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Are We Going Toward a Coherence of the Institutional Arrangements in the Russian Oil Industry?

This article is mainly concerned with the current reorganization of the Russian oil industry. This reorganization is taking place since at least the beginning of the second V. Putin's mandate. Basically, its goal is to increase the state-controlled companies' involvement in the oil upstream activities (Gazprom and Rosneft). This reorganization takes two forms. The first one is quite informal. It consists in some discretionary interventions by the State to reassign oil licences and assets[1]. More formal, the second one is the amendments to the *Subsoil Law* which are currently discussed. Among important issues is the project to limit private firm's access to strategic fields and give state-controlled companies a privileged right to obtain licenses' stakes[2]. Then, it is observed an important change in the way the Russian State wants to regulate the transaction by which he opens its upstream oil to private companies. The objective of this article is twofold. Firstly, we address the reasons of this reorganization. Second, we adopt a more normative perspective and raise the question of the relevance of the way this reorganization takes place.

Regarding the Russian oil industry reorganization, some authors stress two complementary points of view. First, the interventionist tendency from the Russian authorities cannot be seen as a coherent oil policy[3]. This move can only be explained by a

[1] G. Collins presents a quite recent synthesis of these reassignments. G. Collins (2006), "With National Oil Companies, Russia Seeking Control Plus Capital", *Oil and Gas Journal*, Vol. 104.19, pp. 18-22.

[2] L. Skyner (2005), "The Regulation of Subsoil Resource Usage. The Erosion of the "Two-Key" Principle and its Inclusion into the Framework of the Civil Law", *Review of Central and East-European Law*, n.2-4, pp.127-157. The Moscow Times, "Trutnev Sees No Subsoil Law Before '08", *The Moscow Times*, 31/08/07, p. 5.

[3] This idea is defended by V. Milov, the current director of the Russian Energy Institute. L. Coburn, I. Danchenko & V. Milov (2006), "Russia's Energy Policy, 1992-2005", *Eurasian Geography and Economics*, Vol. 47, n. 3, pp. 386-405. Among the reactions involved by this article, few authors contest the negative consequences of the state interventionism. See M. Sagers (2006), "Russia's Energy Policy: A Divergent View", *Eurasian Geography and Economics*, Vol. 47, n. 3, pp. 314-320, A. Åslund (2006), "Russia's Energy Policy: A Framing Comment", *Eurasian Geography and Economics*, Vol. 47, n. 3, pp. 321-328.

regression toward a "*central planning mentality*"[4] from the Russian authorities' part. It is currently observed a re-nationalisation of oil assets and political short-term interests are stressed as an explanation for this regression. Second, this interventionism must be considered as the main obstacle the Russia's oil industry will encounter to sustain the current level of production. While the organization model which has emerged from the privatization program has been successful in increasing the level of oil production, state interventionism is likely to put an end to this growth. According to this point of view, the slowdown of the growth rate since 2005 is the first negative manifestation of this interventionism[5].

Conversely to these ideas, this article aims at highlighting that the current reorganisation cannot be seen as a mere re-nationalisation of oil assets. In our opinion, the main objective of the Russian state remains to delegate the exploration-production activities to private companies for a large part. However, what we will call the "unexpected results" of the Russia's oil industry privatization lead the state to impose the presence of a state-controlled company beside private ones. Mainly, these "unexpected results" lie in the short-term strategies implemented by Russian private oil companies. While they maximize the production from "old" fields, those bring in production or explored during the soviet period, they are ignoring investments in exploration. These features are likely to explain the impressive growth of Russian oil production as well as the inhability of this country to replenish its resources. Therefore, we will be more measured than V. Milov in assessing the apparently success of the Russian model which has emerged from the privatization process[6]. Well then, according to the tenant of a rapid privatization of oil assets, this process should have led companies to implement a more balance resource management. Interested by the future value of their assets, the new owners were supposed to invest in oil exploration. Here, we will try to explain these "unexpected results" by stressing the ineffectiveness of economic institutions, mainly private property rights on oil assets and oil contracts[7]. This ineffectiveness is likely to explain the short term strategies implemented by oil companies in Russia. Afterwards, in

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[4] L. Coburn, I. Danchenko & V. Milov (2006), *Op. cit.*, p. 312.

[5] After an impressive decline during the first years of transition, it is observed an important growth of the Russia's oil production since 1998. However, the growth rate is decreasing since 2005. According to the "*Energy Strategy of Russia for the Period of up to 2020*" which is supposed to guide the Russian energy policy, the current management policy of resources could lead to a strong reduction in production level, from 9.6 Mb/j to 6,3 Mb/J in 2020. The Ministry of Natural Resources points out a production level of 5 Mb/J in 2020. For an overview of different scenario regarding Russian oil production, see : S. Boussena & C. Locatelli (2004), « Vers une plus grande cohérence de la politique pétrolière de la Russie ? », *Revue de l'énergie*, n°560, p. 507.

[6] Here, we follow V. Kryukov & A. Moe (2006),"Resource Abundance and Reserve Scarcity", *Paper for Presentation at 29th IAEE International Conference*, Postdam 7-10 June 2006, The Fridtjof Nansen Institute and L. Dienes (2004), "Observations on the problematic Potential of Russian Oil and the Complexities of Siberia", *Eurasian Geography and Economics*, Vol. 45, n. 5, pp. 319-345.

[7] For a presentation of the objectives assigned to the process of privatization and an overview of its "unexpected results", see D. Finon & C. Locatelli (2003), « L'échec de l'introduction d'institutions de marché dans une économie en transition. Les limites du consensus de Washington dans un secteur de rente », *Cahier de recherche LEPII-EPE*, n°33.

order to understand these institutions' ineffectiveness, we will turn to the ideas of institutional complementarity and institutional incoherence developed by the New Institutional Economy (NIE). Basically, new institutionalist economists stress the links which exist between institutions. An institution's efficiency and effectiveness cannot be assessing independently of the institutional environment into which it is implemented. Regarding the specificities of the transaction by which the State opens its oil upstream on one hand, and those of the Russian environment on the other hand, it is argued that the privatization program was an institutional incoherence. Private property rights on oil assets and oil contracts cannot be effective. Finally, we stress that under some restrictive conditions the imposition of a state-controlled company beside private companies could be an institutional arrangement likely to put an end to this institutional incoherence.

To support this last idea, four main points are worth to consider. First of all, it is stressed the current ineffectiveness of market institutions in the Russian oil industry. The second point deals with the idea of institutional complementarity. This idea is used to build a classification of oil models and to highlight the incoherence of the Russian one. The market institution, mainly private property rights and oil contract cannot be effective. The short term strategies implemented by the Russian oil companies appears to be a response to this incoherence. Therefore, the point to consider lies in the way the Russian authorities could change the incentives faced by private companies. How the Russian authorities could be able to enforce market institutions? For answering this question, it is carry out a comparative analysis of contractual arrangements likely to improve the incentives faced by private companies. Through this analysis, it will be show that "good" contractual arrangements, those improving the incentives faced by private companies, involve high control costs borne by the state. Here lies the main argument in favour of our thesis. The imposition of a State-controlled company beside private ones is likely to diminish the control costs borne by the State. It could be a complementary institutional arrangement allowing the enforcement of oil contracts. Afterwards, the last point try to address the question of the way the Russian state could control its national oil companies.

I. The Ineffectiveness of Market Institutions in the Russian Oil Industry

"Market institutions" is a quite broad concept. In parallel, the perception of their role and their functionality in economy is a hot topic among the theories which share the basic point that "institutions do matter"[8]. Among these theories, the New Institutional Economics appears as the one which is the most followed. The specificity of the NEI lies in the functionality role which is attributed to institutions. Property rights and contracts are seen as essential for facilitating private transactions and cooperative behaviour (A). Despite the formal definition of private property rights over oil assets and oil contracts managing the openness of Russian oil upstream, these institutions do not ensure their

[8] This diversity of view clearly appears in works which aim at giving an overview of economics thought regarding institutions' role in economy. See for example M. Rutherford (1996), *Institutions in Economics. The Old and the New Institutionalism*, Cambridge University Press and T. Eggertsson (1990), *Economic Behavior and Institutions*, Cambridge University Press, Cambridge.

functional role. They do not allow cooperative behaviour between the state and private companies (B).

A. The NIE Perspective of Economic Institutions

It is possible to find two definitions of institutions into the NEI. Each one allows highlighting different functional roles attributed to institution by the NEI. The first and the most usual is the D. C. North's definition. This author sees economic institutions as "*the rule of the game of a society* (…) *the humanly devised constraints that structure human interaction. They are made up of formal constraints (rules, laws, constitutions), informal constraints (norms of behavior, conventions, and self imposed codes of conduct)*"[9]. According to the authors sharing this point of view, the functional role of institutions is twofold. First, institutions allow the decreasing of uncertainty which is faced by individuals. Regarding this uncertainty, NIE stresses that the most pregnant one lies in what D.C. North calls the uncertainty of "*human environment*". Agents cannot anticipate other agents' actions. Then, this uncertainty can inhibit individuals. Agents could be reluctant to engage themselves on quite uncertain production and exchange activities. Therefore, by constraining the choice of each individual, the rules of the game allow a decrease of this uncertainty. That's why institutions can be viewed as the determinant of economic performance. Institutions determine the level of production and exchange in economy for a large part. The second functional role of institutions is that they define "*the incentive structure of societies and specifically economies.*[10]" In this respect, the property rights approach is the one which insists the most on this dimension. Its main objective is to show that property rights structure on assets affect use of resources in "*specific and predictable ways.*[11]" Advocates of this approach stress that property rights structures on assets influences owners' incentives and behaviors[12]. For an owner to be incited to use efficiently his asset its property rights must not be attenuated, i.e. he must possess:

i) the right to use the asset ;
ii) the right to sell, transfer the asset ;
iii) the right to receive the residual profit.

As point out by L. J. Alston and B. Mueller, "*The more exclusive are property rights to the individual or group the greater the incentive to maintain the value of the asset (…)*

[9] D. C. North (1990), *Institutions, Institutional Change and Economic Performance*, Cambridge University Press, Cambridge.

[10] D. C: North (1990), *Op. cit.*

[11] E. G. Furubotn & S. Pejovich (1972), "Property Rights and Economic Theory: A Survey of Recent Literature", *Journal of Economic Literature*, Vol. X, n. 4, p. 1139.

[12] A quite complete synthesis of all issues raised and adressed by the property rights approach is furnished by Y. Barzel. Y. Barzel (1997*), Economic Analysis of Property Rights*, Seconde Edition, Cambridge University Press, Cambridge.

more exclusive rights increase the incentive to improve the value of the asset by investment."[13]

The second definition of institutions found in NEI works is the one put out by the transaction costs economics (TCE) branch. Articles by R. C. Coase and by O. E. Williamson are seminal works of the TCE[14]. Economic institutions are viewed as the modes of organization, the governance structures, specified by agents for managing their transactions. These private-order rules are essential for agents to protect themselves against opportunism of their partner. According to Williamson, this behavioral assumption extends the mere self-interest seeking assumption to include "*self-interest seeking with guile*"[15]. Opportunism "*manifests itself as adverse selection, moral hazard, shirking, subgoal pursuit, and other forms of strategic behavior*"[16]. By relying to this behavioral assumption, new institutional economists are concerned with all negative consequences which are likely to happen because of asymmetries of information. Compared to other economics theories dealing with this problem, NIE refuses to consider possible the implementation of optimal contracts. The reason lies in the second behavioral assumption made by new institutional economists: bounded rationality[17]. Aiming at stressing the limited cognitive capacity of agents, this assumption induces the impossibility for agents to deal with all their conflicts of interest at the time of the transaction. Necessarily, contracts are incomplete[18]. While recognizing the importance of *ex ante* contractual devices, TCE highlights that governance structures regulating transactions have mainly for objective to control *ex post* opportunism.

These two definitions of institutions found in NEI lead us to follow O. E. Williamson when he stresses that NIE is concerned with two main research matters: formal and informal rules of a country and governance structures specified by agents to manage their

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[13] L. J. Alston and B. Mueller (2005), "Property Rights and the State", in C. Ménard and M. M. Shirley (eds.), *Handbook of New Institutional Economics*, Springer, The Netherlands, p. 574.

[14] Of course, the concept of transaction costs has been introduced by R. C. Coase in economics. We will refer here to the definition which is given by O. E. Williamson: each transaction involves costs of "*planning, adapting and monitoring tasks*". O. E. Williamson (1994), *Les institutions de l'économie*, InterEditions, Paris, p. 20.

[15] O. E. Williamson (1994), *Op. Cit.*, p. 20.

[16] O. E. Williamson (2000), "The New Institutional economics: Taking Stock, Looking Ahead", *Journal of Economic Literature*, Vol. XXXVIII, p. 601.

[17] The concept of bounded rationality is introduced by H. Simon. Here, no differences will be made between bounded rationality and procedural rationality also introduced by H. Simon. See H. Simon (1976), "From Substantive to Procedural Rationality", in S. Latsis [Eds], *Method and Appraisal in Economics*, Cambridge University Press, Cambridge, pp. 129-148.

[18] Basically, here lies the specificity of the TCE comparing to other theories of contracts in economics, that is to say Incomplete Contract Theory and Incentive Theories. E. Brousseau & J-M Glachant [ed.] (2002), *The Economics of Contracts. Theories and Applications*, Cambridge University Press, Cambridge.

transactions[19]. Despite this difficulty to find a common definition, two assumptions relative to agents' behavior give to the NIE its identity and its homogeneity. The first one is bounded rationality. Two consequences are induced by this assumption. First, agents take decisions in an uncertain environment, according to the distinction made by Knight[20]. Social rules are needed to decrease this uncertainty and allow productive activities to take place. Second, contracts are incomplete. The second common assumption which unifies NIE works lies in the opportunism of agents. Because of that, social and private-order rules are essential for allowing transactions to take place despite asymmetries of information.

Therefore, an NIE perspective of institutions focuses on the functionality role of economic institutions. Social and private-order rules ensure the following role:

i) To decrease uncertainty and agents' inhibition;
ii) to incite owners to use efficiently their assets;
iii) to overcome obstacles to transactions induce by informational asymmetries and opportunism.

B. The Ineffectiveness of Economic Institutions in the Russian Oil Industry

Despite a formal specification of private property rights on oil assets and a quite detailed legal framework regulating private companies' activities in Russian oil upstream, economic institutions do not currently ensure their functional roles. In order to defend this point of view, three observations are worth to highlight. The first lies in the characterisation of Russian oil companies' strategies. It seems possible to show that these strategies are those of private actors facing a total uncertainty. Standard economics works dealing with management of a non-renewable resource stress the decisive role of the discount rate chose by an operator. This rate will determine its strategy regarding extraction and investment[21]. The discount rate reveals companies' preference for the

[19] O. E. Williamson (2000), *Op. Cit.*

[20] Knight points out two ways for dealing with the future in economics: either we consider a risky environment, as neoclassical economics does, or we consider an uncertain environment. The main difference which is important to have in mind is the following: while agents are supposed to know all the events which are likely to happen when they face a risky environment, this is not the case if they are facing an uncertain environment. They do not even know which events are likely to occur. The main analytical consequence of this distinction lies in the fact that it is not possible to consider agents' decisions as a result of a maximization calculation. N. Moureau & D. Rivaud-Danset (2004), *L'incertitude dans les theories économiques*, Ed. La découverte, Collection repères.

[21] M. A. Adelman (1990), "Mineral Depletion with Special Reference to Petroleum", *The Review of Economics and Statistics*, Vol. 7, n.1, pp. 1-10. T. Besley uses Adelman's model to stress the results of an uncertainty over property rights upon the depletion rate choose by agents. Uncertainty over property rights is likely to increase agent's discount rate. According to T. Besley, while it is quite clear that this increase leads to lower investments carry on for exploration, how this increase affects the time path of depletion rate remains an open question. While a higher discount rate raises the premium on near-term revenues, it also

present time, the rate they use to value resources on the ground. Then it can be considered as a good indicator of the uncertainty faced by oil companies. Russian oil companies' strategies regarding resources management clearly indicate a high discount rate. They are reluctant to invest in risky exploration works and their depletion rate of known reserves is quite high[22]. These strategies catch the high uncertainty toward the future faced by Russian oil companies. That is why we can consider that private property rights on oil assets do not ensure a decrease of the uncertainty faced by private oil companies[23]. More, private property rights do not induce owners to manage efficiently their assets. Sooner or later, Russian oil assets' value will be negatively and strongly affected by these short run strategies.

Two other observations can be made. They stress the current ineffectiveness of oil contracts. Formal rules regulating the openness of Russian oil upstream do not ensure their functional roles. At the present time, opportunist behaviours from the two partners are observed. A look at the oil projects' benefits sharing highlights this point. It is largely recognized that the Russian authorities encounter difficulties to effectively tax Russian oil companies' profits. This is mainly due to the asymmetries of information which exist in favour of private companies. These asymmetries concern production costs and sells prices. Regarding this point, it is worth to stress the work realized by the World Bank for assessing the scale of the transfer pricing mechanism[24]. This 2004 study aims at re-calculate the Russian GDP by eliminating problems induced by transfer pricing mechanism. According to this study, the hydrocarbon sector share in the Russian GDP puts up from 8,8% according to official statistics to 25%[25]. Then, Russian authorities cannot control effectively profits' oil companies. These latter can benefit from their private informations about production costs and sell prices for an effective fiscal evasion. The second observation is concerned with the opportunist behaviour from the Russian

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raises the opportunity cost of investment to obtain those resources. Then, a higher discount rate has an ambiguous effect on depletion rate. A Russian oil industry's feature leads us to consider that a higher discount rate induces a higher depletion rate. This feature is the fact that Russian oil companies became the operator of fields explored and bring into production during the Soviet period. Then, their opportunity costs to obtain resources are low. T. Besley (1995), "Property Rights and Investment Incentives: Theory and Evidence from Ghana", *Journal of Political Economy*, Vol. 103, n.5, pp. 903-937.

[22] Since 1999, the Russian oil output increase is mainly due to some specific investments for enhancing oil recovery from "old" deposits. These investments have not been followed by investments for the exploration of new fields in remote areas like Eastern Siberia. This explains why Russia cannot ensure the replenishment of its reserves despite a huge resources base. Regarding this, some observers talk about a "*predatory management of resources*". International Energy Agency (2002), *Russia Energy Survey*, IEA/OECD, Paris; L. Dienes (2004), *Op. cit.*; V. Kruykov & A. Moe (2006), *Op. cit.*

[23] This point is made by C. G. Gaddy and B. W. Ickes (2005), "Resource Rents and the Russian Economy", *Eurasian Geography and Economics*, Vol. 46, n.8, pp. 559-583.

[24] This mechanism allows Russian oil companies to decrease their fiscal obligations. The holding sells its crude to some subsidiaries registered in a fiscal heaven at a price well below the market price. Then, holdings' profits are automatically decreased as well as fiscal obligations if taxes are based on profit.

[25] World Bank (2004), *Russian Economic Report*, n. 7, World Bank, Washington, p. 6.

authorities. This opportunism manifests itself by some discretionary interventions of the Federal authorities, withdrawing licenses, re-defining contractual arrangements, especially fiscal ones and so on[26]. It is worth to note that the term discretionary does not mean that the Russian authorities in not complicit with oil legislation. Rather, this term is used to highlight the selective application of this law[27].

The objective of this first part was to stress that a neo-institutional perspective of economic institutions focuses on the functional role of institutions. Social rules are essential to decrease uncertainty and induce private actors to engage themselves in productive and exchange activities. More, private-order rules are necessary for the agents to protect themselves against opportunism. Despite some formal rules specifying private property rights on oil assets and a quite extend legal framework regulating upstream activities, institutions are not effective in the Russian oil industry. Short term strategies implemented by private oil companies show the ineffectiveness of private property rights on oil assets. More, opportunist behaviour is the dominant strategy implemented by the two partners.

II. Institutional Complementarities and the Incoherence of the Current Russian Oil Model

Once stressed the ineffectiveness of institutions, we can turned to the idea of intitutional complementarity developed by the NIE (A) for addressing the reasons of this ineffectiveness (B).

A. One View of the Institutional Complementarity

New institutional economists put out the idea of an institutional complementarity. There exist some links and interdependencies between institutions. Their basic point is quite simple. Each institution's efficiency and effectiveness depend on the way this institution is articulated with institutions which already are in place. Two direct implications can be stressed. First, there is no optimal institution which could in itself deals with coordination problems at stake. Each institution, each contractual arrangement, have to be assessed on the basis of its own strengths and weaknesses on one hand, and on the basis of the way they articulates with other institutions on the other hand. Second, it appears relevant to lead comparative analyses of institutions. These studies aim at bringing to light what are the institutions which allow a specific arrangement to be effective. In a more dynamic perspective, these studies aim at addressing the

[26] Tax legislation in Russia is known as one of the most complicate and unstable comparing to international standard.

[27] For example, the threat to withdraw the Kovykta license hold by TNK-BP for underproduction has been used by the Federal authorities for inducing TNK-BP to negotiate Gazprom's arrival. This is quite coherent regarding the license terms. However, almost all licenses could be revoked according to these criteria.

consequences of an institutional change on the global institutional structure of an economy[28].

What we will call the "Standard approach" of institutional complementarity is presented by O. E. Williamson in his 2000 article. According to this author, the institutional environment of a country must be considered as the institutions hierarchically first. This means that political and legal institutions limit the possibilities to make economic institutions effective. Property rights are social rules specified and enforced by the state. The state appears as the legitimate authority allowing the emergence of the *Rule of Law*. This term indicates a legal environment where property rights are protected. They are not attenuated by the state or by other agent's actions. It can be easily understood that the independence of judicial authorities or the form of government are some essential features allowing or preventing the emergence of the *Rule of Law*.

Regarding the effectiveness of governance structures chose by agents for regulating their transactions, the standard approach also considers that the institutional environment is hierarchically first. This point is more explicit in B. Levy and P. T. Spiller's works than in O. E. Williamson's one. These two authors lead a comparative study of governance structures implemented in different countries to regulate the telecommunication sector[29]. Their main conclusion is that relative efficiency of these governance structures must be re-assessed by taking into account the institutional environment of the country in which they are implemented. Governance structures which were supposed to be efficient for giving operators some incentives to invest appear to be ineffective. The main reason is that these structures of governance are not coherent with the institutional environment's characteristics. Conversely, contractual arrangements supposed inefficient appear to be quite effective. This is because they are aligned with some features of the country's intitutional environment.

This standard approach of institutional complementarity is used by some authors to explain the ineffectiveness of economic institutions in Russia, notably in the oil sector[30]. First, it is stressed than political and judicial institutions put an important barrier to the emergence of the *Rule of Law*. More precisely, the scale of corruption in Russian administration cannot ensure the protection of private property rights against attenuations

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[28] C. Ménard (2000), "Methodological Issues in New Institutional Economics", Analyse Théorique des Organisations et des Marchés. Downloaded on the ATOM's website, 10/09/2006: http://atom.univ-paris1.fr/documents/M_nard_2001c_Methodological_Issues.pdf

[29] B. Levy & P. T. Spiller (1994), "The Institutional Foundations of Regulatory Commitment: A Comparative Analysis of Telecommunications Regulation", *Journal of Law, Economics and Organization*, Vol. 10, n°2, pp.201-246.

[30] Without refering to NIE theoretical framework, W. Tompson is the author who is the most convincing when he stresses the importance of the Russian institutional environment for explaining the current actions of the Federal authorities in the oil sector. W. Tompson (2006), « Un Venezuela du froid ? La malédiction des ressources et la politique russe », *Politique étrangère*, Vol. 1, pp. 37-50.

from state agent's part on the one hand, and from other private agents' part on the other[31]. More, some features of the Russian governance structure regulating oil upstream activities cannot ensure a good alignment with the Russian institutional environment. We cannot underestimate this point. For example, it can be considered as an institutional incoherence the choice made by Russian authorities to regulate upstream activities via the license mechanism. Exploration and production licences are administrative permits. For a large part, their effectiveness depends upon the delegation of an important discretionary power to oil administration for issuing licenses, supervising their applications and revoking them. That way, a corrupt administration or the difficulties for the Federal authorities to control regional administrations are some barriers to this mechanism's effectiveness. These characteristics of the Russian environment could not ensure the effectiveness of the license mechanism[32].

Then, according to the "Standard Approach" of institutional complementarity, the main explanation of the current ineffectiveness of economic institutions lies in the Russian institutional environment. This latter prevents the emergence of the *rule of law* and the effectiveness of the governance structure. Regarding the current reorganization of the Russian oil industry, this point of view stresses another explanation than the regression toward a "*central planning mentality*" from the Russian authorities. The delegation of upstream oil activites to state-controlled companies is the default mode of organization, the only feasible alternative regarding the Russian institutional environment. This positive conclusion can nevertheless be criticized. This is because of the theoretical inconsistency of the "standard approach".

These inconsistencies are stressed by G. M. Hodgson and J. Sapir, notably[33]. The first one lies in the contradiction between the individualism methodological that O. E. Williamson is referring to, on one hand, and the way social institutions are supposed to influence agents' preferences and interests, on the other hand. While O. E. Williamson wants to explain the emergence of institutions, the emergence of governance structures, by relying on individualism methodological, it is stressed implicitly in its 2000 article that social institutions influence agents' preferences and interests. Then, it appears necessary to make explicit this point by abandoning individualism methodological. Agent's interests are not pre-existent to choices and they are influenced by social rules in which decisions take place. As put out by B. Amable, "*agent's strategies are conceived*

[31] T. Frye (2004), "Credible Commitment and Property Rights. Evidence From Russia", Ohio State University. Downloaded on the World Bank's website, 16/03/2005: http://www1.worldbank.org/publicsector/politicaleconomy/FryeCredibleCommitment.pdf

[32] G. Cordero Moss (1998), "Contract or License? Regulation of Petroleum Investments in Russia and the Role of Foreign legal Advice", *Centre for Energy, Petroleum, and Mineral Law and Policy*, Vol. 3, n. 11. Downloaded on the CEPMLP's website, 06/02/2006: http://www.dundee.ac.uk/cepmlp/journal/html/vol3/vol3-11.html

[33] See G. M. Hodgson (1993), "Institutional Economics: Surveying the Old and the New", *Matroeconomica*, Vol. 44, n. 1, pp. 1-28 and J. Sapir (2005), *Quelle économie pour le XXIième siècle ?*, Odile Jacob, Paris.

under the influence of institutions, that is to say the formal and informal rules which define the set of choices.[34]" More, social institutions do not influence choices and interests independently. Here lies one of the main important links between institutions. Each rule influences agents' interests and incentives. Therefore, the effect of a particular rule upon agents' behaviour cannot be assessed independently from the effects induce by other rules. This last point is important for our subject. Indeed, it must be stressed that property rights on oil assets and property rights on oil resources both influence agents' interests. As it will be make clear later, here lies a specificity of the transaction by which a state opens its oil upstream to private operators.

The second incoherence lies in the contradiction existing between the bounded rationality assumption, on one hand, and the way agents are supposed to determine their strategies, on the other hand. According to the standard approach developed by O. E. Williamson, agents are supposed to choose governance structures for minimizing transactions costs. In a way, this means that governance structures are an outcome of a maximization calculation. It is in contradiction with the bounded rationality assumption on which O. E. Williamson relies. More, opportunism's theory put by O. E. Williamson implicitly rely on the assumption that agents are able to assess all gains and losses of a defection strategy. They are supposed able to maximize their utility in a dynamic perspective. These two features of the way agents are supposed to choose their strategies are in contradiction with the bounded rationality assumption. Indeed, these features require that agents are perfectly rational. They maximize their expected utility on a basis of an intertemporel calcul. However, if perfect rationality is accepted, social institutions are inconsequent form a NEI perspective. Indeed, social institutions are worth to analyze only if agents face a bounded rationality resulting from the uncertain environment in which they take their decision. We can see here that the standard approach of the institutional complementarity is based upon some strong inconsistencies.

In order to overcome these inconsistencies, it appears necessary to accept all analytical consequences of the bounded rationality assumption. First, that means that we have to suppose that social institutions influence for a large part agents' interests and preferences. Second, agents will define their strategies regarding opportunism according to their subjective beliefs concerning their interests. In this perspective, we will rely here on NIE works which consider institutions as equilibrium phenomena. Some authors as M. Aoki and A. Greif consider institutions in a game theoretic perspective. Institutions are outcomes of a subjective game played between agents[35]. The concept of "subjective game" means that players are supposed "*to have individual, incomplete cognitive views regarding the structure of the game they play.*[36]" Formal law and formal contracts cannot

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[34] B. Amable (2005), *Les cinq capitalismes. Diversité des systèmes économiques et sociaux dans la mondialisation*, Edition du Seuil, Paris, p. 49.

[35] See M. Aoki (2001), *Toward a Comparative Institutional Analysis*, Massachusetts Institute of Technology, MIT, and A. Greif (1998), "Historical and Comparative Institutional Analysis", *American Economic Review Papers and Proceedings*, Vol. 88, n.2, pp. 80-84.

[36] M. Aoki (2001), *Op. Cit.*

be seen as themselves as institutions. These laws are just the rules of the game and institutions are the results of this game. Each agent chooses his strategy according to his beliefs regarding its interest, on one hand, and his beliefs regarding other agents' interests on the other hand. Then, it seems to us that this approach of institutions allows overcoming theoretical inconsistencies of the "standard approach". Each social rule influence agents' interests. More, agents really face a bounded rationality. They implement their strategies by relying on their subjective beliefs.

Beside the importance of beliefs, the second feature of this approach of institution lies in the idea of self-enforcement. As institutions are an equilibrium outcome of the game in which each player choose his best strategy according to his beliefs, institutions can be considered as self-enforceable. Here lies another reason to rely on this approach of institutional complementarity. Indeed, this approach stresses the need to include into the game the enforcer of institutions, i.e. the state. We need to address the question of the state's motivations to really enforce institutions. Concerning the transaction analyzed here, this need is strengthen since the state is at the same time a contractor and the enforcer. Then, the theoretical inconsistencies of the standard approach and the specificity of the transaction justify that we rely on this game theoretical approach of institutions.

This approach of institutions will be used here to bring to light the main links and interdependencies between property rights on oil assets, property rights on oil resources and oil contracts. Methodologically, we consider here that state's interests regarding the use of its oil resources are hierarchically first. That means that these interests limit the possibilities to make private property rights on oil assets, on the one hand, and oil contracts, on the other hand effective. This can be justified by the double status of the state. Compared to the "standard approach", institutional environment is not hierarchically first. However, this does not mean that the institutional environment's features have no consequences upon the enforceability of institutions. For example, a weak administrative capacity can influence agents' beliefs regarding the ability of the state to enforce formal rules. Then, it can influence agents' interests and consequently their strategies.

B. The diversity of Oil Models and the incoherence of the Russian Oil Privatization

By considering state's interests regarding the use of its oil resources as hierarchically first, we can highlight three generic oil models. Each model is characterized by the form took by the property rights on oil resources, on one hand, and property rights on oil assets on the other hand. Following B. Mommer, we consider two types of oil states: those implementing a *proprietorial regime* and those implementing a *liberal regime*[37]. According to this author, the main difference between these two types of regime lies in the fiscal system. While liberal regime is featured by a system which aim at levy a tax on oil rent, a proprietorial one consider that oil resources present a value underground. Then, a proprietorial fiscal system is featured by some devices taxing the

[37] B. Mommer (2002), *Global Oil and the Nation State*, Oxford Institute for Energy Studies, Oxford.

volume of production. A royalty based on production volume which must be paid by operators is the most striking example of a proprietorial fiscal device. Here, we consider two more differences. The first one lies in the fact that a proprietorial state wants to make effective its property rights on oil resources. The state wants to control the depletion rate of its oil resources. Conversely, a liberal state let private companies explore and extract oil resources according to their own rationality. The second difference is a complement of the first one. A proprietorial state does not intend to conform to international law for managing an eventual conflict with private companies.

This simple classification of oil states leads us to consider three types of oil model. The first one can be called the "*coherent proprietorial model*"; basically, it is the model implemented in OPEC's counties. In order to make effective its property rights on oil resources, the state close its oil upstream to private operators. That's why, it is a coherent model. The second one is the "*liberal model*". Here, the UK appears to be the striking example. While the upstream activities are delegated to private companies, the state lets the companies extract the resources according to their own rationality. The state does not really make effective its property rights on oil resources. The third model can be called the "*incoherent proprietorial regime*". Surely it is the most widespread model. This model is based upon an institutional incoherence. While the state wants to make effective its property rights on oil resources, upstream activities are delegated to private companies. But private property rights on oil assets cannot be self-enforcing. They are necessarily attenuated. Indeed, as the state wants to control the depletion rate of resources, the operators' right to use the asset is attenuated. Private companies' beliefs are that it is not the interest of the State to protect this right. More, private companies' right to access oil resources is also attenuated. First, this access is allowed through a lease system. The length of the lease is necessary finite. And, as stressed by R. Boadway & F. Flatters, "*only a lease of indefinite duration would be equivalent to full private ownership of the resource property*.[38]" Second, as the State do not comply with international law, private rights to resource access are also uncertain. Then, this last model is based on an institutional incoherence. Whatever the institutional environment of a country, private property rights on oil assets cannot ensure their functional role to decrease uncertainty and give private companies good incentives to use oil resources.

At the present time, Russian oil model belongs to the "*incoherent proprietorial model*". Here lies the first incoherence of the Russian oil industry privatization program. Private property rights are attenuated and access to oil resources remains uncertain from the Russian private companies' point of view. In accordance with the view of institutional complementarity adopted here, this institutional incoherence can have a consequence upon the strategies of opportunism implemented by agents. In this respect, one can argue that the companies and the sate have interests to negotiate and respect their mutual commitments. Private companies could be incited to respect state's interests in implementing their depletion strategies and sharing benefits' project. In turn, state's commitment to protect their property right on assets and their access to oil resources could become credible from private companies' point of view. However, the conditions

[38] R. Boadway & F. Flatters (1993), *Op. cit.* p. 5.

for the cooperative equilibrium to emerge are quite restrictive[39]. Two features of the present transaction could influence agents to implement opportunism behaviours. Of course, the first lies in the institutional incoherence of the transaction. By increasing private companies' discount rate, this incoherence decrease future profits' value. Companies are incited to implement short term strategies. Therefore, state's interest to protect their property rights and enforce oil contracts is not credible from private companies' perspective. The second feature of the transaction is the rent characteristic of the sector. Large gains expected are another incitation for oil companies to implement short term strategies. Then, these two features of the transaction can induce the emergence of a non-cooperative equilibrium. This is quite coherent with the results of the "subject" game theory.

The second incoherence of the privatization process lies in its illegitimacy. It is worth to remind that privatization of oil assets took place in the middle of the nineties. The so-called oligarchs became the new owners of oil assets through the "Loan for Shares" program. Russian banks lent money to Federal state. In exchange, bankers received oil companies' shares for presumably a transitional period. Because of the state's inability to pay back, bankers became owners of oil companies' shares after some quite opaque auctions[40]. This program and oligarchs' ownership of assets still remain illegitimate in Russian population's eyes. This illegitimacy strengthens bad consequences of the institutional incoherence. Once again, oligarchs' belief is that the Federal authorities are not able and are not incited to protect their property rights[41].

The third incoherence of the Russian privatization program is the legal and political environment in which this process has taken place. The *non-Rule of law* state and the quite conflict-provoking relations between federal authorities, on one hand, and

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[39] Because of the bounded rationality assumption, we cannot admit the idea that a market failure induce by asymmetries of information will give rise to an optimal institution via agents' negotiations. In this respect, J. E. Stiglitz talks about the "*functionalist fallacy*". As put out by M. Rutherford, "*the attempts to interpret rule following in maximizing term run into logical difficulties as soon as imperfect information or cognitive constraints are allowed to enter the picture.*" See M. Rutherford (1996), *Op. cit.*, p. 78 and J. E. Stiglitz (2002), "Information and the Change in the Paradigm in Economics", *The American Economic Review*, Vol. 92, n. 3, pp. 460-501.

[40] S. Guriev & A. Rachinsky (2004), "Oligarchs: the Past or the Future of Russian Capitalism?", SSRN Working Paper, Social Science research Network. Downloaded on the SSRN's website, 10/05/2005 http://papers.ssrn.com/sol3/papers.cfm?abstract_id=579581

[41] This may explain the turning point observed in the relationship between the authorities and the oligarchs at the beginning of the second V. Putin's mandate. The first mandate has been featured by the so-called pact between V. Putin and the oligarchs. Mainly, they were supposed to invest their money in Russia and to discharge their fiscal obligations. In exchange, V. Putin commits himself to protecting their property rights. This pact led to a stalemate. Because of the illegitimacy of the privatization process, V. Putin's commitment could not be credible. This may explain the hardening of their relationships during the second V. Putin's mandate. In this respect see J. Sapir (2007), "Quel bilan pour les années Poutine ?", *Document de travail du Centre d'études des modes d'industrialisation*, n°07-1, Downloaded on the CEMI/EHESS website, 05/06/07 : http://cemi.ehess.fr/document.php?id=981

regional power, on the other hand, are some striking elements of the Russian institutional environment[42]. These are factors which can affect private owner's beliefs about the willingness and the ability of Russian state to enforce property rights and contracts. Obviously, this can strengthen incentives to adopt short term strategies and opportunism behaviors. Here, two points are worth to stress. First, while admitting that institutional environment play a decisive role regarding economic institutions' effectiveness, the view of institutional complementarity adopted here leads us to point another causal relation than the "standard approach". We must consider that corruption cannot be viewed as a cause of the ineffectiveness of contracts. Rather, it must be considered as a consequence of the institutional incoherence of the transaction. Indeed, as this incoherence increases private companies' interests for opportunism behavior; they are incited to multiply informal relationship with state agents to implement these strategies. This point is clearly made by C. G. Gaddy and B. W. Ickes[43]. Similarly, our point of view regarding the institutional incoherence of the transaction leads us to reject the idea defended by some reformers at the beginning of the transition. According to them, privatization of large firms would permit the emergence of a powerful political constituency. These new owners were supposed to be interested by the emergence of the *Rule of law*. Then, they were supposed to exert a lobby over the authorities in favor of the *Rule of law*. A quite similar idea is currently stressed by P. J. Luong. According to this author, oil assets' privatization is a quite effective mean for protect oil states against the "resource curse"[44]. "Resource curse" literature tries to explain that natural resources endowment gives the state bad incentives for enforcing economic institutions essential to economic growth. Privatization of oil assets allows the emergence of a political constituency which is interested and strong enough to negotiate with the state appropriate institutions. In our opinion, it can be shown that these arguments cannot be admitted. Indeed, the institutional incoherence of the transaction increases private companies' discount rate. Then, they can be interested by implementing short term strategies and opportunism behaviours. This is easier in a *non-Rule of law* environment. Consequently, they can be interested by the extension of the *non-Rule of Law* state. That's what happened in the Russian oil sector[45].

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[42] In respect of the conflict-provoking relations between Federal and Regional powers, see V. Kryukov & A. Moe (1998), "Joint Management of Oil and Gas resources in Russia", *Post-Soviet Geography and Economics*, Vol. 39, n. 7, pp. 588-605.

[43] C. G. Gaddy & B. W. Ickes (2005), *Op. cit.*

[44] J. P. Luong (2004), "Rethinking the Resource Curse: Ownership Structure and Institutional Capacity", *Paper presented to the Conference on Globalization and Self Determination*, Yale University, 14-15 May 2004.

[45] Regarding oligarchs' rent seeking strategies and their interests in prolonging the absence of the *Rule of law*, see B. Black, R. Kraakman & A. Tarassova (2000), « Russian Privatization and Corporate Governance: What Went Wrong ? », *Stanford Law Review*, Vol. 52 and K. Hoff & J. E. Stiglitz (2002), "After the Big Bang ? Obstacles to the Emergence of the Rule of Law in Post-Communist Societies", *World Bank Policy Research Working Paper*, n. 2934.

In short, a game theory perspective of institutional complementarity leads us to consider three incoherencies of the Russian oil industry privatization. These can explain the current ineffectiveness of economics institutions in the Russian oil sector without blaming only the Russian institutional environment. The first is that Russian model which emerges from privatization belongs to the "*incoherent proprietorial model*". Private property rights on oil assets cannot be effective. Consequently, this can lead private companies to implement short term strategies and opportunism behaviour. Second, the illegitimacy of oil assets' privatization in Russia strengthens these negative consequences. The *non-Rule of Law* state in which the privatization took place constitutes the third inconsistency. It was far from certain that new owners will lobby authorities for ensuring the emergence of the R*ule of raw*.

III. A Comparative Analysis of Oil Contracts: The National Oil Company as a Complementary Arrangement of Oil Contracts.

While an institutional analysis allows us to highlight the incoherance of the Russian oil industry privatization, it remains to consider the relevence of the current reorganization. Does this reorganization can be an arrangement allowing to overcome contradictions inherited from the privatization program? Does this reorganization can allow a change in incentives faced by private companies for lead them to implement a more balanced resource management of resources? In short, does this reorganization can allow the effectiveness of economic institutions? Today, the first stake for the Russian authorities is to ensure the credibility of its commitment to protect private companies' property rights, including their right to access oil resources. This is the condition for inducing private oil companies to invest in the exploration of marginal fields, notably in East Siberia. In accordance, with the game theory perspective of the institutional complementarity, this credibility required that oil companies believe that it is the state's interest to protect their rights. The point is then to bring in light how the state could incite private companies to manage their resources according to its own interest. The second stake is to highlight how the State can control private companies' activities. Indeed, because of the institutional incoherence of the transaction and because of the rent characteristic of the sector, private companies can have interests to cheat and implement an opportunism behaviour regarding oil contracts. It can appear relevant to lead a comparative analysis of oil contracts in order to see what are the arrangements apt to achieve these two objectives. This analysis would highlight the tension existing between these two objectives. Contractual arrangements which induce good incentives for oil companies are those which lead to an increase in the control costs borne by the state[46]. This analysis addresses first the fiscal aspects of oil contracts (A). Then, the comparative analysis focuses on the two main leasing systems currently implemented, i.e. license system and production-sharing agreements (B).

[46] The idea that the implementation of contractual arrangements giving appropriate incentives goes hand in hand with an increase in *ex post* control costs is not new and quite widespread in NEI works. For example, this tension has been formalized by P. Bajari & S. Tadelis (2001), "Incentive Versus Transaction Costs: A Theory of Procurement Contracts", *RAND Journal of Economics*, Vol. 32, n. 3, pp. 387-407.

A. Fiscal Devices

No doubt, the two partners are quite attentive to fiscal arrangements of oil contracts. Because they determine the sharing of the benefits' projects of course but also because fiscal arrangements are devices for the state to regulate private companies' activities. Fiscal aspects of oil contracts are essential for disciplining private companies' strategies regarding exploration and ressources management. Following the UNCTAD's classification, it is possible to distinguish three types of fiscal devices[47]. Each one induces different incentives for private oil companies. The first type is made up by progressive fiscal devices. They are liberal fiscal devices according to B. Mommer's classification, i.e. they aim at collecting only oil rent. And, most of economics works are agree that here lies the crieria for assessing the efficiency of a fiscal arrangement. All collecting devices that do not tax companies' excess profits induce bad incentives for operators. According to the UNCTAD's classification, these bad fiscal arrangements include neutral and regressive devices. They are devices which are made up by tax on the volume or the value of production, i.e. royalties, bonus bid, export duty and so on.

Regarding the highly problematic incentives resulting from the implementation of neutral and regressive devices, four problems are usually stressed. First, it is no more profitable for companies to explore and develop marginal fields characterized by high production costs. Indeed, taxing the volume or the value of production implies an increase in production costs. Then, some deposits which otherwise are profitable can be pushed into the non-profitable category[48]. Second, companies are incitated to abandon the develoment of fields prematurely; without extracting resources which are the most difficult to recover[49]. The "Prudhoe Bay Effect" is the third negative consequence. Because the state cannot collect extra profits by relying to a tax on the volume of the production, he is likely to increase *ex post* the tax rate. This *ex post* change can affect companies' beliefs regarding risk. Consequently, they are likely to raise their discount rate and postpone their exploration activities[50]. Lastly, this state's inability to collect excess profits could induce private companies to increase their depletion rate, to acclerate the extraction path of ressources. This is because private companies collect the majority part of the excess profit.

In order to overcome these problems, a tax aiming at collect the oil rent appears efficient. In order to achieve that, government take must vary according to the evolution of production costs on one hand and according to oil prices on the other hand. Then, for

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[47] UNCTAD (1995), *Administration of Fiscal Regimes for Petroleum Exploration and Development*, UNCTAD, Geneva.

[48] R. Boadway & F. Flatters (1993), *Op. cit.*

[49] W. J. Mead (1994), "Toward an Optimal Oil and Gas Leasing System", *The Energy Journal*, Vol. 15, n. 4, pp. 1- 18.

[50] R. Garnault & A. C. Ross (1975), "Uncertainty, Risk Aversion and the Taxing of Natural Resources", *The Economic Journal*, Vol. 85, pp. 272-285.

progressive fiscal devices to be effective, the state must be able to control the volume of output, production costs and sell prices. Otherwise, the risk is to see private companies use their private information for an effective tax evasion. Conversely, neutral and regressive fiscal devices have some comparative advantages. To be effective, surveillance costs are very low. For example, a flat royalty rate on production requires to be effective only the control of the production volume. Here lies the first argument for supporting the idea of a tension between the two main objectives of oil contracts. Fiscal arrangements which induce good incentives for private companies also induce high transaction costs borne by the state. The following table highlights this tension.

Table 1: Fiscal Devices, Transaction Cost and Incentives

	Control of Production Level	**Control of Sell Prices**	**Control of Exploration and Production Costs**	**Type of fiscal devices according to their effects upon companies' incentives**
Fiscal Devices				
Royalties				
. Flat Rate on Production	Necessary	Unnecessary	Inutile	Régressive
. Flat Rate on Production Value	Necessary	Necessary	Inutile	Régressive
. Flexible rate According to Production Level	Necessary	Unnecessary	Inutile	Neutral
Bonus	Unnecessary	Unnecessary	Unnecessary	Regressive
Export Duty	Necessary	Unnecessary	Unnecessary	Regressive
Flat rate on profits	Necessary	Necessary	Necessary	Neutral
Ressource Rent Tax	Necessary	Necessary	Necessary	Progressive

B. Licenses VS Production-Sharing Agreement

Two lease systems are usually implemented by oil states to regulatate upstream activites. The first one is the license system. As mentionned before, licenses are permits assign to private companies authorizing them to carry on exploration and production activites. Among other issues, licenses deal with the lengh of the lease, the area, the work commitment and so on. Production-sharing agreements are works contracts. They are usually implemented in developing countries[51]. According to the majority of authors, no

[51] For a presentation of oil contracts' main features, see: P.D. Cameron (1988), « The Structure of Petroleum Agreements », in Beredjick Nicky & Wälde Thomas [ed.], *Petroleum Investment Policies in Developing Countries*, Graham and Trotman, UK, pp. 29-46, B. Taverne (1994), *An Introduction to the Regulation of the Petroleum Industry. Laws, Contracts and Conventions*, International Energy and Resources Laws and Policy Series, Graham & Trotman, London and A. Jennings (2002), *Oil and Gas Exploration Contrats*, Sweet & Maxwell, Londres.

strong differences are worhwile to mentionned. For example, T. Waëlde stresses that "*main functions of an agreement (…) are largely independent of the legal form*"[52]. Similarly, D. Johnston's comparison of agreements' fiscal aspects leads to the conclusion that the "*terminology is effectively distinct but these two systems are not really different from a financial point of view.*[53]"

It is obvious that licences and production-sharing contracts share some common features regarding arrangements aiming at control and discipline private companies' incentives. Among these basic arrangements, we can notice the following. First, licences and production-sharing agreements both specify some compulsory works, i.e. exploration works that operators have to carry on. This disposition can ensure the state that oil companies will not accumulate licenses without exploring the area. Basically, arrangements regarding compulsory relinquishments aim at the same target. Companies must relinquish a part of the area. The state can ensure that companies are really interested to carry on exploration and production into the area that they keep. More, the state can assign to another company relinquished area.

Despite these common features, it can be pointed out some differences between license and PSA regarding the objectives of disciplining companies' incentives and controlling their activities. The main difference which is worthwhile to stress concerns the transfer of property rights over oil resources. Basically, an operator holding a license becomes the owner of oil resources once they are extracted. Conversely, such transfer of property rights does not take place if the state and the operator sign a PSA. The state remains the owner of oil production. The operator is paid via the "Profit Oil" mechanism: oil output is split between the state and the operator according to a percentage specified into the agreement. This fiscal device is quite regressive. Indeed, "Profit Oil" mechanism is likely to induce for the operator the same bad incentives than a tax on the value/volume of production. Conversely, it seems easier for the state to specify progressive fiscal arrangements by issuing licences. As the operator becomes the owners of resources once they are produced, state's remuneration is effective via the *ex post* taxation of oil companies. Consequently, the state is able to implement some progressive fiscal devices. Then, a license system is more apt to offer good incentives to private companies than the PSA's one. This is because the main fiscal device of PSAs lies in the "Profit Oil" mechanism which is regressive.

Inversely, it is probably easier for the state to control companies via a PSA than via the licenses' system. By signing a PSA, the state becomes a contractual partner of the operator. Via the minister or its national oil company, the state can be involved for making some important decisions during a project. Conversely, the state is not directly involved and it may be harder for him to control operators' activities via the license

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[52] T. Waëlde (1988), "Investment Policies in the International Petroleum Industry-Responses to the Current Crisis", in N. Beredjick & T. Waëlde [Eds], *Petroleum Investment Policies in Developing Countries*, Graham and trotman, UK, p. 13.

[53] D. Johnston (1994), I*nternational Petroleum Systems and Production Sharing Contracts*, Penwell, Tulsa, Oklahoma.

system. As put by the UNCTAD, this control necessarily takes place "*after the facts*"[54]. Then, it seems possible to conclude that license system can offer the state the possibility to implement some progressive fiscal devices. But, for these good arrangements to be effective, the state must be able to control effectively operators' activities *ex post*, without be involved for making important decisions. On the contrary, it seems easier for the state to control companies' operation by signing a PSA. But, the "Profit Oil" mechanism is quite regressive. It is tougher for the state to offer private companies good incentives.

This quick comparative analysis brings into light the tension between the two objectives of oil contracts. Contractual arrangements which allow the state to discipline private companies' incentives induce high *ex post* costs of control. Here lies the main argument for sustaining the idea that the presence of a state-controlled company is a complementary arrangement to oil contracts. By decreasing *ex post* transaction costs, this arrangement can ensure the effectiveness of *ex ante* contractual arrangements aiming at offer good incentives to oil companies. By ensuring the effectiveness of oil contracts, a state-controlled company can be an organizational arrangement allowing the delegation of upstream activities to private companies in large scale.

This last assessment is particularly worthwhile for Russia. At the present time, high *ex post* costs of control prevent the effectiveness of *ex ante* contractual arrangements. In this respect, the observation of the evolution of Russian fiscal devices is striking[55]. Since the beginning of the transition, progressive fiscal devices have been substituted for more regressive ones. During the first years of the transition, some fiscal devices as the excises on oil or royalties were flexible enough to offer good incentives. Since then, most of the changes introduced in the Russian fiscal scheme have increased the relative importance of regressive devices. The most important reform has occurred in the beginning of 2002 when mineral extraction tax was introduced to take over from several other taxes. This tax is based upon the value of each company's production. Then, total government take does not vary according production costs. This is highly problematic and explains why Russian companies call at the government to introduce tax breaks for the development of marginal fields. In accordance with the tension highlighted here, it seems possible to follow L. Dienes who stresses that this trend can be explained by the authorities' difficulties to control effectively profits' companies[56]. The state cannot ensure the effectiveness of progressive fiscal devices. Federal authorities have chosen to rely on regressive devices which require less *ex post* control to be effective. Therefore, the presence of a state-controlled company beside private ones could diminish control costs and consequently allowing the effectiveness of better fiscal devices. We can notice that

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[54] UNCTAD (1995), *Op. Cit.*

[55] International Energy Agency (2002), *Op. Cit.* , B. Bosquet (2002), "The Role of Natural Resources in Fundamental Reform in the Russian Federation", *World Bank Policy Research working Paper*, n. 2087 and P. Daniel & A. Fernando (2004), "Reforming Taxation of the Oil Sector in the Russian Federation", *International Tax and Investment Center Special Report*. Downloaded on ITIC's website, 30/06/06 : http://www.iticnet.org/publications/Default.htm

[56] L. Dienes (2004), *Op. Cit.*

the difficulties of the federal authorities to control *ex post* companies' activities are reinforced by their conflicting relations with regional power. In a majority of cases, it seems that informal relations between regional power and private companies have been tied against the federal authorities. This is another argument in support of the current reorganisation's coherence.

IV. How the State Can Control National Oil Companies? The Norwegian Example

If we accept the idea that national oil company can be a complementary arrangement to oil contracts, two important problems must be addressed. First, it cannot be forgotten that the main normative conclusion of the property right theory is that public property rights on assets are inefficient. This is because a public firm's manager faces bad incentives to manage the asset. While he controls the assets, he is not the residual claimant of profit. This seperation between control and ownership induces bad incentives. Public firm's manager is not motivated to take any action that will increase the asset's value. He can have in minds other goal than the maximization of profit. More, the observation of the links between different state-controlled companies and their government owners leads B. Mommer to consider that the main risk is that the national oil company represents the private oil industry's interests, and not the state's ones[57]. Then following O. Nøreing, we have to take into account that national oil companies' managers "*are not agents, subjects to a total control from the government but some independent actors who have their own growth and development strategies for their companies*"[58].

In this perspective, the ability of the state to control and discipline its national company appears as an essential condition for this organizational arrangement being effective. Once again, the effectiveness of this arrangement depends upon the subjective beliefs of private companies regarding national companies' interests. Private companies' beliefs may be that the rules imposed by the state to the national oil company are in contradiction with the national company's interests. Then, the ability of the state to control their activities via this arrangement does not appear credible from the point of view of private companies. Consequently, even a state company-led consortium can implement a strategy of defection regarding state's interests for the management of resources. Therefore, private companies' subjective beliefs are that state's interest is not to secure their rights of access to the resource. This can strengthened private companies' incentives to implement short term strategies and to be opportunist regarding oil contracts. In this respect, partial privatization of Gazprom and Rosneft can appear

[57] According to B. Mommer, the example of the venezuelian national company, PDVSA, is quite striking. B. Mommer (2002), *Op. cit.*

[58] O. Noreng (1994), « National Oil Companies and Their Government Owners: the Politics of Interaction and Control », *The Journal of Energy and Development,* Vol. 19, n°2, p. 198.

problematic. Indeed, private companies' beliefs may be that national oil companies' interests are the same than privates' ones.

Arrangements allowing the Russian authorities to control national oil companies are essential for ensuring the effectiveness of the current reorganization. In our view, here lies the main problem which will be faced by the Russian authorities. On short-term, the current informal and personal links between authorities and national oil companies' managers may be effective to ensure that control. But clearly, this will be ineffective on a longer run because this control is not institutionalised and too much sensitive to political economics issues. The stake is then to institutionalize the links between national oil companies and the authorities. Then, it is necessary to address this question and highlight which formal mechanisms could be implemented for ensuring an adequate and more formal control of national oil companies. To achieve this objective, it appears pertinent to briefly analyze the Norwegian model. Three reasons justify this choice. First, while the Norwegian authorities made quickly clear their intention to make effective their property rights on oil resources, they chose to delegate upstream activities to private companies for a large part. Then, Norwegian model belong to the "*incoherent proprietorial*" type. Second, it seems that Norway has managed to overcome problems resulting from the institutional incoherence on wich is based the transaction. It seems possible to show that Norway's authorities have been quite effective for controlling and disciplining private companies in order to make them respect its interests regarding the management of oil resources. Despite the institutional incoherence, the Norwegian authorities have been able to induce oil consortium to implement a moderate rate of extraction in accordance with the objective quickly stressed on official documents. Lastly, an important role has been given to national oil companies for controlling private activities. As soon as the beginning of the seventies, the state introduces into its petroleum legislation a provision giving Statoil a minimum of 50% stake in all petroleum consortium. Here, the stake is to highlight the original arrangements of the Norwegian model allowing the state to ensure the credibility of the Statoil's role of control. In this respect, J. M Chevalier stresses that "*the Norwegian model appears as a form of accurate monitoring of the national oil company.*[59]"

Basically, three important lessons from the observation of the Norwegian model can be stressed. First, it is obvious that the control over Statoil by the Norwegian authorities is strict and quite formal. This control is carried out through Storting and Minister's approbation of all important decisions make by Statoil. As mentioned before, this control is not so strict in Russia and very less formal. Second, as soon as 1982, a commission is mandated for thinking about a reorganization of the state's involvement in the oil industry. The objective is clearly to limit the financial growth of Statoil for avoiding the national oil company to become a too powerful political constituency[60]. The

[59] J-M. Chevalier (1994), « L'avenir des sociétés nationales des pays exportateurs d'hydrocarbures », *Economie et Sociétés*, Série Economie de l'énergie, n°6, p. 9.

[60] D. H. Claes (2003), « Globalization and State Oil Companies: the Case of Statoil », *The Journal of Energy and Development*, Vol. 29, n°1, p. 50.

introduction of the *State Direct Financial Interest* (SDFI) is the original arrangement introduced by the Norway for achieving that goal. In accordance with this mechanism, all Statoil's stakes in oil licenses are divided and one part is attributed to the State. Then, the Norwegian state is currently a stakeholder in all licences. This confirms the difficulty to control the national oil company by some indirect means. Indeed, even with an institutional environment very less opaque than Russian one, Norwegian state has chosen to be directly involved in oil consortiums. This stress how problematic the control of Gazprom and Rosneft will be in Russia and raises the question of the pertinence of implementing a mechanism closed to the SDFI.

The third lesson lies in the fact that the Norwegian model tends to confirm that this direct state involvement is the striking arrangement allowing the authorities to overcome problems induced by the institutional incoherence of the transaction. This involvement has increased the credibility of the state's ability to control consortium's operations. Statoil-led consortium's subjective beliefs lie in the ability of the State to control operations regarding resources management, production costs and so on. Then, contract arrangements aiming at discipline their incentives have been effective. Especially, fiscal devices have become more and more progressive. Consortiums have sufficient incentives to implement a quite balanced resource management strategy. The important point to note is that the Norwegian state has never used its right of vote[61]. This means that consortiums' respect of the state's interests is self-enforcing. Knowing the capacity of the State to control effectively their operations, consortiums' subjective beliefs are that it is in their interest to take into account state's prerogatives. In this perspective, their subjective beliefs are also that the state has an interest to protect their property rights over oil assets and their rights regarding access to oil resources. Consequently, the state's commitment to protect their rights is credible from the oil companies' point of view. Private property rights and oil contracts are then self-enforcing and they can ensure their functional role of decreasing uncertainty and induce efficient use of resources. In this respect, it is worthwhile to note than none licences have ever been revoked by the Norwegian authorities.

[61] Al-Kasim Farouk (2006), *Managing Petroleum Resources. The "Norwegian Model" in a Broad Perspective*, Oxford Institute for Energy Studies, Oxford.

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This article supports the idea that the current reorganization of the Russian oil industry is not a mere re-nationalization of oil assets explained by short-term political objectives. Current situation of the Russian oil industry is hardly sustainable. While we observe a maximisation of the production from old field, insufficient investments are carrying on for the replenishment of resources. By relying on a neo-institutional perspective, we have tried to explain this result by the ineffectiveness of economics institutions. Property rights on oil assets and oil contracts are not effective and do not ensure their functional role in economic coordination. Afterward, this article focused on the possible explanations of this ineffectiveness. All works which explain this ineffectiveness by only blaming the Russian institutional environment cannot be totally convincing. That is because of the theoretical inconsistencies on which they are based. In order to overcome these inconsistencies, we have to stress another view of institutional complementarity by relying on M. Aoki and A. Greif's works. A game theory perspective of institutions leads us to build a classification of oil model and to highlight the incoherence of the Russian's one. This incoherence lies mainly on the contradiction which exists between private property rights on oil assets on one hand and public property rights on oil resources, on the other hand. Private property rights on oil assets are necessarily attenuated. Consequently, private companies face bad incentives when implementing their resource management strategies. This is what we call the institutional incoherence of the transaction. For the state to overcome this contradiction, it must be able to ensure the effectiveness of *ex ante* contractual arrangements which aim at disciplining companies' incentives. A comparative analysis of these arrangements brings in light that good contractual arrangements go hand in hand with an increase of *ex post* control costs. In our opinion, that is why the involvement of a state-controlled company into private consortiums is a complementary arrangement to oil contracts. Under some restrictions, this could be an arrangement overcoming the institutional incoherence of the transaction and then allowing the delegation of oil upstream activities to private companies. In this respect, we can agree with P. Noël's analysis of the recent Shtokman deal passed between Gazprom and Total[62]. This deal may be a new investment model in Russia for IOCs, and beyond Russia in all *proprietorial* oil states.

[62] P. Noël (2007), "Lessons from the Shtokman Deal", Downloaded on the EU Energy Policy Blog's website, 10/09/07 : http://www.energypolicyblog.com/?p=54

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