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Managing Contractual Risks of Capital Applicant in Oil and Gas Upstream Development Contracts within the Framework of Moral Hazard Model

Mohammadi, M. H.[1], Hajian, M. M.[2*], Emami Meibodi, A.[3]

Abstract

Information asymmetry between the National Iranian Oil Company and International Oil Companies, may causes adverse selection (while contractor selection) and moral hazard (while execution of the contract) in the development contracts of oil and gas fields. Identifying the roots of moral hazards is the prelude to finding solutions to deal with distortion in contracts. In order to prevent inconsistencies in contracts, efforts should be made to align the interests and incentives of the parties to the contract, as well as reducing information asymmetries through monitoring and performance appraisal tools. In this study, using descriptive-analytical method, the findings of economics in the field of contract theory have been used to formulate a more complete contract in order to manage the moral hazard caused by information asymmetry in financing contracts for the development of oil and gas fields. To this end, the application of legal conditions capacity to reduce the client risks relevant to moral hazards caused by information asymmetry has been examined. The most important areas of information asymmetry in the contracts are technical features including basic and detail design of the project, determining the capital cost ceiling and financial resources of the project, the program of financing required funds and the program of repayment of financial resources. In many studies on the subject of comparing different contract forms in aspect of the revenue of National Iranian Oil Company, only the interests of the National Oil Company have been considered in the calculations, which has three objections. First, not paying attention to the interests of the other party in the contracts, because it would be too likely that the oil company will not accept such a contract. The second problem is that even assuming the acceptance of the National Oil Company desired contract by International Oil Company, the existence of information asymmetry between the parties will create the opportunity for the oil company to achieve the expected results of the contract. The third one is that the type of contract itself does not determine the amount of interest earned by the parties to the contract, but the terms of the contract determine the share of the parties to the field revenue. In other words, using the terms of the contract, the same financial results can be achieved from all types of contracts. Considering the above considerations, researchers should focus on the effective use of contract terms in order to manage the risks of information asymmetry in contracts and provide more benefits to the National Iranian Oil Company. In this situation, regardless of which model is chosen for the contract, the inclusion of the desired legal conditions can lead to satisfactory results of the contract. Purposeful and effective application of contract terms in order to reduce conflicts of interest and harmonize the interests of the parties, determine the desired performance indicators in the contract, provide efficient tools to control and monitor the performance of the contractor and defer payment in compensation are the main risk management strategies of the National Iranian Oil Company. At the same time, upgrading the technical and managerial capacity of the National Iranian Oil Company and using the advice of reputable oil companies can reduce information asymmetry in oil and gas development financing contracts in the country and consequently reduce the resulting risks.

Keyword: Contract Theory, Moral Hazard, Financing Contract, Oil and Gas Development Contract.

JEL Classification: K12, F38, F51.

1. PhD in International Oil and Gas Contracts Management, Department of Private and Economic Law, Faculty of Law and Political Science, Allameh Tabataba'i University, Tehran, Iran — **Email:** 57iran@gmail.com

2. Assistant Professor, Department of Private and Economic Law, Faculty of Law and Political Science, Allameh Tabataba'i University, Tehran, Iran (Author)* — **Email:** mahdihajian@yahoo.com

3. Professor, Department of Private and Economic Law, Faculty of Law and Political Science, Allameh Tabataba'i University, Tehran, Iran — **Email:** emami@atu.ac.ir

1. Introduction

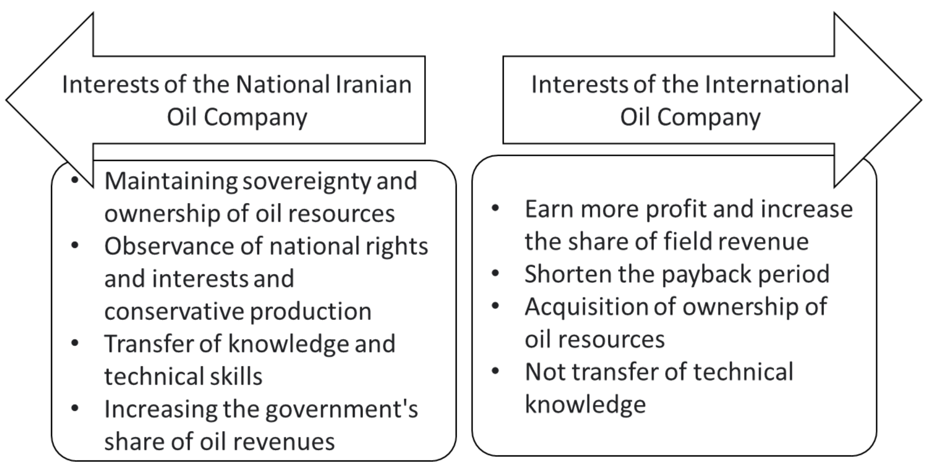
The National Iranian Oil Company, as the custodian of the country's oil and gas fields, is responsible for evaluating and defining development projects and concluding contracts to achieve production goals within the framework of the country's laws. Information asymmetry between the National Iranian Oil Company and the oil companies that are parties to the contract causes the occurrence of the phenomena of adverse selection and moral hazard in the implementation of the contracts. Conflict of interest along with contract defects and information asymmetry between the parties to the contract makes moral hazards always possible in these contracts. Failure to achieve an appropriate contractual framework would lead to paying transaction and supervision costs, cost of writing more complete contract, information acquisition costs, renegotiation costs, and costs of enforcing the terms of the contract. The present study, while expressing the moral hazards caused by information asymmetry in the financing contracts of the country's oil and gas development as a source of risk for the National Iranian Oil Company, tries to answer the question of how the financial and legal conditions contained in the contracts can be in order to reduce the risks arising from moral hazards in order to support the National Iranian Oil Company as an investor.

2. Research Background

Most of the researches related to the title of the article have evaluated different contractual forms from the perspective of information asymmetry and moral hazard. The results of the studies confirm the existence of this risk in various oil contracts. Therefore, the present study can be considered as an attempt to continue the research conducted to manage the risks associated with ethical risks in oil contracts. In his study, Oliver Williamson addressed the issue of transaction costs, the characteristics of exchanges, and how they were organized. According to him, all exchanges can be classified based on three characteristics: "uncertainty", "frequency of repetition" of the exchange and "degree of allocation" of the exchange. Oliver Hart and Bengt Holmstrom were also named Nobel Laureates in Economics in 2016 for their research in contract theory and for helping them understand issues such as performance-based pay to CEOs. Hart worked on which companies should be merged, what is the right mix for financial institutions, and when they should be privatized. Holmstrom's work also helps managers formulate contracts. In an article, Mazraati and Grundall examine Iran's Buy-back contracts and conclude that Buy-back contracts will not be beneficial to the NOC in the long run because they make the final recovery of the oil and gas field less than optimal.

3. Explain the problem

The subject of information economics and contract theory has been one of the most recurring topics in economic studies and interdisciplinary research in recent years. Access to more information on the subject of the transaction or one of the parties to the transaction provides the ground for the misuse of information and the so-called opportunity of the informed party, and it is always possible that he dominates the other party by his information. Opportunistic behaviors, if they result from covert behaviors related to the subject of the contract, cause moral hazards, meaning behaviors that lead to the loss of the interests of the employer or the customer. Contract theory suggests solutions to manage this phenomenon. The purpose of moral hazard models is to design a contract that can manage the broker's motives for hiding information and convince him that not disclosing information costs more than disclosing it. The chart below shows the inconsistencies between the interests of the client and the contractor in the oil and gas development contracts.



If the National Oil Company can align its interests with those of oil companies in designing its contracts, it will reduce the risk of inconsistencies in the behavior of the oil company. The motivational system should be such that the expected desirability of the broker when he chooses the optimal effort is not less than his expected desirability when he chooses less effort. The most important moral hazard management strategies can be categorized under the following headings:

- Motivate and align the interests of the parties to the contract
- Determining the desired performance indicators in the contract
- Deferred payment in service compensation
- Monitoring and evaluating performance

4. Managing NIOC risks in oil and gas development financing contracts within the framework of Moral Hazard Model

Oil and gas development financing contracts, like any other contract, are exposed to the risks of information asymmetry, including Adverse selection and Moral hazard. The National Iranian Oil Company (NIOC) is in a position of information weakness due to structural reasons from different angles compared to international oil companies, and this information asymmetry creates the risks of Adverse selection and Moral hazard for NIOC. The most important areas of information asymmetry in oil and gas development financing contracts that can be a source of risks associated with moral hazard are:

1. Technical characteristics of the field and basic and detailed design of the project

2. Determining the ceiling of costs and resources required for the implementation of the project

3. Financing program required for the project

4. Refund Program

The only tool available to the National Oil Company to achieve its expected benefits is the efficient use of the contractual capacities, provided that it can guarantee the fulfillment of the terms of the contract. In order to achieve its goals from the contract and to manage the risks arising from information asymmetry, the National Iranian Oil Company has to align the interests of the oil company with its own interests or increase the control and supervision of the oil company. Some of the proposed solutions for managing the risks of the National Oil Company in oil and gas development contracts are as follows:

- In relation to the technical characteristics of the field and the design of field development mechanisms, the principled solution is to upgrade the technical and engineering capacity of the National Iranian Oil Company to evaluate the proposed design of the oil company and the technical control of the contract.

- Using the services of another oil company with the necessary technical capabilities as a consultant to the National Oil Company to monitor the performance of the main contractor of the project is a solution for technical control of the contract.
- The National Oil Company can establish a mechanism to encourage and punish if a change in the design of the project by the contractor reduces development costs or improves the realization of production objectives of the field, he is entitled to receive a reward.
- Regarding the financial capacity of the oil company to provide the resources needed to implement the development plan, the National Oil Company can consider the estimation of cash flow required for the implementation of the project as one of the annexes to the contract and penalties for the oil company if the set goals are not achieved.
- In connection with the observance of conservation production standards, the National Oil Company can undertake the repayment of the investment and eliminate the contractor's salary in the form of agreed annual installments, the possibility of possible abuse in this regard. It is better for the National Oil Company to consider the repayment plan of the principal as well as the reward and interest of the oil company, independent of the time of receiving the field revenues.
- The National Oil Company can defer some compensation payments over time and evaluate the results of the contractor's work. It should be noted that the performance results should be attributable to the broker performance.

5. Conclusion

International oil companies, due to their technical and financial capabilities, are in a superior information position than the National Oil Company when entering into oil contracts. The special requirements of oil and gas field development contracts make competition rules not compensate for information asymmetries between the parties to the contract. Therefore, the National Oil Company must inevitably adjust the contract in such a way as to block the abuse of the dominant position of the oil company. The present study, while enumerating the possible Moral hazard risks due to information asymmetry in the financing contracts of oil and gas development projects in the country, has provided solutions for managing the relevant risks.

Reducing the conflict of interest in the contract, aligning the interests of the parties to the contract, determining the desired performance indicators in the contract, providing efficient tools to control and monitor the performance of the contractor and deferred payment in compensation are the main strategies for managing ethical risks in contracts.

References

Akhavan, M., (2014). "The Buy-back Development Contract for Phases 2&3 of South Pars Gas Field and Incomplete Contract ". *Iranian Journal of Energy Economics*, Volume 4, Number 13, Winter, Pages: 1-32 (In Persian).

Ayres, I. & Gertner, R., (1989). “Filling gaps in incomplete contracts: An economic theory of default rules”. *The Yale Law Journal*, No. 99(1), Pp: 87-130.

Bahadori, Sh; & Abtahi, T., (2018). "How to deal with the contractor's declared development costs when negotiating new Iranian oil contracts" *Oil and gas exploration and production*, 1397, No. 153, pp. 20-26 (In Persian).

Bolton, P. & Dewatripont, M., (2005). *Contract theory*. MIT press.

Brousseau, E. & Glachant, J. M., (Eds.). (2002). *The economics of contracts: Theories and applications*. Cambridge University Press.

Derakhshan, M., (2013), " Desired Properties in Oil Contacts: Economic and Historical Approach in the Performance of Iranian Oil Contracts". *Iranian Energy Economics Research*, Volume 3, Number 9, Winter, pp. 53-113 (In Persian).

Derakhshan, M., (2014). "Oil Contracts from the Perspective of Safe Production and Extraction: An Approach to a Resistance Economy." *Scientific-Research of Islamic Economic Studies*, Volume 6, Number 2, Spring and Summer, pp: 7-52 (In Persian).

Eyvazlu, Reza; Sayadi, M. & Khademi, M., (2019). "A Comparative Evaluation of the NIOC’s Risk Factor in the IPC, Buy-Back and PSC Contract Arrangements" *Iranian Journal of Energy Economics*, No. 8 (29), pp: 8-29 (In Persian).

Fleckinger, P. & Martimort, D., (2018). “Contract Theory in the Spotlight: Oliver Hart and Bengt Holmström, 2016 Nobel Prize Winners”. *Revue d'economie politique*, No. 128(4), Pp: 493-533.

Grant, S.; Kline, J. & Quiggin, J., (2009). *A matter of interpretation: bargaining over ambiguous contracts* (No. 1744-2016-140817).

Haji Mirzaei, M.; Emami Meibodi, A., Hosseini, M., Ebrahimi, M.; and Suri, A., (2017). "Introduction to A Theoretical Framework for Evaluating Petroleum Contracts from an Optimal Production Policy Point of View: Iran’s Buyback Contracts". *Journal of Energy Economics Studies*, No. 12 (51), pp: 181-213 (In Persian).

Holmstrom, B., (1982). “Moral hazard in teams”. *The Bell Journal of Economics*, No. 471, Pp: 324-340.

Jahanbeigleri, M., (1397). *Foreign financing methods, attracting foreign investment*, Jangal Publishing (In Persian).

Nygaard, A. & Myrtveit, I., (2000). “Moral hazard, competition and contract design: empirical evidence from managerial, franchised and entrepreneurial businesses in Norway”. *Applied Economics*, No. 32(3), Pp: 349-356.

Nygaard, A. & Myrtveit, I., (2000). “Moral hazard, competition and contract design: empirical evidence from managerial, franchised and entrepreneurial businesses in Norway”. *Applied Economics*, No. 32(3), Pp: 349-356.

Pongsiri, N., (2004). “Partnerships in oil and gas production-sharing contracts”. *International Journal of Public Sector Management*, Vol. 17 No. 5, Pp. 431-442.

Sadeghiziazi, H.; Shafaqati, Z., (2017). "Attracting foreign investment by concluding new Iranian oil contracts (IPC)". *Knowledge of Law and Finance*, Volume 1, Number 2, pp. 65-83 (In Persian).

Saheb Honar, H.; Lotfalipour, M.; Hooshmand, M. & Faizi, M., (2017). "Comparative Analysis of Fiscal Terms of Iran Petroleum Contract (IPC) and Production Sharing Contract (PSC): Case Study of South Azadegan Field". *Journal of Applied Theories of Economics* No. 4 (1), pp: 87-118 (In Persian).

Shirvi, Ebrahimi; Asgharian, (2009). "Exploration and Development of Iran’s Oilfields through Buyback ". *International Law*, No. 26, pp. 243-262 (In Persian).

Shirvi, A. H., (2014). *Oil and gas rights*. Tehran: Mizan Publishing (In Persian).

Toghyani, M.; Samadi, S. & Sadeghi, Z., (2015). "Analysis of the issue of 'asymmetric information' in interest-free banking partnership agreements and its solutions." *Knowledge of Islamic Economics*, Year 7, Autumn and Winter, No. 1, pp. 5-21 (In Persian).

Williamson, O. E., (1996). "Transaction Cost Economics and the Carnegie Connection". *Journal of Economic Behavior & Organization, Elsevier*, Vol. 31(2), November, Pp: 149-155.