THE BOUNDARIES OF THE FIRM.THE CASE OF OIL INDUSTRY IN ROMANIA

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The economic theory of the firm has met an exponential growth in the last decades different from the traditional neoclassical approach. In the first part of the paper we are skimming through the most spread approaches, namely the theory of incomplete contracts and evolutionary school. In the second part we apply the explications on integration provided by the economics of transaction costs with an example on the oil industry in Romania. A brief qualitative analysis reaches out the conclusion that cutting transaction and agency costs is one of the factors that leads to integration within the studied sector.

Keywords: transaction costs, agency theory, evolutionary economics, integration, oil

JEL Classification: D23

Introduction

The fast organizational and technological changes of the last years, globalization and the more noticeable restrictive character of resources have lead to the reconsideration of the economic theories of the firm and development of new approaches. But what are the reasons that lay beyond the existence of the firm? How much can it develop? These are opened questions to which microeconomics provides a large offer of answers, in the form of a system of new theories or just interdependent hypotheses.

The movement of the borders of the firm in the global economy due to mergers and acquisitions carried on at global, regional or just local level leads to the increase of the degree of horizontal or vertical integration. As an example, in the region of Central and Eastern Europe in 2007 mergers and acquisitions summed 192.6 billion dollars of which 4.4 % carried on in Romania increasing by 83.8% compared to 2006. By these processes similar or different interdependent activities are placed under the roof of the same firm. Studying the causes of integration can’t be separated from the analysis of the nature of the firm even though in this paper our goal is to explain the limits of the development of firms. The causes of integration as economic theory presents them can be grouped in a few categories and these are: acquiring or increasing market power and monopoly profit, protection against competition, cutting transaction costs and agency costs, correction of market imperfections, skipping some regulations, increasing the degree of security in supplying production factors.

By the present paper we don’t realize an exhaustive presentation of the nature and limits of the firm but the most important features within the theory of incomplete contracts that includes transaction cost economics, theory of property rights and agency theory. Yet while exposing the economic literature in this area we’ll refer to other approaches, too for a clearer delimitation of the topic against contemporary theoretical background.

Theoretical Background

It was in 1926 when Pietro Sraffa in his article "The laws of returns under competitive conditions" that questions the model of perfect competition. But the paper to be the cornerstone of what today we call economic theory of the firm is "The nature of the firm" published in 1937 by Ronald Coase, in which the author asks himself why the firm exists if according to the model of general equilibrium shows that the market allocates efficiently the resources. Coase argues that using the mechanisms of prices is not for free in a world dominated by uncertainty and information asymmetry. The Nobel winner calls transaction costs "the costs of carrying out a transaction by means of an exchange on the open market or simply marketing costs"[18]. The transaction is seen both as a transfer of rights of use on goods and services between separable technological units (Menard, 2000) and a potential source of conflict that assumes a transfer of social rights within a certain institutional framework (Commons, 1934). Transaction costs mainly include negotiation and contracting costs, the reduction of the number of contracts inclusive, costs corresponding to potential conflicts and costs as a result of the authorities differentiate approach of transactions. In his paper published in 1988, Coase suggests that studying and understanding the structure of an industry implies explaining from the perspective of transaction costs the relations between the firm with the lowest cost and the market, relations between firms and the interdependencies between different activities carried out within the same firm. The limit of the firm "is set where its costs of organizing a transaction became equal to the cost of carrying it out through the market"[19].

Transaction costs economics, research-orientated by Coase's papers, is developed and consolidated by the reference papers of Oliver Williamson. The latter defines three features of the transaction, considered the cornerstone of the analysis in microeconomics, interdependent and these are: frequency, uncertainty and asset specificity against the background of two behavioral hypotheses limited rationality (according to H. Simon) and opportunistic behavior. Between the frequency of transactions and the probability of integration there is a direct correlation since there are many opportunities for the moral hazard to appear and therefore much more potential losses to compensate the internalization cost of that transaction. To support this statement there are a few empirical proofs (Majumadar and Ramaswamy, 1994) or a few studies that have shaken it (Anderson and Schmittlein, 1984). Uncertainty, direct correlated to the probability of integration (empirical proofs are provided by Lieberman, 1991 and Majumadar and Ramaswamy, 1994) has 2 shapes: an environmental uncertainty, a pre-requisite of the business environment and behavioral uncertainty, the most important, a result of bilateral dependence and information asymmetry. Asset specificity is the main characteristic of a transaction. Williamson shows that: "asset specificity has reference to the degree to which an asset can be redeployed to alternative uses and by alternative users without sacrifice of productive value"[20]. Asset specificity is important against the background of behavioral hypotheses mentioned above since the take the form of sunk costs in case of contract breaking. After the parties of a contract, incomplete by its nature, sign the contract that has as object a specific asset takes place what Williamson calls "fundamental transformation": if initially the parties have chosen the partner from a competitive market, after signing the contract their relation turns into a bilateral one. The continuation of the relation between the parties whose identity is now important produces quasi-rents established as a differential of the capitalized value of the asset controlled together and the sum of the values of the asset controlled separately by the two parties[21]. Depending on the characteristics of the transaction, three governance structures may appear: market, hierarchy and hybrids (such as franchising). Governance structures are supported by different forms of contract law. The market is based on the classical contract law in which the identity of the parties doesn't matter, the continuation of the contract doesn't add value and the contract complies with strict rules, well defined, possible disputes being solved by the Law Court. The hybrid has as cornerstone the neoclassical contract law and excuse

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[18] Coase R. H., The Firm, the Market and the Law, The University of Chicago Press, Chicago and London, 1988, pp. 6

[19] Ibid., pp.7

[20] Williamson, Oliver, The Mechanisms of Governance, Oxford University Press, 1996, p. 59

[21] Holmstrom, Bengt, Roberts, John, The Boundaries of the Firm, Journal of Economic Perspectives, vol.12, no.4, 1998, p. 75

doctrine, in which the parties maintain their independence and to a certain extent depend one on each other. The contract is a flexible framework that allows post-adjustment and disputes are solved by arbitrage. The hierarchy is characterized by forbearance, more precisely by an internal juridical contract that stipulates that any post-adjustment will be made by hierarchical relations. There are other three elements that differentiate governance structures: the intensity of incentive tools, administrative controlling and adaptation to the unpredictable. The market is characterized by the highest incentive, no administrative controlling and an autonomous adaptation through price mechanism (walrasian model). If unpredictable changes appear, the negotiation may be expensive and the adaptation may fail (the transaction stops). The hierarchy is a structure within which the intensity of incentive is lower than in the case of the market, administrative controlling higher and the adaptation is a coordinated one: the individuals accept the decision of the superiors and cooperation since they consider it's in their interest. This way are saved resources otherwise wasted by negotiation and solving disputes, possible sunk costs (if the adaptation fails) but with the price of a diminishing incentive and bureaucracy costs. Within the hybrid keeping the autonomy of the parties leads to higher incentives than in hierarchy but bilateral dependence and non-neglectable asset specificity assumes accepting some protective measures that lower the incentive towards market and increase administrative controlling and coordinated adaptation. It results that the costs corresponding to governance structures are mainly influenced by asset specificity. When the specificity is zero the market has an advantage since there are no potential losses to compensate bureaucracy costs specific to the hierarchy. As asset specificity raises governance costs raise faster that in the case of transactions through the market than those through the firm since the importance of the adaptation for prolonging the contract grows exponentially (the hybrid is in between the two). For this reason there is a given specificity level beyond which the organization as a hierarchy has the lowest transaction costs (for Williamson these are costs of the economic system functioning). The firm appears as a governance structure that allows minimizing transaction costs. The statement according to which asset specificity has a significant impact on vertical integration given the incomplete character of contracts and the need of adaptation form the paradigm problem of Williamson. Integration is a reply to contractual difficulties driven by asset specificity and explaining integration is in fact explaining why administrative coordination may be preferred to market coordination. Integration turns out to be a vehicle "to safeguards the gains that arise from exchange characterized by high physical asset specificity and human relationships"[22] (quasi-revenue). But why at one moment the expansion of the firm stops? The explanation offered by the economics of transaction costs is based on incentive issues and bureaucracy since integration drives distortions and specific costs. These arise especially because it's impossible to keep within the firm the incentive intensity specific to the market therefore there is a permanent trade-off between bureaucracy costs and gains from adaptation leading to "disintegration" or "dismergers" as Coase argued.

The analysis of transaction costs is linked to that of property rights: the existence of property rights makes the system of property rights to affect resource allocation and the efficiency of the allocation since like contracts are incomplete the same way property rights are defined incompletely. The way they are defined and allocated sets the diversity and characteristics of organizational structures. The firm is a nexus of contracts that stipulate a certain structure of property rights and "on one hand allows making use of the advantages of specialization and on the other hand to provide an effective incentive and controlling system"[23]. The idea of a firm as a nexus of contracts between the holders of resources (production factors) and clients is taken over by agency theory (Meckling and Jensen, 1976) that fills in the theory of property rights. The firm is a legal fiction, an environment of negotiation and contracting similar to the market: there is no opposition between market/firm but 2 forms of the market concept: the firm and the neoclassical market. Therefore there is no point to try to explain the limits of the firm but the contracting relations between individuals (that pursue to minimize agency costs) no matter the environment where they arise.

A completely new vision is introduced by the evolutionary school that considers as cornerstone for the microeconomic analysis: Homo sapiens oeconomicus (HSO). Who is he? He is "Homo sapiens as a rule-

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[22] Majumadar, S.K., Ramaswamy, V., Explaining Downstream Integration, Managerial and Decision Economics, vol.15, no.2, 1994, p. 121

[23] Coriat, B., Weinstein, O., Les Nouvelles Theories de l'entreprise, Le livre de poche, Paris, 1995, p.85

making and rule-using animal in economic contexts, such as production, consumption and transaction"[24]. One should make a difference between elementary basis-unit HSO and what evolutionists call a micro-unit itself, in the economic theory of the firm a socially organized productive unit with a knowledge base. The firm is a community based on rules (Nelson, 2005) within which knowledge is created, adopted selectively, learnt, adjusted and used repetitively. By repeated use rules appear, also called organizational routines. Routines seem to be specific assets, non transferable leading to differences between enterprises and different positioning on the market. The firm survives on the medium-long run due to a type of governing named generically governance different from governance structures mentioned above that evolutionists call operant governance. Generic governance takes care of the management of the knowledge base and therefore organizational changes within complex social network that the firm represents. As a result the dynamics of the firm is established endogenously and path dependency and routines lead to a certain technological path of the firm that will set the limits of the latter's activity.

Some synthesizing statements are required in the end of this short theoretical background: the research concerning the limits of the firm are interdependent with those on the nature of the firm; TCE suggests a present dichotomy between the firm and the market, the limits of the firm being given by incentive constraints; TPR and TA consider the market and the firm are two market forms that is transaction environment and contracting nexus so there is no point to study the limits of the firm; evolutionary school associates the firm with a knowledge and technologies integrated system formed by learning within which routines and learning processes lead to a certain technological path that will set the limits of the activity of the firm.

Short empirical application: the oil market in Romania

The empirical applications of the TCE on the oil market that formed the base of the present study belong to O. Williamson (1996)[25], Andrea Shepard (1993), Margaret E. Slade (1996). Our goal was to answer the question: are transaction costs a cause of the disintegration/integration of the activities on the oil market in Romania? In our empirical try we made use of the information public available on the websites of the corporations within the industry and official studies and statistics. The opacity of the information didn't allow us yet to carry out a quantitative research therefore the conclusions that we'll expose are based on a qualitative research.

In the Romanian oil sector we could identify three big operators: Petrom (holds two refineries, Arpechim and Petrobrazi), Rompetrol (with two refineries, Vega and Petromidia) and Lukoil (Petrotel refinery). In our paper we focused on the first two players whose evolutions allowed us to identify some conclusions with reference to the target of the research. In short, the firms that activate in the Romanian oil sector may be represented like this:

[RESOURCES(oil, gas)]=>REFINERIES=>RETAIL(own or autonomous)] + IDUSTRY SUPPIRT SERVICES

The sketch drawn above is significant for the high degree of integration specific to the area. Thus the two selected firms carry out or are to carry out activities of exploration and production, refining, oil production and petrochemical products, retail, support services such as trading petrol and oil products, construction and positioning, quality management and so on.

The evolution of the Rompetrol group by chain expansion to complementary transactions underlines the strategy of diversification of the latter in order to increase profit and reduce bilateral dependency and an organizational pattern named by Porter by two categories of activities: production/distribution and support. The development of the group started from a firm of intermediation of oil products transactions. Step by step this firm bought refineries (supplying with transacted products), fuel stations (supplying/expanded

[24] Dopfer, Kurt, Evolutionary economics: a theoretical framework, in The Evolutionary Foundations of Economics, Cambridge Univerity Press, 2005, p.23

[25] In the paperThe Mechanism of Governance published in 1996, chapter 5, the 6th part (Petroleum Exchanges), p. 137, O. Williamson draws a short analysis based on a sttudy with reference to the Canadian market, The State of Competition in the Canadian Petroleum Industry.

distribution both in Romania and abroad), and built new business units of transportation, maintaining, research, financial, quality and environment management. All the business units are specialized in oil industry, transact (with a few exceptions) mainly within the company (but also outside) and assume making use of assets specific to this industry. The integration pursued the profit but also according to us *the specificity of physical and human assets had a key role*. It is interesting to notice that specificity was two-way orientated: on the one hand because specific assets existed new business units were created in order to exploit competences and on the other hand because the new activities that the firm needed assumed asset specificity and the possibility of hold-up their integration was preferred to the free market. Concerning the uncertainty we could notice the acquisition in August 2007 by KazMunaiGas of 75% of the Rompetrol Group the stated target of the buyer being to enter European market. Before the acquisition the Rompetrol Group relied exclusively on imported oil, 80% of the costs of the group were driven by the mentioned imports. Starting from 2005 the oil price met a high volatility with an obvious increasing trend that significantly increased the uncertainty of the environment for Rompetrol with a negative impact on the financial results. The integration in KMG under the umbrella of the provider was the solution to reduce environment uncertainty proving *a positive correlation between uncertainty and integration.*

Concerning Petrom-OMV its organizational structure is similar to that of Rompetrol but the independence of the business units seems smaller. Integration is technology-driven but in 2002 an event revealed the importance of transaction costs: at that moment Petrom decided to externalize maintenance services by setting an independent firm called Petroserv, later Petromservice. Later this firm due to asset specificity had an opportunistic behavior being reintegrated in 2006 in Petrom-OMV. The acquisition cost of Petromservice by Petrom-OMV, summing 328.5 million euro, offers an image of the quasi-revenue generated by specific assets corresponding to the transaction.

In the relation between production and distribution the studies carried out for the fuel stations in USA and Canada showed the variety of contracting forms and significant differences between the ownership of the stations. In Romania there are two ways of organization: stations the ownership of the producers and dealer stations (for Petrom-OMV) or partner (for Rompetrol) with diverse activities (fuel and auto products marketing, cafeteria, carwash and so on). The resulted governance structure is of hybrid with a certain degree of dependence supplier-retailer. More than this recently Petrom has externalized the retail activity appealing to dealers showing that the integration of the activity within the company was a right decision because of diminishing incentives. By externalization the sales of carburant raised by 23% and those of complementary products by 76% in 2006/2007. As a result incentive *reduction by internalization is a limit to the development of the firm.*

Some brief conclusions are required for this market in Romania: the theory of incomplete contracts is useful and applicable; asset specificity is a cause of integration together with the technological factor, the increase of security degree in resource supplying, entering external markets and increasing profit and monopoly power, the increase of uncertainty thrives integration and the statute of residual claimant for retailers considering a hybrid structure increases incentive without a negative influence on adaptation and controlling.

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