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**ENERGY POLICY:
SECURITY OF ECONOMY OR BUSINESS AS USUAL?**
PROSPECTUS (DRAFT)

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WORK IN PROGRESS

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Abstract:

Although energy security is a "policy driver of great rhetorical and practical importance," it is not the only reason why states get involved in this specific sector of economy. The proposed research project focuses on the specificities of state involvement in energy sector as exhibited in the gas and electricity subsectors, and the importance, relevance and effects of security concerns on the degree, and primarily kind of state's involvement. The focus of this research project is stated within two questions: (1) what are the factors that influence the variation of state's involvement in energy sector across countries, (2) what causes the variation in the way states get involved in the energy sector and why there is difference in kind of involvement. Finally these descriptive elements will be measured against yardstick of reliability of supply, and levels of prices at which these services are provided.

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ENERGY POLICY: SECURITY OF ECONOMY OR BUSINESS AS USUAL?

(PhD Dissertation Prospectus)

INTRODUCTION AND THE PUZZLE

One of the most salient concerns of developed, as well as rapidly developing countries is continuous availability of energy and the ability to adjust to the changing conditions of the global market. This concern, often simply referred to as energy security, is mentioned from various perspectives by virtually all countries, at various international forums. Both energy security, as well as ability to adjust to international economic competition is a compelling motivation for involvement of states in the energy sector. The solutions to these concerns entail urgency and special importance requesting solutions outside of the business-as-usual procedures.

What is so special about energy that it is dealt with in a special – strategic / security mode, different from other sectors of the economy? Why do states get involved in the energy sector at all? Why do different states deal with this issue differently if they are facing comparable problems? Why some states treat different energy subsectors differently? Are certain kinds of involvement superior in the outcome they provide as compared with others?

Governments' involvement in the economy has been examined by a number of students of political economy. Nonetheless, the involvement of the state in the energy sector has attracted interest of scholars of international affairs as well. Governments are involved in the economy for various reasons, ranging from fixing market failures such as assumed monopoly characteristics, information asymmetries, negative (primarily environmental) externalities (on which widest gamut of actors can agree) through promoting growth, to achieving normatively informed motives of equity and (re)distribution (which is generally more contested). States' involvement in certain sectors, often ascribed with an adjective 'strategic', also has additional 'security' motivations, which are not present in other sectors in such a degree.

Energy is considered ‘strategic’ sector of economy because of its importance as the basic input for economy; it is a term that describes carrier of power in its prime form – with limited substitutability and form limiting the possible utilization. Because of these characteristics it is required in specified form and required amount which is in direct relation to the developmental stage, structure and needs of the particular economy. Energy, as understood in the contemporary economy, boils down to its tradable primary sources of fossil oil, gas, and coal; and fissile materials.¹ The most common carriers of energy are electricity, and (still rather rare and emerging) hydrogen.

Energy sector is too complicated to be studied as a whole; nonetheless, there are certain specific conceptual similarities within particular subsectors that can be benefited from in the proposed study. The two conceptually most similar while still distinct subsectors are electricity and gas. Strictly speaking, gas and electricity are physically different conceptual branches, one being the primary source, while the other being energy carrier, the physical difference nonetheless can be overlooked because of their similar economic and policy characteristics, which enable meaningful comparative study, which is not equally possible among other types of primary sources or energy carriers.² Both gas as well as electricity share similar market structures, both are produced and delivered through network infrastructures and consumed (also) by the end-consumers. The primary differences between these two that need to be acknowledged are the fact that electricity cannot be stored and its consumption is in short-run inelastic.

Nonetheless the question remains, what is so special about these commodities that they deserve special attention and treatment so different from the rest of the economy?

¹ In Europe uranium is of primary interest as fissile material. Plutonium and thorium are of less importance for energy purposes.

² Another possible comparisons that were considered are conventional and nuclear thermal power generation, nonetheless, because of the difference in the military implications for these two makes this comparison unfeasible. Yet another example which was excluded is oil. Oil was excluded primarily because of its systemic position as strategically different in its upstream and downstream segments. While upstream segment can be characterized as an oligopoly commodity market, the downstream segment possesses less of these features and is in fact, mostly liberalized energy business, which makes its utility for comparison to other energy subsectors implausible.

Governments are involved in the energy sector for various reasons. Energy security, although the most voiced “policy driver of great rhetorical and practical importance,”³ may not be the only reason for states’ involvement after all. Energy security as a widely accepted concept captures condition in which a nation *perceives* a high probability that it will have a continuous access to adequate energy supplies at reasonable prices in the right forms.⁴ Other rationales for governments’ interventions include protection of consumer interests, environmental protection and the support for the new investment, the EU Lisbon strategy on the other hand also focuses on the need for reliable electricity and gas services at reliable prices delivered through efficient means.⁵

RESEARCH QUESTION

Although energy security is a “policy driver of great rhetorical and practical importance,”⁶ it is not the only reason why states get involved in this specific sector of economy. The assumption of students of international relations is that access to resources is a matter of security,⁷ thus energy resources deserve special treatment and the involvement of governments in this particular sector should be viewed differently from government involvement in other sectors of the economy. The focus of this research project, therefore, is on the specificities of state involvement in energy sector and the importance, relevance and affects of security concerns on the degree and kind of government’s involvement.

The research question that this project poses to tackle is twofold: First part of the question focuses on the factors that influence the variation of government involvement in national energy

³ Clinton J. Andrews, "Energy Security as a Rationale for Government Action," *IEEE Technology and Society Magazine* 24, no. 2 (Summer 2005): 24.

⁴ David A. Deese, "Energy: Economics, Politics, and Security," *International Security* Vol. 4, no. No. 3 (Winter, 1979-1980): 140. who uses term ‘affordable’ instead of reasonable which is used by Hisham Khatabi, "Business As Usual," in *Energy Security* (Prague, Czech Republic: Prague Security Studies Institute, 2004), 14.

⁵ *Communication from the Commission to the Council and the European Parliament: Report on progress in creating the internal gas and electricity market* (Comission Of the European Communities, 15.11.2005), 2.

⁶ Andrews: 24.

⁷ Barry Buzan, Ole Wæver, and Jaap de Wilde, *Security : a new framework for analysis* (Boulder, Colo.: Lynne Rienner Pub., 1998), 104..

sector across countries; the second part focuses on what causes the variation in the way governments get involved in the energy sector – the kind of involvement. Finally these descriptive elements will be measured against yardstick of reliability of supply, and levels of prices at which these services are provided.

The proposed dissertation will research two, structurally most similar energy sectors – natural gas and electricity, to find the answers to the proposed research question.

RATIONALE

The relevance of this project for both academia as well as policymaking decisions stems from the fact that understanding of energy policymaking is crucial for reducing energy-related market and political insecurities.⁸ This project through focusing on energy as represented by gas and electricity provides an insight into government involvement in the economy in a way which sheds light into strategic economic considerations within a sector which is not completely confined to military logic.

Another aspect closely related to the question of economic security as emerging within the energy security is the broader question of ability of economy to withstand (economic / competitive) pressures at the global market. State's need to provide for security is not necessarily confined to the state of war – state provides for its security (and the security of its citizens) in times of peace as well. The role of state's involvement in energy sector therefore can be of immense importance for the mode of the competition and global market pressures for the domestic industry, and therefore not only for the state's sovereign ability for military action, but also its ability to provide welfare functions for its citizens.

⁸ Some examples of political risks include self-fulfilling prophecies (creating demand insecurity through certain means of providing for supply security), as well as for overcoming dilemmas of interdependence without jeopardizing freedom, security and efficiency. The market insecurities are mostly the commodity price fluctuations, tradeoff between the ex ante incentives for investment and the ex post incentives for regulators to pressure the prices down possibly resulting in underinvestment and infrastructure inadequacies.

Studying energy policy therefore can be viewed as a way to analyze how states act upon their economic security in times of peace as seen in relation to various groups of their constituents as well as their relation within the country as well as vis-à-vis the global market.

THE STATE OF THE FIELD

One of the constitutive topics of Political Economy is the relation between states and markets⁹. States provide for the institutional context of jurisdictions for market to function, and are involved in the economy for various purposes: political, security or economic. States need resources to (re)create political community, to provide the stability for, and security of its constituents, to ‘fix’ market failures, and to provide welfare, or conditions for it – to allocate and (re)distribute resources. Whatever the reason, the current reality is that all ‘functioning’ states are somehow involved in the economy within their jurisdictions. The type and degree of their involvement, nonetheless, is different from state to state, as well as within various economic sectors.

In order to study the variation in the government’s involvement across different countries, as well as across different sectors, it is important to review the major strains of existing literature that deals with these questions. The sectoral focus of this project lies in the comparison of state’s involvement in the provision of access to energy as presented in gas and electricity. The type of involvement will be focusing on the market shaping (patterns of regulation) and participation (patterns of ownership) – the institutional modes and means of market involvement in case of energy policy.

This literature review not only provides survey of the existing academic context it also probes into the existing methodology for analyzing the research questions posed by this research project. As the ultimate goal of this research endeavor, is quest for the twofold question of what the factors that

⁹ Adam Przeworski, *States and markets : a primer in political economy* (Cambridge ; New York: Cambridge University Press, 2003), i.

influence the variation of state's involvement in electricity and gas markets across countries are, and what causes the variation in the way states get involved in these energy subsectors.

The cross-sectoral comparison will be utilized also in order to provide an answer whether the variation of capitalisms in the strategic energy sectors is more evident at national (jurisdiction), or at sector level.

The approach to the outlined questions can be based on the multiple perspectives. First, the analytical razor can cut the state-market relation according to the actors' motivations, rationale, and the expected outcome of the involvement action of the actors. Second, the analysis can follow the division by the type of involvement, and finally by the degree of this involvement.

The rationale of the state's involvement is nonetheless hard to analyze ex ante, as not only the actors' motivations are important, but also other 'exogenous' factors influence the policy outcome – the state's involvement on the market. Perhaps the only graspable way, is to analyze the policy outcomes in relation to the existing discourses, while controlling for the effects of the specific exogenous variables.

Nonetheless, if the exogenous factors are controlled for, and the variation on the outcome remains present, why do the states differ in the way they tackle the same challenges? Why do similar states differ in their involvement with the electricity and gas market?

The theoretical schools, which at this point provide the most promising venue in terms of methodological and conceptual food for thought, are institutional variations literature, namely Varieties of Capitalism. The specificities of sectoral comparison can be distilled from the existing literature on Varieties of Regulatory Capitalism (VoRC) which extensively utilizes cross-sectoral comparisons.

Varieties of capitalism (VoC) literature perhaps best known through the work of Hall and Soskice, builds on a broader literature of institutional variation. As Hall and Soskice note, the three

dominant perspectives were responses to the economic problems of those times.¹⁰ The first one focuses on the problems related to the *modernization*¹¹, which focused on the set of actors who had strategic capacity to influence the modernization paths of industries and sectors. The prominent role of banks and public officials was emphasized; states were divided into strong and weak according to their structure,¹² while polar examples of France as a success and Britain as laggard were given. Second approach, based on *neocorporatism*, was focusing on the ability of state to negotiate bargains with economic actors regarding the economic policy.¹³ The successful examples of this strain of literature were small, open economies of northern Europe. The third body of literature providing the basis for VoC literature is what Hall and Soskice term '*social systems of production*' approach, which groups analyses of sectoral governance, national innovation systems, and flexible production regimes, that share certain analytic features, although being diverse.¹⁴ This school, influenced by the French regulation school, emphasizes the features of firm behavior in response to the reorganization and adaptation fueled by the technological change.¹⁵

¹⁰ Peter A. Hall and David W. Soskice, "An Introduction to Varieties of Capitalism," *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage* (2001): 2.

¹¹ Andrew Shonfield, *Modern capitalism; the changing balance of public and private power* (London, New York.: Oxford University Press, 1965).

¹² Michael M. Atkinson and William D. Coleman, "Strong States and Weak States: Sectoral Policy Networks in Advanced Capitalist Economies," *British Journal of Political Science* 19, no. 1 (1989).

¹³ Peter J. Katzenstein, *Small states in world markets : industrial policy in Europe*, Cornell studies in political economy (Ithaca, N.Y.: Cornell University Press, 1985), Claus Offe, *The Attribution of Public Status to Interest Groups: Observations on the West German Case* (Cambridge University Press, 1981).

¹⁴ Hall and Soskice: 3.

¹⁵ Robert Boyer, *The regulation school : a critical introduction* (New York: Columbia University Press, 1990), Robert Boyer and Daniel Drache, *States against markets : the limits of globalization*, Innis centenary series (London ; New York: Routledge, 1996), Robert Boyer and Yves Saillard, *Regulation theory : the state of the art* (London ; New York: Routledge, 2002), John L. Campbell, J. Rogers Hollingsworth, and Leon N. Lindberg, *Governance of the American economy*, Structural analysis in the social sciences ; (Cambridge [England] ; New York: Cambridge University Press, 1991), Charles Edquist, *Systems of innovation : technologies, institutions, and organizations*, Science, technology and the international political economy series (London ; Washington: Pinter, 1997), J. Rogers Hollingsworth and Robert Boyer, *Contemporary capitalism : the embeddedness of institutions*, Cambridge studies in comparative politics (Cambridge ; New York: Cambridge University Press, 1997), William Lazonick, *Business organization and the myth of the market economy* (Cambridge [England] ; New York: Cambridge University Press, 1991), Wolfgang Streeck and Philippe C. Schmitter, *Private interest government : beyond market and state*, Sage series in neo-corporatism (London ; Beverly Hills: Sage Publications, 1985), Richard Whitley, *Divergent capitalisms : the social structuring and change of business systems* (Oxford ; New York: Oxford University Press, 1999).

These three major strains of literature have influenced the VoC literature, as Hall and Soskice note, VoC looks for the variation on the national level, extending the already existent literature¹⁶, in order to provide more general and parsimonious view. The primary difference of VoC approach is in the understanding of the role of the institutional interplay for the final outcome. The VoC approach centers the whole institutional framework on the firm and analyzes the *strategic interactions* that are central to the behavior of economic actors.

The focus of the VoC framework is centered on the firm and primarily seeks to answer questions such as,

[w]hat kind of economic policies will improve the performance of the economy? What will governments do in the face of economic challenges? What defines a state's capacities to meet such challenges? What are the trade-offs in terms of economic performance to developing one type of political economy rather than another? Can we expect [...] the competitive pressures of globalization to inspire institutional convergence? What factors condition the adjustment paths a political economy takes in the face of such challenges?¹⁷

Although Hall and Soskice and VoC School does not explicitly deal with the questions of strategic sectors of economy, they consider the financial sector, which in its importance and role in the adjustment to the pressures of global market has comparably important role. The need for the coordination of the actors, is present also in the network industries, even more so because of the particular specificities of this industry in relation to misalignment of *ex ante* incentives (primarily for investment) and *ex post* welfare functions, and societal short-term benefits as related to the expected profit levels. These specificities are direct outcome of the highly fixed-asset and fixed cost sector attributes in sectors such as energy. Although the financial sector does not share these specificities of

¹⁶ Colin Crouch and Wolfgang Streeck, *Political economy of modern capitalism : mapping convergence and diversity* (London ; Thousand Oaks, Calif.: Sage, 1997), Hollingsworth and Boyer, Whitley.

¹⁷ Hall and Soskice: 1.

the network industry, the effects of monetary policy and the availability and the rate of availability of money have similar repercussions within the whole economy.

The goal of coordination is definitely provision of stability and sustainability of economy, primarily in view of possibility of coordination problems, collective action and multiple equilibria. The primary differences that VoC framework studies, is in institutional variation across the states, which they expect to influence the sectoral policies. Their outcome is distinction of states into liberal market economies (LMEs) and coordinated market economies (CMEs), where the expectation is that particular policies and institutions should cluster “along dimensions that divide liberal from coordinated market economies, as nations converge on complementary practices across different spheres”¹⁸

The interesting and useful aspect of the VoC framework for my research, nonetheless is the variation in the institutions related to the access to capital. Traditionally three factors of production were considered by the students of political economy, in addition to land, labor and capital, Strange proposes additional two factors, technology and energy.¹⁹ Although strictly speaking technology is a method of production and energy is a commodity in function of an intermediate good, their availability in the economy can be conceptualized as a factor of production as it effects the competition and growth potential, in the same manner as factors of production do.

The focus of VoC framework, and the mainstream of the current political economy literature, is on the interplay between the capital and labor. Nonetheless the access and the mode of coordination of the access to energy are at least as important for the questions posed by Hall and Soskice, as access to capital.

¹⁸ Hall and Soskice: 18.

¹⁹ Susan Strange, *States and markets* (London: Pinter Publishers, 1994), 186.

The argument often voiced, primarily by the IR literature, is that energy deserves special treatment from other commodities²⁰. This is similar to special treatment of finance. If this understanding of exceptionality of one sector in relation to others holds, sectors should be a legitimate unit of analysis and cross-sectoral differences should be studied alongside the cross-national differences. This notion is also further supported by Hollingsworth, Schmitter and Streeck, when they note that “Capitalism can no longer be studied as a whole, but must be broken down into its parts [...] Both to capture the diversity of capitalism and to render it manageable, it seems useful to focus on the sector as the key unit for comparative analysis.”²¹

The question following this rationale thus is how to study this multilayered variation. The parsimonious framework is offered by varieties of regulatory Capitalism (VoRC) literature. The parsimony and the utility of the framework are derived by Levi-Faur from the Whewell’s notion of consilience.²²

Nonetheless, in order to further continue with the Levi-Faur application, it is necessary to provide a primer on Whewell’s philosophy as related to Levi-Faur’s assumptions. In Whewell’s view, once a theory is invented by discoverers’ induction, it must pass tests of prediction, consilience, and coherence before it can be considered confirmed as an empirical truth²³. The importance of prediction and coherence for testing new theories is well known²⁴. An even more valuable confirmation criterion, according to Whewell, is that of ‘consilience.’ Whewell explained that

the evidence in favor of our induction is of a much higher and more forcible character when it enables us to explain and determine [i.e., predict] cases of a *kind different* from those which were contemplated in the

²⁰ Andrews, Deese, Raymond Vernon, *The Oil crisis* (New York: Norton, 1976).

²¹ J. Rogers Hollingsworth, Philippe C. Schmitter, and Wolfgang Streeck, "Capitalism, Sectors, Institutions and Performance," in *Governing capitalist economies : performance and control of economic sectors*, ed. J. Rogers Hollingsworth, Philippe C. Schmitter, and Wolfgang Streeck (New York: Oxford University Press, 1994), 8-9.

²² William Whewell, *Novum organon renovatum*, 3d ed. (London.: J. W. Parker and son, 1858). As cited in David Levi-Faur, "Varieties of Regulatory Capitalism: Getting the Most Out of the Comparative Method," *Governance* 19, no. 3 (July 2006), Laura J. Snyder, "William Whewell," in *Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta (Stanford The Metaphysics Research Lab. Center for the Study of Language and Information December 23, 2000, revised October 11, 2006).

²³ Whewell, 83-96.

²⁴ Gary King, Robert O. Keohane, and Sidney Verba, *Designing social inquiry : scientific inference in qualitative research* (Princeton, N.J.: Princeton University Press, 1994).

formation of our hypothesis. The instances in which this has occurred, indeed, impress us with a conviction that the truth of our hypothesis is certain.²⁵

As Snyder notes²⁶, Whewell called this type of evidence a “jumping together” or “consilience” of inductions. An induction, which results from the colligation of one class of facts, is found also to colligate successfully facts belonging to another class. Consilience of event kinds therefore results in *causal unification*.

More specifically, following the Whewell’s reasoning as explicated by Snyder,²⁷ it results in unification of natural kind categories based on a shared cause. In such cases, according to Whewell, we learn that we have found a “vera causa,” or a “true cause,” i.e., a cause that really exists in nature, and whose effects are members of the same natural kind²⁸. Moreover, by finding a cause shared by phenomena in different sub-kinds, we are able to colligate all the facts about these kinds into a more general causal law. Whewell claimed that

when the theory, by the concurrences of two indications [...] has included a new range of phenomena, we have, in fact, a new induction of a more general kind, to which the inductions formerly obtained are subordinate, as particular cases to a general population.²⁹

He further noted that consilience is the means by which we effect the successive generalization that constitutes the advancement of science,³⁰ comparison of different sectors within the countries, and across the countries, as well as comparing different countries by sectors and across sectors, is therefore in line with the assumption of consilience as well as provides for following a progressive research program path³¹.

²⁵ Whewell, 87-88.

²⁶ Snyder.

²⁷ Snyder.

²⁸ William Whewell, *On the philosophy of discovery* (London,: 1860), 191.

²⁹ Whewell, *Novum organon renovatum*, 96.

³⁰ William Whewell, *The philosophy of the inductive sciences, founded upon their history*, New edition, with corrections and additions, and appendix, containing philosophical essays previously published. In two volumes. ed. (London,: J. W. Parker, 1847), II, p. 74.

³¹ Imre Lakatos, "Falsification and the Methodology of Scientific Research Programmes," in *Criticism and the growth of knowledge*, ed. Imre Lakatos and Alan Musgrave (Cambridge [Eng.]: University Press, 1970).

The Levi-Faur's framework for comparing different sectors, while tackling the problem of miscomparing³² focuses on the common (regulatory) problems and (governance) solutions "as the basis for comparative analysis under different technological and economic constraints."³³ He further enriches the approach by taking 'multi-level' method of analysis, as he focuses also on the effects and explanatory power of theories of intergovernmentalism and supranationalism. Although the puzzle of Levi-Faur research project is variation in the commitment to liberalization and Europeanization in the electricity and telecommunications, he operationalizes the problem through asking questions that are of interest also for my research: How is competition governed, and what explains the considerable differences in governance and regulative regimes of the two sectors?³⁴

Levi-Faur proceeds by focusing on the different components that construct the industries in question. This deconstruction into "micro-regimes" provides for the possibility to define and compare regulatory regimes as political constructions, which are not necessarily reflections of the technological and economic characteristics³⁵, which is useful also for my project to capture the political and non-technical aspects of the strategic sectors net technological and external factors, for which I intend to control. Another aspect that is helpful also for my project is the possibility to analyze the modes of involvement, which Levi-Faur does through analyzing the different techniques of promotion of competition.

The cornerstone of framework utilized by Levi-Faur is based on the two-by-two matrix of cross-sectoral commonalities and variations and cross-national commonalities and variations. Through this approach it is possible to distinguish whether in the particular case importance of Policy Sector Approach, (primary differences and similarities are explained through sectors) or

³² Giovanni Sartori, "Comparing and Miscomparing," 3, no. 3 (1991).

³³ David Levi-Faur, "The Governance of Competition: the interplay of technology, economics, and politics in European Union electricity and telecom regimes," *Journal of Public Policy* 19, no. 02 (2000): 177.

³⁴ Levi-Faur, "The Governance of Competition: the interplay of technology, economics, and politics in European Union electricity and telecom regimes," 178.

³⁵ Levi-Faur, "The Governance of Competition: the interplay of technology, economics, and politics in European Union electricity and telecom regimes," 178.

National Patterns Approach (the variation is explained through the differences and similarities across states) is more prominent.

THE PROJECT DESCRIPTION

This proposed research project focuses on the specificities of state involvement in energy sector and the importance, relevance and effects of security concerns on the degree, and primarily kind of state's involvement as exhibited in the gas and electricity subfields. The focus of this research project is stated within twofold research question: (1) what are the factors that influence the variation of government involvement in national energy sector across countries and across energy subsectors, (2) what causes the variation in the way states get involved in these subsectors, and why there is difference in kind of involvement. Finally these descriptive elements will be measured against yardstick of reliability of supply, and levels of prices at which these services are provided.

The proposed dissertation will research two, structurally most similar energy subsectors – natural gas and electricity, to find the answers to the proposed research question.

CONCEPTUALIZATION

The two energy subsectors need to be conceptualized. I define electricity subsectors as all activities related to generation, transmission and retail of electric current. I define the natural gas subsector as upstream segment (purchase/production) which is conceptually in similar position to the generation of electricity, transport and storage which is (could be) in conceptually similar position to the transmission and finally retail of natural gas.

EXPLANANDUM (DV)

The proposed research project focuses on the kind and degree of state involvement in the energy sector. The state's involvement in energy sector is conceptualized in terms of domestic market involvement (DV). Domestic involvement includes market participation (DV_{a1}) – share of private ownership of assets including the infrastructure in the whole sector; and market shaping (DV_{a2}) – mode of regulation, and the dynamism of the market.³⁶ Finally these descriptive elements will be measured against yardstick of (DV_{b1}) reliability of supply, and levels of prices (DV_{b2}) at which these services are provided.

EXPLANANS (IVs)

The degree and kind of state involvement is expected to be dependent on the more objective requirements such as **existing infrastructure and structure of energy sector (IV₁)**, International trade structure and complex trade interdependence (IV₂) domestic and international industry related **interest groups (IV₃)**, significant external actors (neighbors or organizations) – the **current discourses and 'fashions' (IV₄)**, framework of **existing political institutions, considerations and administrative tradition (IV₅)**.

MEASUREMENT - DV

DV_{a1}

State's market participation as domestic involvement will be measured through the share of private ownership of assets including the infrastructure in the whole sector. The variation will be sought through the comparison of share of direct state ownership, municipal ownership, and direct state

³⁶ Although it is possible to analyze also the external involvement of governments as related to the energy, this will be dealt with only as it materializes at the domestic energy market.

managerial control of assets within the whole sector. The direct control through ownership will be analyzed through the ownership of each of the conceptual segments – production, transport/transmission and finally retail.

DV_{a2}

Mode of regulation as a market shaping instrument affecting the dynamism of the market will be measured through systemic position of the Regulatory Agency, its independence from the government, as well as its actual involvement in the practical market shaping and coordination. This will be done through the analysis of whether regulation³⁷ is done by a ministerial body (Czech Rep. Austria, Belgium) or by an independent regulatory body (Italy, Denmark). Another measure that will be used is in terms of legislative position and the possibility for the government to exert pressure on the regulatory agency through the analysis of mass media and the turnover at the leading position of the agency (in similar terms as the independence of central banks is measured)³⁸.

DV_{b1}

Reliability of supply will be measured by the actual performance as well as by the potential vulnerability position in case of crisis. The actual performance will be measured by the reliability of supply through minutes of interruptions per customer per year, and the potential vulnerability position in terms of the amount of spare generation capacity in case of electricity and the amount of storage readily available in case of gas.

³⁷ See the appendix for an example of variation on this variable.

³⁸ A. Cukierman, S. B. Web, and B. Neyapti, "Measuring the Independence of Central Banks and Its Effect on Policy Outcomes," 6, no. 3 (1992). A. Alesina and L. Summers, "Central Bank Independence and Macroeconomic Performance: Some Comparative Evidence," 25, no. 2 (1993). H. Berger, J. de Haan, and S. C. W. Eijffinger, "Central Bank Independence: An Update of Theory and Evidence," 15, no. 1 (2001). J. Forder, "Central Bank Independence: Reassessing the Measurements," 33, no. 1 (1999).

DV_{b2}

The levels of prices at which these services are provided need to be compared in relation to the DV_{b1} as these are potentially interrelated. The levels of prices need to be measured in terms of actual prices and compared within market segments, because of the existing state-supported market segmentation (net of government subsidies where applicable).

MEASUREMENT - IVs AND WORKING HYPOTHESES

IV_1

Existing energy infrastructure and structure of energy sector is expected to determine the import and export routes and trading partners. In relation to the geographic conditions it is expected to be a constraint on the energy policy making in terms of available primary energy sources and the availability of reliable and cost-efficient import routes and imports. Nonetheless, effects of this variable can be controlled for through comparative analysis of countries that share(d) similar infrastructural endowments and legacies (Hungary, Slovakia and Czech Republic). The role of IV_1 is expected to be primarily as an intervening variable in the general causal sequence.

IV_2

International trade structure and complex trade interdependence will be dealt with primarily in terms of the dominant sector of the economy, in terms of its provision for employment and GDP. Countries that rely on energy intensive industries are expected to be more involved in the energy sector, than those with less energy intensive industries. This variable is also expected to exhibit high positive covariance with the degree of industry-related interest groups involvement.

IV₃

Domestic and international industry related interest groups are expected to play a significant role in shaping the government's energy policy making. In relation to the *IV₂* where heavy industry plays a significant role, industry interests are expected to play more important role in lobbying the state to act within the energy sector on behalf of the industry related interest groups. The primary causal connection is expected to be exhibited in the price levels for these industries and possibly kinds of regulation.

IV₄

Significant external actors, that being neighbors or membership in international organizations, is expected to play an important role in the energy policy making. In the globalizing world, primarily for smaller economies in transition, the importance of existing dominant discourses is expected to emerge. The countries that are under the influence of World Bank, European Union or other international pressures are expected to converge in their policies even if the material context does not expect convergence.

IV₅

The institutional and administrative legacy, primarily in terms of regulatory agencies and administrative capacity will be considered. Also the existing framework of political institutions and political considerations will be expected to play an intervening role where transition did not change the specialized institutions, or regime change was not effective in the area of energy sector.

This variable will be measured by the comparative position of the regulatory agency and the amount of staff that supports its working (whether as a number of people working for the regulatory

agency, or the amount of people working for the department of the ministry). The existing framework of political institutions and considerations will be analyzed through the role of legislative bodies (parliaments) and specialized committees.

WORKING HYPOTHESES

H₁: States with larger share of energy demanding sectors in their exports are more prone to exert control over their energy markets.

H₂: Centralized industry interest groups are more likely to affect the energy policy making

H₃: States with generous welfare provisions are more proactive in protective energy policy.

H₄: States with surplus production capacity are more prone to exert control in the energy sector through regulation rather than ownership.

H₅: States with more competitive energy markets achieve lower prices of gas and electricity.

H₆: States with liberalized energy markets face higher vulnerability and lower supply security.

H₇: States with uncompetitive industries are more prone to protect their industries through the involvement in energy market.

THE RESEARCH DESIGN

The proposed research focuses on the developed countries that are also members of the EU. This is due to the fact that controls for the many possible additional causal factors are required. While EU members all share the fact that they are (mainly) downstream developed countries, there is also sufficient variation in other factors that are expected to be of significant explanatory value.

While all of them are members of an important regional block (the EU itself) they were not members all the time, and therefore it is possible to control for the effects of their membership (primarily in terms of the enlargement in 2004 and 2007). The variation in infrastructure and

industrial patterns is also sufficient across EU member states to analyze its causal effects on the state's involvement in the energy sector. The problems that these countries are facing are not novel *per se*, therefore developments in state involvement in energy sector, and policy responses over time can be used as well for analyzing the cross-temporal variance.

The variation in terms of the institutional patterns for state's involvement in the energy sector can be preliminary exemplified via the Figure 1 and 2 (in the Appendix), in terms of electricity market and the regulation, as there are distinct groups of countries that share similar patterns on one of the proposed explanatory variables, while they differ on another. It will therefore be possible to control for these in particular probe groups.

PROPOSED METHODOLOGY

The causal relations will be analyzed using the combination of method of agreement and method of difference, as outlined in the literature review section to identify the possible necessary conditions for the given kind of state's involvement in the energy sector. The combination of necessary conditions for the kind of government's involvement will be analyzed using the qualitative small small-n analysis.

The differences in the degree of involvement and the impact on the reliability and prices will consequently be analyzed through a larger-n statistical study based on the panel data covering wider spectrum of EU member states.

The data sources to be utilized will consist of UN trade database, IEA energy database, as well as publicly accessible BP Statistical yearbook and other commercial data sources. The variation in the mode of regulation will be assessed based on ERRA database; if this will be unavailable (due to significant costs of this commercial base) a collection of representative data will be put together with limited coverage across the time and space.

PRELIMINARY OUTLINE

1. Theoretical chapter

- a. Nexus between the International Relations and Political Economy literatures
- b. Motivation of state's involvement in the energy sector
 - i. Security consideration
 - ii. Market consideration
- c. Overview of institutional varieties of state involvement in the energy sector
 - i. Electricity
 - ii. Natural Gas

2. Case studies

- a. In-depth case studies
 - i. Energy sector specificities explained
 - ii. Intra new EU member cases compared
 1. Importance of perception of vulnerability
 2. Legacies of infrastructure
 3. Correlation between industry restructuring and energy market involvement
 - iii. Intra old EU member cases compared
 1. Correlation between industry restructuring and energy market involvement
 2. Welfare functions of energy sector involvement
 - a. Household welfare
 - b. Corporate welfare
- b. Large-n statistical data analysis
 - i. Effects of surplus production capacity
 - ii. Effects of abundance of energy resources
 - iii. Effects of competitiveness of domestic leading sector
 - iv. Effects of import structure on energy involvement

3. Conclusion

THE RESEARCH SCHEDULE

	Literature review Preliminary data gathering + preliminary background research	Gaining industry / policy making insights at Internship / traineeship at the DG TREN C1-2 or DG COMP B1	Background research - interview negotiations TA + additional classes	Theory chapter - literature review	Fellowship / Sandwich	Field case work - interviews	Data analysis / outstanding interviews / data	Final Write - up	Submission Defense
Mar- Apr 2007									
May-Jun 2007									
Jul-Aug 2007									
Sep-Oct 2007									
Nov-Dec 2007									
Jan-Feb 2008									
Mar-Apr 2008									
May-Jun 2008									
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May-Jun 2009									
Jul-Aug 2009									
Sep-Oct 2009									
Nov-Dec 2009									
Jan-Feb 2010									
Mar-Apr 2010									
May-Jun 2010									
Jul-Aug 2010									
Sep-Oct 2010									
Nov-Dec 2010									

APPENDIX

Figure 1: Electricity market and regulation in Western Europe

	Electricity market opening %*		Obstacles to competition**	Institutional approaches to Electricity Supply Industry regulation:***
	2001	2005		
SD G1				
<i>Denmark</i>	90	100	No - over 50% switching	Indep. regul.agen. separate from ministry / spec.role
Finland	100	100	No - over 50% switching	Indep. regul.agen. separate from ministry / spec.role
Norway			No - over 50% switching	ministerial regulatory agencies /d-2-d independence
Sweden	100	100	No - over 50% switching	Indep. regul.agen. separate from ministry / spec.role
CD-SD G2				
<i>Belgium</i>	35	90	Market Structure or Lack of Integration 0% - 35%	ministries directly+advisory body dispute resolution
Netherlands	33	100	Market Structure or Lack of Integration 0% - 35%	ministerial regulatory agencies /d-2-d independence
CDK G3				
Germany	100	100	Unbundling \ Regulation range 10% (LU) -35% (DE)	ministries directly+negotiated Light-handed approach
France	30	70	Market Structure or Lack of Integration 0% - 35%	Indep. regul.agen. separate from ministry / spec.role
<i>Italy</i>	45	79	Unbundling \ Regulation range -35%	Indep. regul.agen. separate from ministry/ large powers
<i>Austria</i>	100	100	Unbundling \ Regulation range 10% (LU) -35% (DE)	ministries directly
LIB G4				
<i>UK</i>	100	100	No - over 50% switching	Indep. regul.agen. separate from ministry

*Eurostat (Energy)

** Annual Report on the Implementation of the Gas and Electricity Internal Market, COM(2004) 863 final, SEC(2004) 1720, com_2004_0863_en.pdf (refers to eligible customers)

Figure 2: Electricity market and regulation in Eastern Europe

	Separate Licences for distribution and supply	Distribution companies	What ownership	Who invests?	Development costs in tariff	Unbundling	Generation	Transmission	Distribution/ retail
Bulgaria	NO	7+1	State owned/private owned	Distribution comps	yes	G G+T D	?	1	?
Croatia	YES			Owners and distribution company.	yes	G+T+D (control centralized)	?	1	?
Czech Republic	NO	387	State, municipalities, private	Ministry of industry and trade	yes	G T D	1	1	8
Estonia	Yes	3+cca 30	State + private	Distribution comps	yes	G+T+D	3+17*	1	3
Hungary	YES			Distribution company.	Yes, but only after development and only justified expenditure.	G T D	13	1	6
Latvia	YES	7	State and private	In Electricity Sector 40 % of new investment is included in tariff.	40 percent	G+T+D	35	1	7
Lithuania	YES	2+5	State + private	Distribution comps	The development costs are taken into account what concerns tariffs.	G T D	11*	1	7
Poland	YES	27+2+170	State/private/industrial (?)	Investors	Yes, after agreeing with the Regulator.	G T D	?	1	?
Romania	YES	8+10	State + private	Distribution comps	yes	G T D	45*	1	8+12**
Slovakia	NO	3+86	Mixed (state-private) + private	An appropriate distribution company.	Yes. Distribution companies are regulated according to a revenue cap formula.	G T D	?	1	?

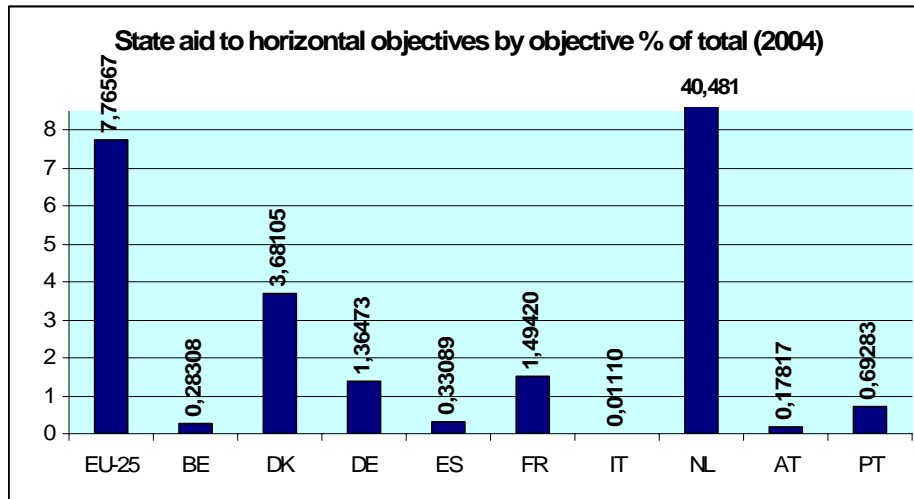


Figure 3: Variation in state support to energy sector

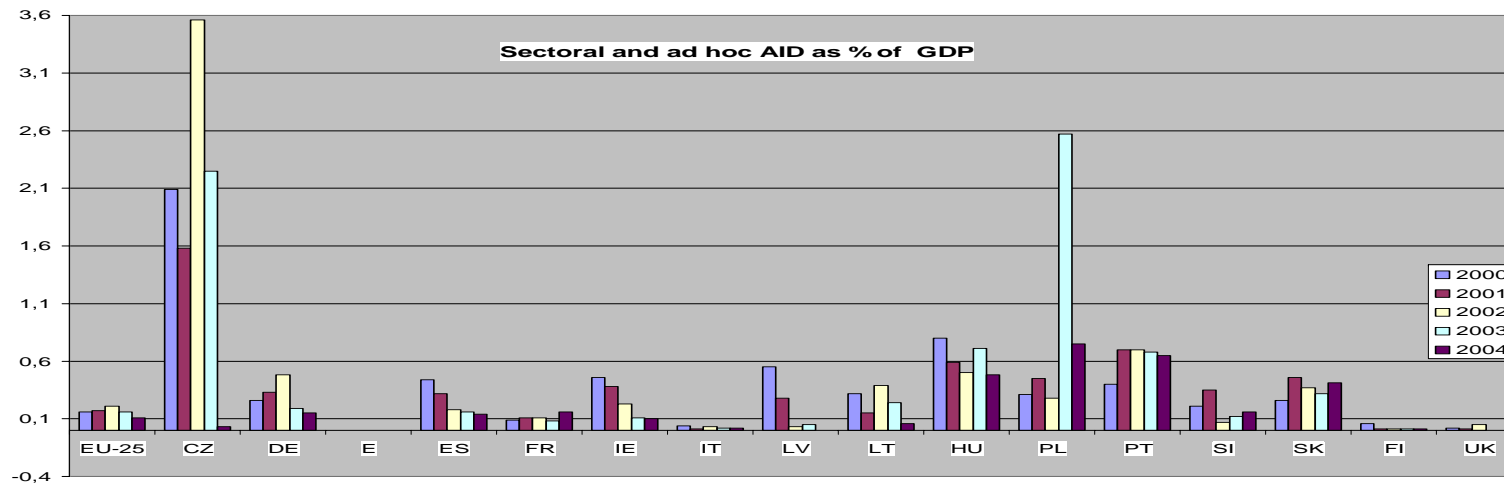


Figure 4: Variation in state support as share of GDP over time

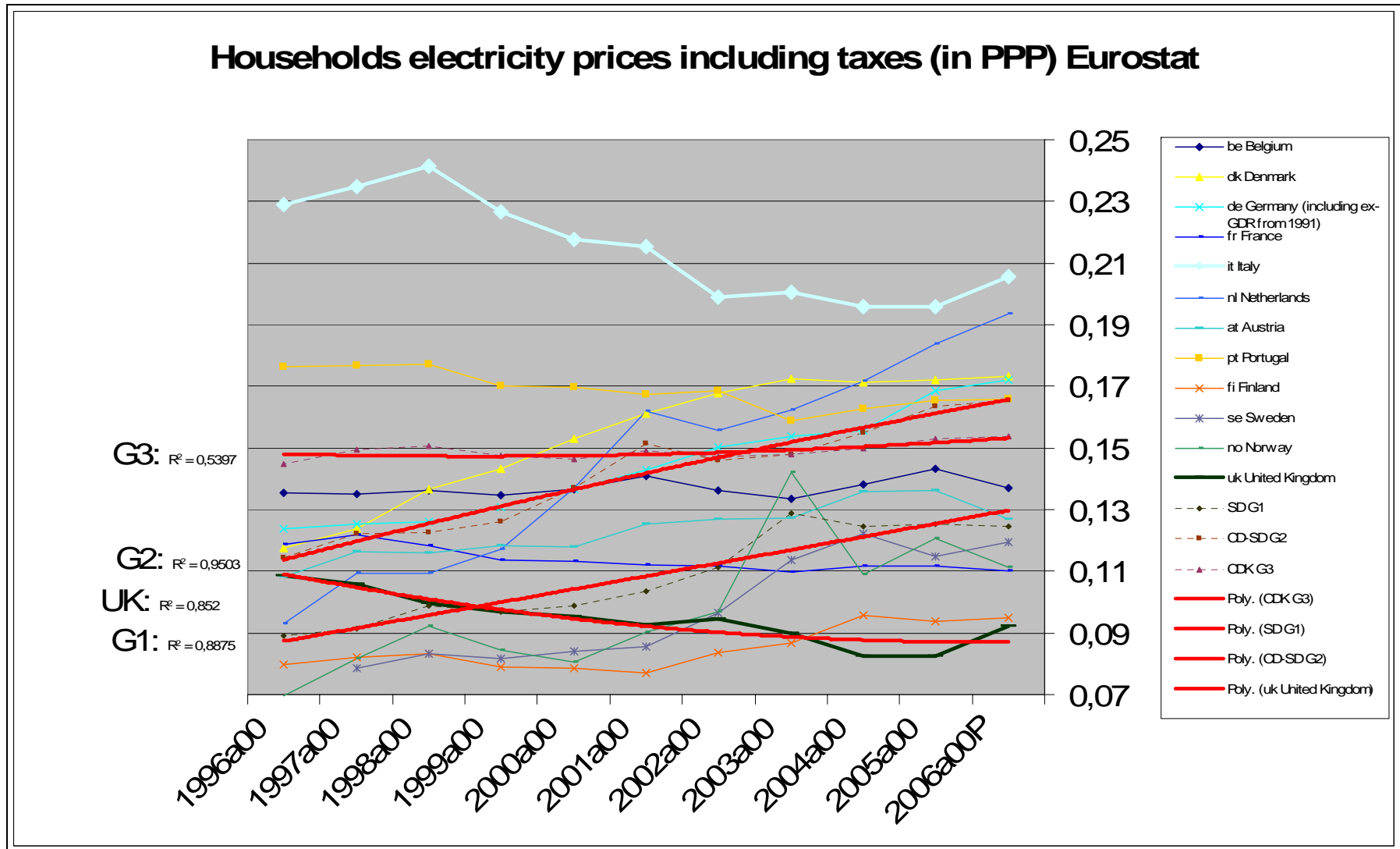


Figure 5: Household Electricity prices (old member states disaggregated)

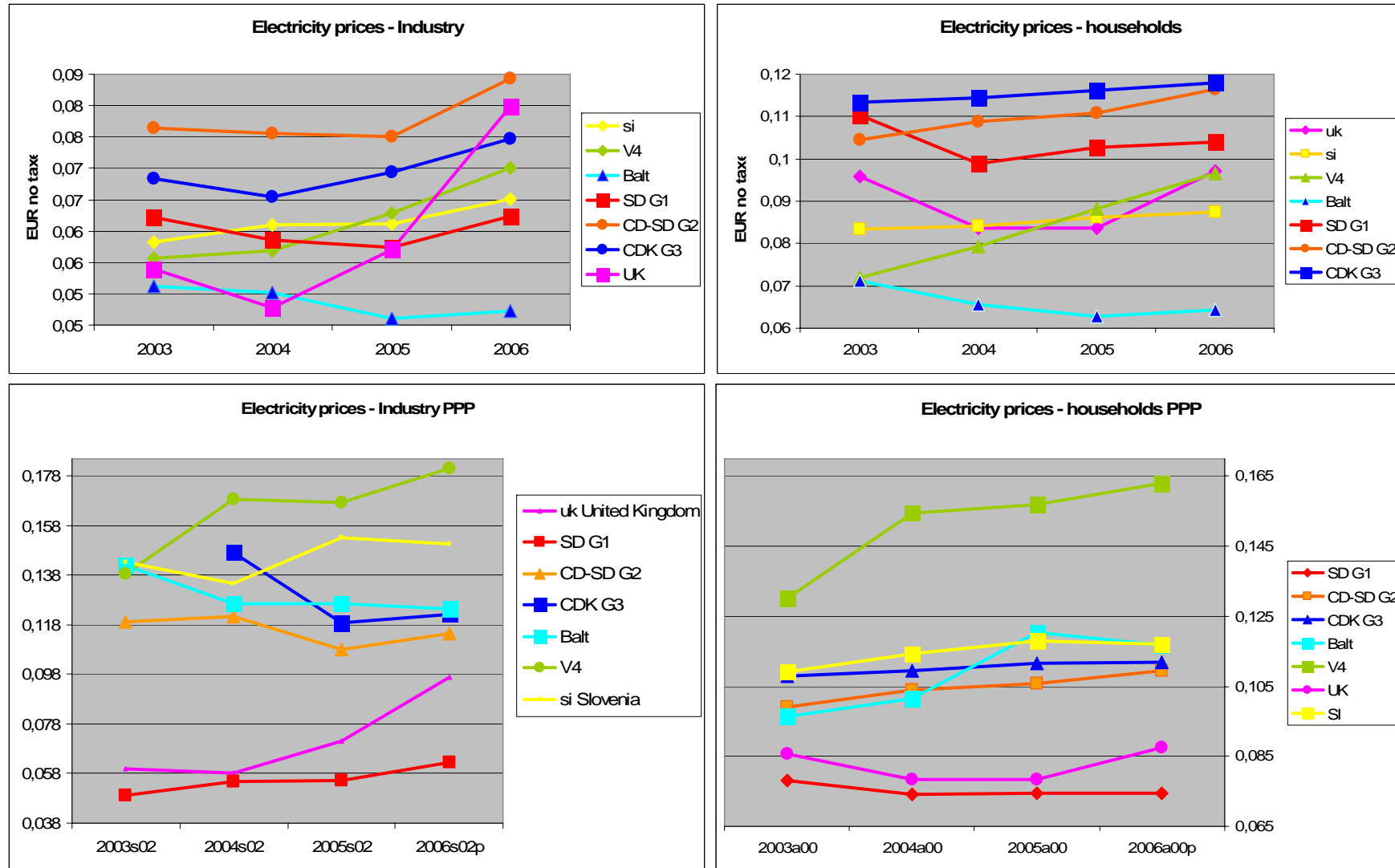


Figure 6: Comparison of electricity prices IND/HH + PPP.

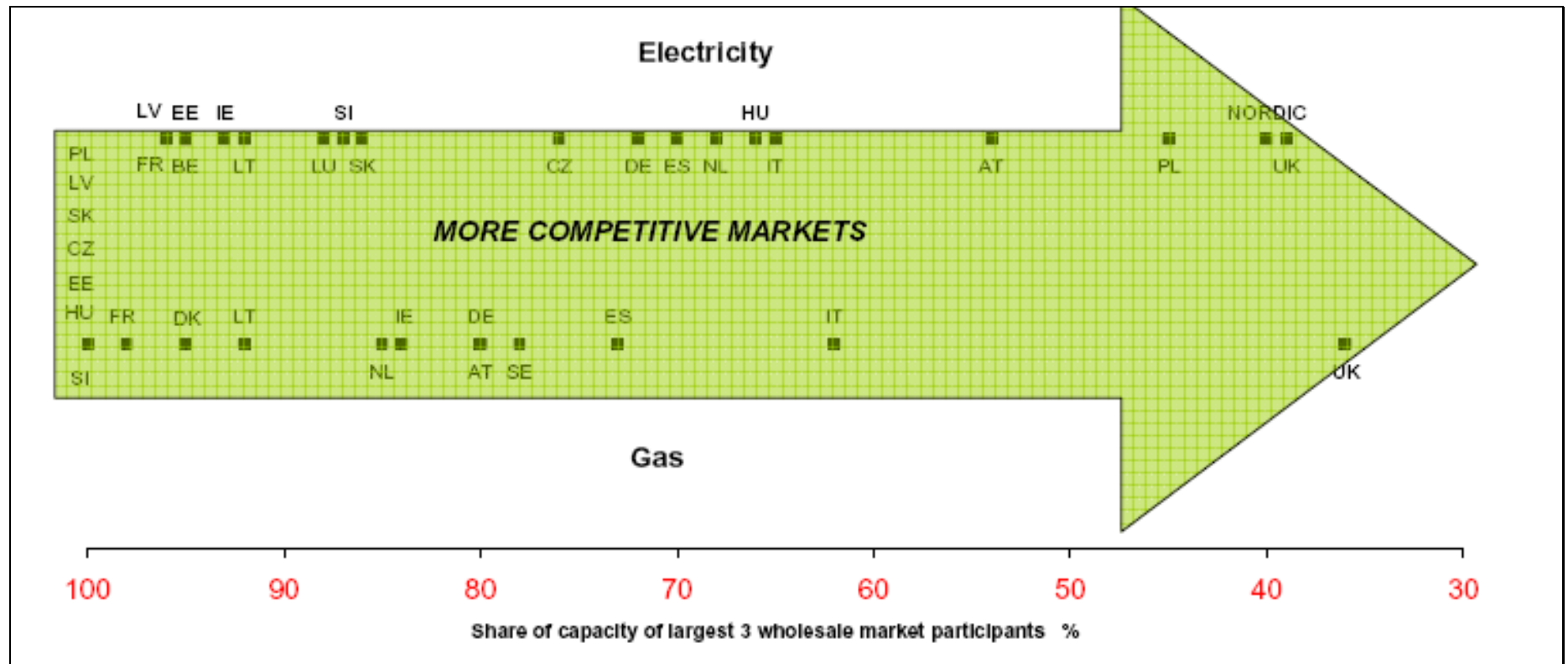


Figure 7: Competitiveness of Electricity and Gas market

Source³⁹

³⁹ Communication from the Commission to the Council and the European Parliament: Report on progress in creating the internal gas and electricity market, 7.

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