to gas market competition can risk security of supply as well. That is why some Baltic or Central and Eastern European countries might feel to be more defenceless during negotiations with a supplier. Sometimes they are more interested in contracting with these actors from outside the EU under a common European shield. The rank is closed with Latvia, which needs further investments in gas supply and service segments and government actions in the regulation in order to reach more competition.

The success of European energy policy depends on the acceptance of the member states (Pointvogl 2009). But the level of their approach shows huge differences according to their gas market development stages. This conflict is getting even worse if market opening is not coming from market base (competition pull) but it is necessary because of a decision coming from outside or from above (liberalisation push). The adversary incumbents or national, political groups can even resist with the improper application of relevant EU regulations.

The fact that the EU is unable to have an effect on the whole gas market – particularly on importing countries – upgrades the importance of common, unified appearance and negotiations with third players even more. The creation of common energy policy is a necessary tool of both market efficiency and of security of supply. Compared to this the EU also acknowledges that for the present it is unable to create this consequent, common and unified opinion, which would be so necessary for energy market and environment objectives. The EU-wide conflict of interests makes it impossible, owing to the strategic characteristic of the product and its market results that every member state concentrates first on its own interests and only secondly on the interest of the EU. So if an actor is not interested in accepting EU objectives, the EU is unable to force the desirable liberalisation because of the delayed establishment of supranational supervisory and regulative body. These conditions set back the creation of an integrated and competitive common energy market.

Thesis 5: Energetics can not only be the subject but also the measure of crisis management. Considering the wider range of crisis management tools it looks like that beyond its donor function *energetics receive emphasised attention, so it can even be a winner of the present crisis.*

The 2008 crisis has left its signs also on crisis-proof energy sectors. Energy demand decreased, although thanks to its inflexibility in lower amount compared to other sectors. The fall of investments caused by the decrease of prices and demand and the general uncertainties were somehow balanced by surplus of money, political and economic interests coming from other sectors.

Primarily/Mainly national level supports treated the energetic effects of economic crisis. However, competition regulation slacked less in connection with this sector and supports rather serve development than company-saving. Other measures of crisis management – like extra taxes, privatization and the extent of state ownership – can be observed here, but mainly in the sense to obtain and assure short or long term income from the sector. Energetics became not only the subject but the measure of crisis management.

Beyond the continuation of liberalization process the European Union is committed to the fight against climate change and to energy efficiency. So even if it seems that during the economic and now euro-crisis non-financial sectors get into the upstage, it looks like energetics are getting more attention. The sector may obtain gains from crisis if approved state aids and energy projects with EU financial assistance are realized.

Future of the European energy market is determined by today's crisis management measures. The period that holds the possibility of changes gives good circumstances to the regulative restructure, the strengthening of international coordination even if the lack of financial and natural resources restricts the attainment of commonly accepted goals. The next few years will show how Europe can exploit the possibilities coming from energetic and regulation economic adaptation. The significance of regulation and tax-system changes made in the name of “green get-out”, supports from the EU and their execution could be much bigger as it is seen from today's short term interests.

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