Perfect planning or the lack of effective lobbying? The analysis of participants of European gas market liberalization

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The EU has great medium term goals according to the common energy market. Its aim is to create a competition based productive, competitive gas market with respect to environmental aspects as well. Our aim is to examine with all of our restrictions, what (may) happen on this special field of energy market, closer on the gas market, by all the changes made within the framework of EU directed liberalization.

More precisely, the aim of this study is to find out whether it is possible to handle the EU as a unity and to create one energy policy for the 27 Member States? Using more than a dozen of indicators chosen mainly from OECD studies and national statistics of countries we would like to classify EU Member States into some possibly homogeneous groups. We try to find out, whether it is possible to make some homogeneous clusters, or there may be some Member States left, as outsiders, which do not produce the expected conditions for example in state control, public ownership, entry regulation, and so on? We try to answer on the question why the common energy policy is so sensitive topic, and why a common energy policy cannot really be created without its full perception by Member States? By the help of this research we would like to get closer to answering our basic question, which refers to that, whether it is possible to extract a real EU level competition by liberalization in a market that has so different characteristics among member countries?

Keywords: gas market liberalization, Member States, cluster analysis

1. Background of the research – European gas market liberalisation

If we look at the history of energy use, energy efficiency and its developments we can notice that the progress is intensifying and happening more and more rapidly by time passing. So what future will bring? Will we be burning fossil fuels, or will we use solar energy gathered high up in the atmosphere and beamed to us in the form of microwave radiation? The only reliable answer is that no one knows what will happen. Until someone will be able to answer these questions the participants, producers, suppliers and end users must adapt and adjust themselves to the actual

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circumstances. This is the reason why the EU has "only" medium term real goals considering its common energy market. It's several times published and emphasized aim to create a competition based productive, competitive gas market with respect to environmental aspects as well.

1.1. Economic reasons

Gas market liberalisation and the competition should solve all the problems of public supply in theory. Widely emphasized and accepted arguments are the *widening possibility of choices*, and the *improved quality services on lower prices* by the help of competition of suppliers. On the contrary the public property stands, which is often used as synonym of corruption and worsening quality. In reality we have to collect and add some more information and economic reasons in order to be able to decide which way is better to choose.

Among the upper mentioned economic reasons the first must be the reason of *competitiveness*. This criterion can be found both at micro – company or sectoral level – and of course macro – Member States and EU-wide – levels as well. This is not the place where we would like to decide which is more important. We must add that according to the theory of industrial organisations energy supply as a public service provided by a sector that is influenced by a natural monopoly seems to be inconsistent with the conditions of competitiveness. As a solution for this situation the EU does not expect Member States to "sell out" public properties, but to improve the market structure, at least by a separation.

In many Member States, where regulators decided to reorganise the originally monopolistic structure of gas sector, private investors have "great expectations" to gain higher profitability. The higher are these expectations are the bigger should be the *innovation constraint*. This pressure appears not only from the investors side, but from the fact that public services – be it energy services, telecommunication or water supply – are usually in bad conditions (Scheiring – Boda 2008).

Among economic reasons the following could be that these structures and services should or expected to be *run efficiently and in a competitive spirit*. A widely accepted solution is that a network could be more effective if competition is being created or let on at least some levels of the network, if not in the whole structure. The question is now changing, since we have to decide somehow that those structures seem to function "better" where market based competition characteristics appear or those where still natural monopolies dominate (Bakács 2003)?

1.2. EU policy reasons

It is easy to understand that with economic reasons mentioned in the previous paragraph the European Union must face and adapt itself to the present challenges and circumstances like the problems in the security of supply, higher gas prices, climate change and try to exploit as much from the market by the help of

liberalization and so competition as it can. Europe must go back to its roots and original aims to have a common answer on these problems which affect almost every Member States. Sustainability, security and competitiveness are not the ones which could be reached by single Member States themselves. Along with some other not less important goals the creation of a common energy strategy was also a central element of the European Coal and Steel Community (1952) and also of the European Atomic Energy Community (1957) (COM(2007) 1). Although conditions have changed a lot in the last more than 50 years, common answer, namely the creation of a common European gas market is more necessary and important than ever.

Unfortunately or not, the European Union seems to be a bit poor considering the reach of these acceptable goals. Although the beneficial effects of an integrated and common answer are all known and stressed regularly by the Commission and by scholars of energy policy *"Today's Union is still without what could be called Common Energy Policy."* (Pointvogl 2009, pp. 1) The European government has still tools only mainly in the sub- or co-areas of energy like environment, research, infrastructure and lately competition and Single Market. There can be several reasons lying behind the processes. The supranational level regulation's fate is sealed by the fact that until the 70-ies public services were not being regulated at Community level. Moreover, the EU has the right to regulate this field only by directives. The problem of using directives in regulating such a sensitive and strategically important sector of Member States is serious. Directives are said to be less effective in reaching goals compared to regulations, but unfortunately they are the most applicable tools in fields where Member States want to maintain some licenses and possibility of intervention.

Although they have adopted several directives in the field of common energy market, it does not seem to be enough to reach the EU's mid-term goals. The Council of the European Union has accepted the first two directives for the electricity (96/92/EC) and the gas market (98/30/EC) quite late. Later on because of ineffectiveness in decreasing monopolies' dominancy and unifying fragmented market two other directives replaced them in 2003 of which the more important from our point of view is the 2003/55/EC. Although development has started and there are positive effects of the liberalisation process, still not every advantages are being exploited in the market (COM(2009) 115). In the meantime Services Directive (2006/123/EC) became adopted in 2006, but it does not contain the complete regulation of services of general interest. The third package of measures must have been adopted because of the failure of the previous two attempts. The third package – with a report called *"An energy policy for Europe"* (COM(2007) 1) as a starting point – adopted by the Commission plans to ensure that all European citizens can take advantage of the numerous benefits provided by a truly competitive energy market. Consumer choice, fairer prices, cleaner energy and security of supply are at the centre of this third legislative package, adopted by the Commission on 19

September 2007. We have to add not only by the way, that the directive plans to decrease market concentration and the cutting up of giant vertically and both horizontally integrated energy providers in order to create symmetric and harmonized energy market. These steps seem to be necessary because of the above mentioned report published in 2007, which reflected highly concentrated market structure concerned state or regional levels, by which incumbent actors with the lack of effective liberalisation and competition are still able to control import/production, access of networks and maybe prices as well. We have to add that the success of these directives is highly influenced by the attitude of Member States and interested companies of the energy sector. The present state of legislation in the Member States will come up later.

1.3. Problems

Going ahead introducing the reasons of necessary gas market liberalisation we have to mention shortly the problems, of which solution seems to be only the creation of a really competitive and competition based market structure.

We all know that liberalisation does not mean deregulation but rather re-regulation in the sense that new regulations are needed in order to create the expected structure and competition. This is true in a greater extent for the market of public services. The most important reason for the liberalisation is that the state seems to be inefficient in providing these services. But we cannot forget that these markets seem to be so special that they need special handling as well. By the help of new regulation market failures like monopolies or abuse of dominant position can be handled and new coming actors can face better conditions than ever in order to be enough competitive compared to their incumbent competitors. Reduction of so called *market entry barriers* is the main task of decision makers, authorities, and of actors in order to let new comers entering the market. These barriers of market entry can be divided into three main groups. The group of *natural barriers* (1), covers mostly physical market access problems, and so delivery costs; the group of *artificial/administrative barriers* (2) of market entry means mostly active trade policy and some structural barriers that can come from the specific industry we are talking about. As we all know that the distances – because of decreasing transport costs – became less and less, and the EU, the WTO and so almost every countries of the world are somehow committed promoting liberal trade policies and towards the reduction of trade barriers, the first two groups of market entry barriers have less and less importance in reaching different markets. The rest of the conditions that may restrict trade can be mentioned as *strategic market entry barriers* (3). The importance of these latest mentioned barriers has increased along by the decreased importance of the first two groups (Török 2003). Their common characteristic is that they can be somehow related to strategic behaviour of actors of a market and so usually "only" national competition authorities and/or the Commission of the

European Union (DG Competition) deals with them. The problem that lies beneath this phenomena is that whether national governments on a sensitive field like the EU's common gas market accept their loose of control with resignation or they use their toolbar of competition regulation in order to maintain their influence. If they feel like it is necessary to hold this licence in their hand that will necessarily mean stronger resistance to every EU-level attempt that tries to liberalise the market and will appear as a legal barrier later.

Second type of problems in our opinion can be considered more important because in some aspects it is somewhat independent in short and medium-terms from every attempts and plans made by governments or by the EU itself. That is why *security of supply* of energy[2] – by acceptable reasons – has become one of the most popular keywords of political and economic debates. It is getting considered as the Holy Grail of common energy policy (Weisser 2007, Jamasb – Pollitt 2008). The Commission's Green Paper (COM(2000) 769) about European strategy for the security of energy supply drew attention to the worrying and growing level of dependence – it may reach 70 percentage by 2020 – on gas imports from sources outside the EU. The task of organising security of supply cannot be entrusted to just one player of the market. Member States are obliged to define the roles and responsibilities of all the players on the market with regard to security of supply (2004/67/EC). As it can be seen from the footnote definition security of supply has different sides and so different objectives to reach. One European-level *measure that may improve security of supply* would be the resolution of the above mentioned problem, namely the removal of barriers of supply-side competition and so creation of closer cross-border cooperation and interoperability of gas systems. From an infrastructural side further trade and investments within the internal gas market as well as interlinking of networks play a fundamental role in the flexibility of supplies. With these measures we could improve gas trade among Member States. Another measure that needs common answer but does not remain within the borders is the reduction of dependency from a single supplier. In this research further on we plan to map only present possibilities and not the future ones.

Both two above mentioned problems are so serious, complex and interconnected, that require common answer from the part of the EU. A problem or difficulty coming from this fact is only that whether Member States are willing to renounce their licenses in favour of a common policy. Without such a cooperative behaviour common energy policy seems to be impossible to create!

[2] According to the Communication from the Commission COM (1999) 571 security of gas supply in short-term includes the ability to maintain continuity of gas supply despite exceptional demand and difficult supply conditions including possible disruptions of gas supply whether of a technical, economic or political nature. In longer-term security of gas supply is the ability to ensure that future gas demand can be rated by a combination of indigenous and imported gas supplies. This requires adequate investments in production, transmission infrastructure and supply diversity and clearly has a geopolitical dimension.

2. Research – the analysis of participants of European gas market liberalisation

Our research is based on an assumption – made by previous experiences and by the reactions and answers given on the upper mentioned problems – that there are huge differences among EU Member States considering for example their gas market structure, the level of state intervention, the security of supply, the sources of energy and some other important factors. So our research is based on a somehow theoretical identification of the conditions in which there can be differences existing, and so defining different groups, parties among Member States.

The reason of our choice is based on the basic differences between the gas and the electricity sector. Although they are highly bounded and related to each other, we have to distinguish them. Meanwhile electricity is a produced good and every Member State and even households could be able to generate it by traditional tools, or using the "greenest", recently supported resources, natural gas is a type of energy that can be found in only one half of the Member States but far not in an enough amount neither related to their present nor to their future demand.

Our other reason for the object of our research is that what is presented in the study of Brekke et al (2008). They examined the net welfare effects of the liberalisation process both in the electricity and in the gas sector and found that the positive effects of liberalising domestic gas markets are much smaller compared to the other sector.

2.1. Basic assumptions

The idea that Member States are not in the same position to give the same answers and follow the same methods is quite old. It can be originated from the Tindemans-report (1976), but nowadays it is more actual than ever. We could hear it in connection with the Constitution of Europe, but also related to the Economic and Monetary Union, connected to general economic policy and the economic crises, EU-level institutional organization or in general in debates over the future of the European Union (Csaba 2006, Marján 2007).

This made us think over this phenomenon in connection with one special and sensitive market, the gas market. There are several reasons lying beneath the reaction of countries. We will now focus on those which can be basis of an objective measuring and try to exclude those which are coming from the sensitiveness of the sector.

There are three studies or researches which lead us on our way to define our questions, create the factors and summarize our results. First tool was the so called

Railway Liberalisation-index of IBM from 2004[3]. As a reason of the study, we have to mention that similarly to the gas sector, one of the main objectives of the European Union is the integration of national rail markets into a harmonized domestic European rail transport market. In view of this goal, the coexistence of de facto closed and open national rail markets was and is unacceptable. The main is to analyze how open the rail sector is to new competitors. For this reason, when analyzing the markets, the LIB Index[4] concentrated on the point of view of external railway undertakings (IBM 2007).

The second instrument dealing with market differences in a specific sector is closer to our topic. The Energy Policy Index (EPI) created by Röller et al. (2007) became published by Bruegel in the *Energy: Choices for Europe*. They have investigated the status quo of Europe's energy policy – both gas and electricity(!) markets –, in terms of the three energy policy objectives: *competitiveness, security of supply* and *environmental sustainability*. In order to get a comparable measure across Member States, they have constructed the above mentioned indicator which gives a position of each country in relation to each of the objectives. On the basis of the Energy Policy Index, they made a cluster analysis, by which they could group countries according to the three objectives. From this analysis they also noticed that national starting-points vary considerably.

The third analysis made by Pointvogl (2009) was based on a research focusing on the driving forces of the integration and on the differences revealed among member states of European energy policies, with the title *"Perceptions, realities, concession"*.

Not exactly assumptions, but many ideas and data came from the *Ten years of product market reform in OECD countries – insights from a revised PMR indicator* OECD Working Papers written by Wölfl et al. in 2009 and some previous ones like the work of Conway - Nicoletti (2006). We could obtain many ideas and influences creating the factors based on their approach.

2.2. Objectives

By the help of the above mentioned studies we tried to focus exactly on the gas market of the EU Member States. We could create three groups where the

[3] In the second edition of the 'Railway Liberalization Index,' the basis of the analysis was extended to include the new EU member states, apart from Cyprus and Malta, and of course Romania and Bulgaria at that time.

[4] The LIB Index comprised two sub-indices. The first, the LEX Index, analyzed to what extent legislation allows market access (law in the books). It therefore contains the organizational structures of the incumbent, the regulation of market access and the competencies of the regulatory authority. The second sub-index, known as the ACCESS Index, measures numerous market access barriers (law in action) encountered in practice as well as the percentage of accessible domestic market. A separate index, the COM Index, compares the competitive situation in the countries analyzed (IBM 2007).

answers of a Member State for different challenges may be interesting and determining in our opinion. This research is intended to be an exploratory analysis, focusing on those dimensions and factors that determine member states' approaches towards integration, and their sometimes contrasting view.

As a first group we planned to *examine the conditions and the circumstances that determine security of supply (SoS)* (1). In our opinion these are indicators that can be changed only in longer term, and so we can consider them constant in a short-time period. *Examination of different vertical levels and market structure of the gas sector* (2) is the second group that contains some information about production/import, transmission/distribution and providing service towards consumers. As we think, these conditions can be changed in medium term. Finally the *examination of government involvement* (3) contains important facts about the actual position of a market. These conditions can be mentioned as legal market entry barriers which are almost related only to government decisions and interests.

2.3. Sources of data

We agree with Pointvogl (2009) and know that the gap between the trinity of the EU's policy goals – competitiveness, security of supply and environmental sustainability – and the strategic behaviour of involved players – governments, companies, authorities – risk the success of a deep and updated analysis of gas market in itself. This is further more complicated in a period when member states are in their integration process.

Our work is theoretical as we have already mentioned, because we are convinced that it could function in practice if all the relevant information were published and publicly accessible at the same time. Unfortunately we have met many difficulties in collecting relevant data. We missed many updated information related to present state of different markets. We also met the problem of higher level data protection in connection with such a strategic sector and activity of countries or companies. Unfortunately competition authorities are also missing some relevant information referring to market shares that would be useful for them in investigating horizontal and vertical cartels in the sector.

Significant amount of the information we could collect from OECD Working Paper 36 (Wölfl et al. 2009), and from a DG TREN Staff Working Document (SEC(2009) 287) and information that refers to constant data like consumption and dependency we could find in Energy Pocket Book (CEC 2009). Unfortunately there were still important data missing, so we used Internal Market Fact Sheets of the Member States, Network Country factsheets of International Energy Regulation, the statistical basis of International Energy Agency and of Statistisches Bundesamt Deutschland if needed.

3. Methodology

As we have collected and – in case of missing ones – calculated all data we considered being important for a brief analysis of the gas sector, we had to decide the method of the comparison and of the grouping of Member States to reveal the differences and the similarities among them. In order to be able to perform the chosen method, cluster analysis we were forced to create the factors that constitute the basis of the comparison.

3.1. The variables

For the performance of a successful cluster analysis we had to collect those data, which tell us the most accessible information we could ever get. We have collected several, here not represented information considering the gas markets of the EU, but we have faced the problem of missing information so many times, that we had to reduce the number of factors used in the analysis. Finally – as Table 1 shows it – we have chosen those where the information were the most reliable and the most comprehensive. Having seen the remained variables, we created three groups of them; one refers to the basic conditions a country can face, other deals only with the structure of the market, and the third group of variables will give us information about the government involvement and the legal barriers of market entry. We have to add that we agree with Jamasb - Pollitt (2008) and Pointvogl (2009) who stress that variables though being exogenous are not absolutely independent from each other and from influences.

3.1.1. Conditions

This first group of variables cover mostly our first objective, namely to reveal and stress the differences in the basic circumstances if they exist at all. We consider these conditions important, because there are some which cannot be basis of a change in short terms, but these are almost the only ones determining security of supply[5].

So our first variable among this group is *Total energy consumption per capita* (it is measured in kg or equivalent per person). Our second, but maybe more important indicator is *Gas Import dependency*. It is given in percentage and getting calculated as Net Imports is being divided by the sum of Bunkers and Gross Inland Consumption. The third content of the first group of variables is *Diversity*. In our

[5] Of course we have to add that for example in Hungary compared to the previous three years a significant decrease could be measured in gas consumption when gas price increased in the middle of 2006. That shows a slight consciousness from the part of the population, and the earlier useless(?) wasting of energy, if prices are not forcing them to savings (Kaderják 2009).

opinion this is also an important indicator, since it shows the number of possible sources covering import necessity. A country's one-sided energy defencelessness could hold many problems in the supply side, as we have seen it two or three times now in connection with Europe's high dependency from Russian sources. As Jamasb and Pollitt stress it, *"The most commonly suggested remedy for increasing security of supply is diversification, to reduce overdependence on individual countries or regions, and on particular types of supply."* (Jamasb – Pollitt 2008, pp. 4585). In a way we could make further difference in the exact meaning of the word diversity. According to the cited sentence it may contain also various types of energy sources, so maybe Weisser's word "optionality" – the degree of viable alternative options – represents our intents better (Weisser 2007).

Our present research does not contain it, but in the future we think that measuring and comparing *Storage capacity* can be also useful in getting a clear picture of the market conditions.

3.1.2. Market structure

Within the second group of variables we have collected indicators which give us information about both the market share of the largest company in the gas production/import, the gas transmission and the gas supply industry.

With the first indicator – *Market structure* – we could get a quite broad view about the whole market, but we have collected further information as a control for each sub-market. The variable of *Number of companies with over 5% share of production/import capacity*, the *Share of 3 biggest companies (by available gas) (%)* and the *Share of 3 largest wholesalers in wholesale market (%)* give us information about the structure of gas import and production. The last three indicators – *Number of independent suppliers, Companies with market share over 5%* and *Market share of 3 largest companies in whole retail market (%)* – show the structure of gas retail market. Unfortunately most of the necessary estimations were made within these data.

3.1.3. Barriers to competition

As we have mentioned it above this group of indicators hold information mainly about the existence of legal barriers and about the level of government involvement in the different levels of the sector.

Scope of public enterprise sector contains information on the fact whether national, state or provincial government controls at least one firm in gas sector (gas production/import or gas transmission or gas distribution or gas supply). *Government involvement in network sector* reveals the percentage of shares owned

by government in the largest firm in the gas production/import, or gas transmission or gas distribution or gas supply sector. The *existence of price controls* gives us information about the practice of regulated tariffs in case of industrial users, small commercial users or households. We consider this variable to be important since price control represents one of the most common instruments for the regulation of public services (Dorigoni – Portatadino 2009). *Legal Barriers to entry* discovers those national, state or provincial laws or other regulations that may restrict the number of competitors allowed to operate a business in at least some markets in gas sector. *Antitrust exemptions for public enterprises or state-mandated actions* contains the information about existing rule or principle providing for exclusion or exemption from liability under the general competition law for conduct that is required or authorized by other government authority (in addition to exclusions that might apply to complete sectors). *Entry regulation in Gas industry* is a composite index of relevant information. It contains answer on the question how are the terms and conditions of third party access (TPA) to the gas transmission grid determined (1), what percentage of the retail market is open to consumer choice (2), and about whether national, state or provincial laws or other regulations restrict the number of competitors allowed to operate a business in at least some markets in the sector: gas production/import (3). The information about the *proportion of market open to competition* also belongs to this group of questions, but refers to the entire sector. *Vertical integration in gas industry* is also a composite index, that contains answers for three questions referring to the question of the degree of vertical separation between gas production/import and the other segments of the industry (1), the degree of vertical separation between gas supply and the other segments of the industry (2) and on the question whether gas distribution is vertically separate from gas supply (3).

Table 1. Summarizing list containing the three groups of variables used in the research

Variables of Conditions	***Variables of Market structure***	***Variables of Barriers to Competition***
Total energy consumption per capita	Market structure	Scope of public enterprise sector
Gas Import dependency	Number of companies with over 5% share of production/import capacity	Government involvement in network sector
Diversity/optionality	Share of 3 biggest companies (by available gas) (%)	Existence of price controls
	Share of 3 largest wholesalers in wholesale market (%)	Legal Barriers to entry
	Number of independent suppliers	Antitrust exemptions for public enterprises or state-mandated actions
	Companies with market share over 5%	Entry regulation in Gas industry
	Market share of 3 largest companies in whole retail market (%)	Proportion of market open to competition
		Vertical integration in gas industry

Source: own creation

3.2. Cluster analysis

In order to find out whether countries can be grouped according to their conditions and characteristics, we perform a cluster analysis by the help of the huge amount of standardised data. It is important to stress that the groupings which came out of the analysis are rather indicative and, of course, could be subject of further qualitative assessment of the data gathered from several sources.

Cluster analysis is an exploratory data analysis technique which attempts to identify natural groupings (clusters). We performed a hierarchical cluster analysis using the data of 23 Member States for creating natural groupings. Only 23 countries' data is involved. Because of the missing updated information we had to use data from 2006 until 2008. Almost every statistics from this period missed Romania and Bulgaria as new Member States. The explanation of the other two "missing" countries is more trivial. Because of climatic conditions and geographical background Cyprus and Malta simply do not use gas as energy (EUROSTAT 2009).

4. Results of the research

In order to find out whether countries can be grouped according to their conditions and characteristics, we perform a cluster analysis by the help of the huge amount of standardised data. It is important to stress that the groupings which came out of the analysis are rather indicative and, of course, could be subject of further qualitative assessment of the data gathered from several sources.

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4.1. The five clusters

On the basis of the collected data and relevant information and using hierarchical cluster analysis with Ward methods, we could classify Member States into five groups. The identification of the number of clusters was based on the coefficients of Agglomeration Schedule.

4.1.1. A "unique group"

We start our examination with the end of the results. We have chosen a 5 clustered outcome because we knew that there may be some potential states that can be unique in some senses. By this way the first group contains only Latvia.

It is easy to understand the result if we see the characteristics of this country. Small population with high energy consumption, which is combined with high import dependency (108.8%) which is covered from Russian sources only. It has a small concentrated market with a vertically integrated state owned company, which means high level of government involvement. As a summary in our point of view we could say that the Latvian gas sector is not considered to be mature in the sense of liberalisation, competition and development.

4.1.2. Group of states that need further development

The characteristics of *"Group 2"* that consists of Czech Republic, Estonia, Finland, Hungary, Luxembourg and Sweden are quite low energy consumption, with an exception of Luxembourg with its highest 10137.8 kgoe per person total energy

consumption. With the rate of 82.2% gas import dependency proved to be the lowest in Hungary. Although the average level of government involvement seems to be lower than in other groups, compared to other clusters' members, the overall market structure is not "developed" enough in the sense of level of competition. So concentrated market structure, medium level government involvement and vertical integration are combined with weak diversity position (except in Luxembourg).

4.1.3. Group of "country-mix"

For us, this third group is quite surprising since the members vary, and being so in general no one would put them together in one "party" in a debate over common energy policy. *"Group 3"* contains: Austria, Belgium, France, Greece, Ireland, Lithuania, Poland, Portugal, Slovakia, Slovenia and Spain.

As we have mentioned the characteristics of this group are varying somehow. For example in case of Total energy consumption we can find the lowest in Poland (2429 kgoe per person) and the highest in Belgium (5891.7 kgoe per person). Gas import dependency is the lowest again in Poland (around 71.9%) and the highest in Spain (101.3%). Only Ireland and Lithuania are the two countries of this group who can cover their natural gas demand from one source according to our data. The lowest level of government involvement we can find in Spain, meanwhile Ireland maintains the highest level of it that is also combined with the highest vertical integration in gas industry among the members of the group. Compared to the previous group they seem to be in better position because of their market structure.

4.1.4. Group of "good basics"

The fourth group consists of only Denmark and the Netherlands. Their medium level energy consumption is combined with low dependency, since they belong to that minority within the EU who have significant domestic resources considering natural gas. From the number of players being active in each level of the sector we can see that competition already exists, although government involvement is not the lowest compared to other clusters. Their market structure seems to be competitive, liberalised and so developed. From some aspects United Kingdom could also belong to this group, since it represents quite the same characteristics.

4.1.5. Group of "developed" nations

The last but not least group became the triad of Germany, Italy and the United Kingdom. They perform medium level energy consumption, around 90 percentage energy dependency (except the UK with its 11.8%), already competitive market

structure, and liberalised market with the highest number of independent companies in the supply side, and with higher government involvement only in Italy.

Although we can find differences among them, there are some common interests lying behind in case of large countries, or countries with relatively low – compared to other groups – foreign dependency. They might not derive significant benefits from giving a European dimension to their external policy (Röller et al 2007). Albeit within these countries almost everybody can mention at least one so called national champion to which companies' high level of national interests and emotion belongs, these are the countries that represent good performance if we measure development through liberalisation process and competitive state of the sector.

4.2. Positions of Member States related to each other

Multidimensional scaling gives the geometrical representation of our objects in a lower dimension but with the maintenance of the order and of original distances. Considering the goodness of fit S-stress will give the basis of the success and the possibility of interpretation of the outputs[6].

One dimensional scaling technique will provide the possibility of the creation of a rank of development if S-stress less then .2 and the dimension is definable. The value of S-stress of the examination is 0.12227, that can be considered good, so the model of the reduced number of dimensions seems to hold every relevant information. According to correlation between and the indicators providing the basis of MDS, we have to define to dimension. From Table 2, we can see the significant correlations between mds1 and those variables that seemed to be significant from the point of our research.

[6] Results of the MDS are considered to be good if S-stress shows a value lower than 0.1. If the value is between 0.1 and 0.2 the results could be acceptable, meanwhile in case of a value higher than 0.2 the output is not able to define.

Table 2. Correlations among those variables that seemed to be significant from the point of the research

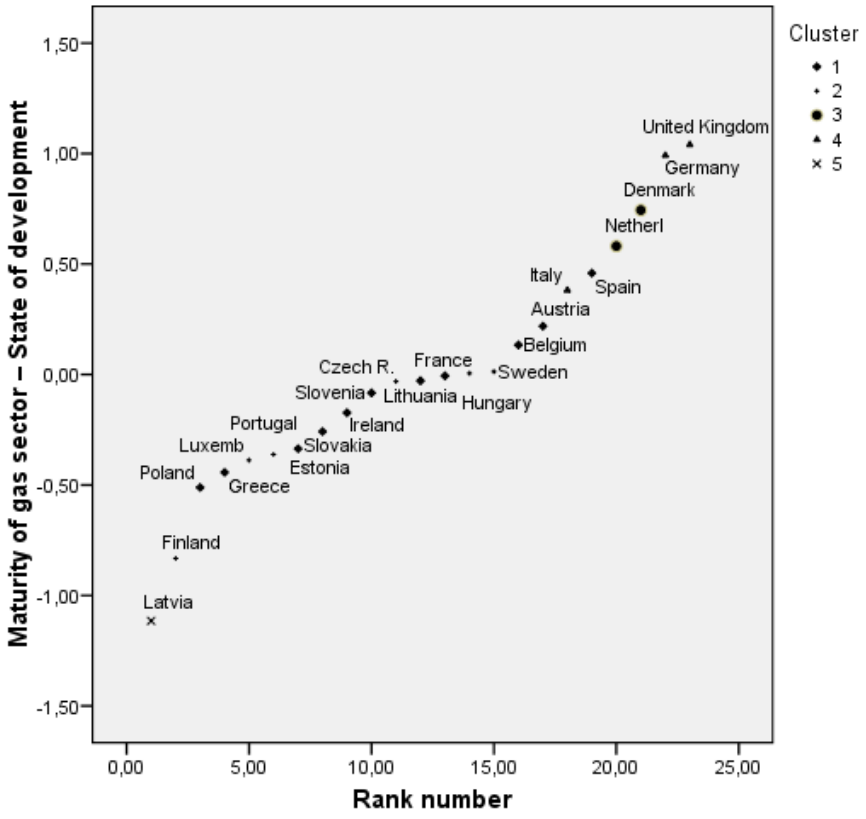
		mds1
Total energy Consumption (per capita)	Pearson Correlation Sig. (2-tailed)	.623(**) .001
Gas Import dependency (in %)	Pearson Correlation Sig. (2-tailed)	-.552(**) .006
Diversity: number of possible sources covering import necessity	Pearson Correlation Sig. (2-tailed)	.548(**) .007
Market Structure	Pearson Correlation Sig. (2-tailed)	-.822(**) .000
Number of companies with over 5% share of production/import capacity in 2007	Pearson Correlation Sig. (2-tailed)	.852(**) .000
Share of 3 biggest companies (by available gas) (%) in 2007	Pearson Correlation Sig. (2-tailed)	-.675(**) .000
Market share of 3 largest companies in whole retail market (%)	Pearson Correlation Sig. (2-tailed)	-.496(*) .016
Government involvement in network sector	Pearson Correlation Sig. (2-tailed)	-.418(*) .047
Proportion of market open to competition (2007)	Pearson Correlation Sig. (2-tailed)	.581(**) .004
Vertical integration in gas industry	Pearson Correlation Sig. (2-tailed)	-.535(**) .008

Source: own creation

**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed)

As we can see bigger part of the variables determine the mds1. Analysing these correlations, we can point out that the dimension mds1 could really be considered as an indicator of development, by which we can determine the order of Member States' by the state of their gas markets. We must handle these results carefully since the country represented with twice bigger MDS coordinates does not mean two times more developed country on the scale of gas market maturity. So for getting the exact positions every Member States shall get a rank number (Figure 1). If two countries' MDS coordinates seem to represent the same value, we have to apply the mean rank.

Figure 1. Ranking of Member States according to the maturity of their gas sector



Source: own creation

We think that state of development is somehow related to the three stages of evolution of gas markets detailed by Austvik (2009). According to our expectations the ranking is led by the United Kingdom, who is often mentioned as one – beside the non-EU member USA – of the good examples considering energy market liberalisation. Those countries follow it where *"The monopolistic position of the transmission companies becomes less predominant, and market transactions are more diversified. Producers and customers have to a degree more purchasers to choose from (gas-to-gas competition). At the same time, however, companies start integrating horizontally (with competing firms) and vertically (with firms further up or down in the gas chain) by mergers and acquisitions, which may contribute to higher concentration around the large champions, if allowed by competition authorities.*" (Austvik 2009, pp. 92.). So countries which are quite mature in the

sense that there is some competition with alternative sources, routes of transport, and where competition within the market appears to lead the ranking of our research.

The order is being closed by Latvia and those countries where there is a need for investments both upstream and downstream to improve competition at markets. In case of countries from the second half (like Czech Republic, Estonia, Finland, Greece, Latvia, Poland, Slovakia, etc.) with low domestic resources and few possible sources covering their high import dependency, concentrated market structure, medium level government involvement and vertical integration are combined with weak diversity position. They might see the creation of domestic competition as a danger to their security of supply (Röller et al. 2007). Some small central European and Baltic countries could find themselves in a weaker position when negotiating with foreign upstream suppliers, and might be more eager to face such negotiations under a protective European umbrella.

The groups represented with different shapes in Figure 1 could provide the basis of understanding the differences among the cooperative behaviour in energy policies and reactions on common energy policy of the Member States. By the help of this indicative result we can focus on special characteristics and demands of countries with different energy conditions. We have to add that we consider the result only indicative that could be subject of further examination, since many things and conditions on this market changed during the last 2-3 years and are changing nowadays as well. The study must be updated regularly in order to get precise basis for the creation of an effective and workable policy.

5. Conclusions

Our aim, as we have mentioned it previously, was to reveal the differences among Member States if they exist at all. Our second objective was to find a possible classification to see the possible perceptions, common perspectives and negotiating positions of countries that are close to each other not geographically but in their gas market characteristics. We found this important because the debate on a common European energy policy cannot simply ignore the current situation of each Member State.

In fact we agree with Röller et al. (2007) that countries might find conflicts in pursuing all three energy policy objectives – *competitiveness, security of supply* and *environmental sustainability* – at the same time and at least in the short term, might be confronted with a number of trade-offs in favour of each, on each fields of energy sector. Although our examination concentrated only to the first objective, we can see from the results that policies designed to increase efficiency, secure supply and protect the environment might not necessarily be complementary, driven and fulfilled together at the same time. Increasing the strength of one might require relaxing the pursuit of other objectives.

As a result, we have found that there are significant differences among the state of development of Member States' gas sectors, considering their basic circumstances and the strength of market players – independent companies or governments – as well. At this point we agree with the statement of Pointvogl (2009) who found that the perception of Member States drives the integration of European energy policies. We think that this perception is highly determined by their state of development considering each sub-sectors of the energy industry. Our intention was to reveal these differences in especially the gas sector.

The conflict of deciding about the order of meeting the objectives is further more increased by the liberalisation "push" from the part of the EU. In many Member States this requirement faces old industrial model with high amount and vide range of market entry barriers, and with high level of dependency towards foreign countries. We join to the opinion of Vissi (2006) and Kaderják (2009) who say that the conditions of competition of general interest are unfortunately missing both at wholesale and retail level of the market in several Central and Eastern European countries or telling the truth in countries with low-level of diversity who are represented in almost every groups. Until the number of the input possibilities – as we have mentioned the level of diversity or optionality – will not increase, real competition and so competitive market is impossible to be obtained by any kind of force.

Our last but not least question is that does it make sense and is it possible liberalising on a market with such different conditions? The diversity of the input and the size and dynamism of wholesale market decides whether there is enough choice and prices competition possibility on a market. We risk asking that whether it makes sense liberalising until in many Member States dependency is so high and diversity of the input are so scarce?

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