

Winners and Losers in the Liberalized Energy Retail Sector in Hungary: A Co-evolutionary Approach

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SUMMARY

This paper examines the recent history of the Hungarian energy trading market in a co-evolutionary framework. Hungary is characterized by a mixed ownership structure with mainly multinational incumbents in energy retail and distribution, while the wholesale is dominantly owned by state-owned companies. The legal framework also has dual characteristics, with free-market regulation for industrial consumers and a regulated price regime for households. Our research method follows a longitudinal approach from the period of market liberalization in 2008 until 2013. We identified strong relationship between the individual and sector performance of the trading companies and the current political ideology and institutional regime.

Keywords: Business/Government Interaction and Relations, Institutional trajectories, Market liberalization, Energy, Central and Eastern Europe

Journal of Economic Literature (JEL) codes: L98, L220.

INTRODUCTION

Companies are in permanent interaction with their environment on macro, meso (industrial) and micro levels. The two – possibly most influential – strategic management schools of the last decades, Michael Porter's *competitive strategy concept* (Porter, 1980) and the *resource based view* (RBV) of the firm (Barney & Arikan, 2001; Grant, 2008; Lockett et al., 2009; Priem & Butler, 2001), differ in the attention given to the main determinants of the firm performance. Porter follows the structure-conduct-performance model of industrial organization theory and identifies the main factors of the economic performance of the firm 'outside the gates', in its industrial structure. The RBV argues that the differences in performance tend to be explained by the differences in resource endowments. It emphasizes the importance of unique, difficult-to-imitate resources in sustaining performance (Rumelt et al., 1991). Volberda & Lewin (2003) draw attention to the different scopes of firm-level and meso-level theories in relation to *strategic adaptation* and *selection*. The first group of theories (RBV, Behavioral Theory of the Firm, Learning Theories) are concerned with capabilities and strategies for adaptation and survival on the firm level and pay limited attention to population-level adaptation. Contrary, the meso-level theories (Transaction Cost Theory, IO, Institutional Theory, Evolutionary Economics) provide a theoretical foundation for linking firm adaptation to the macro institutional and competitive environment and ignore the firm-level micro adaptation.

The notion of *strategic fit* (Grant, 2008) creates a connection between the industrial competitive arena and the organisational factors. The successful strategy must be consistent with the firm's external environment and also with its internal environment (values, goals, resources and capabilities, structure and systems). Birkinshaw et al. (2004) distinguish the external and internal competitive forces of the multinational company's (MNC) subsidiary performance. The MNC subsidiary simultaneously competes in the *external competitive arena*, which contains the customers, suppliers and competitors of the local marketplace and in the *internal competitive arena* for the customers and with the other competing entities that are part of the same MNC.

Although a large number of books and articles have examined the interconnection between the internal and external forces in a competitive market situation, there is a limited focus on the role of active mutual interactions between institutional environment and company performance. However, firms in a highly institutionalized environment tend to behave more actively in formulating the playing field, rather than simply passively adapt to the changes in the external institutional environment. Firms compete not only within the marketplace, but also in the political arena by manipulating the laws, regulations and governing institutions (Henisz & Zelner, 2005). Governments also tend to move from the role of passive guardians of the rules to more active participation in the market game (Child et al., 2012).

The theoretical concept of co-evolution focuses on the mutual influence and impacts of the organizational and environmental factors on corporate adaptation and selection mechanisms. The general meaning of the expression reflects

the situation when two or more populations can causally influence each other's evolution (Hannon et al., 2013). Corporate co-evolution is concerned with the ways in which firms and their environments develop interactively over time (Rodrigues and Child, 2003).

In the current paper we analyze the recent history of the Hungarian energy trading market in a co-evolutionary framework on the *macro*, *meso* and *micro* level and look for the recipe of business success over past years of turbulence. The Hungarian energy industry provides an opportune case to analyze the interactions between firms and governmental and social institutions. Firstly the privatization of the Hungarian energy sector in the middle of the 1990s radically changed the ownership structure of the industry. The former state-owned monolithic structure was divided into two subsystems. The integrated retail companies (including the distribution system operator (DSO) units and the household and industrial retail units) were privatized and with the exception of one company (the Budapest based natural gas retailer FŐGÁZ) transferred to major multinational energy companies like E.ON, EdF, RWE, ENI and GdF. From the time of privatization in the middle of the 1990s these local retailer and energy distributor firms operated as MNC subsidiaries. In contrast, state control was maintained over wholesale activity. The state owned company MVM had a privileged position to distribute power from the contracted state-owned and private power plants, through long term power-purchase agreements (PPAs). Secondly, Hungarian accession to the EU in 2004 required major changes in the legal framework. Hungary partially opened its closed electricity and natural gas trading market to medium and large industrial consumers in 2003. The share of the free market segment achieved more than 35% of the electricity market for 2006 as a result of the increased competition. The growing rivalry was partly due to the competition between the incumbent MNEs for the industrial consumers and partly due to new entrants with strong regional industrial background, such as CEZ and MOL. Following EU legislation, Hungary broke down all legal barriers for free market trading from 2008 (from 2009 in the case of natural gas) and legally opened also the household market segment to the free-market traders. Hungary also had to terminate the long term power purchase agreements (PPAs) between MVM and the major power plants, after the European Commission has requested the Hungarian state to end these contacts because they constituted unlawful and incompatible state aid to the power generators (EC, 2008). Commission declared that around two third of the electricity generated in Hungary was sold under PPAs and these contracts could restrict competition because they close off a significant part of the market from new entrants. The termination of the PPAs and the changes in the institutional framework gave new opportunities for entry on the trading market for industrial companies and also from complementary industries, like the telecommunication sector. Last but not least, the case of the Hungarian energy trading sector also gives a great opportunity to analyze the impacts of the deteriorating macroeconomic conditions caused by the economic crisis from late 2008 on governmental policies, actions and institutional regime. This case gives a remarkable research field to illustrate how macroeconomic problems have influenced the political actors to change the dominant socioeconomic ideology and sector policies.

THE THEORETICAL FRAMEWORK OF CO-EVOLUTION

There are several studies on the theory of co-evolution. Volberda and Lewin (2003) introduced the notion to analyze the process of the firm-level adaptation and population level selection. They explain that co-evolutionary changes in micro and/or macro level are not simple outcomes of adaptation or environmental selection but rather the mixed result of managerial intentionality and environmental effects. Rodrigues and Child (2003) extended the scope of co-evolutionary perspective from the competitive industries to a highly institutionalized environment. They followed both a deductive and inductive method to formulate a relevant research framework for a public infrastructure organisation. The main focus of their model is the two-side, mutual impacts of performance, processes, objectives and structural forms on the macro, meso and micro level. In the authors' interpretation, co-evolution is the *two-way interaction* between the meso (industrial) and micro (firm-level) factors. The performance of an industry has a strong impact on the performance of the individual firms. However, the company also can influence the sector conditions, mainly if it has a dominant market position or leading role in innovation. The sector performance also has impacts on the overall performance of the economy. There is a strong pressure on political actors to make changes in the political regime by modifying the dominant socioeconomic ideology and policies for underperforming macroeconomic indicators. The changes in the institutional regime in combination with exogenous factors like technology and new entrants have strong effects on sector business models. The modification in the business model has a feedback on the sector performance through changing objectives and competitive and/or political sector dynamics. Moving to firm-level impacts, there is an evident two-way causal relationship between organizational performance and sector performance. The organizational processes and objectives also interact with sector dynamics. Targets, norms and objectives typifying the sector have a co-evolutionary interaction with the firm-level objectives, just as the sector dynamics interconnects with the organizational processes.

Foxon (2011) in his pentagonal model framework combines the socio-technical and techno-economic transition and the co-evolutionary approaches. The five key co-evolving systems in his framework are the *ecosystems*, *technologies*, *institutions*, *business strategies* and *user practices*. Hannon et al. (2013) partially modified the original model of Foxon, replacing the dimension of *business strategy* with the *business model* and moving it to the middle of the framework (Figure 1).

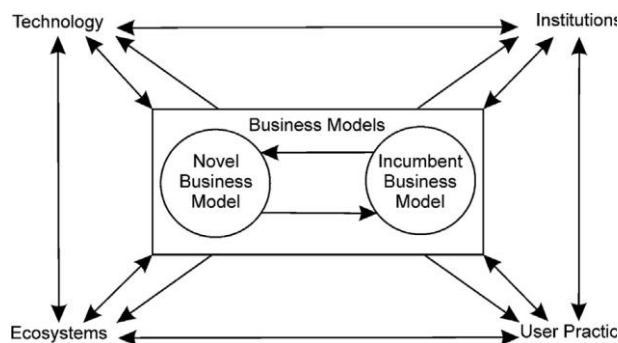


Figure 1. The co-evolutionary relationship between business models and the wider socio-technical system (Hannon et al., 2013)

Hannon et al. (2013) apply the business model canvas of Osterwalder & Pigneur (2010) to represent in detail the main characteristics of the sector concerned in their empirical study on the co-evolutionary interactions between the UK energy service companies and the traditional energy utilities. The authors distinguish the incumbent players' business models from the newcomers' models and identify that the incumbents typically wield more economic and political power compared to the non-incumbent or niche populations of firms.

The current paper follows the methodology of Hannon et al. (2013) with minor changes in focus. Because of the limited empirical data on firm-level internal organizational characteristics, we concentrate on three elements of the business models – the customer segments, the key suppliers/partners and the cost structure – and give less attention to the other elements of the canvas. We also give different emphasis to the four external dimensions of the co-evolutionary framework. Although we present some illustrations on the interactions between the ecosystems, technology, user practices and business models, this study focuses more on the two-way relationship between the institutions and business practices. The co-evolutionary framework of Rodrigues and Child (2003) and Child et al. (2012) promotes deeper reflection on the political perspective of co-evolution.

METHODOLOGY AND SCOPE OF ANALYSIS

This paper follows the deductive-inductive approach of numerous articles of co-evolutionary literature (Rodrigues and Child, 2003; Suhomlinova, 2006; Wilson & Hynes 2009; Child et al., 2012; Hannon et al., 2013). Our empirical research has a longitudinal focus. The study concentrates on the changes of the Hungarian energy retail sector from the time of liberalization of the whole market in 2008 until 2013. We used secondary sources such as company yearly reports, articles, press releases, legal documents and industrial surveys. Active personal involvement in several industrial organisations, industry events and conferences also helped us to collect background information from company managers, regulators and state officials through informal discussions.

The main purpose of the quantitative analysis was to better understand the differences in performance influenced by different business models and environmental factors of the focal firms. We collected company specific information

and performance data of 22 major trading firms of the energy sector from 2008 until 2013. The set of variables includes the industrial activity focus (electricity and/or natural gas), retail market segments served (universal services and/or free-market trading), ownership structure (foreign/local incumbent or foreign/local free-market trader), key operational revenue and cost figures (cost of goods sold, staff costs), and balance sheet items (fixed assets, invested capital, accounts payables, account receivables). We calculated operational efficiency indicators, companies' equity, short and long term debt to measure the companies' leverage and dividend and taxes paid, to measure the financial transfers between the firm and other key stakeholders, like the state and the shareholders. Appendix 1 shows the extract of the dataset.

The firm level data were collected from the official website of the Company Information and Electronic Registration Service Office of the Ministry of Justice, where all companies registered in Hungary compulsorily have to upload their yearly reports (profit and loss statements, balance sheet and notes). The financial figures of the 22 companies concerned properly represent the whole sector with the following minor limitations: (1) There are several international energy trading companies which manage their Hungarian commercial operation through local representative offices without establishing affiliates under the Hungarian corporate law. The non-Hungarian registered firms have a limited licence for energy trading operation without providing any retail services in the country. These companies do not publish their yearly report on the official Hungarian site. (2) The retail activity of the power plant companies also was excluded from the analysis. Although legally it is possible to sell their production directly to consumers without using intermediate traders, this is an uncommon activity. (3) The total energy trading volume in Hungary achieved 221 terawatt hours for electricity and 13.2 billion cubic meters in the natural gas sector based on 2013 figures of the Hungarian Energy and Public Utility Regulatory Authority. The total revenue of the electricity and gas trading sector was approximately 15.5 billion euro, while the revenue of the 22 firms of our dataset achieved 8.6 billion euro (55% of the total) in the same period. As we included all locally registered energy trading firms with yearly revenue over 3 million euro in the dataset, the difference can be explained mostly by the international trading activity of the non-Hungarian registered firms. Taking into consideration the impacts of the abovementioned limitations, we can state with high confidence that our dataset represents the overwhelming majority of the Hungarian energy retail market.

We made some corrections of the raw financial data for better comparison. There are different organizational structures of the firms concerned. The majority of the companies operate the trading business unit in a legally separated affiliate, while several others combine the commercial activity with investment activities in an operating holding structure. The typical investment of the former incumbents is the direct ownership of the DSO's shares. The vast majority of the incumbent traders (ELMŰ-ÉMÁSZ, FŐGÁZ, GDF, TIGÁZ, EDF-DEMÁSZ) also own the shares of their group's DSO, except E.ON, which made a full legal separation and organized all of its Hungarian subsidiaries into a strategic holding form. There are some other examples of a mixed activity profile, when free-market traders own shares in production units (ALTEO, Greenergy). To ensure the comparability of the commercial activities of our sample, we corrected the balance sheets and profit and

loss (P&L) statements of the firms by deducting the book value of the non-trading investments from the non-current assets and deducting the same amount from the capital reserves on the liabilities side. We deducted the financial income (dividends) from the owned DSOs or production units from the raw P&L figures. We used the modified fixed assets, equity and financial income figures in our reports. Appendix 2 demonstrates the statistical relationship between the main variables involved in the analysis, and presents the bivariate correlations and reliability coefficients.

THE RESULTS OF THE QUANTITATIVE ANALYSIS: IMPACTS OF THE CHANGING ENVIRONMENT ON THE ECONOMIC PERFORMANCE OF THE SECTOR FIRMS

The firms' economic performance figures reflect the complex interactions between the factors of the co-

evolutionary framework. Table 1 presents the financial indicators of the sector firms for the last four years of operation. The table shows the average equity, earnings, taxes and dividends figures of the four main clusters of the energy trading firms we have identified: (1) domestic incumbents, (2) domestic new entrants, (3) foreign incumbents and (4) foreign new entrants. The two companies in the domestic incumbent group (Group1) were fully or partially under state (MVM) or municipality (FŐGÁZ) control over the whole research period. Due to the changing political climate there was significant improvement in the financial performance of the state-controlled firms against that of the incumbent MNEs in 2012. This was the year when the *rules of the game* radically changed and the government began to execute its new policy on household energy price reduction and began to increase direct ownership in the retail sector. The overall operational earnings of the incumbent MNEs radically decreased from the level of 2 billion HUF in 2011 to -37 billion in 2012. In contrast, the state controlled firms, mainly MVM, increased their profit from 21 to 39 billion in the same period.

Table 1
Key financial figures of the domestic and foreign-owned energy trading companies

<i>all data in million HUF</i>	Group*,**	2010	2011	2012	2013
Average level of corrected equity	1	16 927	16 884	25 926	16 874
	2	559	1 113	618	1 047
	3	7 406	15 770	4 766	-627
	4	319	462	317	-1 328
Average level of earnings before interest and taxes (EBIT)	1	9 524	10 843	19 617	679
	2	719	1 132	2 299	431
	3	2 432	-226	-5 304	-2 252
	4	1 926	1 269	866	-698
Average level of corporate tax	1	3 001	2 070	4 280	1 181
	2	235	113	231	251
	3	719	275	187	443
	4	34	56	28	36
Average level of dividend paid	1	10 172	10 971	14 950	855
	2	813	1 394	7 606	252
	3	4 755	7 107	3 578	10 490
	4	45	177	126	8

* Group1 = domestic incumbents; Group2 = domestic new entrants; Group3 = foreign incumbents; Group4 = foreign new entrants

** Number of firms in groups: In 2010 Group1 n=2, Group2 n=6; Group3 n=7; Group4 n=2. From 2011 Group1 n=2, Group2 n=8; Group3 n=7; Group4 n=5.

We can observe similar changes in the free-market segment between the local and foreign entities. The local companies were able to increase their average profit while the foreign-based traders were faced with decreasing profitability. The changes in the free-market segment are mainly attributable to the success of a newly founded company, MET. Although officially this company has foreign ultimate owners, we reclassified it as a locally-controlled firms. The majority of the shares of the MET's Swiss based mother-company are owned by several offshore

firms, while 40% of the shares are controlled by the Hungarian oil and gas giant MOL. The main factor behind the success of MET can be explained by an exclusive bilateral contract signed with MVM without public tender about importing natural gas on the Austrian-Hungarian interconnecting pipeline by transferring the special import capacity right of MVM to MET. While MET achieved only 44 billion revenue in 2010, the company realized 280 billion in 2012 and paid 60 billion in dividends to its owners, 2.5

times more than the overall dividends paid by the whole group of foreign incumbents in the same year.

Whereas the governmental ‘restructuring’ of the playing field resulted in positive income for the ‘preferred entities’ and simultaneously served well the changing socio-economic environment, there are several questionmarks regarding the long term sustainability of the new system. Figure 2 and Figure 3 illustrate the dynamic changes in profit

and equity position of the sector companies. It is easy to observe that 2012 was the year of the great successes of the domestic players. The three major local players (MVM, FŐGÁZ and MET) realized significantly higher profits than in the previous period. In contrast, all incumbent multinationals – E.ON, EDF, GDF, RWE GROUP (ELMŰ, ÉMÁSZ and MÁSZ), and TIGÁZ (ENI) – faced decreasing profitability and/or worsening equity positions.

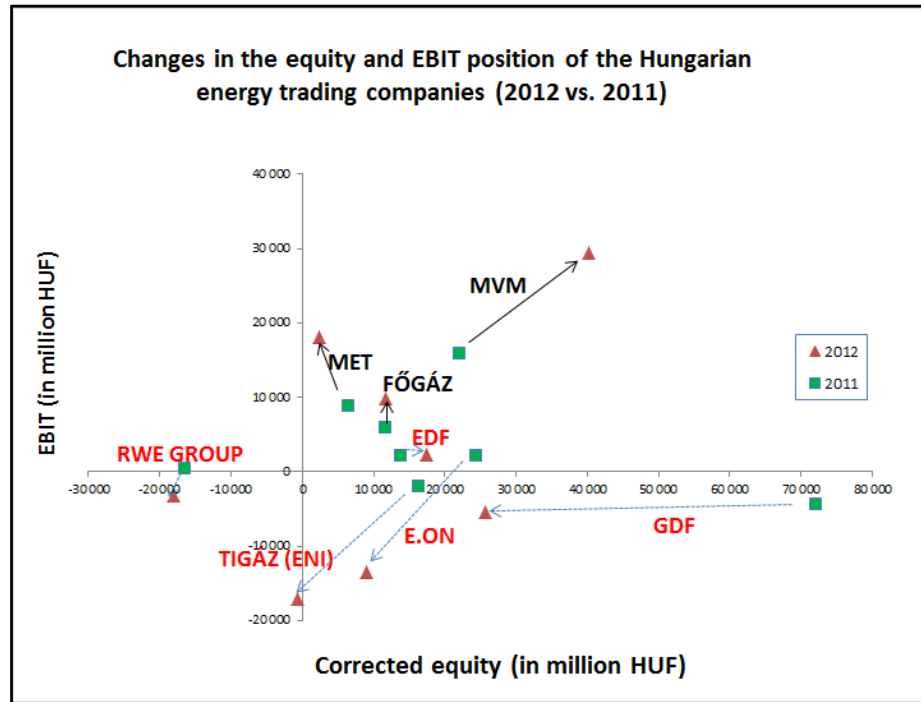


Figure 2. Changes in profitability and equity position of the Hungarian energy trading companies from 2011 to 2012

We can observe significant changes in profit and equity figures in 2013 compared to 2012. However, it seems from the figures shown in Figure 3 that after the shocking year of 2012 the incumbent MNEs adapted to the new

environmental challenges. E.ON and GDF significantly increased the level of their operating profit, while EDF and RWE increased the level of dividend paid while maintaining their profitability.

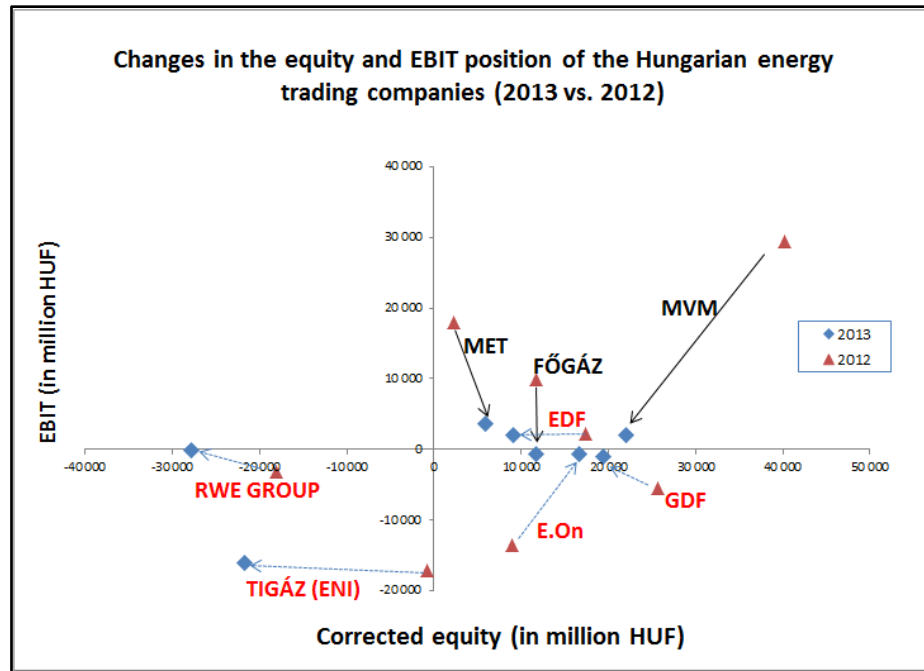


Figure 3. Changes in profitability and equity position of the Hungarian energy trading companies from 2012 to 2013

The statistical analysis of various variables (see the detailed correlations in Appendix 2) also supports our observations of the changes in firm-level performance and strategic behaviour. While there is a relatively strong significant positive correlation between the *after tax profit* of the firms and the *domestic control* dummy variable in 2011 ($r=0.431$) and 2012 ($r=0.457$), the strengths of correlation weakened for 2013 to a moderate level ($r=0.247$). In contrast, the negative correlation between the *after tax profit* and the dummy variable of *universal services* weakened from a strong and significant relationship in 2011 ($r=-0.415$) and 2012 ($r=-0.454$) to an insignificant moderate negative level in 2013 ($r=-0.247$). It is also interesting to observe the relationship between the profits of different years. Generally there is very strong significant positive correlation between the *after tax profits* of the upcoming years ($r=0.834$ between 2010 and 2009). The strength of this relationship continuously weakened in the observed period ($r=0.702$ between 2012 and 2011 and $r=0.562$ between 2013 and 2012), which indicates that the past period profitability has a relatively low influence on the upcoming economic performance of the firms. The correlation between the *dividends* of different years and the *universal service* variable also refers to the changing behaviour of the MNE subsidiaries. The strong significant correlation in 2013 ($r=0.549$) can be explained by the increased dividend paid by various foreign-controlled enterprises, like EDF and ELMŰ-ÉMÁSZ.

The economic performance results of the MNE subsidiaries in 2013 indicate that these firms adapted effectively to the radically changing environment. They executed several organizational changes to increase their operational performance and made a strategic shift to concentrate more on the unregulated free-market activities and decrease their dependency on the regulated household segment.

FORMS OF CO-EVOLUTION IN THE HUNGARIAN ENERGY TRADING SECTOR

The following section illustrates the co-evolving interconnections between the elements of the theoretical approach. It highlights the main changes of the regulatory regime on the legal conditions of the energy trading and their impacts on adaptation and selection of sector firms.

The evolution of free-market trading from the partial market opening in 2003

Although the time horizon of the quantitative analysis in this paper starts in 2009, in the energy trading sector the beginning of the institutional changes dates back to 2003. Hungary partially opened the energy retail market that time, as a requirement of the EU accession negotiations. The change of the regulatory framework had an immediate strong impact on the sector business models. The first wave of new entrants to the market reacted rapidly to the new business opportunities between 2002 and 2006. Some leading regional energy players which formerly had not participated in the privatization of the Hungarian energy businesses in the mid-1990s – like the Czech CEZ and Austrian ÖMV – established local subsidiaries to serve their international industrial consumers. Local newcomers – E-OS, JAS, IFC (formerly named Optenergy) – used their local network capabilities and focused on niche market segments with the strategic concept to serve the domestically-owned SMEs. These two strategic groups of new entrant companies significantly increased the level of competition in the industrial consumer segment and influenced the business models of the incumbent players. Whereas the household retail segment was still a protected market for the incumbents, they also perceived the need to enhance their capabilities because of the decreasing revenues on the

freemarket. E.ON, GDF, ELMŰ and ÉMÁSZ reacted to the challenges with organizational transformations. E.ON reorganized the governing structure of the whole local operations by formulating a strategic holding centre and separated its retail activities from all other business units. ELMŰ and ÉMÁSZ, both majority-owned by the German RWE Group, jointly established a new free-market retailer subsidiary company (MÁSZ) which focused solely on the industrial consumer segment while the two incumbents still managed the retail services for the non-market entities (households, institutions) through the traditional way.

Effects of the full market liberalization – years of increasing competition

EU integration abolished the dual market system, as Hungary was obliged to adopt new laws and regulations for the electricity and natural gas sectors in 2007 and 2008. Whereas theoretically the new legislative framework broke down the entry barriers on the formerly protected market segments, the household retail segment of the market remained under strong state pressure. The new model defined the notion of *universal services* in harmony with the third energy package of the EU. Generally the concept of universal service is to ensure eligibility, transparency and non-discriminatory prices to households and small enterprises and to provide adequate safeguards to protect vulnerable customers (EC2009a, 2009b). Despite the fact that the regulated energy prices for households are not necessarily part of the protection mechanisms of the vulnerable customers, the vast majority of Member States (including Hungary) still apply regulated price regimes (EC 2014, CEER 2012) for the universal energy services. The Hungarian model of regulation was relatively soft in the early years of the new regime, from 2008 until 2011. The ministerial decree on universal services regulated only the commercial margin of the service providers, while the firms could manage their purchasing portfolio on their own risks and interests. This type of *margin regulation* opened a place for new entrants to the household segment. Magyar Telekom, the local subsidiary of Deutsche Telekom, took advantage of the opportunity and entered the household and SME energy retail market in 2011. Telekom's main motivation behind the diversification was to fortify its leading role in household telecommunication services. All local mobile operators (Telekom, Telenor and Vodafone) offer bundled services for consumers with packaging of voice and data services in a single offer. It was a logical continuation of the bundling strategic concept to integrate new non-core services into the 'bundled services for households' model, like retail energy. The pillars of the market-leading telecommunication company's entry strategy were the strategic resources and capabilities of the over 4 million customer basis and the experience in marketing and operations of mass market services. Telekom achieved close to a 5% market share for 2013, two years after entering the household energy retail sector. However the growing revenues were not reflected in the operating profit figures. Telekom's entrance and the changing legal framework posed a challenge to the incumbents. The RWE Group member companies ELMŰ and ÉMÁSZ faced the challenges proactively and changed their conservative approaches on household services. They introduced a new geo-tariff for heat pump users to present their commitment to the ecological impacts of energy consumption. They also elaborated a free-market trading concept of an Internet-based

commercial service platform for households and implemented this new trading system in 2013.

From market coordination to centralized bureaucracy

The results of the parliamentary elections in 2010 significantly changed the dominant view of the political actors on the preferred development paths of the public utility services. The dominant ideology of *liberalization and competition* of the former social-liberal majority were replaced with the ideology of *patriotism and centralized control*. The new National Energy Strategy (Parliament of Hungary, 2011) declared the state's strong commitment to increasing its influence in the electricity and natural gas sector through increasing direct ownership by taking back various formerly privatized segments of the sector. MVM, the single state-owned entity on the market, had a key role in execution. MVM entered the natural gas business by buying the wholesale unit and commercial storage facilities from E.ON as a first step in early 2013. Simultaneously the Parliament adopted a change in law which declared that the ownership and operation of security gas storage facilities is an exclusive right of state-owned entities. MVM continued its acquisition strategy after securing the gas wholesale position through the modified legal environment. Formerly the company had had no direct interests either in the electricity or in the natural gas household retail segment. MVM Partner, the group's retailer, similarly to the non-incumbent newcomers focused only on the more profitable free-market segment after the 2003 partial sector liberalization. To execute the new strategy influenced by the changing political environment, MVM bought the 49% minority stake of RWE Group in FŐGÁZ, the Budapest-based incumbent household gas retailer in 2013. The company also signed a non-binding letter of intent with E.ON in 2014 on the acquisition of E.ON's interests in the household retail service field. The institutional regime supported the expansion of the state-owned market player with several changes in the legislative framework of household services and through discriminatory application of the legal rules. The Parliament modified the price regulation rules of the universal services from 2011 by replacing the former margin regulation to a *selling price regulation* (Vince, 2012). The new full-price control did not leave an opportunity for the universal service providers to share their procurement risks with their customers. Although the incumbent retailers suffered great losses on the universal services, the official communication emphasized that the incumbents would be able to balance their financial income through the profitable operations of the DSOs and the free-market retail units. A 2012 report prepared by the responsible ministry (Index, 2013) stated that the three MNEs (E.ON, RWE and EDF) involved in electricity universal services had 20 billion forint yearly overall losses in 2011 on universal services, while they achieved 51 billion overall profits on the distribution and free-market services the same period. The ministry commented that the MNEs are able to achieve a fair overall profit rate on the corporate level. In fact, the loss reduction of the household services through cross-financing created significant and growing constraints from the aspect of market competition. The strong competition on the free-market segment limited the opportunity to mitigate the losses of the incumbent MNEs on the household retail services through price increases on the freemarket.

The state authorities also increased the pressure on the MNEs with resolutions, penalties and fines from various authorities. Although the firms several times won legal proceedings against the authorities (for example E.ON and FŐGÁZ against the Energy Authority in 2013 in a case on the 2012 energy tariff regulation, ELMŰ and ÉMÁSZ against the Authority of Consumer Protection in 2014 in a case on the printed form of the energy bills) the political message seemed clear. All of the MNEs had to realize that only a few rational strategic opportunities were still available for them: (1) to decrease their exposure to the regulated services through selling or offering their investments to the state entities, (2) optimizing the cash flows of owners (FCFE) by cost reduction, postponement of investments and increasing the level of dividends, or (3) leaving the Hungarian retail subsidiary in a permanent underperforming financial situation.

The transactions between E.ON and MVM on the natural gas wholesale unit and storage facilities and the transaction between RWE and MVM on the minority stake in FŐGÁZ illustrate well the first potential path of MNE's adaptation. The second potential way, optimization of the equity holders' cash flow, is well-characterized in the increased operational efficiency (E.ON, ELMŰ, GDF) and/or the significantly increased dividends (EDF, ELMŰ, ÉMÁSZ) of MNEs in 2013. The third adaptation strategy is well characterized by TIGÁZ.

Although the majority of the MNEs' short-term adaptation strategies seem successful, several issues still remain open. If they want to decrease their exposure to the state and plan to leave the regulated market, they need a buyer. The single potential buyer seems to be the state-owned MVM, as there is a very low probability that any private entities plans to enter the unpredictable regulated retail segment. However the capital position of MVM seems insufficient to manage more acquisitions. The negative impacts of the below-cost regulated prices on the recent profitability of the firm can be seen. The 2013 after-tax profit of trading activity decreased close to the zero level from the level of 23 billion HUF in 2012.

Because of the low interest of potential buyers to invest in Hungarian regulated retail businesses, the MNEs have to look for alternative and more proactive strategies to survive. They can use their bargaining power more actively, also on the firm and on a state-to-state level. The changes in the MNEs' organisational structure with separation of the regulated retail business lines can help to mitigate the risks of state influence on the remaining part of their activities. Last but not least, they also can innovate. E.ON and RWE came to the market in 2014 with a new concept of building and operating small distributed solar panels for households and converting the traditional retailer-consumer model to a 'prosumer' concept. These firms reshape their business models through learning from the industrial technical changes and using their experiences from the

German market. It seems that the permanent changes of the sector will continue also in the upcoming years.

CONCLUSIONS

The aim of this paper was much more to explore two-way interactions in a co-evolutionary framework on micro, sector (meso) and macro levels and to present their impacts on firms' performance rather than to formulate hypotheses on the causality of the factors. The Hungarian energy trading sector gives an excellent research field to apply the theory of co-evolution in a highly institutionalized environment because of the significant institutional constraints, the strong political influence on the sector and the mixed ownership structure of the trading firms. We identified various examples of the mutual impacts of the firms and their institutional environment. We found, following the theoretical statements of Child et al. (2012), that in a highly institutionalized business system the co-evolution is the outcome of the relational processes between the relevant actors, including politicians, regulators, firms and other stakeholders. The last decade of the Hungarian energy retail sector illustrates well the permanent change in the relationships between the relevant interest groups. The relationship between the MNEs and the political actors was modified several times during the last decades. The privatization in the mid-1990's guaranteed a stable institutional framework for the MNEs. The EU accession had significant impacts on the institutional environment and the business strategies of the incumbent market players because of the partial market opening in 2003 and the full liberalization of the market in 2008. MNEs had to react to the increased level of competition and develop more consumer-oriented services and business models. They also had to modify their business strategies and their relationships to other groups of stakeholders after the parliamentary election in 2010, when the dominant ideology of liberalization and competition has been replaced with the ideology of patriotism and centralized control.

We can state with high probability that the upcoming years will give an excellent research opportunity to follow the evolution of the sector and the firm-level adaptation in a longer historical perspective. There are several opportunities for the further development of four research method and analytical framework. We gave relatively low attention to the *intra-firm level* factors of the co-evolutionary framework, such as the processes of development of capabilities and the ways of organizational transformation. We also applied in a simplified way the suggested method of Hannon et al. on the identification of the business models. Regardless of the limitations, we hope that our remarks could make a valuable contribution to the co-evolutionary literature.

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Appendix 1 – Main characteristics of the firms in dataset

Name of Company	Main Ultimate Shareholder	Country of origin	Main owner's stake of shares	Date of foundation*	Short Name in Dataset	Product focus	DSO in the same group	Universal services	HU power plants in group	Revenue in 2013**	Base equity in 2013	Corrected equity in 2013	EBIT 2013	EBIT/Sales 2013	Corrected Profit after Tax in 2013	PAT/Sales 2013
Alteo Nyrt.	Wallis Asset Management Zrt.	HUN	94,9%	2008	ALTEO	electricity			Y	2 256	1 593	-926	-129	-5,72%	-103	-4,55%
Budapesti Energiakereskedő Kft.	B.E.K. GROUP s.r.o.	SVK	100,0%	2003	BEK	electricity				1 952	98	98	-114	-5,83%	38	1,92%
CEZ Magyarország Kft.	CEZ a.s.	CZE	100,0%	2005	CEZ	electricity				17 557	106	106	-327	-1,87%	-349	-1,99%
CYEB	ArtProgram Srl.	ROU	100,0%	2010	CYEB	combined				5 218	96	96	47	0,90%	38	0,72%
E.ON Energiaszolgáltató Kft.	E.on Energie AG.	GER	100,0%	1991 (2007)	EON	combined	Y	Y	Y	485 150	16 609	16 609	-678	-0,14%	-1 610	-0,33%
Econgas	EconGas GmbH. (ÖMV)	AUT	100,0%	2007	ECONGAS	gas				23 578	257	257	20	0,08%	5	0,02%
EDF-DEMÁSZ Zrt.	EDF International S.A.S.	FRA	100,0%	1991	EDF	electricity	Y	Y	Y	123 628	122 016	9 147	2 056	1,66%	1 912	1,55%
ELMŰ Nyrt.	RWE Energy Beteiligungs	GER	55,3%	1991	ELMU	electricity	Y	Y	Y	191 597	201 090	-24 990	-2 309	-1,21%	-3 416	-1,78%
ÉMÁSZ Nyrt.	RWE Energy Beteiligungs	GER	54,3%	1991	EMASZ	electricity	Y	Y	Y	74 811	83 930	-3 312	-1 957	-2,62%	-2 385	-3,19%
E-OS Zrt. & E-OS Gáz Kft.	Közgép Zrt.	HUN	100,0%	2006 / 2011	EOS	combined				6 794	227	227	29	0,43%	46	0,68%
FŐGÁZ Zrt.	Municipality of Budapest***	HUN	50,0%	1993	FOGAZ	gas	Y	Y		218 803	34 885	11 649	-611	-0,28%	-905	-0,41%
GDF-SUEZ Energia Magyarország Zrt.	GDF International S.A.S.	FRA	100,0%	1993 (2006)	GDF	gas	Y	Y	Y	184 260	19 487	19 365	-998	-0,54%	-25	-0,01%

* Date of foundation generally shows the founding date of the unit concerned. In several cases there were significant organizational changes in the holding structures. The date between brackets reflects the date of the reorganisation and establishment of independent trading unit. In the case of Magyar Telekom, the date reflects the beginning of its energy trading activities.

** all financial figures are in million Hungarian forints.

*** The Municipality of Budapest sold its stake to Hungarian Asset Management Zrt. in July 2014

Name of Company	Main Ultimate Shareholder	Country of origin	Main owner's stake of shares	Date of foundation*	Short Name in Dataset	Product focus	DSO in the same group	Universal services	HU power plants in group	Revenue in 2013**	Base equity in 2013	Corrected equity in 2013	EBIT 2013	EBIT/Sales 2013	Corrected Profit after Tax in 2013	PAT/Sales 2013
Greenery Trade Kft.	Greenery Holdings LLC	USA	100,0%	2009	GREENENERGY	electricity			Y	1 901	67	67	13	0,71%	3	0,18%
JAS Budapest Zrt.	Hungarian private individuals	HUN	100,0%	2002	JAS	combined				2 256	1 593	1 593	-129	-5,72%	55	2,43%
Magyar Telekom Nyrt.	Deutsche Telekom AG	GER	59,2%	(2011)	MTEL	combined				48 000	-7 168	-7 168	-4 153	-8,65%	-4 244	-8,84%
Magyar Áramszolgáltató Kft.	RWE Energy Beteiligungs	GER	54,3%	2002	MASZ	electricity	Y		Y	144 841	450	450	4 200	2,90%	1 836	1,27%
MET Magyarország(MOL) Energiakereskedő Zrt.	offshore companies	(CHE)	60,0%	2009	MET	gas				232 489	5 873	5 873	3 590	1,54%	-1 723	-0,74%
MVM Partner Zrt. & MVM Trade Zrt.	Hungarian State	HUN	99,9%	1991 (2002/2005)	MVM	combined			Y	609 407	22 099	22 099	1 968	0,32%	524	0,09%
Nordest Energy Kft.	Hungarian private individuals	HUN	100,0%	2010	NORDEST	combined				2 169	-2	-2	-40	-1,86%	-18	-0,83%
IFC Energy (Optenergy) Kft.	Hungarian private individuals	HUN	100,0%	2006	IFC	combined				27 622	1 325	1 325	269	0,97%	91	0,33%
TIGAZ Zrt.	ENI SPA.	ITA	100,0%	1994	TIGAZ	gas	Y	Y		240 413	26 087	-21 658	-16 080	-6,69%	-20 774	-8,64%
VPP Erőmű	Hungarian private individuals	HUN	100,0%	2011	VPP	electricity			Y	11 865	186	186	-28	-0,23%	-42	-0,35%

* Date of foundation generally shows the founding date of the unit concerned. In several cases there were significant organizational changes in the holding structures. The date between brackets reflects the date of the reorganisation and establishment of independent trading unit. In the case of Magyar Telekom, the date reflects the beginning of its energy trading activities.

** all financial figures are in million Hungarian forints.

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Appendix 2 – Correlations and reliability coefficients

		DIV_13	DIV_12	DIV_11	DIV_10	DIV_09	SIZE_13	SIZE_12	SIZE_11	SIZE_10	PAT_13	PAT_12	PAT_11	PAT_10	PAT_09	DOM_CON TROL	UNIV	PROD UCTI ON
DIV_12	Pearson Correlation Sig. (2-tailed) N	,151 ,503 22																
DIV_11	Pearson Correlation Sig. (2-tailed) N	,279 ,221 21	,402 ,071 21															
DIV_10	Pearson Correlation Sig. (2-tailed) N	,553 ,014 19	,295 ,221 19	,435 ,063 19														
DIV_09	Pearson Correlation Sig. (2-tailed) N	,502 ,034 18	,227 ,364 18	,416 ,086 18	,903** ,000 18													
SIZE_13	Pearson Correlation Sig. (2-tailed) N	,309 ,162 22	,417 ,054 22	,602 ,004 21	,533 ,019 19	,479 ,044 18												
SIZE_12	Pearson Correlation Sig. (2-tailed) N	,285 ,199 22	,429** ,046 22	,623** ,003 21	,506 ,027 19	,447 ,063 18	,984** ,000 22											
SIZE_11	Pearson Correlation Sig. (2-tailed) N	,333 ,130 22	,391 ,072 22	,605** ,004 21	,524** ,021 19	,461 ,054 18	,899** ,000 22	,943** ,000 22										
SIZE_10	Pearson Correlation Sig. (2-tailed) N	,249 ,320 18	,179 ,478 18	,435 ,071 18	,420 ,082 18	,460 ,063 17	,678** ,002 18	,745** ,000 18	,826** ,000 18									
PAT_13	Pearson Correlation Sig. (2-tailed) N	,016 ,945 22	,023 ,919 22	,132 ,568 21	,129 ,599 19	,075 ,767 18	-,283 ,202 22	-,282 ,204 22	-,259 ,244 22	-,209 ,405 18								
PAT_12	Pearson Correlation Sig. (2-tailed) N	-,049 ,828 22	,520* ,013 22	,364 ,104 21	,398 ,092 19	,413 ,089 18	,023 ,919 22	,025 ,911 22	,000 ,999 22	-,054 ,832 18	,562** ,007 22							
PAT_11	Pearson Correlation Sig. (2-tailed) N	-,132 ,559 22	,418 ,053 22	-,080 ,730 21	,406 ,085 19	,369 ,132 18	,118 ,601 22	,115 ,610 22	,081 ,720 22	,010 ,968 18	,413 ,056 22	,702* ,000 22						
PAT_10	Pearson Correlation Sig. (2-tailed) N	-,356 ,147 18	,267 ,284 18	,092 ,717 18	,390 ,110 18	,372 ,141 17	,336 ,173 18	,334 ,176 18	,298 ,229 18	,215 ,393 18	,181 ,472 18	,554 ,017 18	,778* ,000 18					
PAT_09	Pearson Correlation Sig. (2-tailed) N	-,110 ,676 17	,262 ,311 17	,166 ,525 17	,549 ,022 17	,627** ,007 17	,179 ,492 17	,169 ,518 17	,143 ,583 17	,120 ,645 17	,231 ,372 17	,786** ,000 17	,764* ,000 17	,834** ,000 17				
DOM_CONTROL	Pearson Correlation Sig. (2-tailed) N	-,334 ,128 22	,262 ,239 22	-,057 ,805 21	,012 ,960 19	-,065 ,798 18	-,316 ,152 22	-,295 ,183 22	-,316 ,152 22	-,082 ,747 22	,247 ,267 22	,457 ,032 22	,431 ,045 22	,225 ,369 22	,305 ,234 17			
UNIV	Pearson Correlation Sig. (2-tailed) N	,549** ,008 22	-,044 ,845 22	,461* ,036 21	,241 ,319 19	,163 ,517 18	,618** ,002 22	,624** ,002 22	,651** ,001 22	,512* ,030 18	-,379 ,082 22	-,454* ,034 22	-,415 ,055 22	-,349 ,155 22	-,436 ,080 17	-,428* ,047 22		
PRODUCTION	Pearson Correlation Sig. (2-tailed) N	,457* ,032 22	,002 ,993 22	,076 ,743 21	,490 ,033 19	,546* ,019 18	,219 ,328 22	,211 ,345 22	,156 ,487 22	,334 ,176 18	,195 ,383 22	,065 ,775 22	,248 ,267 22	,295 ,234 22	,294 ,252 17	-,203 ,366 22	,226 ,313 22	
DSO_in_GROUP	Pearson Correlation Sig. (2-tailed) N	,514* ,015 22	-,073 ,746 22	,435* ,049 21	,413 ,079 19	,265 ,288 18	,672** ,001 22	,669** ,001 22	,699** ,000 22	,563* ,015 18	-,298 ,177 22	-,426* ,048 22	-,338 ,124 22	-,119 ,638 18	-,302 ,239 17	-,500* ,018 22	,904** ,000 22	,332 ,131 22

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

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

Comments to the set of variables:

DIV_n means the dividend paid in the year n;

SIZE_n measured as the natural log of revenue of year n;

PAT_n means the profit after tax of year n; DOM_CONTROL (dummy)=1 if the company controlled by local ultimate owners;

UNIV (dummy)=1 in case of universal service activities;

PRODUCTION (dummy)=1 in case of ownership production entities (power plants);

DSO_IN_GROUP (dummy)=1 if the firm belongs to a group which also has ownership in a DSO.