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Institutional Economics

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11. Institutional Economics

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1. Introduction

Institutional economics offers a theoretical framework for studying *domestic institutions and organizations* prevailing in an economy and the way these institutions emerge evolve and impact the behavior of individuals. Regarding the overall *Polinares* project, a particular attention is paid to answer the two following questions:

i) What kind of conflict/cooperation institutional economics is well suited to apprehend (dependant variables)?
ii) What are the key variables highlighted by NIE to explain why conflict or cooperation emerge (intervening variables)?

This paper will first review the main hypotheses, concepts and analytical methodology of the two main institutional trends in economics[1]. Special attention is paid to NIE and recent developments in this research program (Ménard 2005, Dutraive 2009). The main factor is the desire of author to develop a standardized framework of the different levels of analysis of institutions on which NIE was constructed: the microeconomic one of governance structures developed by Williamson on the one hand, and the more macro-analytical analysis of the institutional environment by North on the other. This development in the neo-institutional research program has led a tendency to structure research around the concept of institutional complementarity and coherence. This idea may be developed in both a static and a dynamic reasoning. The static one considers that the effectiveness of an institution ultimately depends on how it fits in with other institutions of a country. From the dynamic perspective, the interactions between the various institutional levels explain the institutional changes and/or stumbling blocks. According to North, organizations created by agents in response to the characteristics of the institutional environment will, in turn, become the agents of institutional change (I).

Applying this unified interpretation of the different institutional levels to the problem of resource access may enable to define a typology of organizational and institutional models defined by states for supervising the access to their underground resources as well as their processes. Here, access to resource is understood as the initial transaction that takes place between the owner of the underground resources, generally states, and the operators exploring and developing these resources. As it appears in the paper by Stevens related to the history of oil, it is these complex relations that has determined the balance between conflicts, collaboration and competition. By focusing on the initial transaction of the value chain, some

[1] We will not deal with the theory of regulation which is the third institutional approach in economics. For an overview, see Boyer (2004) and Théret (2000).

conflicts/collaborations that appear at other stages are not taken into account. More, the emphasis is mainly put on oil.

In accordance with the NIE analytical methodology, this reasoning can be structured in three stages. One consists of a generic definition of the conflicts/convergence of interests that underpin the transaction between the main players: the states owning the resources on the one hand, and the oil companies, both public and private, to whom the exploration-production activities are delegated on the other (*dependant variables*). This analysis of coordination problems induced by the transaction is based on the principal NIE concepts: property rights, transaction costs, opportunism and the asymmetrical nature of information.

The second part consists of analyzing the governance structure (contracts and organizations) that serve to overcome these coordination problems and allow the stabilization of the transaction, which is torn between the two aspects of an *a priori* convergences of interest, and potential *ex post* conflicts. An analysis of the strengths and weaknesses intrinsic to the various contractual arrangements may constitute the best approach. This means identifying the formal rules as well as the organizational framework likely to ensure the internal consistency of the various models (*domestic intervening variable*).

Lastly, a feedback process allowing us to include the level of analysis constituted by the institutional environment as understood by North is both necessary and useful. Necessary, because only by analyzing the institutional environment it is possible to complete the analysis of specific coordination problems as well as the possibilities for the actual implementation of contracts. Indeed, in the logic of institutional complementarity, the study of ways of creating internal transactional coherence through governance structures is combined with a need to analyze the external coherence of governance structures with the institutional environment in which they are defined. And useful, because this analytical feedback to the institutional environment will necessarily open the way to comparative case studies that may shed light on factors in the institutional environment on which the stabilization (or not) of the transaction, the emergence of an order beyond conflicts depends (II).

2. Institutional Economics: The Old and the New

When surveying institutional economics, it is common to distinguish the Old from the New (Hodgson 1993, Rutherford 1996). Old Institutional Economics has been developed by Commons and Veblen notably. The main authors of the NIE are North and Williamson. Without underestimating the epistemological differences between the two approaches, both offer a useful theoretical framework for studying the way institutional framework governing transactions emerge and change. It is first introduced the hypotheses and main concepts as well as the methodological process of these two institutional economic approaches.

2.1 A Common Problematic: "How to Infuse Order in the Transaction"?

According to J. R. Commons, institutions are the "*collective action in the control and the liberation of the individual action.*"(Commons 1931) This definition allows highlighting the dual nature of institutions. Rules both constrain and allow economic activity. J. R. Commons considers as a necessity to move from an analysis in term of exchange to an analysis taking as the ultimate unit the *transaction.* This conceptual change aims at highlighting that for understanding the behavior of individuals, it is necessary to focus on the *legal dimension* of all exchange. Transaction is defined as the "*activity of alienation and acquisition, between individuals, of future property rights over physical things*". Then, the exchange of property rights over assets becomes the main object of study to apprehend the behavior of individuals. Institutional economics is fundamentally a "*property economics*". J. R. Commons highlights that the transaction must be the ultimate basis of analysis because it "*contains in itself the three principles of conflict, mutuality and order*."

The object of institutional economics is to study the emergence and the evolution of institutions allowing the transaction to take place, to "*infuse order beyond the conflict*". A few decades later, O. Williamson refers to J. R. Commons in his presentation of transaction costs economics (TCE), one of the pillars of NIE (Williamson 2005a, 2005b). He puts emphasis on the idea that "*not only transaction cost economics subscribe to the idea that transaction is the basic unit of analysis, but governance is an effort to craft order, thereby to mitigate conflict and realize mutual gains*." (Williamson 2000).

The relevance for Polinares to take into account the problematic of institutional economics is a priori strong. What is at stake is the relationship between the divergence and convergence of interests that unite the stakeholders in a transaction as well as the collective actions that make possible to introduce an order beyond conflicts in the transaction.

2.2 From the Old to the New: Epistemological differences

The "intermediary position" of NIE is frequently raised in articles summarizing the various institutional approaches in economics (Chavance 2007). This way of describing NIE derives from the fact that unlike the other institutional approaches in economics, NIE was not constructed in opposition to neo-classical theory. On the contrary, its founding research was the result of the desire to apprehend institutions by means of standard theoretical tools (Eggertsson 1990, Furubotn & Richter 1998). Thus even though Williamson attributes the same subject of study to NIE as that defined by Commons a few decades earlier, the two institutional approaches remain irreducible for some authors (Bazzoli & Kirat 2003, Hodgson 2006). Indeed, Commons' project for constructing an institutional economy is a result of his explicit desire to overcome the shortcomings of the standard approach in terms of behavioral hypothesis, of reductionism implied by methodological individualism, its inability to take into account the power relations in exchanges and the supposed irrelevance of legal measures for understanding the dynamic of economies (Hodgson, 1993).

NIE however, brings institutions into economic analysis by relaxing the boundaries of certain assumptions in standard theory. At the outset, it maintained an individualism methodological approach and a normative stance that conveyed a universal vision of institutions, in the sense that institutions prevailing in mature market economies (with private property rights, contracts, rule of law, etc.) form appropriate rules for application to all developing countries for allowing the development of exchanges and productive investments. Because of its epistemological foundations, the core of the NIE is to develop a functionalist approach of institutions.

2.3 What Are Institutions for the NIE?

It is possible to find two definitions of institutions into the NIE. Each one allows highlighting different functional roles attributed to institutions by the NIE.

2.3.1 Institutions as the "Rules of the Game" of a Society

The first definition of institutions is the one introduced by North. This author considers institutions as "*the rules 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)*" (North 1990). This broad approach encompasses both rules governing private transacting as well as legal and regulatory environment. Furthermore, informal institutions introduce the cultural, social and cognitive process which provides a range of norms shaping human interaction (Vanderberg 2002). In his last book, North develops in quite details the role played by ideology, *i.e.* the shared beliefs and mental models used by individual for deciphering their environment, in the process of institutional change[2] (North 2005).

According to the authors accepting this perspective, 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 North calls the uncertainty of "*human environment*" (North 2005). 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.

Rules, whether formal or informal, "domesticate" uncertainty in the human environment. Therefore they are a determining factor in the timeframe during which the interactions of the various individuals occur. 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*."(North 1991). In this respect, the modern property rights approach is the one which insists the most on this dimension. Developed at the beginning of the seventies, its objective is to show that property rights structures on assets affect use of resources in some "*specific and predictable ways*." (Furubotn & Pejovich 1972)[3]. Advocates of this approach stress that property rights structures on assets influence owners' incentives and behaviors.

For an owner to be incited to use efficiently his asset its property rights must be secured and non-attenuated *i.e.* he must possess:

i) The right to use the asset;

ii) The right to sell and transfer the asset;

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[2] This perspective has been developed by M. Aoki and G. Greif. Using a game theoretical approach, these authors have defined an institution as "a *self-sustaining system of shared beliefs*" (Aoki 2001).

[3] See also Alchian & Demsetz 1973, Alston & Mueller 2005 and Barzel 1997.

iii) The right to claim the residual profit.

This approach has been criticized by tenants of the old institutional economics (Dugger 1981, Gonce 1976). According to these authors, this perspective is too prescriptive. The privatization of assets and the establishment of the *rule of law* are the best way to generate adequate development.

2.3.2 Institutions as "Governance Structures"

The second definition of institutions found in NEI works is the one put out by transaction costs economics (TCE). Economic institutions are viewed as the governance structures specified by agents for managing their transactions. A governance structure is defined as the "*explicit or implicit contractual framework*" governing a transaction (Williamson 2005). The distinction between implicit and explicit is of importance. It aims to stress that governance structures work around a contractual aspect and an organizational one. According to Williamson, every type of organization (firm, market and hybrid) is based on a specific contractual rule (Williamson 1991).

These private-order rules and organizations 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*". Opportunism "*manifests itself as adverse selection, moral hazard, shirking, subgoal pursuit, and other forms of strategic behavior*" (Williamson 1985). By relying on this behavioral assumption, new institutional economists are concerned with all negative consequences which are likely to happen because of asymmetries of information (Stiglitz 2002). Compared with other theories of contract which concentrate on defining contractual arrangements capable of overcoming these issues (agency theory, Incomplete Contracts Theory), TCE posits that problems of coordination can only be partly solved by *ex ante* incentive arrangements. The reason lies in the second behavioral assumption of NIE: bounded rationality. 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. While recognizing the importance of *ex ante* contractual devices, TCE highlights that *ex post* opportunism is still probable. The prime goal of governance structure is therefore to minimise the risks of its occurrence (Brousseau and Glachant 2002).

The methodology of the "*discriminatory alignment*" is at the core of the TCE. Firms, markets and hybrid mode of organization - and their respective contractual rules - must be aligned with the specificities of the transaction in order to minimize transaction costs (Coase 1998, 2005)[4]. According to the generic framework developed by Williamson, three specificities of a transaction must be taken into account:

[4] At this stage, it seems necessary to mention the main critic which has been addressed to TCE. Simon, for example, the author who has introduced into the analysis the concept of bounded rationality, is not really in line with O. Williamson. In particular H. Simon criticizes Williamson for the inconsistency of his reasoning: while agents are supposed to face a bounded rationality, they are supposed to choose a governance structure which allows a minimization of transaction costs. Therefore, the choice among different governance structures remains the result of a rational choice (Simon 1991).

i) the degree of specificity of assets ;

ii) the degree of uncertainty surrounding the transaction ;

iii) the frequency of the transaction.

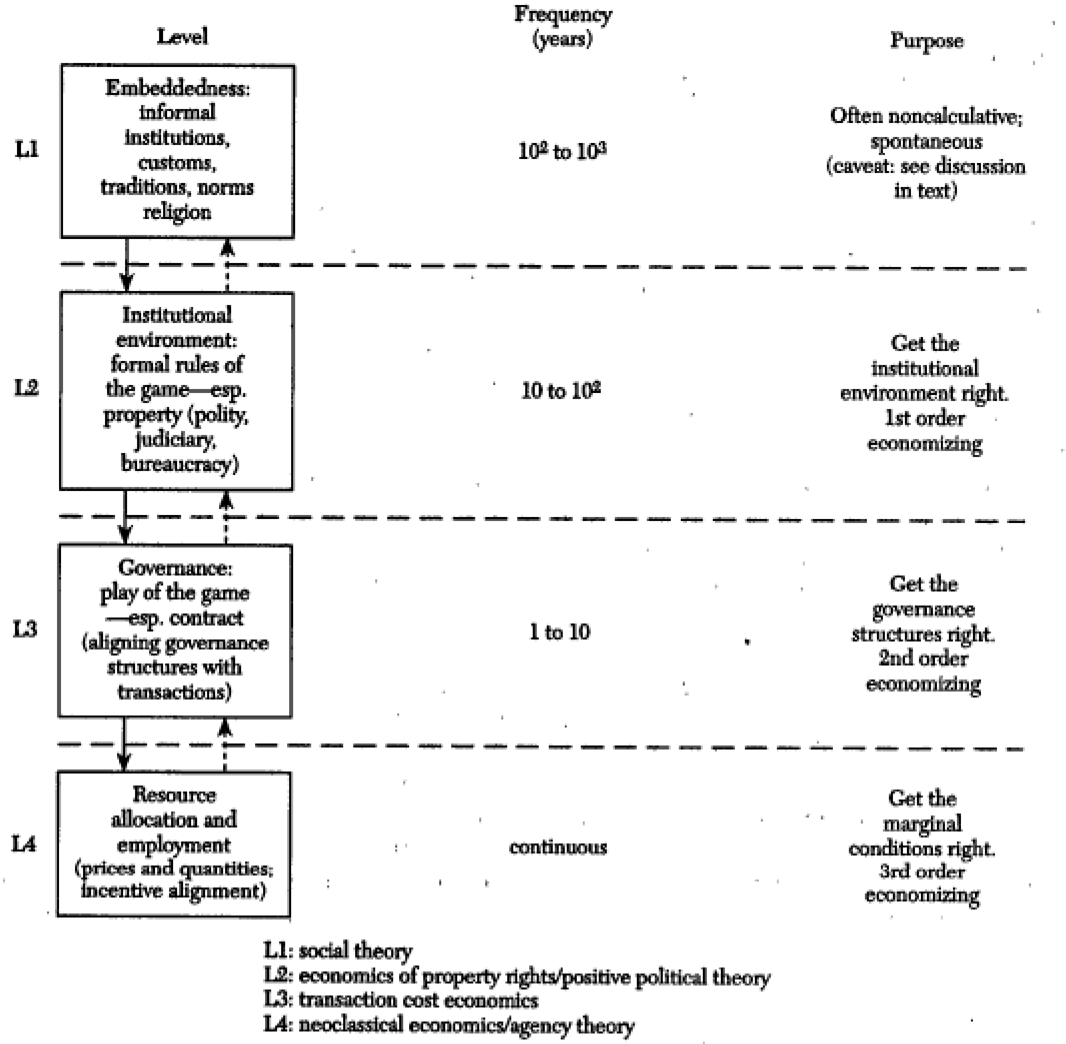
These two definitions of institutions found in NIE lead us to concur with O. E. Williamson when he stresses that NIE is concerned with two main research matters:

- The institutional environment in the D. C North sense, that groups together all the formal and informal rules (shared beliefs, political institutions, laws relating to property rights, judiciary institutions, administrative capacities of a state) ;
- The governance structures defined by agents to provide a framework for the transactions taking place within that institutional environment.

2.4 Towards Research focused on the issue of Institutional Coherence and Complementarity

The following diagram taken from Williamson summarizes the new institutionalist perspective of institutional complementarity (see also Brousseau 2008, Dixit 2009). Institutional complementarity can usually be understood as the fact that the effectiveness of rules for achieving the functional role attributed to them, depends on how the institution functions with other rules prevailing in a given economy (Amable 2005, Sapir 2005). Two developments in the research program have led to structure the research around this idea of institutional complementarity.

Figure 1: The New Institutionalist Perspective of the Institutional Complementarity



Source: O. Williamson (2000), "The New Institutional Economics: Taking Stocks, Looking Ahead", *Journal of Economic Literature*, Vol. XXXVIII, p. 597.

2.4.1 Bottom-Up Evolution

The first approach to an examination of institutional complementarity may be described as a bottom-up one. It originated with an article by Williamson in the early 1990s that aimed to provide a broader interpretation of governance structures. His objective is to include the way the institutional environment impacts the pertinence of choices of a peculiar governance structures (Williamson 1991). It encourages a joint analysis of governance structures and the institutional environment.

Williamson identified two main vectors through which the institutional environment impacts the relevance of choices in governance structures. First, the institutional environment affects the coordination problems that arise from a transaction. Originally TCE considered that the specific characteristics of transactions, and therefore the particular coordination problems they posed, should form the only basis for gauging the relevance of the modalities adopted by the various governance structures. It has since become necessary to take also into consideration the characteristics of the institutional environment. To highlight this point, Williamson carried out a static comparison exercise. First he assumed that the institutional environment does not allow a stabilization of agents' anticipations by making property rights secure. Then he assumed that these rights are more secure. Since the first situation is characterized by greater uncertainty than the second, one might consider that the agents are less able to organize their transaction on the market and will prefer a hierarchical or hybrid government structure.

Thus, the forms taken by the formal institutions are, much as the specific features of the transaction itself, determining factors in the problems of coordination to which governance structures must find an answer. This is due to their influence over the incentives affecting individuals and their varying ability to reduce the uncertainty facing individuals in their interactions.

Second, the specific features of the institutional environment, primarily judicial institutions and the administrative bodies of a country, have an impact on the feasibility of implementing any particular governance structure.

This methodology for analysing governance structures is well illustrated in the works By B. Levy & P. T. Spiller. They use a comparative perspective to analyze the different governance structures that regulate the opening of the telecommunications market to private operators. They stress that the political and social institutions impact the credible commitment of the state, and consequently the problems of coordination that governance structures have to deal with, as much as the feasibility of application of the various contractual tools used to encourage operators to invest, and thereby improve operational efficiency. Their main conclusion is that contractual arrangements that have proved their worth in surmounting the specific problems of coordination induced by a given transaction may prove ineffective in a different institutional environment. (Levy & Spiller 1994).

Thus, the essence of the idea of institutional complementarity lies in the fact that property rights, judicial institutions, state capacity affects both the intrinsic relative effectiveness of governance structure and the scope for their deployment. In this regard, the important point is that an institutional matrix governing a transaction must be coherent. If not, "frictions" are likely to occur and instability can be observed (Aoki 2001).

2.4.2 Top Down Evolution

The second way opened by the neo-institutional research program that structures research around institutional complementarity/coherence, is a result of the development of the northien concept of institutions. In this regard, the important factor lies in D. North's gradual detachment from all normative and universal perspectives of institutions. As we have already emphasized, this neo-institutional bias has often been criticized. Neo-institutional research gave rise to a perspective by which institutions in mature market economies (with private property rights backed by rule of law) formed the most efficient institutions and these could be implemented in all countries. The problems of under-development were reduced to the fact that these countries have not defined "market friendly" institutions.

To evaluate the potential impact of a new formal institution on the economic and institutional dynamics as a whole, it is important to consider the complementarities between formal institutions, informal ones, and the implementation mechanisms. For using the terms of D. North: « *changing only the formal rules will produce the desired result only when the informal norms are complementarity to the rule change and enforcement is either perfect or at least consistent with the expectation of those altering the rules* » (North 2005b). Consequently no one institution is intrinsically more efficient than any other in ensuring adequate reduction of uncertainty, a decrease in transaction costs and an incentive structure that will lead it on a road marked by sustained growth. Theoretically, the stake is to now to improve the understanding of the *variety of institutional forms* which can support exchange and productive activities. As it is highlighted by Dietsche, "*the difference between institutional forms and functions should no be longer ignored*" (See the paper by Dietsche). At this stage, the reflexion focuses on the "*second best institutions*" (Rodrik 2008) or on the "*institutions of transition*" (Murrel 2005, Opper 2008).

2.4.3 The Process of Institutional Change

Some feedbacks going from lower levels of institution to the higher ones can be envisaged in order to think the Williamson scheme in a dynamic perspective (Joskow 2008). According to North, the continuous interaction between institution and organizations is the key to institutional change (North 1991). But, this process implies quite complex mechanisms which make institutional change incremental and path dependant. Ideologies and preferences, which are historically and geographically situated, are at the roots of the processes of institutional change. They are going to structure the way agents apprehend the opportunity for changes. More, the institutional matrix prevalent at one particular point of time is going to determine which organizations are powerful enough to impulse the change, whose ideologies and preferences are predominant.

3. Applying the New Institutional Interpretation to the Organizational and Institutional Framework Governing the Access to Natural Resources

Although it is not always explicit, some works dealing with the question of the access to oil, gas and minerals use the NIE framework. The problem seems to be in the difficulty to structure a coherent approach connecting the different aspects of the NIE. An approach focusing on the institutional complementarity between the two main branches of the NEI could be a way to fill this gap.

3.1 An Approach Using Resources Access Models

NIE's perspective of institutional complementarity may be used to define an approach in terms of domestic models structuring the access to oil, gas and minerals. A model combines:

i) The way to access the resource (and therefore the property rights to that resource).

ii) The organizational model (state oil company versus private companies).

iii) The competition rules (production monopoly versus opening up to the competition).

First we need to analyze the internal institutional coherence of the oil model. Ensuring internal coherence requires that contracts be established that can overcome the coordination problems between the stakeholders in the transaction, the state and the companies to which the upstream oil and gas operations have been delegated. Furthermore, the institutional complementarity perspective necessarily opens the way to an analysis of external coherence, namely that of the oil model with the institutional environment of the country.At this stage, one point seems important to stress. This two-fold coherence will condition the stability of a model, the possibility of infusing order beyond conflicts.

Regarding the degree of institutional coherence, we may define three different types of model structuring oil/gas resources' access:

i) <u>Models which are institutionally coherent</u>: USA and OPEC. The first is coherent because there are *private* property rights over resources and over assets. At the other extreme resides the OPEC model which is characterized by public property rights over resources and over assets.

ii) <u>Hybrid Models which are institutionally incoherent:</u> The term hybrid aims to specify that the way to access resources is institutionally incoherent. The transaction by which a state opens its upstream to private companies implies a mitigation of property rights over resources. But, internal coherence is managed by specific institutions such as oil contracts and/or the presence of a NOC in the consortium exploring and developing resources. These institutions are in turn coherent with the institutional environment and permits external coherence of the model. Norwegian model is a good example of this kind of models.

iii) Hybrid Models which are institutional incoherent: These are models characterized by a pregnant instability. Achieving internal coherence through contractsand/or
the presence of a NOC is difficult/impossible because of the characteristics of the institutional environment. (Russia, Venezuela…)

NIE can mainly be useful for studying the hybrid models and for identifying why cooperation/cooperative behaviors emerge in some cases (Norway) and why instability and conflicts are predominant in some other cases (Russia, Venezuela…).

3.2. What Kind of Conflicts Institutional Economics Can Apprehend? A Focus on Hybrid Models (Dependant Variables)

Institutional economics can be useful in order to build a typology of conflicts/convergence of interests which structure the transaction between producers' states and IOCs. In this regard, it is possible to take for granted the permanent sovereignty of producer states over their natural resources.

The main aspect to consider is the exchange of property rights over resources occurring during the transaction. This first step allows highlighting the incentives of the different actors involved. In this regard, the founding transaction of a hybrid model implies a partial, temporary and potentially non-secured transfer of property rights over underground resources to private companies.

First, the state remains the owner of underground resources but the companies are in charge of the process of exploring and extracting the resources. Private companies are therefore encouraged to implement management strategies for the resources that will maximize the value of their assets, or in other words, their stockmarket value.

This first form of mitigation shows the importance of validity duration of the rights granted to companies, as well as how these rights are secured. The validity duration of access rights will determine the time frame in which companies will project their calculations for measuring the profits and losses they will have to bear in their management strategy for their oil resources. Here, a property rights approach would lead us to consider that « only a lease of indefinite duration would be equivalent to full private ownership of resource property" (Boadway & Flatters, 1993). That would lead companies to become legal contenders for the potential revenue and losses from the underground resources in an infinite time frame, during which they would bear all the costs and benefits of their actions. However, that is not the case since oil exploration/production licenses are valid for a given period. Similarly, work contracts stipulate a precise timeframe for the validity of the agreement. Thus companies are encouraged to determine management strategies for underground resources that aim to maximize their stock market value in the legally defined timeframe governing their access rights. The temporary nature of access rights constitutes the second aspect of the mitigation of rights transferred to private companies.

Lastly, the transaction takes place between two partners with a different legal status. This implies that the transfer of property rights over resources is potentially non-secured. The state is both a stakeholder in the transaction and the ultimate legitimate legal authority in charge of defending and enforcing the contracts (Noël 2002). In legal terms, mining rights providing access to underground resources are granted through state contracts. They are therefore subject to what legal doctrine calls "the alea de souveraineté", a generic term that stresses the fact that the state can use its legislative, executive and administrative powers to unilaterally change the main terms of the contract governing the transaction (Brinsmead 2007). Thus, the problematic of credible commitment is very acute. Here we broach the issues of obsolescing bargain and the cycle of oil nationalism (Stevens 2008, Cameron 2007).

The consequences in terms of conflicts and convergence of interest between states and companies are important. The following points structure the transaction:

i) *Exploration*: Here lies the *ex ante* convergence of interest between the two actors. Exploration is intensive in capital and very risky. States are therefore prone to delegate exploration activities to private companies. More, valuation of IOCs depends on their ability to replenish their reserves (Osmundsen & *al.* 2006). Nevertheless, exploration for hydrocarbon is a "*sunk investment*". In this perspective, non-secured property rights can induce a wait-and-see strategy by companies.

ii) *Depletion rate of resources*: Private companies can prefer a faster depletion rate than states, especially with non-secured access rights (Bohn & Deacon 2002, Deacon & Mueller 2004).

iii) *Rent sharing:* the capture of oil rent by states can be difficult because of the companies' private information regarding costs and prices.

From the viewpoint of oil states, their preferences regarding the last two points may be linked with their strategy of development. In this regard, resource curse literature (Dutch Disease) could be integrated in order to complete this typology (P. Stevens & J. V. Mitchell 2008).

3.3 The Institutions for the Internal Coherence of Hybrid Oil Models (intervening Variables)

For a state's underground property rights to be effective, oil and gas contracts have to meet a certain number of objectives. We can identify three of these. The first objective of an oil and gas contract is to re-shape the companies' incentives *ex ante*. The second objective deals with implementing sufficiently flexible contractual measures that will enable these to be adapted to any unforeseen occurrences affecting the transaction. The last objective relates to the degree of control states must have in order to protect themselves against *ex post* opportunistic behavior by companies and ensure the effectiveness of their incentive and coercive measures.

According to ECT, each governance structure is flawed. This means that each contractual arrangement presents intrinsic strengths and weaknesses to overcome coordination problems. Thus, a comparative analysis of the various contractual arrangements for achieving these objectives is necessary.

3.3. 1 The Main Contractual Measures Allowing to Re-Shape Companies' Incentives

Two main types of contractual measures create incentives for companies. The tax system is undoubtedly pivotal in any oil contract. Clauses targeting the stabilization of contractual measures, and consequently the mitigation of "alea de souveraineté", can also re-shape *ex ante* companies' incentives.

Tax as a pivotal factor in oil contracts

All modern literature on mining tax systems recognizes the efficiency of taxation in capturing differential rent (in a ricardian meaning) in relation to those targeting customary ground rent. This distinction regarding the tax base is the dividing line whereby B. Mommer conceptualizes non-proprietorial governance on the one hand (liberal fiscal regime), and proprietorial governance on the other (Mommer 2002). The former's premise is based on the fact that *in situ* oil reserves have no intrinsic value; they are a "gift of nature". Proprietorial governance on the other hand extends the tax base to include a portion of the value of the underground resource. Mommer stresses that at present "*the whole weight of modern economics is thrown behind worldwide non-proprietorial mineral governance*" (Mommer 2002).

The main reason why research on oil taxation favors tools targeting only differential rent is because they do not introduce distortions into oil company incentives (Kemp 1994, Mead 1994). By their nature, taxes targeting only differential rent will constantly evaluate changes in production costs and in the value of the resources. They are totally flexible. As a result they do not "draw on companies' normal profits". While bearing in mind the difficulties that states may encounter in evaluating changes in production costs and in determining what constitutes "normal profits" for oil companies, taxes on differential rent do not introduce any distortion in company incentives. These are encouraged to explore and develop all the reserves they deem profitable. The main progressive tax arrangement is the resource rent tax (Garnault & Ross 1975).

Taxation based on customary ground rent must necessarily be a tax on production. Consequently the amount of the tax does not alter with the extraction costs of the various deposits or the prices of the resource. It is regressive in the sense that the percentage of the profits captured by the state is in inverse proportion to the amount of the profits. This percentage increases when the profits generated decreases and conversely decrease when the level of profits increases. Because of the peculiar structure of this tax base, companies may not have sufficient incentives to extract the most difficult and inaccessible reserves or to explore marginal fields. More, these fiscal devices are instable by nature. Indeed, states are prone to engage *ex post* fiscal renegotiations as soon as the prices are increasing (Johnston 2008). Nevertheless, these kind of fiscal devices present a very important advantage from the point of view of oil states: they are quite easy to monitor. They do not induce a high cost for monitoring companies. Indeed, it is not necessary for oil states to monitor prices and production costs (UNCTAD 1995b, Mommer 2002). Most state tax systems blend both kinds of fiscal tools (Jonhston 2008, Cameron & Kellas 2008).

Stabilization clauses

The second contractual incentive mechanisms to consider are the legal measures aiming to overcome the unequal legal status of the partners and any institutional uncertainty surrounding the transaction. In this respect, international oil companies are interested in three types of clauses to be included in oil agreements: stabilization clauses, arbitration clauses and clauses governing the internationalization of the law applicable to the contract. To use T. Wälde's terminology, these contractual tools aim to "*bring the rule of law*" to such arrangements, it "*means to transform them from political understandings subject to the discretion of the host state to contractual promises that can be made effective under a legal system and enforcement procedure outside host state control and therefore credible and more suitable to be the basis for large-scale, initial investment*"(Wälde 2008, Bernardini 2008)

Stabilization clauses can be thought as an intervening variable dealing with the "alea de souveraineté". Nevertheless, skepticism is shared by authors concerning the efficiency of this kind of clauses for achieving an adequate stabilization (Stevens 2008).

<u>3.3. 2 A Trade-off between Stability and Flexibility</u>

Considerable uncertainty affects the transaction. This may be both geological and economic. Geological uncertainty derives from the *ex ante* uncertainty about the amount of the exploitable reserves. Economic uncertainty is due to the lack of knowledge about production costs and the conditions under which the oil will be valued in the future. From that perspective, contracts must foresee a degree of flexibility so that the stakeholders may adapt their main measures to unforeseen events that may affect their relations. Here we see the classic trade-off highlighted by a neo-institutional analysis. Contracts must be sufficiently credible and reliable to stabilize anticipations but they must be able to adapt to changing environmental conditions.

<u>3.3.3 Protecting Against *Ex Post* Opportunism by Companies</u>

The final condition for coherence in a deregulated oil model lies in the definition of control mechanisms that will protect the state from *ex post* opportunistic behavior by companies. Such behavior is made possible by the advantages companies have in terms of concealed action and information. We may identify two types of contractual measures to which the state is especially vulnerable with regard to this type of behavior by companies when applied. Firstly rules regarding the obligatory work to be carried out by the companies, and those governing the development plan for the oil and gas field. Given that incentive clauses cannot be deemed sufficient to ensure the self-enforcing of these rules, the state must be in a position to control their application. Secondly, capturing resource rent, in its both components, requires adequate state control over the companies' production costs as well as oil prices. Otherwise states run a considerable risk of seeing companies benefit from their private information to engage in strategies aiming to minimize their fiscal obligations.

3.4. The Issue of External Coherence

An analysis of the institutional environment of each country (political institutions, judicial institutions, informal institutions, state capacity) is necessary to assess the conditions which are required for inducing a stabilization of the governance structure through these contractual arrangements. This is the essence of the consistency requirement stressed by NIE. It could be a way to put in light *key variables* for the success and/or failure for achieving stabilization, cooperation through these contractual arrangements. In this regard, the following elements can be found in the literature.

3.4.1 The Role of Informal Institutions

The question of the legitimacy of private property rights (domestic or foreigners) over oil & gas assets can reinforce the problem of state commitment and make some coordination problems more acute (Stigiltz 2007).

3.4.2 Political Institutions

The analysis of political institutions remains very thin in the NIE. It focuses mainly on state capacity and, in a quite liberal perspective, on the problem of states' credible commitment (Weingast 1993). In this regard, the institutional symptom of the resource curse (the entrenchment of authoritarian and non-democratic state) is stressed as a vector preventing the emergence of the *rule of law* and thus affecting the possibility of credible commitment by state. Therefore, the incentives for IOCs to deplete faster the resources and to share in a quite informal way the rent are strengthened. Coordination problems and the ability to infuse order through contracts are made more problematic.

3.4.3 State Capacity

A weak state capacity can induce the inability for a state to capture the differential rent because of its inability to monitor companies. Therefore, states characterized by a weak capacity can be prone to structure their fiscal regime on taxes targeting the level of production or revenue of oil companies despite their side-effects in terms of incentives.

3.4.4 Judicial Institutions

Independent judicial institutions can be seen as a crucial requirement for achieving stabilization through contractual devices.

3.4.5 Corruption

Corrupt administration can be a problem for inducing an adequate commitment by the State and for allowing an adequate capture of the rent.

The approach in terms of institutional coherence can apprehend what is referred as oil nationalism, or more generally the difficulties to achieve an adequate stabilization of hybrid models. We refer here to *ex post* renegotiations of contracts and/or total or partial re-nationalization of assets. Our approach differs from interpretations which focus on populist moves against private and/or foreign investors for explaining this instability. In our sense these interpretations fall short because they rely on a relatively universal vision of institutions. Here, we stress that these moves can be apprehend as an attempt to increase the coherence of hybrid models in countries whose institutional environment put a barrier to an adequate regulation through contracts. In this respect, the example of the Russian oil model is striking. During the nineties, the Russian state has been unable to induce adequate investments by private companies. Also, it has been unable to secure a fair share of oil rent. The institutional environment (weak state capacity, a privatization process largely viewed as illegitimate and a regulatory framework prone to corruption) induce the ineffectiveness of contractual tools. In this perspective, the rise of Russian NOCs can be interpreted as an attempt to increase the coherence of the Russian oil model. Indeed NOCs can be considered as a substitute and/or a complement to contractual devices. But, of course, NOCs are not the end of the story.

3.5 Relations between Producer States and NOCs

Tompson puts out that the institutional requirement for regulating hydrocarbon industry is far less demanding when a NOC is involved than when the attempt is made to regulate the industry through purely contractual devices (Tompson 2002, Boschek 2007).

For the points which are of interest in the analysis, *i.e.* the presence of a NOC as an organization allowing the coherence of hybrid models, the following "positive" points are often stressed. First, it *seems* easier to control NOCs than IOCs. NOCs can simply be said what to do in terms of exploration or depletion. Second, the presence of a NOC could be a way to add credibility to the contractual commitments entered into with international oil companies. Finally, the involvement of state companies might help reduce information asymmetry and ensure that a fair share of oil revenues is secured. Therefore, it is easier to introduce a flexible fiscal regime. As put out by Grayson, NOCs were considered in the seventies as offering a "*window on the oil industry*" allowing the state to fill the information gap. NOCs were supposed to play a benchmarking role (Grayson 1981).

The Norwegian model is of interest because it illustrates the double role that NOC can play in a governance structure. Statoil both allows a direct control from the authorities and a progressive refinement of contractual regulation (Al-Kasim 2006).

On the other hand, many problems can be observed with NOCs. First, theoretical works relying on property rights and agency theory highlight the bad incentives offered to the managers of the NOCs and the inability of the state to act as an efficient proprietor (Schleifer & Vishny 1997). Generally, empirical works tend to confirm the efficiency gap between IOCs and NOCs. (Al-Obaidan & Scully 1991, Wolf 2009). Second, it cannot be forgotten that the "*relationship between NOCs and their government owners is dynamic and conflictual*". This hypothesis is structuring the work by Noreng. (Noreng 2002). It can be as difficult for the state to monitor a NOC as to control IOCs. This risk can become true if the "*management of NOCs tend to align with the goals and operation of the private sector*" (Noreng 2002). In this perspective, the benchmarking role of the NOC can be put in jeopardy if the NOC does not inform properly the State. In this respect, the example of PDVSA seems striking.

(Mommer 2002, Van der Linde 2000) In the same spirit, the benchmarking role of the NOCs can be put in jeopardy if the NOC does not work "*in the same way than as the large IOCs*". (Van der Linde 2000). It is the idea that NOCs are often asked by their government owner to perform activities other than purely commercial activities. More, bad incentives and inefficiency characterizing NOCs put some constraint to the benchmarking role they are originally supposed to have. Finally, if NOCs lack some financial autonomy, it can be difficult to invest and to sustain a adequate level of production. This can lead to a re-opening of upstream oil to private companies when the prices are on the downside of the industry cycle (Walde 2008).

It is clearly difficult to develop a generic analysis of NOCs as their degree of autonomy vis-à-vis the state, their financial and technical abilities, their market power, and their structure of property (some NOCs are partially privatized) are different. Some works have nevertheless put some foundations for building a framework of analysis (Noreng 2002, Marcel 2006, ESMAP 2007).

3.6 The Process of Institutional Change

According to D. North, organizations are the main agents of institutional change. In this regard, NIE can be a way to think about what is called the institutional symptoms of *resource curse* (Long Jones, 2004). According to this author, privatization of oil assets is a way, if not to solve, at least to break the vicious circle of the institutional symptom of the resource curse. It is stressed that privatization of oil assets oblige the state to enter into negotiations with IOCs in order to put in place a quite consistent institutional framework in order to benefit from the exploitation of its natural resources. This assertion can be criticized by relying on the concept of "*functional fallacy*" stressed by J. Stiglitz (Stiglitz 2002, Hoff & Stiglitz 2004) .This "functional fallacy" resides in the idea that the mere need of an institution is sufficient for inducing the actors to put in place this institution. Anyway, the idea of Long Jones deserves to lead an analysis of the variables driving or constraining domestic institutional changes depending on the private or public character of oil companies.

4. Conclusion: Coming Back to the Analytical Framework

As far as the independent variables are concerned, institutional economics put the emphasis on the following points. First, it appears that NIE deals explicitly with state-companies relations. In particular, it allows conceptualizing some of the coordination problems which structure the initial transaction for accessing natural resources. Second, the evolution of the value of the resource is clearly a vector leading to a change in institutions governing the access to resources. This is especially the case for *ex post* and unilateral modifications of fiscal arrangements or re-nationalization (Guriev, Kolotilin & Sonin 2008). But the evolution of the value of the rent can also be considered as a result of the prevalent institutional framework. Indeed this institutional framework is going to shape the incentives of the companies in their strategies of exploration and production. Second, the analysis of state capacity is necessary. Third, the analysis of political institutions remains very thin in the NIE. It focuses mainly on state capacity and, in a quite liberal perspective, on the problem of states' credible commitment (Weingast 1993). It seems necessary to have a better understanding of the impact of different state-regime on:

i) The ability to achieve stabilization through the different models. Also, the feedback process through which NOCs/IOCs affect the political process needs to be studied in more details.

ii) The conflict/convergence of interests between the state and the companies can depend of the state-regime. For example, authoritarian states can prefer a faster depletion rate than democratic ones.

Concerning the intervening variables, contracts (PSA, licenses, fiscal arrangements) are the rules allowing, or not, the stabilization of the transaction beyond conflicts. The consistency requirement of NIE obliges to study the way these private rules are connecting with other institutions prevailing in an economy. In this respect, *international* organization/institutions are not considered into NIE works. Thinking about possible linkages could be stimulating. If the focus remains on hybrid model, NOCs can also be seen as an organizational intervening variable in the sense that a NOC can be considered as a substitute or a complement to contractual arrangements.

Finally, NIE can apprehend the following economic dependant variables: the sharing of economic rent, depletion rates and exploration.

References

Institutional Economics:

Aoki Masahiko (2001), *Toward a Comparative Institutional Analysis*, MIT Press, Cambridge, Massachusetts.

Alchian Armen A. & Demsetz Harold (1973), "The Property Right Paradigm", *Journal of Economic History*, Vol.XXXIII, n°1, pp. 16-27.

Alston Lee J. & Mueller Bernardo (2005), "Property right and the State", in C. Ménard & M. M. Shirley (eds.), *Handbook of New Institutional Economics*, Springer, The Netherlands, pp. 573-590.

Amable Bruno (2005), *Les cinq capitalismes. Diversité des systèmes économiques et sociaux dans la mondialisation*, Edition du Seuil, Paris.

Barzel Yoram (1997), *Economic Analysis of Property Rights*, Second edition, Cambridge University Press, Cambridge.

Boyer (2004), *Théorie de la régulation. Les fondamentaux*, La Découverte, Collection Repères, Paris.

Brousseau Eric (2008), "Contracts: From Bilateral Sets of Incentives to the Multi-Level Governance of Relations", in E. Brousseau & J-M. Glachant [eds], *New Institutional Economics. A Guidebook*, Cambridge University Press, Cambridge, pp. 37-66.

Brousseau Eric & Glachant Jean-Michel (2002), "The Economics of Contracts and the Renewal of Economics", *in* Brousseau E. & Glachant J-M. [eds], *The Economics of Contracts. Theories and Applications*, Cambridge University Press, Cambridge, pp. 3-30.

Chavance Bernard (2007), *L'économie institutionnelle*, La Découverte, Ed. Repères, Paris.

Coase Ronald H. (2005), "The Institutional Structure of Production", in C. Ménard & M. Shirley (eds.), *Handbook of New Institutional Economics*, Springer, The Netherlands, pp. 31-39.

Coase Ronald H. (1998), "The New Institutional Economics", *American Economic Review Papers and Proceedings*, Vol. 88, n°2, pp. 72-74.

Commons John. R. (1931), "Institutional Economic", *American Economic Review*, Vol. 21.

Commons John. R. (1924), *Legal Foundations of Capitalism*, Augustus M. Kelley Publishers [1974], Clifton, New Jersey.

Denzau Arthur T. & North Douglass C. (1994), *Shared Mental Models: Ideologies and Institutions*, http://129.3.20.41/eps/eh/papers/9309/9309003.pdf

Dequech David (2002), "The Demarcation between the "Old" and the "New" Institutional Economics: Recent Complications", *Journal of Economic Issues*, Vol. XXXVI, n°2, pp. 565-572.

Dixit Avinash K. (2009), “Governance Institutions and Economic Activity”, *American Economic Review*, Vol. 99, n°1, pp. 5-24.

Dugger William M. (1981), “Property Rights, Law and John R. Commons”, *Review of Social Economy*, Vol. 38, pp. 41-53.

Eggertsson Thrainn (1990), *Economic Behaviour and Institutions*, Cambridge University Press, Cambridge.

Furubotn Eirik G. & Pejovich Svetozar (1972), “Property rights and Economic Theory: A Survey of Recent Literature”, *Journal of Economic Literature*, Vol. X, n°4, pp. 1137-1162.

Furubotn Eirik G. & Richter Rudolf (1998), *Institutions and Economic Theory. The Contribution of the New Institutional Economics*, The University of Michigan Press, Michigan.

Gonce R. A. (1976), “The New Property Rights Approach and Commons’ *Legal Foundations of Capitalism*”, *Journal of Economic Issues*, Vol.X, n°4, pp. 765-797.

Greif Avner (2005), “Commitments, Coercion, and Markets: The Nature and Dynamics of Institutions Supporting Exchange”, *in* C. Ménard & M. M. Shirley (Eds.), *Handbook of New Institutional Economics*, Springer, The Netherlands, pp. 727-786.

Hodgson Geoffrey M. (2006), “What Are Institutions?”, *Journal of Economic Issues*, Vol. XL, n. 1, pp. 1-25.

Hodgson Geoffrey M. (1993), “Institutional Economics: Surveying the “Old” and the “New”, *Metroeconomica*, vol. 44, n°1, pp. 1-28.

Hoff Karla & Stiglitz Joseph E. (2004), "After the Big Bang? Obstacles to the Emergence of the Rule of Law in Post-Communist Societies", *American Economic Review*, Vol. 94, n°3, pp. 753-763.

Joskow Paul L. (2008), “Introduction to New Institutional Economics: A Report Card”, *in* E. Brousseau & J-M. Glachant [Eds], *New Institutional Economics. A Guidebook*, Cambridge University Press, Cambridge, pp. 1-19.

Ménard Claude (2001), “Methodological Issues in New Institutional Economics” *Journal of Economic Methodology*, Vol. 8, n°1, pp. 85-92

Ménard Claude [Ed.] (2000), *Institutions, Contracts and Organizations. Perspectives from New Institutional Economics*, Edward Elgar, Cheltenham, UK.

Murrel Peter (2005), “Institutions and Firms in Transition Economies”, *in* C. Ménard & M. M. Shirley (Eds.), *Handbook of New Institutional Economics*, Springer, The Netherlands, pp. 677-699.

North Douglass C. (2005a), *Understanding the Process of Economic Change*, Princeton University Press.

North Douglass C. (2005b), “Institutions and the Performance of Economies Over Time”, in C. Ménard & M. Shirley (eds.), *Handbook of New Institutional Economics*, Springer, The Netherlands, pp. 21-30.

North Douglass C. (1993), “Institutions and Credible Commitment”, *Journal of Institutional and Theoretical Economics*, Vol. 149, n°1, pp. 11-23.

North Douglass C. (1991), “Institutions”, *Journal of Economic Perspectives*, Vol. 5, n°1, pp. 97-112.

North Douglass C. (1990), *Institutions, Institutional Change and Economic Performance*, Cambridge University Press, Cambridge.

Opper Sonja (2008), “New Institutional Economics and Its Application on Transition and Developing Economies”, *in* E. Brousseau & J-M. Glachant [eds], *New Institutional Economics. A Guidebook*, Cambridge University Press, Cambridge, pp. 389-405.

Rodrik Dani (2008), “Second-Best Institutions”, *American Economic Review*, Vol. 98, n°2, pp. 100-104.

Roland Gérard (2008), *Economic Theory and Transition: What Lessons from North Korea?*, University of California. http://www.econ.berkeley.edu/~groland/pubs/NAIStransition.pdf

Rutherford Malcolm (1996), *Institutions in Economics. The Old and the New Institutionalism*, Cambridge University Press, Cambridge.

Sapir Jacques (2005), *Quelle économie pour le XXIe siècle ?*, Odila Jacob, Paris.

Shleifer Andrei & Vishny Robert W. (1997), “A Survey of Corporate Governance”, *The Journal of Finance*, Vol. LII, n°2, pp. 737-783.

Simon Herbert A. (1991), “Organizations and Markets”, *Journal of Economic Perspectives*, Vol. 5, n°2, pp. 25-44.

Stiglitz E. Joseph (2002), “Information and the Change in Paradigm in Economics”, *American Economic Review*, Vol. 92, n°3, pp. 460-501.

Théret Bruno (2000), “Nouvelle économie institutionnelle, économie des conventions et théorie de la régulation: vers une synthèse institutionnaliste?”, *La lettre de la régulation*, n°35, pp.1-4.

Weingast Barry R. (1993), « Constitutions as Governance Structures: The Political Foundations of Secure Markets », *Journal of Institutional and Theoretical Economics*, Vol. 149, n°1, p. 287.

Williamson Oliver E. (2005a), “Transaction Cost Economics”, in C. Ménard & M. M. Shirley (Eds.), *Handbook of New Institutional Economics*, Springer, The Netherlands, pp. 41-65.

Williamson Oliver E. (2005b), “The Economics of Governance”, *American Economic Association Papers and Proceedings*, Vol. 95, n°2, pp. 1-18.

Williamson Oliver E. (2000), “The New Institutional Economics: Taking Stock, Looking Ahead”, *Journal of Economic Literature*, Vol. XXXVIII, pp. 595-613.

Williamson Oliver E. (1985), *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*, Free Press, NY.

Access to Oil & Gas

Abbas A. Al-Mejren (2005), « Upstream Privatization: Issues and Arguments », *The Journal of Energy and Development*, Vol. 30, n°2, pp. 279-295.

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

Al-Mazeedi Wael (1992), "Privatizing National Oil Companies in the Gulf", *Energy Policy*, Vol. 20, n°10, pp. 983-994.

Al-Obaidan Abdullah & Scully Gerald W. (1991), "Efficiency Differences between Private and State-Owned Enterprises in the International Petroleum Industry", *Applied Economics*, Vol. 23, n°2, pp. 237-246.

Al Qurashi Zeyad A. (2005), "Renegotiation of International Petroleum Agreements", *Journal of International Arbitration*, Vol. 22, n°4, pp. 261-300.

Andrews-Speed Philip (2010), "The Institutions of Energy Governance in China", *Note de l'IFRI*, Institut français des relations internationales, Paris, Bruxelles.

Antill Nick & Arnott Robert (2002), *Oil Company Crisis. Managing Structure, Profitability, and Growth*, Oxford Institute for Energy Studies, Oxford.

Bernardini Piero (2008), "Stabilization and Adaptation in Oil and Gas Investments", *Journal of World Energy Law & Business*, Vol. 1, n°1, pp. 98-112.

Bindemann Kirsten (1999), *Production-Sharing Agreements: An Economic Analysis*, Oxford Institute for Energy Studies, Oxford.

Blinn Keith W., Duval Claude, Le Leuch Honoré & Pertuzio André (1986), *International Petroleum Exploration & Exploitation Agreements. Legal, Economic, and Policy Aspects*, Barrows, New York.

Boadway Robin & Flatters Frank (1993), "The Taxation of Natural Resources. Principles and Policy Issues", *World Bank Working Papers*, Policy Research, World Bank.

Bohn Henning & Deacon Robert T. (2000), "Ownership Risk, Investment, and the Use of Natural Resources", *American Economic Review*, Vol. 90, n°3, pp. 526-549.

Besley Timothy (1995), "Property Rights and Investment Incentives: Theory and Evidence from Ghana", *Journal of Political Economy*, Vol. 103, n°5, pp. 903-937.

Boscheck Ralf (2007), "The Governance of Oil Supply: an Institutional Perspective on NOC Control and the Questions It Poses", *International Journal of Energy Sector*, Vol. 1, n°4, pp. 366-389.

Brinsmead Simon (2007), "Oil Concession Contracts and the Problem of Hold-Up", *CEPLMP Internet Journal*, Vol. 17, n°11.

Cameron Peter D. & Kellas Graham (2008), "Contract and Fiscal Stability: Rhetoric and Reality", Wood Mackenzie & Center for Energy Petroleum and Mineral Law Policy.

Cameron Peter D. (2007), "Contract Stability in the Petroleum Industry: Changing the Rules and the Consequences", *Middle East Economic Survey*, Vol. XLIX, n°22.

Deacon Robert T. & Mueller Bernardo (2004), "Political Economy and Natural Resource Use", Working paper, UCSB, University of California.

ESMAP (2007), *Investing in Oil in the Middle East and North Africa*, Report No. 40405-MNA, ESMAP/World Bank

Garnault R & Ross A.Clunies (1975), "Uncertainty, Risk Aversion and the Taxing of Natural Resources Projects", *The Economic Journal*, Vol. 85, pp. 272-287.

Grayson Leslie E. (1981), *National Oil Companies*, John Wiley & Sons, Chichester, UK.

Guriev Sergei, Kolotilin Anton & Sonin Konstantin (2008), "Determinants of Expropriation in the Oil Sector: A Theory and Evidence from Panel Data", *Center for Economic Policy Research*, Discussion Paper n°6755.

Johnston Daniel (2008), "Changing Fiscal Landscape", *Journal of World Energy Law & Business*, Vol. 1, n°1, pp. 31-53.

Johnston Daniel (1994), *International Petroleum Fiscal Systems and Production Sharing Contracts*, Pennwell Books, Tulsa

Johnston David (2007), "How to Evaluate the Fiscal Terms of Oil Contracts", in in M. Humphreys, J. D. Sachs & J. S. Stiglitz [Eds], *Escaping the Resource Curse*, Columbia University Press, New York, pp. 53-88.

Luong Jones Pauline (2004), "Rethinking the Resource Curse. Ownership Structure and Institutional Capacity", *Paper presented at the Conference on Globalization and Self-Determination*, Yale University, 14-15 May 2004.

Marcel Valérie (2006a), *Oil Titans. National Oil Companies in the Middle East*, Chatam House/ Brooking Institution Press, London/Washington D.C.

Mead Walter J. (1994), "Towards an Optimal Oil and Gas Leasing System", *The Energy Journal*, Vol. 15, n°4, pp.1-18.

Mommer Bernard (2002), *Global Oil and the Nation State*, Oxford Institute for Energy Studies, Oxford.

Osmundsen Petter, Asche Frank, Misubd Bard & Mohn Klaus (2006), « Valuation of International Oil Companies », *The Energy Journal*, Vol. 27; n°3, pp. 49-64.

Noreng Øystein (1994), "National Oil Companies and Their Government Owners: The Politics of Interaction and Control", *The Journal of Energy and Development*, Vol. 19, n°2, pp. 197-226.

Kemp Alexander G. (1994), "International Petroleum Taxation in the 1990s", *The Energy Journal*, Vol. 15, Special Issue on the Changing World Petroleum Market, pp. 291-309.

Kemp Alexander G. (1992), “Development Risks and Petroleum Fiscal Systems: a Comparative Study of the UK, Norway, Denmark and the Netherlands”, *The Energy Journal*, Vol. 13, n°3, pp. 17-39.

Noël Pierre (2002), *Production d’un ordre pétrolier libéral. Une politique normative américaine dans les relations internationales entre 1980 et 2000*, Thèse de doctorat en Sciences Politiques, Université de Grenoble II, Institut politique de Grenoble, Grenoble.

Stevens Paul & Dietsche Evelyn (2008), “Resource Curse: An Analysis of Causes, Experiences and Possible Ways Forward”, *Energy Policy*, Vol. 36, n°1, pp. 56-65.

Stevens Paul (2008), “National Oil Companies and International Oil Companies in the Middle East: Under the Shadow of Government and the Resource Nationalism Cycle”, *Journal of World Energy Law & Business*, Vol. 1, n°1, pp. 5-29.

Stiglitz E. Joseph (2007), “The Role of the State”, *in* M. Humphreys, J. Sachs, and J.E. Stiglitz [eds], *Escaping the Resource Curse*, Columbia University Press, New York, 2007, pp. 23-52.

Tompson William (2008), “Back to the future? Thoughts on the Political Economy of Expanding State Ownership in Russia”, Cahiers *Russie*, n°6, CERI Science Po.

United Nations Conference on Trade and Development (1995a), *Comparative Analysis of Petroleum Exploration Contracts*, UNCTAD, Geneva.

United Nations Conference on Trade and Development (1995b), *Administration of Fiscal Regimes for Petroleum Exploration and Development*, UNCTAD, Geneva.

Van der Linde Coby (2000), *The State and the International Oil Market. Competition and the Changing Ownership of Crude Oil Assets*, Kluwer Academic Publishers, Boston/Dordrecht/London.

Wälde Thomas W. (2008), “Renegotiating Acquired Rights in the Oil and Gas Industries: Industry and Political Cycles Meet the Rule of Law”, *Journal of World Energy Law & Business*, Vol. 1, n°1, pp. 55-97.

Wälde Thomas W. (2000), *International Law of Foreign Investment: Towards Regulation by Multilateral Treaties*, Centre of Energy, Petroleum, Mineral Law and Policy, Dundee.

Wolf Christian (2009), “Does Ownership Matter? The Performance and Efficiency of State Oil vs. Private Oil (1987-2006)”, *Energy Policy*, Vol. 37, n°7, pp. 2642-2652.