

Studies on Co-opetition among National Petroleum Companies in China

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Abstract: This study is trying to find the co-opetition basic strategy among domestic similar companies and focus on the strategy system of the formation of complementary advantages force and competitive energy when the China national petroleum corps in opening up the international market. With the obviously increasing dependence on petroleum in China and the entering of advanced international petroleum companies in China's market, the competition in petroleum industry becomes more serious than before. The cooperation and competition mode among national petroleum companies is an efficient way to push the development of petroleum industry in China. Based on the analysis of encountering difficulties in national petroleum industry, the necessity of co-opetition among national petroleum companies was proposed in this study. Moreover, basic orientation and path for co-opetition are analyzed. At last, the co-opetition for exploiting international petroleum market is proposed in this study.

Keywords: Cooperation-competition, exploitation in international market, national oil company, strategy

INTRODUCTION

Study on the co-opetition is originated in a case study (Brandenburger and Nalebuff, 1996). Padula and Dagnino (2007) think co-opetition ideas derived from such a consensus: in the process of interdependence among companies, value creation and value sharing will involve a part of consistent benefit structure. The enterprise can be in the competition to seek opportunities for cooperation, but also can cooperate to compete better, but in the process of cooperation will create new competitive relationship (Padula and Dagnino, 2007). Co-opetition's basic meaning refers to the enterprises (or organization) at the same time have competition and cooperation (Lado *et al.*, 1997; Bengtsson and Kock, 2000). Studies about two-dimension relation phenomenon mainly regard interior subsidiary's co-opetition in Multi-National Corporation (Luo, 2005), between enterprise and its main competitor's co-opetition (Bengtsson and Kock, 2000, 1999; Gnyawali *et al.*, 2006; Zineldin, 2004) a Multi-National Corporation's co-opetition with a group of competitors (Luo, 2007), within the channel upstream and downstream partners' co-opetition (Kotzab and Teller, 2003) as research subject. These research focusing on the two-dimension subjective relationship in different areas revealed that competition and cooperation in different bodies' interaction relationship at the same time. In addition, studies are from co-opetition measurement and co-opetition model construction aspects, emphasis on quantitative research. On the co-opetition strategy, the practice of the

enterprise is much more, but there is little influential research.

As an important component in energy, petroleum industry takes strategic position in every country all over the world base on its specific characteristics of internationalization, politicization, finiteness. Therefore, the sustainable economic development in China also needs a strong support from energy industry. As a country with large amount of petroleum resource consumption, since 1993 China has become a net importer of oil. Until 2008, the ratio of dependence on foreign oil has already exceeded the red alert line 50%. Moreover, in 2011 that ratio exceeded 56%, which means the oil safety situation is not optimistic in China. In the international market perspective, home countries of oil and gas resources have already recognized both the scarcity and the importance for national economic development of oil and gas resources. In recent years, both all countries in the world strengthened the regulation of oil and gas resources and home countries strengthened the control of oil resources, therefore the harsh oil scramble is debut all over the world. Based on this background, China national petroleum companies, i.e., CNPC, Sinopec, conic, etc., increased the efforts on exploiting capability in international market. Although they has obtained many achievements, the integrated capability of China's national oil companies cannot be expressed effectively and the corresponding revenue and effect cannot meet expectation. On the other hand, with the expansion of China's petroleum market opening degree, multinational oil companies are entering into China's oil market in the advantages of

their technology, brand and management, which will cause the harsh competition status in domestic.

National oil security issues become more serious:

Based on the latest statistics data in China, the production of crude oil was 189 million tons in 2009, while the net import crude oil reached 199 million tons. The oil ratio of dependence on foreign countries reached 51.3%, which has beyond the 50%, the international warning line. According to the forecast in Energy Blue Book issued in the middle of 2009, 10 years later, China's crude oil external dependence will reach to 64.5%. In the statuses of without authority of international pricing, China's energy security will face more and more severe challenges. Moreover, the strategic reserve of crude oil and commercial oil is very weak, therefore the multi-level strategic oil reserve system includes state, society and enterprises should be constructed in China to ensure the security of oil supply and sustainable development of the economy in the future. In recent years, foreign energy cooperation expanded rapidly under the strong support of government's energy diplomacy. In the process, we obtained both success and progress and frustration and failure. However, in the process of developing international market, many times of "crash" phenomenon were occurred among three big national oil companies, which not only harmed to the integrate development of petroleum industry and damaged the interests of the Chinese oil companies, but also harmed to China's energy security. Therefore, cooperative competition mechanism should be established among national petroleum companies in China and finally realize persistent and expansibility in China's oil supply to protect the economic development in China.

The issue of excess production capacity construction in China's petroleum industry becomes more serious:

In 2009, China installed a series of large refining device in Huizhou in Guangdong province, Dushanzi, Fujian, Tianjin, etc. The processing capacity of crude oil added 45 million tons per year; the refining capacity added 483 million tons. At present, China has been second only to the United States, retaining its position as the world's second largest oil refining. Calculated by projects under construction, the total refining capacity in China will reach 750 million tons in 2015. Oil demand in the next five years is expected to average growth of 4.9% and then demands will reach to 5.3 million tons in 2015. This means that when refining capacity will be about 220 million tons of surpluses in the future. And refining is likely to become the next crisis of overproduction industry following the steel industry, cement industry.

As the most common oil transport modes in today's world, pipeline transportation of oil and gas is the most convenient, the most economical and the

safest means of transportation. The oil imported from Caspian region, West Asia and the Russian as well as the long distance between origin place to consumption place of domestic oil and gas, call for the establishment of the domestic and international oil pipeline system. Present years, two major oil companies, i.e., Petro China and Sinopec have actively invested in the construction of pipelines for crude oil, refined oil and natural gas, based on their perspective needs. This situation cannot form the optimization of. To increase the co-opetition in this aspect will realize the sharing of resources and reducing investment.

The entering of international oil companies in all directions into Chinese oil market increased competitive pressures to China's national oil companies:

Present, along with the opening of China's oil market, international oil companies are speedy entering into China's oil market based on their advantages in technology, brand and management. Almost all of large scale international oil companies listed on Fortune magazine top 500 have already planned to investment in China. The powerful invasion of the international oil companies increased competition in China's oil market, due to their well-funded capital, advanced technology and efficient management modes. In order to resist the competition to foreign oil companies, it is necessary to strengthen the competition and cooperation among China's national oil companies to increase the overall strength and competitiveness.

In recent years, major foreign oil companies have increased the pace of entering Chinese oil market. How to protect their dominant position in the domestic and escort for China's economic development? The Co-opetition should be implemented by effectively integrating and coordinating domestic resources and strength, optimizing and integrating petroleum chain, realizing the share of fundamental resources and information and forming integrated large-scaled regional system involved petroleum exploration, refining process and extended chemical industry.

Co-opetition can improve the technical level of China's petroleum industry:

There is a wide gap between China's petroleum and petrochemical industry and large foreign companies between the technical sides. The overall technical level is only equivalent to the level of the mid-1990s in foreign countries. European, United States and Japanese petrochemical companies strengthened the control of advanced technology and constantly strengthen the key techniques' restriction and control in petroleum and petrochemical industry in China by using their advantages in intellectual property rights protection and standardization. The competitive strength of petroleum and petrochemical companies closely correlated with their complementation of industrial chain, the technical

Table 1: Summary table of national oil company with co-opetition policy

Industry chain	Projects	Co-opetition's direction	Co-opetition's purpose
Upstream business	Exploration development and production	Strong cooperation weak competition	Lean production
	Petroleum engineering technical services	Same cooperation and competition	Technological upgrading Enhance team capabilities
Downstream business	Facilities investment	Strong cooperation weak competition	Prevent investment waste, effective risk control
	Refining and chemical	Strong regional cooperation	Keep the national petroleum company advantage position
Oil sales	Oil distribution	Strong competition weak cooperation	Regional transportation cooperation, maintain the market vigor
Pipeline construction and oil prices	Pipeline construction	Strong cooperation weak competition	Reduce investment, make full use of the resources
Explore international market	Oil price	Strong cooperation weak competition	Stabilize the market, improve the profit of enterprise
	Exploit overseas market	Strong cooperation weak competition	The interests of the state, the enterprise development

level of China's petroleum and petrochemical industry. Though after decades of development, there is still a gap with international standards. Because there are relatively sound scientific research system and management mechanism in every oil company in China, if were integrated effectively, it will be a great help to the overall improvement of the technical level of China's petroleum and petrochemical.

In summary, there are a series of questions during the current development of China's national oil company and co-opetition is a good method to solve these problems in some extent. Therefore, this study would analyze and research to point out the necessity of co-opetition and optimize among national oil companies in China.

CO-OPETITION AMONG CHINA'S NATIONAL OIL COMPANIES

According to the situation of the industrial chain of China's national oil companies, we defined the petroleum industry chain consists of upstream exploration, development, production, storage and transportation enterprises, midstream oil processing enterprises and downstream oil circulation enterprises. After our analysis of China national petroleum companies' relationship, we think: China national petroleum companies' main co-opetition strategy was mainly summarized in Table 1:

We believe that among the national oil companies major control co-opetition points are in the following aspects:

- The petroleum exploration and development business, namely the upstream business. The main goal is to discover reserves, enhance oil recovery and reduce operation cost. There is no direct competition with each other, co-opetition's direction is strong cooperation and weak competition.
- Oil refining and chemical business, i.e., downstream business. The main objectives are the regional competition, to prevent duplication of investment and production capacity surplus, the direction of co-opetition is also strong cooperation and weak competition; c. in addition, there are four control points, including oil pipeline construction

business, price, developing international market are strong cooperation and weak competition, oil sale business should take strong competition weak cooperation strategy.

The co-opetition among China's national oil companies in the upstream business mainly includes two aspects. One is the development and production of onshore oil exploration and the second is the competing strategies of offshore oil exploration and development.

Co-opetition of the development and production of onshore oil exploration: Co-opetition strategy of the development and production of onshore oil exploration mainly includes the co-opetition strategy among Petro China, Sinopec, Sinochem, Yanchang Petroleum Group, in which, in terms of the onshore oil exploration, Petro China has obvious advantages, but Sinochem Group, Yanchang Petroleum Group at a disadvantage. In order for the sustainable development of China's oil exploration, co-opetition among the major oil companies should be encouraged, in particular, the cooperation should be strengthened. Aiming at the reality, the co-opetition strategy is to encourage these companies to break the boundaries of inter-company, to establish the benchmark in the development and production of onshore oil exploration, to implement a nationwide benchmarking management.

The basic principle of benchmarking is setting the industry's leading and most prestigious companies in the aspects of products, services, or processes of practical measures as the basis, then fostering a target of being learnt and being caught up with. Through the collection of data, analysis and comparison, learning and tracking, putting into practice, such a series of standardized procedures, compare the real condition of the company with the basis, then to find the best strategy to improve the enterprise, which could strive to catch up and surpass rivals.

Co-opetition of the development and production of offshore oil exploration: Presently, co-opetition strategy for offshore oil exploration and development is among CNOOC, Sinopec and Petro China, in which due to its long-term exploration and development of offshore oil and gas fields CNOOC has a wealth of production management experience, however, Petro

China and Sinopec have explored and developed onshore oil and gas fields for a long time, with little experience of the development of offshore oil and gas fields.

For co-opetition of offshore oil exploration and development, there are two major ways, i.e., the national oil companies are competing for the offshore oil exploration and development and CNOOC solo sponsors grants. The first strategy is most appropriate to use in the Petro China (Sinopec) and CNOOC teamed up to participate in the international offshore oil bidding activity. This is not appropriate for our condition; otherwise the exploitation of marine resources in China doesn't achieve the purpose of risk aversion. For the second strategy, the first prerequisite is to change the CNOOC's perception. Competent competitors play a significant role, not only can promote the development of the enterprise, but also is conducive to China's energy security; Secondly, our industry management department should give the CNOOC some financial compensation, because learning is not on paper, learning at sea needs much security and livelihood security; Thirdly, Petro China (Sinopec) needs to establish a mutual learning system through purchasing the offshore equipment and facilities of CNOOC; Finally, according to the requirements of the relevant national administrations, the national oil companies are state-holding companies, they do hold some certain industry management functions, so the proposed requirements could be ensured to have a smooth implementation.

The co-opetition strategy of the midstream refining business among the national oil companies: Although our refining business in the future will show certain production overcapacity problem, but there is distance between the planning and the reality. The overall goal of China's oil refining industry development is to meet the domestic market demand, unlike the Middle East countries or India's oil refining industry goals-to meet the domestic market as well as to open up foreign. With time going by, the government's guidance and planning will help China's oil refining industry to balance production and demand. The specific co-opetition strategies can be interpreted as following.

In face of the increase in our dependence on foreign oil, the government's planning should adjust the structure, focus on regional distribution and strengthen the centralized resources, comprehensively utilize the energy. The new refinery projects in the future should focus on the northeast, northwest, southwest and sea such four strategic channels.

The refining integration is an important measure to enhance the competitiveness of the refining business, which benefits are also very impressive. 25% of the refinery feed are converted into high value petrochemical products and the corporate rate of return can be increased by 2 to 5 percentage points. During the

process of refining integration process, the petrochemical enterprises should base on its own characteristics of the raw materials for effective chemical projects differentiation, effective control of the competitive level of the regional chemical market.

Currently, along with China's oil market gradually opening up, the world's large multinational oil companies of world 500 best companies almost have been in our country for investment and business expands. In the field of oil refining and processing, the multinational oil companies are currently progressing into. At present, the multinational oil companies in some chemical business has set up a dominant role in the Chinese market.

From the point of view of China's economic security, in the refining market protecting leading position of domestic enterprises is very important. So, the country's national oil companies in the aspect of regional market protection should through inter-company industry chain optimization, reduce the cost of operation, achieve the purpose of protecting area market dominance. Achieving regional industrial chain optimization requires oil companies establish mutual complements of regional industrial planning, reduce duplication of investment, have regional differentiation in products, control the competition between the national oil companies within a certain range.

THE RESEARCH ON EXPLORING OVERSEAS MARKETS STRATEGY OF CHINA'S NATIONAL OIL COMPANIES

The existing problems on China's national oil companies when developing the overseas market and cause analysis:

The national oil companies in overseas markets "Crash" frequently: Oversea oil and gas resources market is a "seller's market", in the oil rare situation, more intense competition in the oil and gas resources. Faced with an overseas project, a number of oil companies tend to swarm. For example, in June 2008, Iraq opens tender for the foreign oil companies, selecting 35 foreign oil companies competing for Iraqi oil cake from 125 enterprises bidding, while China has four oil companies to participate in the competition, appearing a "crash" phenomenon. In addition, in other oil and gas resources markets, a number of national oil companies often competing for the same project, which greatly disperses the strength of our oil companies to compete in the international market.

There is a "defeating" phenomenon between the national oil companies: Many national oil companies in order to achieve their own strategic territory expansion, often make their strategic territory coincides with other companies', which produces a conflict of interest. Sometimes for their own interests, they would even sacrifice the interests of the compatriots'

enterprises. For example, in 2004, Petro China and Sinopec raced to tender for oil pipeline in Sudan. Sinopec's action not only damages the profits of the Petro China, but also disrupts its own oil overseas business strategy. This phenomenon is clearly not conducive to the harmonious and healthy development of two major oil companies.

The profit space of enterprise is little which damages the interests of the state: China's oil companies in order to win the bid of overseas oil projects, generally offer low price, even below the cost, to tender, but when they fulfilled certain contracts, only to find the project's profit is too little, or even have difficulty to make ends meet and finally due to the high cost offered stop the whole project, so that enterprises have suffered serious economic losses. In 2009, Petro China joint British BP won the bid in Rumania, Iraq's largest oil field; however, the project only paid 2 U.S. dollars/barrel for Petro China. This is equivalent to only get the labor cost of \$ 2 a barrel, but not bring any imports of oil resources to the state.

Cause Analysis: Analysis the cause of the above phenomena, the fundamental reason is that there are excessive competitions, lack of cooperation between China's national oil companies. A concrete analysis shows enterprise's own reason, also the reason of government policy.

China's oil companies in the international petroleum competition mostly are in isolation, only rarely with other compatriots oil companies, but even in vicious competition between each other. Sense of cooperation and competition is not strong; they lose the initiative of cooperation and competition. Review Petro China's overseas expansion path, once with BP, Kazakhstan's national oil and Gas Company, Total Exploration and Production Company in Iraq, the Malaysian oil company and other oil companies' joint cooperation, but seldom with domestic oil companies. Intense competition turns their cooperation partners to foreign countries, ignoring the cooperation between the brothers.

When oil companies expand oversea markets, the phenomenon of "Crash" is inevitable. The fundamental motivation for oil companies to explore overseas markets is to maximize their own profits. When there are more than those who compete for a petroleum project, they often think unite the strength of the large multinational oil companies, even at the cost of transferring the domestic part of the oil commodities retail market. If we cannot take initiative communication and coordination around the contradictions, the contradictions must be intensified, thus cannot be properly resolved.

China's national oil companies are currently led by the Bureau of Energy, which strength is limited. When several oil companies in overseas markets appear

contradiction, in addition to its own coordination, there is still a lack of the corresponding coordination organization, the third force except for enterprises and government-social groups or organizations. In China, the Petroleum Institute, Petroleum Chemical Information Society, these two organizations don't play a significant role in the coordination of the major oil companies.

Currently, the state encourage competition policy that the national oil companies develop the overseas market emphasizes the automatic regulation of the market, in line with the elimination mechanism of the market. However, excessive competition damages the interests of the country. That the major oil companies as an independent individual, if there is no national policy to guide, no constraints of the relevant laws and regulations, no clear line between powers and responsibilities, are in the free development, in the long run, regardless of the enterprises themselves or the country's energy security, is unfavorable.

The target of oil companies to open up overseas markets: Previous research has found that the process of opening up overseas market leads to a situation of excessive competition and ignoring cooperation, in the public or to the private, is adverse. This study advocates "harmony, go hand in hand" which means safeguarding their own interests, at the same time safeguarding the interests of the country. Thus, the major oil companies to explore overseas markets should on the basis of following three objectives:

- Forming a concerted effort to open up overseas markets, to access to more oil resources, to assume the important task of safeguarding national oil security
- Each oil companies can get more revenue at a lower cost, increasing individual interests
- Establishing good competition order within major oil companies, in order to achieve a win-win situation between enterprises, between enterprises and the state in the process of opening up overseas markets

The co-opetition strategies of China's national oil companies to open up overseas market: In the process of opening up overseas markets, the national oil companies implement co-opetition strategies which need to transform the concept of competition and build good coordination and communication mechanisms. In order to promote a good situation of competing, state and government should work out some related supporting policies to expand the space of overseas markets, increase the chance of competing, coordinatethe relationship between the stakeholders, prompt national oil companies to form a joint force in the process of exploring overseas market, which can

protect the nation's energy security and the development of the national economy.

CONCLUSION

Based on the analysis above, we can obtain the corresponding measures in enhancing the co-opetition among national petroleum companies in China as following:

Construct the flowchart of opening overseas market of national oil company and find the co-opetition key point:

According to the specific activities of major oil companies in exploring overseas markets, we build a flowchart (Petro China, Sinopec and CNOOC, three national oil companies as the examples), as shown in Fig. 1.

According to the research of Brandenburger and Nalebuff (1996), value creation is essentially a process of cooperation, while the value accession (or distribution) is essentially a competitive process. Usually enterprises would cooperate with each other when they co-develop or co-occupy the market, but they will compete in the allocation of market share or income. Therefore, according to the characteristics of each link, as well as various aspects of the process of creating value or sharing value, we would identify the orientation of co-opetition of the major national oil companies and the focus in all aspects (Table 2). The major oil companies must seize the focus according to co-opetition oriented strategic direction, as well as concrete analysis of concrete problems.

Co-opetition strategy of national oil company: The national oil companies' exploration of overseas

markets, not only is the process of self-expanding, but also the process of the implementation of the national energy strategy. The oil enterprises as the main force to carry out the national oil "going out" strategy, must put the national interests and business interests together closely to make efforts to enhance the international competitiveness, to participate in the share of international oil resources and market as much as possible and to guarantee domestic oil and gas supply. The national oil companies in the overseas market must firm the supreme principle of national interests to avoid the major companies' excessive internal competition and excessive mutual pressure, raising the price and mutual killing for their own interests, finally being caught in the trap of the so-called "internationalization". The national oil companies, after recognizing the need to take social responsibility, must change the concept of "individual" in the past and seek cooperation opportunities actively. Although the national oil companies have a strong competitive power, when participating in the foreign exploration and development of oil and gas resources, there is still a certain gap compared with the first-class foreign oil companies. In this case, domestic companies must be organized to take the co-opetition strategic measures, which might make a breakthrough. Facing the complex international environment, the strong competitive rivals and unstable external factors, major oil companies are required to be able to cooperate actively to establish a good co-opetition relationship and to improve competitiveness in the international market.

Implementing co-opetition strategies effectively among the national oil companies needs to have a clear understanding from oil exploration, development, storage and transportation, refining, sales distribution of

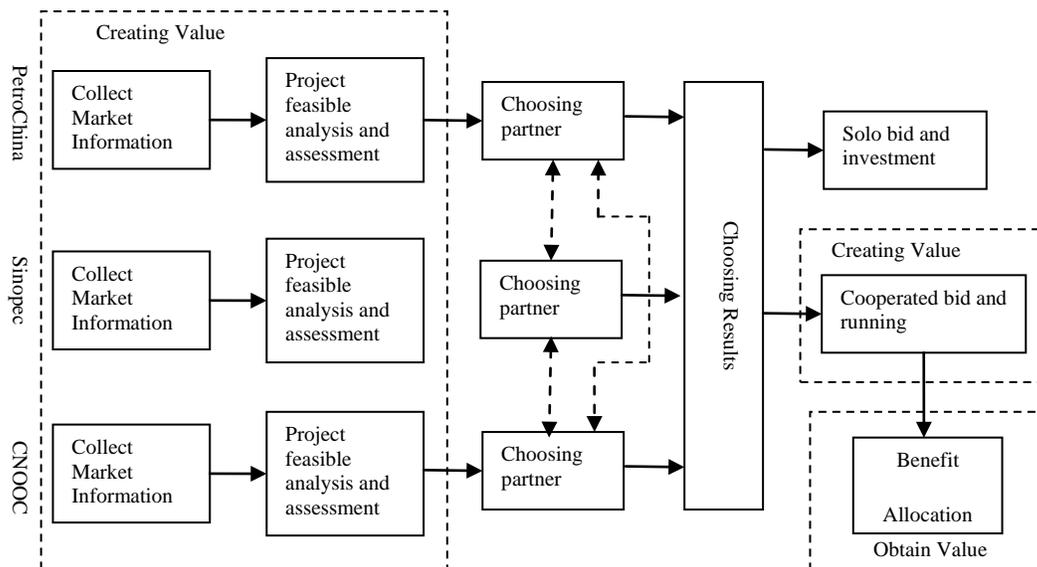


Fig. 1: Flowchart of overseas market development

Table 2: The orientation of co-opetition to open up overseas markets

Project /Process links	Co-opetition's orientation	Focus
Access to market information	Strong cooperation weak competition	Collect and analyze the market information; Analyze macro and micro environment
Project feasibility analysis and risk assessment	Strong cooperation weak competition	Establish project feasibility analysis system; Establish project risk assessment system; Conduct feasibility analysis and risk assessment
Co-opetition partner selection	Weak cooperation weak competition	Measure and analyze the various forces
Cooperation tender and operating	Strong cooperation weak competition	Cooperate to establish the commonwealth of overseas projects; Together with the other competitors to compete; Cooperate in technology, capital, labor, infrastructure, etc
Distribution of benefits	Strong competition weak cooperation	Distribute the profits equitably

oil products to domestic and international market, capital and technical ability. This will not only find the opportunity for cooperation and can make full use of each other's ability and save cost. In the competition and cooperation of oil companies, interest allocation is a key link. Through cooperation, this "cake" is made bigger and how to allocate "cake" becomes the focus of the competition. If we cannot guarantee a fair and efficient distribution, we will lose the basis for cooperation. At this point, the cooperation parties need to negotiate and communicate with each other until all the parties are satisfied with the distribution plan.

To change the situation of the domestic oil companies going alone completely, oil companies must establish a unified and coordinated mechanism to avoid the "crash" in the project of "going out" to search oil. This can draw on the experience of integrated trading company in Japan and South Korea to integrate the internal resources, to strengthen the joint and to adapt to international competition "non-zero-sum game" and "cooperative game". "Combined body" has many forms, such as establishing the overseas department of market development, establishing the strategic alliances, or setting up a separate branch which participates in the cooperation and is responsible for overseas market development activities. Strategic alliance is a popular way in recent years and members of the union are both independent and in the interest correlation, both cooperation and competition. For example, members of the union commit to any project should introduce the other two to participate in the project.

Cooperation has risks. A game whether cooperated depends on whether there is a binding agreement, making the participants using Pareto optimality. When the oligopoly manufacturers reach an agreement for their own interests, this cooperation agreement may be destroyed at any time. Similarly, the national oil companies as the main body in the market are also driven by their respective interests, looking for more conducive to their own opportunities and thus do not implement the provisions of the cooperation agreement. For example, union members do not achieve the commitment of original interest fairness in the distribution; therefore they find other partners secretly in order to maximize their own interests. These activities will destroy the co-opetition relationship. Therefore, oil companies involved in must strengthen their self-discipline, maintain the basis of co-opetition, self-perform co-opetition agreement, otherwise you will be punished by the protocol.

The communication between employees can promote the formation of good culture and avoid the inefficiency in the process of cooperation due to cultural differences. Through the empirical study, Li and Shen (2009) prove that when enterprises cooperate, the improvement of personal relationship is conducive to knowledge acquisition and has a positive effect on cooperative performance and this effect is most effective in the co-opetition relationship of high competition and high cooperation. Evidently, communication between employees of different companies is very significant. Especially the national oil companies cooperate in a petroleum technology research, good staff relations can improve the efficiency of the technology research and promote to share and access to technology.

Government promotes the implementation of the strategy of co-opetition among companies: National Energy Administration is founded on August 8, 2008, which marked that the high-profile energy industry government management agencies entered into the normal operation stage. National energy administration bears the major task of national energy demand and energy security. In the face of the "crash" phenomenon of national petroleum companies in the international market, National Energy Administration should play its responsibilities, play the role of "Oil housekeeper" well, encourage them to cooperate actively, coordinate the conflicts of the oversea expand territory and it can make decisions of safeguarding the interests of the state in case of necessity.

There is a lack of a systematic policy guidance of competence and cooperation among national oil companies, our government must make clear industry policy to direct them to carry out the activities of co-opetition, manage the motivation of enterprises, in order to conform to the interests of the country, especially avoid excessive competence inside. For example, by taking advantage of the tax and financial subsidies, the government should guide the direction of investment and investment region, to make it develop in a virtuous circle.

In today's world, oil industry is in an information age of more competitive and more risks which is deeply influenced by the global economy. Overseas information that enterprises have mastered is not enough and the feasibility study and analysis are not comprehensive, leading to many conditions of "being fooled". Petroleum enterprise must establish efficient,

quick and accurate information network system and analysis mechanism, to ensure the authenticity, effectiveness, timeliness and systematic of the information in order to carry out the multinational business. However, if only one company constructs the network, not only it lacks of professional technology and experience, but also against information sharing. The government should organize forces to establish efficient information network of international petroleum market to support decision for the national oil companies. This is a return form which national oil companies safeguard the national oil security.

Establishing international operation support system can strengthen technical support and business support to overseas projects and form effective support service system. The technical support mainly includes: the deployment of project exploration and development, regional geological research, demonstration and evaluation of exploration and development, the research of development plan, the design of engineering process, the geological and geophysical research, seismic and logging data processing and interpretation, fluid physical property analysis laboratory, special technology research and service, information technology services, technical specifications and standards and so on. Business support includes: legal adviser, insurance and tax consulting, procurement service, financial consultant, set up rules and regulations and so on.

In order to promote national oil companies to exploit overseas market, the government should improve the international oil market to promote the organization system. For example, International Oil Development Promotion Association which is advocated by the National Energy Administration, composed of three big oil companies leading representatives and representatives of petroleum industry association, etc is responsible for the interests of them three and communications of exploiting market overseas. And the technical exchange organization is responsible for the communication and learning petroleum engineering technology service. The overseas investment promotion center's fund which supports enterprise to do the preliminary work research is shared by the enterprises and the government, if the project succeed, they can return the part funded by the government, if lose, the government will pay the part loss, so as to spread the risks.

At present, the oilfield projects which have high quality and small risks have been largely carved up completely by western oil giants, China's oil enterprises have to turn to the Middle East, Africa and other area. Political instability poses a big threat over our overseas project development. The government should make full use of foreign resources to create a good environment for the foreign investment of petroleum enterprises and create opportunities and expand the spaces for

exploiting overseas market of our petroleum enterprises. Especially the foreign institutions in the oil-producing countries, should actively improve the political relationship with producers to minimize the effects of political instability.

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REFERENCES

- Bengtsson, M. and S. Kock, 1999. Cooperation and competition in relationships between competitors in business networks [J]. *J. Bus. Ind. Mark.*, 14(2): 178-193.
- Bengtsson, M. and S. Kock, 2000. Cooperation in business networks: To cooperate and compete simultaneously [J]. *Ind. Mark. Manag.*, 29(4): 411-426.
- Brandenburger, A.M. and B.J. Nalebuff, 1996. *Coopetition: A Revolutionary Mindset that Combines Competition and Cooperation in the Marketplace* [M]. Harvard Business School Press, Boston.
- Gnyawali, D., J. He and R. Madhavan, 2006. Impact of cooperation on firm competitive behavior: An empirical examination [J]. *J. Manag.*, 32(4): 507-530.
- Kotzab, H. and C. Teller, 2003. Value-adding partnerships and co-opetition models in the grocery industry [J]. *Int. J. Phys. Distrib. Logist. Manag.*, 33(3): 268-281.
- Lado, A.A., N.G. Boyd and S.C. Hanlon, 1997. Competition, cooperation and the search for economic rents: A syncretic model [J]. *Acad. Manag. Rev.*, 22(1): 110-141.
- Li, J. and Shen, H., 2009. The relationship between knowledge acquisition and cooperative performance in the context of different co-opetition portfolios [J]. *Sci. Res. Manage.*, 30(5): 139-147.
- Luo, Y., 2005. Toward cooperation within a multinational enterprise: A perspective from foreign subsidiaries [J]. *J. World Bus.*, 40(1): 71-90.
- Luo, Y., 2007. A cooperation perspective of global competition [J]. *J. World Bus.*, 42(2): 129-144.
- Padula, G. and G.B. Dagnino, 2007. Untangling the rise of cooperation: The intrusion of competition in a cooperative game structure [J]. *Int. Stud. Manag. Organ.*, 37(1): 32-53.
- Zineldin, M., 2004. Cooperation: The organization of the future [J]. *Mark. Intell. Plann.*, 22(7): 780-789.