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Master Thesis

The International Oil Market of the 21st Century:

Increased Competition through State Intervention

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Abstract

This thesis investigates the brewing 4th era of the international oil market. The result of the study shows that we are in a period of uncertainty and change; market mechanisms are changing and new key players are emerging. In addition to traditional producer National Oil Companies (NOC), the past decade has seen an increase of NOCs belonging to states whom are net importers of oil. These companies are identified as key drivers of current market changes and case studies of these revealed two clusters with regards to their perception of oil. The former identifies oil as common pool good and the latter as a toll good. Furthermore NOCs have developed from being passive players to vertically and horizontally integrated global companies. This thesis argues that the state-private relations behind these new NOCs have been powerful tools to overcome market failure of imperfect competition. However, the relation to the state appears to be a double-edged sword, since these NOCs often are part of a broader vision of economic growth and are thereby obliged to divert financial and organizational capacity towards non-commercial activities. NOCs with large oil reserves have accelerated their subsidization and in many cases they have partnered with consumer NOCs instead of IOCs. These trends in tandem create a combination of government and market failure namely that of imperfect information.

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Sandra Wessman Stockholm, August 24th 2013

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Abbreviations

APEC – Asia-Pacific Economic Cooperation

BRIC – Brazil, Russia, India and China

BOD – Board of Directors

CNPC – China National Petroleum Corporation

EITI – Extractive Industries Transparency Initiative

FDI – Foreign Direct Investment

IEA – International Energy Agency

IEF – International Energy Forum

IOC – International Oil Company

JODI – Joint Organizations Data Initiative

JV – Joint Venture

IPE – International Political Economy

MOU – Memorandum of Understanding

MPI – Ministry of Petroleum Industry

MRPL – Mangalore Refinery and Petrochemicals Limited

NDRC – National Development and Reform Commission

NOC – National Oil Company

OECD – Organization for Economic Cooperation and Development

OLADE – Organización Latinoamericana de Energia

ONGC – Oil and Natural Gas Corporation

OPEC – Organization of the Petroleum Exporting Countries

OVL – ONGC Videsh Limited

PDVSA – Petroleos de Venezuela S.A.

PESD – Program on Energy and Sustainable Development

PSC – Production Sharing Contracts

SEC – Securities and Exchange Commission

SPC – Supreme Petroleum Council

UNSD – United Nations Statistics Division

WPC – World Petroleum Council

WTO – World Trade Organization

Introduction

Few commodities are as fundamental to economic development and industrialisation as oil. Nearly all of our modern activities are indirectly or directly connected to oil either by transport, manufacturing or heating. There are certainly alternatives in the making, hence transitions in energy are slow and willingness to do so is doubtful. "While alternative energy sources are increasing, hydrocarbons are still projected to dominate energy supply through at least 2030"(National Petroleum Council 2007). As the main source of energy it is important for consumers, producers and policy makers to understand how the oil market is changing. For example, how a shift in market actors cause changes in market conditions.

Previous research has left gaps in the literature, especially pertaining to state - market relationships and institutional governance. This master thesis aims at contributing to the collective knowledge of oil market governance and NOCs (National Oil Companies) and thereby helps closing those gaps. First of all by asking and answering the question of what happened in the 2000s, are we seeing an increased influence from state actors than it was a decade ago and if so, questioning who these actors are and how they perceive oil. Secondly, by asking how strategic choices by these actors affect the supply chain.

Changes in the market will have implications for all actors along the supply chain from the citizens of host governments, via companies and states to the end consumer. My ambition is that this thesis will be able to give some constructive input for actors who try to understand what types of changes are happening in the oil market. Even though I cannot predict the future, I hope to be able to give a picture of where we are now and how and why we got here.

Acknowledging the time and financial constraints of this master thesis, it is evident that I will not be able analyze every detail of every actor. However, I'm confident that the data available is rich enough to present general trends in the oil market and give a more specific contribution on key players.

1. Literature Review

This chapter serves as a theoretical foundation and gives a historical perspective of the international oil market. The first section provides a review of concepts and theoretical frameworks capturing governance, goods and state-market collaboration. The second section summarizes what we know and what we don't know about the history of the oil market until the turn of the millennium. Lastly the two parts are combined in a discussion on shifts in governance structures and key players of the international oil market.

Governance

The history of the oil market reveals shifts in market power between actors and changes in degree of political governance. In order to make sense of this, the first clarification ought to be what governance of a market actually is. There are several definitions of the concept governance, for example, that of The Commission on Global Governance; "the sum of many ways individuals and institutions, public and private manage their common affairs…it is the continuing process through which conflicting or diverse interests may be accommodated and co-operative action may be taken" (1995). Governance is then a process shared by three main sectors; the state, the market and civil society. These sectors are intimately associated through an intricate network of connections (Rhodes, 1997; Goldsmith and Eggers, 2004). In the context of the global oil market these sectors have over the past decades shifted in importance and influence. State forces have created NOCs to influence the market and have taken regulatory measures to steer and in fact create the market itself. At the same time market forces have influenced the market by determining prices on the free market exchange and private actors serve as clusters of knowledge and investment. Thirdly there are non-governmental clusters that influence policy makers and private actors, such as think tanks and more activist organizations such as Greenpeace that serve as fire alarms. Hence there are also institutional actors like the IEF (International Energy Forum) to enhance dialogue among actors.

A strand of scholars, such as Salamon, argues that governance on many arenas have moved from the old dynamic of public versus private and has been replaced by a convergence of public plus private (1989, 2002). The line between market

and state actors has become blurred. Wettenhall argues; "Students of the old government-owned enterprises noted that so-called privatizing action frequently resulted not in a clear-cut transfers from public sector to the private, but rather to mixes of the sort of which Salamon was drawing attention" (2010:20). The aim of this thesis is to give a deeper understanding of how different actors interact but also the different (perhaps new) means of political governance pursued by state actors in order to cope with the changing rules of the game.

Provision of goods

Governance can then ultimately be seen as a process to provide a good in the best possible way. The shifts in governance can be seen as shifting perceptions among key actors as how to provide these goods. These perceptions are often built on whether an actor sees the good as a public, private or strategic good. There is a well established literature on the provision of public and private goods (Besley and Coate 1991, Olson 1965, Epple and Romano 1996) and some with particular focus on natural resources and collective action problems related to common-pool goods, such as natural resources (Ostrom 2003).However, oil may hold characteristics of both types of goods and is therefore also subject to more interconnected governance than many other goods. In general terms Ronit and Schneider puts it this way; “Some goods and services can only be provided through collective efforts coordinated through such non-market devices as hierarchies and networks [1](1999)”.

Oil has strategic concerns which may give rationale for the nation-state to intervene in the market. Hence as globalization is making its presence more visible, some argue that the nation-state no longer plays a vital role (whether voluntarily or not) (Guehenno 1995). Whereas others such as Knill and Lehmkul argue that the capability of the state as a viable actor often is underestimated in the debate on global governance (2002) and others argue that globalization in fact has both strengthening of the nation-state in terms of goods provision (Mann 1997) and that the nation-state is just finding new ways to pursue such provision (Dicken 2011). Furthermore, some argue that the capacity of both public and private actors largely depends on the specific strategic constellation underlying a

[1] For example, some goods and services require the exercise of state authority or agreement between governments of states in the form of inter-governmental regimes within specific policy sectors and issue areas such as international trade and security, more recently also environmental affairs

certain policy (or good). ”It is conceivable that the provision of a good is determined by the smallest individual contributions i.e. the weakest link”(Knill and Lehmkuhl 2002). In terms of the oil market, I wonder if this could be transferred to the uncertainty of certain actors (weak links). For example in terms of transparency; a weak link (a non-transparent actor) would add strategic concerns and thereby increase the rational for state intervention.

Global governance

As a result of globalization and international trade most goods belong to some form of overarching international regime organizing trade and governance of that market, such as the WTO (World Trade Organization). Oil is one of the few commodities lacking such a regime. With the formal ending of the Cold War and globalization reaching new levels, a strand of global governance scholars emerged (Weiss 2000, Murphy 2000, Griffin 2003). Global governance refers to “The complex of formal and informal institutions, mechanisms, relationships and processes between and among states, markets, citizens and organizations, both inter- and non-governmental through which collective interests on the global plane are articulated. Duties, obligations and privileges are established, and differences are mentioned through educated professionals” (Thakur and Weiss 2006). Early scholars argued that there was a brewing creation of global governance in many markets which was tilted in favour of private actors (market forces), on behalf of the state (Hewson and Timothy J. Sinclair 1999:4).

The global governance literature is also growing on the area of energy (Florini and Sovacool 2009, Goldthau and Sovacool 2012). With regards to oil, the debate is often centered on how global governance creates friction with realist approaches of geopolitics and mercantilist frameworks (Naidu and Davies 2006, Vivoda 2009). Goldthau and Witte argue that such a state-centered perspective neglects not only the fact that market forces matter in international oil and gas markets but also the fact that during the past three decades market forces have assumed a position of prime importance in determining outcomes in international oil and gas markets, driven by reforms that were in many cases driven by producers and consumers alike (2009:375).On the other hand there are arguments that we see more state in the market and more market in the state. In a more general analysis of globalization, there are trends of private market institutions engaged in the

creation of international standards, human rights and environmental non-governmental organizations (Wettenhall 2010:21). However it is equally important to recognize that these markets, like any others do not function without institutions, which brings us to an IPE (International Political Economy) framework for analysis the market.

An International Political Economy interpretation

The oil market can be translated into the broader IPE literature, which enables analysis of institutional networks and their relations to the functioning of a market (Garrett 1998; Gereffi, Humphrey and Sturgeon 2005). This strand of literature stresses that we need to understand a wide range of institutions that affect and are affected by a market. These institutions are not simply formal institutions such as law and state regulation, but they also include private-sector self-regulatory institutions (e.g. professional associations, producer associations) and informal institutions such as social conventions (Ha-Joon Chang 2002:552).

What is clear both from this debate as well as from the literature review in general is that we are looking at some form of hybrid state-market formation. The strand of global governance and IPE is still evolving and gaps are closing. However there is still more analysis needed to explain the new forms of energy governance (including oil) which should be understood as a patchwork of institutions, organizations and regimes, coexisting on various levels of analysis and involving both state and non-state actors, and hybrids such as networks or public-private partnerships (Florini and Sovacool 2009; Goldthau and Witte 2009, 2010; Goldthau, Cherp, and Jewel 2011).

The creation of a truly global market for oil has in a sense handicapped the nation-state to interact in a traditional state-centered approach. That is not to say that the state is dead, but rather that it has taken a new form or found new ways to interact (Ruggie 2004, Stone 2008) such new ways include institutional networks and transnational cooperation.

Government and market failures

Market and government failures relate to a situation in which the market fails to efficiently allocate or provide a good or when the government fails to provide a good in a way that is Pareto optimal allocation respectively (Anheier 2005). In the

governance and provision of goods economists argue that the imperfect nature of the state results in government failures in the form of regulatory capture, rent-seeking and corruption (Ha-Joon Chang 2002:540). Throughout history of the oil market, the most debated government failure appears to be that of rent seeking by elites. This will be further elaborated on during the sections on the OPEC (Organization of the Petroleum Exporting Countries) era. Market failures on the other hand are commonly acknowledged to take the form of externalities, imperfect competition or incomplete information (Goldthau 2012). In terms of the oil market, a common debate on market failure is volatility in prices.

The transnational nature of market failures in the global oil market gives rationale for global governance. In the oil market it can be hard to define what counts as a state intervention (in order to correct for market failures and spillover effects from state failures of other states). The interpretation of state intervention differs depending on the actors view, and in a way no market is a free market, there is always some form of state intervention, after all the market itself is a political construct (Ha-Joon Chang 2002). As discussed above, the literature is unclear as to what type of good oil actually is, however it does have certain public good characteristics, such as externalities from CO_2 emissions from using oil. Collective action problems associated with the provision of global public good have become even more of a challenge, conceptual and practical, than is their provision in the national setting (Weiss 2000:810). Other market failures may be seen in the lack of investments and uncertainty in energy security.

Comparable goods

There is to date little comparison of oil with other goods, most likely because it is hard to find another commodity with similar characteristics. Oil is a commodity that is traded on the market exchange, while at the same time it's the backbone of economic development and industrialization. Interruption of supply can cause societies to a standstill whilst at the same time overuse of fossil fuels can threaten the long-term survival of the planet as we know it. State intervention in consumer prices comes from opposite directions; some developed countries have applied additional taxes on the commodity whereas others, mainly developing countries, have chosen to subsidize it. The only commodity that I could argue have some similar characteristics would be connectedness (internet/phone connection). In a

similar way access to these goods are arguably the key defining characteristics of economic development (Florini and Sovacool 2011:66). Hence, an important difference between the goods, which also highlights another dynamic of oil, is that interconnectedness by no means is rival in consumption. Table 1 shows an overview of different types of goods and their characteristics. Interconnectedness then falls in the category of toll goods. It is non-rival because it doesn't matter how many people are using it, hence it is excludable since it is possible to charge a fee for usage.

Table 1 Public and private goods

	Non-excludable	***Excludable***
Non-rival	Pure public good	Quasi- public : Toll good
Rival	Quasi-public: Common pool	Pure private good

Oil may be considered as non-excludable by certain actors, due to that in some countries it is viewed as a natural resource, like a forest or a sea, it should be free of charge (or in at least very close to free). Whereas other actors may view it as a private good, hence due to its economic and political importance it is given strategic concerns. The essence is that oil has both public and private good characteristics, such as non-rival ideological concerns and non-excludability as a strategic concern for economic prosperity. Furthermore, what gives oil another complicated dimension is the fact that investments are uncertain and it takes a long time to find, extract and transform these molecules from the ground to the fuel that runs the engine of a car. Meaning that changes to the market, by any actor, require time and stamina.

Collaborative Governance

Another strand of governance literature which is relevant for the oil market is that on collaborative governance, which relates to the process of bringing public and private stakeholders together in collective forums. These forums come in a variety of forms, hence often with the aim of reaching and engaging in consensus building. Another characteristic is that these collective forums tend to take the form of either coordination or collaboration (Thynne 2008). A reoccurring obstacle is the power imbalance that appears when important stakeholders lack organizational infrastructure to participate in the institutional framework (Ansell och Gash 2007). Throughout the past decades, there has been a range of different

rationales for these partnerships, starting with government regulation of business in the 1970s, to regional and urban dynamics of the 1950s, to New public Management of the 1980s, to strategic management and public governance of the 1990s (Wettenhall 2010:36). This strand of literature mainly relates to a national setting, which is visualised through relationships between oil companies and governments in the oil market. However, collaborative governance can also be transferred to the global oil market where emerging arenas and institutional frameworks are incorporating both state and market actors. However, as the literature suggests there are often obstacles and imbalances in capacity among these different actors (Anheier, 2005).

Theoretical tools

The paragraphs above have covered vast theoretical grounds; there are different concepts and theories which can explain the governance and ultimately the provision of oil as a good. The next section provides a brief history of the international oil market. In the final section of this chapter the theory and history are combined in an analysis of key actors.

The history of oil governance

The beginning of oil

Oil production took off in the United States in the mid 1850s, hence this literature review has its starting point at the end of WWII due to the uncontroversial nature of the prewar structure. However, the most extensive documentation of the prewar period can be found in Yergin's book *The Prize: The epic quest for power, money and oil.* In great detail the author guides the reader through the rise and fall of Standard Oil, the importance of Baku, how oil changed the WWI, the clever maneuver of Mr. five percent and the adventure of Rockefeller. Furthermore Yergin explains the prevailing model of the American oil industry at the middle of the century. The underlying assumptions of that system were that the demand for oil would not be significantly sensitive to price movements and that each state should have its natural share of the market.

State-centrism in the postwar oil market

After WWII the importance of oil and its significance to power and economic growth was realized among politicians across the globe. Oil had changed the rules

of war and became a matter of winning or losing. During the war, tremendous efforts were assigned to securing oil supplies to your own army as well as cutting your enemies supply.

The decades following the war were dominated by a state-centered approach in oil market governance. First it was dominated by IOCs (International Oil Companies) from the Western world and later by producer government's trough the OPEC(Yergin 1991:500). The widespread drive towards state intervention in the oil market following WWII was mainly supported by three arguments among the OECD (Organization for Economic, Cooperation and Development) countries; market failure, the Keynesian legacy and the Soviet example (Stevens 2008). In more general terms a state-centered approach is based on two assumptions. The first assumption is that in some cases protectionism can raise social welfare. Whereas the second assumption states that governments can operate independent from interest group pressure(Oatley 2012).

The seven sisters

In 1948 the U.S became a net importer of oil and the western world (including Japan) were dependent on IOCs to supply sufficient supplies of "foreign oil" to cover domestic demand (Yergin 1991). The most important IOCs in securing that supply came to be called the seven sisters and in the immediate period after the WWII they were the majors of the global oil market(Claes 2001). The steady increase in demand and low production costs in the Middle East generated great profits for the seven sisters and security of supply for western governments.

The seven sisters were the "Anglo-Iranian oil company, the four Aramco partners-Jersey, Socony, Texaco and Standard of California- plus Gulf, which was Anglo-Iranian's partner in Kuwait; Shell, which was tied to Gulf in Kuwait; and the French company, CFP. The American and British governments were also intimately involved" (Yergin 1991:476).What they had in common was that they all were involved in large scale joint ventures in the Middle East and through a consortium they controlled almost the entire industry. The Seven sisters controlled the entire upstream segment and host governments were mainly perceived as passive players engaged in the industry as competing sellers of licenses or oil

concessions. However in the domestic downstream segment of western markets competition over consumers could be fierce (Fattouh and Van der Linde 2011: 26).

In the decades to come resource rich nations developed a state centered approach that would have vast consequences for the seven sisters. Already before the WWII a new form of resource nationalism had started. For example, in 1938 the nationalization of Mexico's oil industry and the creation of Pemex would come to serve as a role model for other resource rich countries across the globe (Jaffe and Soligo 2010). In addition there were three other factors that were very important for how the industry would develop; the rise of 'permanent sovereignty' over natural resources, dissatisfaction with the concession terms agreed in the previous period and rising oil demand (Stevens 2008).

The main battle between these two "blocks" (seven sisters and host governments) was about economic rent. Rents had a much greater meaning to many of the host governments than its meaning in pure financial terms; it was also a matter of sovereignty and nation building. Host-governments were eager to show the world and in many cases its own population the power, influence, significance and status these resources gave the country. This was an opportunity to build a strong nation-state based on power and pride (Yergin 1991:431). For the consuming nations that had put their faith in the hands of the IOCs joined the battle for strategic reasons. They all understood that they needed to secure supplies of oil in order to grow economically and for many oil was also a great source of direct and indirect taxes (Yergin 1991:433).

There was a great dissatisfaction among the producing countries over the distribution of profits from the industry. In many cases IOCs paid more in taxes on consumer markets than they did in royalties to host governments. An event that really marked a shift in the battle was the Saudi-Aramco fifty-fifty deal in 1950. When the Saudi-Aramco deal was struck it opened up a door for new arrangements in the distribution of rents. The era of the seven sisters were broken down by several factors, increased competition, lack of unity and the argument that has received the most literature; the establishment of OPEC.

The major reason for the creation of OPEC was a growing anger towards the IOCs. IOCs were cutting posted prices simultaneously as it was the posted price that was the basis for the producer countries taxes and royalties (Claes 2001). In a Gentlemen´s agreement leading up to the creation of OPEC, a leading figure, Perez Alfonzo urged that the concerned countries should defend the price structure and establish NOCs. It was also urged to build domestic capacity to move further along the value chain, in particular downstream and into refining. A major shift in power in OPECs favor happened in 1971 through two agreements signed between OPEC members and IOCs. These agreements marked a significant shift because they covered topics such as tax and price increases, inflation compensation and fixing of such rates for future years. "The effects of the agreements were a 21 percent price increase for Saudi Arabian crude (from $1.80 to $2.18), and an increase in revenue of 38.9 percent"(Claes 2001:63).

The nationalization of resources in the 1970s was in many cases also rooted on a much deeper level. Both the creation of NOCs and the creation of OPEC was for Latin American, African and Middle Eastern producing countries a way to affirm their independence in relation to foreign interests and an assertion of independence (Noreng 2006). The postwar period did not only see an increase in demand but also in supply. In the beginning of the 1970s most nations in which supplies were found created a NOC. By October 1973producer governments took over the prerogative of oil prices and unilaterally announced increases to the price, this was the first oil shock (Stevens 2008).

The first oil crisis quickly spread across the globe and it was a result of OPEC´s, Syria´s and Tunisia´s response to the third Israeli-Arab war through a proclaimed oil embargo; it was “in response to the U.S. decision to re-supply the Israeli military”. The embargo lasted until March 1974 and during this period the price of oil increased from $3 to $12 per barrel. The oil embargo signaled a new era for oil and the years that followed, 1974-1978 can be seen as the golden years of OPEC (Yergin 1991).

From 1983-1984 OPECs role as a price setter started to be diminished for two major reasons; first, a halt in oil demand due to the economic downturn and a huge inventory dump which now was considered unnecessary and secondly new producer competition outside of OPEC(Claes 2001). In March 1982 OPEC reduced its quota in order to maintain the price, but it was the end of an era. Furthermore, the way that OPEC influenced the oil market in its golden years and up until the mid 1980s can be characterized by price setting whereas since 1986 the strategy has been producing quotas (Wirl 2012).

Oil as a private commodity

In the 1980s there was a shift towards a more market oriented approach. "As was said, sometimes with approval and sometimes with horror, oil was becoming, just another commodity "(Yergin 1991:721). Oil was no longer considered a strategic good which had to be under state control, but rather a commercial commodity with private good characteristics. The Washington consensus and the fall of the Soviet Union finalized the arguments for privatization and deregulation. The Washington consensus symbolized an ideological swing away from government involvement in the economy and the oil market. Furthermore it was argued that NOCs had the potential to become too powerful in domestic politics (Stevens 2008).The early 1980s can be seen as the shift away from a statist paradigm and towards a liberal paradigm based on deregulation and privatization of the oil industry. The new policy agenda was to make oil a private good governed by free market exchange (Goldthau 2012).

The era of liberalism conquered the western world and with it came a wave of privatization of State-Owned Enterprises (SOEs), some of which were large energy companies (Parra 2010). Furthermore NOCs were criticized for being ineffective due to conflicting objectives imposed by governments and rent seeking bureaucrats (Stevens 2008). “The development of new oil in Alaska and the North Sea played an important role in the recovery of many companies as significant market players, helping them to regain some of their market power in the rather stagnant oil market of the late 1970s and first part of the1980s”(Fattouh and Van der Linde 2011:39).

The market as price setter

During the 1980s the entire pricing system had changed, in the late 1970s crude sales were nearly exclusively long-term contracts whereas by 1985 seventy percent of sales were based on spot price (Claes 2001). Saudi Arabia started to pursue netback pricing and the futures and forward markets exploded; this meant at least in the short term that it was market traders that decided the price of oil. By mid 1980s North Sea crudes, particularly Brent, was a major feature of an increasingly price-transparent market. Parra argues that this was visualized in two trends, firstly the Dated Brent was a feature of making the spot market an integrated part of the supply channel and secondly Brent became a "marker" crude. Contract prices of other crudes came to be fixed by reference to the price of Brent, subject to appropriate adjustments for quality and location (2010).From 1987 Saudi Arabia started to set crude prices monthly in advance according to a formula. World oil prices has since been set by reference to the prices of the marker crudes; Brent, WTI and Dubai. Furthermore Parra argues that OPEC still played a role in price setting but now without precision. OPEC continued to set producing quotas, but the effectiveness and outcome was highly uncertain. As for demand, it did not reach back to peak levels until 1989.

The Gulf War was a turning point in producer-consumer relations, most likely because it proved how sensitive the global market still was to such supply shocks. On October 1, 1990 in the UN General Assembly, the Venezuelan President Perez called for an urgent meeting of producers and consumers. He claimed that the arrangement at the time only would favor speculators and opened up for a dialogue between OPEC and the International Energy Agency (IEA). The first meeting took place in Paris in the summer of 1991 and these meeting are now held on an annual basis under the name of the IEF(Fattouh and van der Linde 2011).

Market concentration

Throughout the 1990s both financial and physical reserves were to be concentrated among fewer companies. This trend of mergers and acquisitions intensified at the turn of the next decade; from 45 IOCs in 1998 only 16 remained in 2004(Claes 2001:85). What had unfolded in these years was one of the most significant restructurings in the history of oil. The companies that came out of

mergers were not only bigger but also capable of larger and more complex projects than ever before (Yergin 2011:105). Another trend in the industry was streamlining, which is the process where company´s focus on the core business, in this case oil, gas and chemicals (Parra 2010). In conjunction and correlated with the industrial concentration three realities appeared. First there was a growing importance of attracting FDI (Foreign Direct Investment) as the basis of development strategy. Secondly, a low oil price following from the collapse in 1986. Thirdly, it was manifested that oil from now on would be coming out of a much more difficult geography and geology (Stevens 2008).

The 1990s also opened up new opportunities, in particular the opening of the Soviet Union. The Caspian basin offered great opportunities for development and today this region produces four times of what they were just a decade ago. "Today the total output of Azerbaijan and Kazakhstan is 2.8 million barrels of oil, equivalent to more than 80 percent of North Sea production"(Yergin 2011:82). Below is a summary of the governance of the international oil market and key actors that are seen as drivers of change.

Governance of the international oil market

The oil market has been through some distinct shifts in governance, the state-led approach was blooming in the post-war period, reaching a peak by nationalizations of the oil reserves in the 1970s. The market led-approach have been on the agenda since the late 1980s, triggered by the Washington consensus and a paradigm shift in overall economic and social policies characterized by liberalization and deregulation.

The perception of oil as a good has also changed over time and among actors, the state-led approached emphasized public goods characteristics of the good, both on producer and consumer side, in at least a more strategic view on the good. Whereas demand, supply and the market exchange has been the trusted tools for setting a global equilibrium price of oil since the governance shift in the late 1980s. Global governance has not received much attention in previous eras and throughout history there have been a lack of forums for a global dialogue. In the 1990s, we can see more dialogue through the IEF, which involves IEA and OPEC.

State failures such as rent distributions and market failures such as lack of information and volatile prices has historically been problematic and state solutions of the post war era and market solutions of the 1990s mirror different beliefs among actors. This thesis investigates how the new era of the oil market is governed, first by looking at how market fundamentals have changed, secondly by investigating NOCs of the new market players and third the consequences of the new approaches by these actors by looking at vertical and horizontal integration.

Key drivers

Behind the shifts discussed above there are a few market players that can be characterized as key drivers of change. Actors that want to change the status quo of how the market is arranged. In the post war period it was the seven sisters who created a state-led approach abroad in order to create security of supply, yet trusting market actors to provide the good in the domestic market and believing in competition to bring the right price. This period was followed by a different state-led approach, led by the OPEC countries. Security of supply was not the strategic concern; rather it was ideology and domestic politics. Lastly from the 1990s, the new super majors, such as Shell and BP emerged as the key drivers of change, they viewed oil more as a private good and reinforced the position of market-led actors and the use of the market-exchange mechanism to be the price setter. Table 2 visualizes a brief overview of the shifts described above, the history is of course much more complex, hence it gives an idea of how the components are linked and why this thesis is structured the way it is.

Table 2 Eras of the oil market and key actors

Era	Key actors	Good	Motive	Consequence
Post war period	Seven sisters	Strategic	Security of supply	Demand side capture economic rent
1970s- 1980s	OPEC	Strategic	Nationalism, economic rent, politics	Supply side capture economic rent
1980s-1990s	BP, Shell, Exxon etc.	Private good	Efficiency	Market concentration, price volatility
2000s	? (chapter 3)	? (chapter 4)	? (chapter 4 &5)	? (chapter 5&6)

As table 2 indicates, in order to understand current changes in the market and possible scenarios for the future we ought to understand who these new key players may be and what their motives and strategies are. The major question and the theme of this thesis is then whether these key drivers are adapting strategies that are either strengthening or correcting for market and state failures.

2. Research Questions and Design

In order to formulate researchable and relevant questions it is important to locate the current research frontier. As governance of the oil market is the central theme of the thesis, the research frontier of the previously mentioned clusters of governance; state actors, market actors and the institutional network are relevant. The following paragraphs present the research frontier on all three of these.

The research frontier

The first decade of the millennium has meant vast changes for the oil industry, hence there is still confusion among the research community as in which direction the market is moving.

State actors

Several researchers indicate that there is a stronger presence from state actors than it was in the 1990s, hence not operated in same statist approach as we have seen before (Harks 2010; Goldthau 2012). The most common way for the state to intervene in the market appears to be by creating and maintaining a NOC (Youngs 2009; Umbach 2010; Henderson 2012). In particular, attention has been given to consumer NOCs (James Baker Institute 2007; World Bank 2007; PESD 2012) since they appear to be gaining market power. These companies are also connected to a wider debate on resource nationalism (Jaffe and Soligo 2010; Beeson, Soko and Young 2011) and investments in capacity building that is needed to meet the rising demand. Furthermore debates on state actors' role in peak oil and transparency continue (Noreng 2012).

Market players

For the first nine months of 2012 Asian NOCs spent $ 37 billion acquiring assets outside their home market and there are no signs of slowing down (Ernst & Young 2012:1) (Beeson, Soko and Young 2011). Asia and in particular China has received a fair amount of attention in recent literature. There is no doubt that China will play a more important role in world politics in the years to come and thereby also in energy politics. Throughout the past decade China´s 'going out' strategy has received particular attention and there is still confusion as to how the relationship between the state and Chinese NOCs actually is functioning. Apart

from a rising demand, the oil price has also been debated (Taylor 2006; Zigler 2008). After almost a decade of increasing oil prices, the years after the financial crisis have been characterized by price volatility and the explanation ranges from Peak Oil (Raphael and Stokes), cheap peak oil (Noreng 2012), lack of investments (Fattouh Van der Linde 2011; Radetzki 2012) to financial speculation (Bressand 2010;Yergin 2011).

Institutional network

The new dynamics of the oil market appears to have triggered new dynamics and relationships as well as new risks and opportunities (Xu 2007). Oil lacks a clear institutional framework, as opposed to many other goods it is not under the WTO or any other such international regime (Goldthau 2012). Therefore most research is focused on the different parts of the institutional network, such as the consumer-producer dialogue through the IEF or transparency issues through for example JODI (Joint organization Data Initiative) (IEA 2008; Kohl 2010; Benner and Soares de Oliviera 2010; Van der Linde and Luciani 2012).

Research objectives and questions

The objective of this thesis is three-fold, firstly to give an understanding of changes in governance and market conditions of the oil market since mid 1990s and thereby identify key players in the new paradigm. The second objective is to get a deeper understanding of the motivations of new key players. The third objective is to analyse the consequences of these changes and motivations. These objectives then result in a three more specific questions.

The first research question is two-fold;

1a How have market conditions of the oil market changed over the past decade?

1b Who are the key drivers of these changes?

In order to get an understanding of how the market conditions of the oil market has changed, the thesis will thoroughly analyse the research frontier and present key changes in state, market and institutional actors and then interpret these in terms of market conditions; multiple actors, transparency, entry barriers and price-setting. Furthermore, these findings will help to locate the key drivers behind these changes, just as we saw in chapter one, there have been some key drivers behind each paradigm in the past.

Chapter one also revealed that an important factor for changes in the oil market is the perception of oil among key actors, for example, do key actors view it as a public or a private good. Therefore the second research question is;

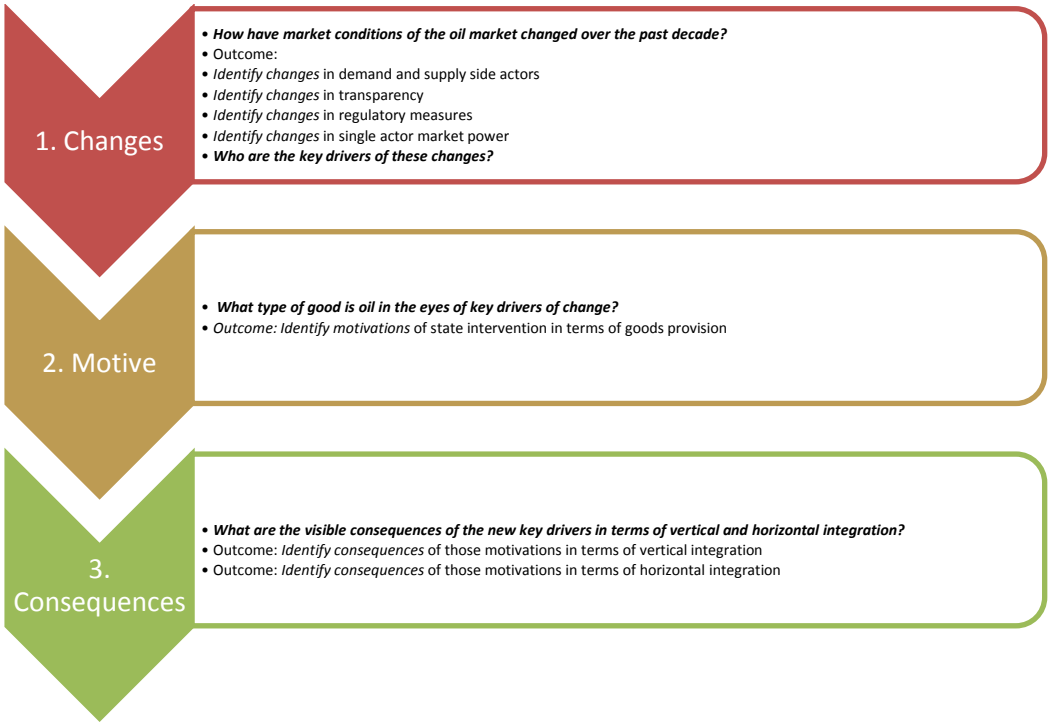
2.What type of good is oil in the eyes of key drivers of change?

The third research question relates to visible consequences of the findings in question one and two. From the literature review it is already clear that these key drivers will be NOCs and this thesis is determined to close the knowledge gap on how these NOCs behave in terms of vertical integration and strategic alliances. A combination of these two facts, gives the third research question;

3.*What are the visible consequences of the new key drivers in terms of vertical and horizontal integration?*

This third part is important since it is one of the few visible trends we can see of the brewing new era of the oil market. Figure 1 visualizes the research design and the underlying logic.

Figure 1 Research design and overview



Analytical framework

1a. How have market conditions of the oil market changed over the past decade?

1b. Who are the key drivers of these changes?

From the literature review in chapter one it is clear that the oil market has always been of a hybrid character with influences from the state, the market and institutions/organizations. Over periods these actors have increased and decreased their influence, creating consequences for market conditions, such as competition, transparency and price-setting. The analytical tools used to answer these questions will be firstly through a literature review of governance in the new millennium and secondly interpreting the findings in terms of the market conditions of the free market hypothesis.

In economic theory, a commodity left entirely to market forces will have its price and quantity determined by the equilibrium of supply and demand, this argument started from Adam Smith and has developed through the last centuries and is to today the basics of any introductory microeconomics class. In order to analyze the changes of political interference with the market this analysis will use the conditions of a perfect competition as indicators. The perfect market hypothesis says that a commodity is in perfect competition of free trade if the following characteristics prevail (Aumann, 1966 et.al):

1. A homogenous good
2. Multiple actors on both demand and supply side (No monopoly, monopsony, oligopoly etc.)
3. All participants have the same information.
4. Low barriers to entry
5. All participants are price takers

When all these conditions are in place, we have perfect competition according to economic theory. From now on, I will treat them as indicators, due to that the first condition has not changed in the past ten years I will treat it as a constant.

I_1= Multiple actors: Measured by the possibility for consumers to diversify their supply and for producers to sell to a variety of consumers.

I_2 = Information: The availability of information on reserves, production and trade as well as transparency of transactions.

I_3= Entry barriers: What are the most significant entry barriers today compared to a decade ago.

I_4= Price takers: If both supply side and demand side actors are price takers, if no actor alone can change the price by disrupting supply or change the demand.

Drawing from the literature review I will not find perfect competition. However, what I will be able to extract is changes in the state-centered and market-led approaches, some indicators may have decreased whereas others have increased and in turn this will have consequences for market mechanisms. By using the variables of the free market, I expect to find not only whether the state has more control over the oil market, but perhaps more interestingly on what variables it changes over time and how. Furthermore, based on this analysis, key actors of the changes in market mechanisms will be identified. These actors are identified by looking at the changes as well as market data on leading oil companies.

2. What type of good is oil in the eyes of key drivers of change?

The core of the analysis is the underlying motivations of these actors and how they perceive that provision of oil as a good should be carried out. Therefore the final analysis is drawn on goods theory. However, in order to be able to do that I will first analyse the six cases in terms of corporate governance, domestic monopoly and non-commercial activities. The selection of the six NOCs to be analysed are drawn from the analysis in chapter 3 on governance of the oil market. The NOCs selected are identified as plausible drivers of change in the brewing paradigm.

The three evaluation criteria are corporate governance, domestic monopoly and non-commercial activities. These three dimensions will capture different aspects of goods provision. The governance structure will indicate whether state or market actors are preferred to secure supplies. Corporate governance will we evaluated on whether the NOCs behave more as a private enterprise or as an arm of the government. The domestic market will reveal whether key players believes that competition or monopoly is the preferred market set up for exploring domestic resources, it may also reveal natural monopolies. The evaluation criteria therefore relate to market share and dominance in the domestic market (and in case of

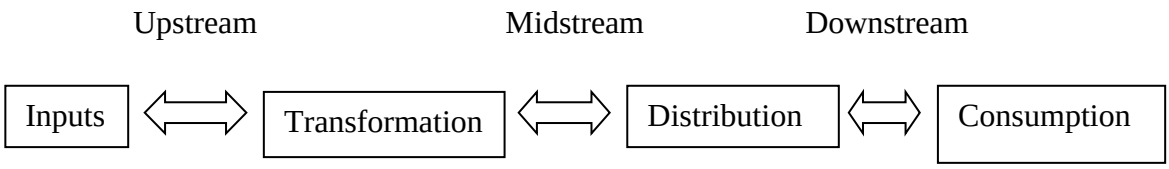
monopoly whether it is created by the government or if it is a natural monopoly). The non- commercial activities will reveal whether there are other public goods characteristics, such as redistributive effects. Non-commercial activities are evaluated on their significance and consistency.

If actors view oil as a pure private good we would expect no state interference. Whereas if viewed as a public good it should be non-rival and non excludable, oil does not hold these characteristics. However, there might be states that treat oil as a good with some public good characteristics. There might be states that may consider it so vital to economic prosperity or pressure from the public that it should be subsidized, so that it is nearly free of charge. This part is a way to translate the findings of changes into motives.

3 What are the visible consequences of the new key drivers in terms of vertical and horizontal integration?

The third part is related to how these motives turn into consequences both for the actors that conduct them and for non-state actors in forms of vertical and horizontal integration. There are three major segments in the value chain of the oil market:

Figure 2 Vertical Integration



If a company is pursuing a strategy of vertical integration, they try to capture more segments than previously, for example a company that historically have been involved in Exploration in the upstream phase, decide to move into the business of refining the crude oil (transformation) in the midstream segment. In order to answer the question at hand, I will analyze then NOCs of the six case studies. This section will therefore be a comparative study over the past fifteen years.

Strategic alliances are formal agreements between firms to pursue a specific strategic objective; to enable firms to achieve a specific goal that they cannot achieve on their own by horizontal integration. It involves the sharing of risks as

well as rewards through joint decision making responsibility for a specific venture. Three major models of horizontal integration exists; research oriented, technology oriented and market oriented (Dicken 2011:156). The section on horizontal integration will mirror that of vertical integration. It will be a comparative study, with the same NOCs and time frames.

Data

Data is gathered from a wide variety of secondary sources, the first part drawing more on journal articles due to the literature review format, whereas the core of the second part is the six cases and thereby are company/country related and most data is drawn from annual company reports and industry reports.

The first research question is answered by first presenting an extensive literature review and secondly by analyzing the findings in terms of market mechanisms. The literature review itself consists of three dimensions, the state, the market and institutional networks. Sources to analyze the changes in state governance of the oil market are drawn from industry reports by Ernst & Young, IEA and IEF, publications of books and journal articles by frontier scholars such as Youngs and Harks. Furthermore three series of case studies on NOCs are introduced and these will be important sources throughout the thesis. They are written by James Baker Institute, World Bank and PESD (Program on Energy and Sustainable Development).

In addition to the sources above, research and debates on the role of market actors are analyzed by using data from BP statistical review and Petroleum Intelligence Weekly. As in the case of state actors, this section tries to capture the main debates of the research frontier over the past decade, therefore contributions from scholars such as Yergin and Noreng as well as articles from journals such as Energy Policy, Global policy and International Affairs. There are also industry and market reports by IEF and the World Bank.

For the institutional infrastructure, the main point is that there is not that much research done due to the lack of a global institutional regime for oil. Hence, there has been some research on voluntary cooperation through JODI and EITI (Extractive Industries Transparency Initiative) by frontier scholars such as

Goldthau, Florini, Harks and Eigen. There is also some research on regulatory frameworks by organizations such as IEF, OPEC, WTO and WPC (World Petroleum Council). Therefore this section draws secondary data from all of these sources in order to be able to present as a broad and accurate view of the institutional patchwork as possible.

Chapter four and five are based on the six case studies, the former focuses on goods provision and the latter on commercial integration of NOCs. Chapter four is based on the three cases studies previously mentioned as well as company and government reports. Similarly chapter five focuses on domestic and international mergers and acquisitions therefore annual reports from NOCs and industry expert's serves as the core of the data set. The NOCs analyzed are great enterprises with vast amounts of subsidiaries; I therefore would like to raise a concern that the data on vertical and horizontal integration may have minor reliability flaws due to missing data as a consequence of lack of transparency. However, I'm confident that approach taken is of high validity for what is measured and that more than enough data is gathered in order to be able to show accurate and significant trends and answer the questions at hand in the best possible way.

3. The international oil market in the 2000s

This chapter analyses the changes in governance, market mechanisms and key players over the past decade. The chapter has three main sections, the first summarises major debates and key changes by analysing three clusters of actors; state, market and institutions. The second part interprets these findings by looking at the free market hypothesis and thereby identifies and captures movements in the number of actors, transparency, entry barriers and price-setting. The third part of the chapter presents the case selection of key drivers for chapter four and five.

Governance of the international oil market

The governance of a market is a set of processes and mechanisms chosen to provide a good and is collaborated among three types of actors; state, market and institutions. The sections below present a literature review on major debates and research findings regarding these different actors in the past decade.

State

Presented below are the major scholarly debates on the changing role of state in the oil market. The literature focuses on three main themes; resource nationalism, strategic reserves and NOCs.

Resource nationalism

Estimations show that roughly 90 percent of all oil resources on the planet have been nationalized; this creates a major entry barrier for oil companies trying to establish themselves in new markets. Every year the consultancy company Ernst & Young presents the main opportunities and risks in the oil market. For 2011 access to reserves was listed as the main risk followed by political constraints and competition for proven reserves. "Indeed, our multi-sector survey found that oil and gas respondents were more likely than those in any other sector to report difficulties in managing the risks associated with the expansion of government's role"(Ernst & Young 2011:4). At this point there are few known oil resources that have not been nationalized and therefore government policies of countries holding these reserves constitute a major entry barrier. Today the share of oil reserves

available for IOCs is very small, its considered to be less than 10 percent (IEF 2012:5).

The debate on resource nationalism has triggered concerns among countries not holding any significant reserves such as the member states of the European Union (EU). They have received attention for their lack of state interference in the oil market and the debate often belongs to a wider debate of whether or not the EU should have a common energy policy and whether it is nation-states or the European commission that should provide energy security. European companies have found themselves in fierce competition with both producer NOCs and Asian investors (Youngs 2009:169). Some argue that the so called new "resource nationalism" gives the EU a reason to protect itself, not necessarily by creating NOCs but at least to take a more active role (Umbach 2010:1239). This could also be a space for improved of economic and political integration that strengthens cohesion of its members. However to date the EU institutions have not played a role in securing this strategic resource, and European vulnerability is far too high (Palazulelos and Fernandez 2012:280).

Spare capacity and strategic reserves

In order to protect from supply interruptions major consumers such as the IEA countries and China have started to hold strategic reserves. For example, a requirement for members of the EU is to hold a 90 day reserve and many other consuming nations have started similar initiatives. Strategic reserves were for example used to make up for supply shortages during hurricane Katrina.

There is a similar concept on the supply side, that of spare capacity. Spare capacity is defined as capacity that can be brought on-stream within thirty days and remain sustainable for at least ninety days (IEA 2008a). For example it was used during the strikes[2] in the winter 2002/2003 in Venezuela (at the time the 3rd biggest producer in the world) as well as during the invasion of Iraq in March 2003 (ibid). However, as a result of a growing demand for oil, spare capacity

[2] "In 2002 the Venezuelan economy experienced a significant downturn following a failed military coup to overthrow Chavez and a two-month strike by PDVSA workers. Oil production dropped from close to 3 million bpd to less than 500,000 bpd in January 2003."(Tordo, Tracy, and Arfaa 2011).

decreased during the decade. Hence with the global subprime financial crisis, the oil demand and its price crashed and as a result spare capacity in 2010 was estimated to be at a comfortable level of spare capacity of around 7 million to 8 million barrels a day (Harks 2010: 254). Hence Harks also points out that this situation was created by external factors rather than by deliberate strategies, it is therefore likely that in an event of an economic upturn spare capacity may run dry again.

National Oil Companies

According to PIW's (Petroleum Intelligence Weekly) yearly rankings 17 of the 25 largest oil companies today are NOCs. In addition, NOCs like Statoil and Petrobras have become industry leaders worldwide within their specific expertise (Henderson 2012:45). In the past five years there have been several studies of NOCs. Here I would like to highlight three that have particularly influenced the recent debates on the topic.

In 2007 the James A. Baker Institute for Public Policy conducted a series of in depth case studies on a range of NOCs. The presentation of the case studies entailed the following six conclusions. Firstly, NOCs have noncommercial objectives that differ from IOCs objectives, for example; redistribution, foreign and strategic policy, energy security, wealth creation for the nation, domestic politics and economic development. Secondly the extent to which the noncommercial objectives govern the behavior of a NOC has a huge impact on its ability to replace and expand its oil and gas production. Thirdly, the institutional structure and regulatory framework can make a NOC much more effective. It reduces the impact of noncommercial activities upon the core business and in addition, multiple NOCs can improve the efficiency. Another point which the study revealed was the importance of international capital markets in facilitating corporate responsibilities. A new trend was also discovered; NOCs have long been excluded from downstream and marketing segments in consuming markets, however lately NOCs have been seeking to gain market share in these segments and by doing so creating opportunities for new strategic alliances between NOCs and IOCs. Finally, the study emphasized the growing importance of NOCs in the global oil market and that this should be of concern for importing countries in

particularly concerning insufficient reinvestment rates and responses to vertical integration.

A second study was published by the World Bank in 2011, it focused on value creation among NOCs. Four particular questions were asked and answered in the study. Firstly, internal governance structures appeared to be more important than external and there is a tendency that wholly state-owned NOCs have more national missions to oblige to and have fewer incentives to improve efficiency. However, cultural differences explain why similar corporate governance structures may function in a dissimilar way. Secondly, the study concluded that large resource endowments are a disincentive to efficient production, hence that it is the manner in which they are exploited that matters. Thirdly, they found that sheltering a NOC from competition by restrictions on access helps the NOC to focus on developing necessary competence and economies of scale. Hence, such measures can have decreasing effects on value creation over time. And finally, they concluded that national mission objectives hamper value creation when their pursuit is in conflict with other value added functions (Tordo, Tracy and Arfaa 2011).

The third study was conducted by PESD and published in the book *Oil and Governance: state-owned enterprises and the world energy supply*. First of all this study asks why a NOC is created and maintained and what they found was; fear that IOCs were not delivering adequate revenues and benefits, nationalism, contribution to the nation's industrial base and lastly to take over from IOCs one´s the risky part is over. Another research topic was what influenced the performance of a NOC and the study found that state goals, geology and consistency in the state-NOC interactions to be important indicators.

The increase of NOCs coupled with the fact that almost all current reserves are nationalized has been argued to lead to an underinvestment in the industry. Several scholars argue that in many exporting countries, the relationships between the states as owners and NOCs are too complex and inefficient and this yields very low rates of investment in the oil sector. For example, revenues from the oil industry that could be used for reinvestments are instead used to subsidize domestic oil prices (Jaffe and Soligo 2010).

Market

This section highlight debates regarding the changing influence of market forces. Four main trends are presented; demand, supply, price volatility and the global economic shift.

Demand

During the past decade many countries have increased their demand for oil, in particular emerging Asia and the BRIC's (Brazil, Russia, India, and China). Table 3 shows how countries like China and India have more than doubled their consumption in the past fifteen years, whereas the demand of traditionally large consumers such as the U.S, Japan and Germany is stagnating. Apart from the increased demand by the BRIC[3]s there is also an increase from large suppliers such as Saudi Arabia. Furthermore an interesting trend is that the new large consumer has given rise to consumer/importing NOCs.

Importing NOCs seek to acquire reserves and invest in properties abroad to supplement inadequate domestic supplies (such as China and India) or because domestic supplies are largely nonexistent (as in South Korea or Japan)(Ziegler 2008:134). Some argue that the consumer NOCs of Asia resembles the characteristics of the seven sisters in the middle of the past century (Harks 2010a).

Table 3 Top 10 oil consumers

TOP 10 consumers	*1995*	*2000*	*2005*	*2011*
in million barrels per day				
USA	17,72	19,70	20,80	18,84
China	3,39	4,77	6,94	9,76
Japan	5,75	5,54	5,33	4,42
India	1,58	2,26	2,57	3,47
Russian Federation	3,10	2,55	2,62	2,96
Saudi Arabia	1,30	1,58	1,97	2,86
Brazil	1,78	2,04	2,07	2,65
South Korea	2,02	2,26	2,31	2,40
Germany	2,87	2,75	2,59	2,36
Canada	1,76	1,92	2,23	2,29

Source: BP statistical review

[3] With the exception of Russia

Supply

The number of suppliers and their size has been fairly stable over the past decade. Table 4 is a compilation of data gathered from BP's statistical reviews in the period between 1995 and 2011; it shows the top ten countries in terms of reserves and production. There are no major changes since 1995.

Table 4 Top 10 oil producers and proven reserves by country

Top 10 producers	**1995**	**2000**	**2005**	**2011**
in million barrels per day				
Saudi Arabia	9,09	9,44	11,03	11,16
Russian Federation	6,24	6,47	9,44	10,28
USA	8,32	7,73	6,90	7,84
Iran	3,74	3,85	4,18	4,32
China	2,99	3,26	3,64	4,09
Canada	2,40	2,72	3,04	3,52
United Arab Emirates	2,40	2,62	2,98	3,32
Mexico	3,05	3,46	3,77	2,94
Kuwait	2,13	2,24	2,65	2,87
Iraq	0,53	2,61	1,83	2,80
Top 10 Proven reserves				
in billion barrels	**1995**	**2000**	**2005**	**2011**
Venezuela	66,3	76,8	80,0	296,5
Saudi Arabia	261,5	262,8	264,2	265,4
Canada	48,4	181,5	180,5	175,2
Iran	93,7	99,5	137,5	151,2
Iraq	100,0	112,5	115,0	143,1
Kuwait	96,5	96,5	101,5	101,5
United Arab Emirates	98,1	97,8	97,8	97,8
Russian Federation	n/a	68,5	80,2	88,2
Libya	29,5	36,0	41,5	47,1
Nigeria	20,8	29,0	36,2	37,2

Source: BP statistical review

Hence, it is important to note also what we don't know because the reserves presented in table 4 are simply estimations and projections. Hubbert developed his theory of peak oil already in the 1950s and still today it is a controversial topic when discussing future supply. The term peak oil refers to the point of maximum global production, however the debate of whether this point is reached, ever will be reached or already has past is continuous. A popular modification of the model is to call it peak cheap oil, meaning that oil with relatively cheap production costs will no longer be found. So there is no lack of resources as such but rather that the new discoveries will be found in very tricky geology and in unconventional sources (Noreng 2012:121).

There are a few interrelated obstacles to efficiency that has been difficult for the entire industry during the past decade, namely lack of investments, volatility in the oil price and the financial crisis. The financial crisis thought to have affected the rate of investment negatively both by lowering the oil price and secondly by general precaution towards investments and credit constraints (Fattouh and Van der Linde 2011:103,127). This recent volatility in prices has had a negative impact on investments and in addition it triggers opportunistic behavior on the part of whoever has the temporary advantage (Bressand 2010).

The price of oil saw between 2002 to the financial crisis the longest sustained increase. However in the years following the crisis we have seen an intensified price volatility (Harks 2010a). The increased and volatility may be an effect of several causes, among those proposed are financial speculation (Yergin 2011), increase in demand (Harbo 2008:42) low reinvestment rates of host governments and NOCs (Radetzki 2012) and transparency. Most likely there is a combination of all these factors. However, the fluctuations, at least may indicate that today we do not have any cartels controlling the price on neither side of the equation, at least non effective such.

However, the lack of investments and specialization among NOCs and the lack of resources among IOCs appears to have triggered new dynamics in the industry. NOCs are still dependent on investments or technologies/expertise from abroad forcing entry barriers to be lowered. Previous frontiers have largely been about exploration and development in new geographies, and the private operating companies, of all sizes have become skillful in managing risks. The IEF claim that IOCs are the preferred partners for long-term ventures, in addition to technology and finance, IOCs bring a package of operational expertise and project management capabilities as well as market knowledge and access (2012:7). In addition, its suggested that service companies are taking over the many tasks from IOCs (IEF 2012:7). There has been an increase in strategic alliances both between NOCs and between NOCs and IOCs (Xu 2007). "This period (2000s) witnessed the renegotiation of contract terms and conditions for many projects which signaled a shift in the balance of the relationship between NOCs and IOCs.

Contracts between NOCs and services companies grew in size and importance over the same period" (IEF 2012:4).

Due to the issues with transparency, a volatile price and the creation of new alliances, an emerging question is for how long the dollar will be seen as the favorable currency to make transactions (Noreng 2011). The financial crisis did not only bring a fall and volatility to the oil price, it also brought a shift of power in the international economy from the U.S. to China which may in the future lead to other changes for the price of oil. Noreng elaborates on the topic; China is becoming the most important trading partner of many oil-exporting countries and this together with the rising convertibility of the Yuan may well lead the way for oil-pricing in the Chinese currency in the future (Noreng 2012:22).

Institutions

Previously the dialogue between consuming and producing states and companies has been centered between IEA and OPEC. However, the new millennium has seen the rise of the new consumers and producers. On the demand side in particular emerging economies such as the BRICs and on the supply side new field developments in Africa and Caspian Basin. This means that the emerging key players are not in the old debate and thereby they often stand outside the institutional network. Furthermore these new players conceive a wide range of different interests, aspirations and perceptions of the energy challenges (Fattouh and van der Linde 2011). The IEA has in later years been reaching out for a dialogue with new consumers such as China and India, hence interest of membership has been fairly low both from the newcomers and existing members (Kohl 2010).

For most commodities, there is some form of regime governing the market, most commonly the WTO. However, for the oil market there is no such overarching regime or a clear forum for discussion and resolving disputes. Oil governance is rather a highly complex network of institutions and organizations covering different parts of oil governance. The most known are WPC and IEF, however none of these have managed to gather all parties or important issues to the table.

One issue that have received a lot of attention lately and that exemplifies different aspects and changes in the organizational influence on governance is efforts to create an institutional and regulatory framework to enhance transparency. In order for actors to make rational actions and for the market exchange to work as an efficient price-setter, actors need adequate and equal information. As touched upon in the sections above, there are uncertainties for example the amount of reserves available. Furthermore, several oil companies received criticism for lack of transparency in a variety of data, such as production levels and financial performance

Voluntary cooperation

The volatility of oil prices in the 1990s brought a consensus for more cooperation for the benefit of consumers and producers alike. A platform for this process was created by the launch of the IEF in 1991, initiated by OPEC and IEA.

It became more and more apparent that the unavailability and unreliability of data is a major obstacle to a stable price (Goldthau 2012:74). Concerns for the lack of transparency in the market were raised several times during the late 1990s and on the 7th ministers meeting of the IEF in Kiyadh in 2000 the development of a Joint Oil Data Exercise was initiated in collaboration with six organizations (APEC (Asia-Pacific Economic Cooperation), Eurostat, IEA, OLADE (Organización Latinoamericana de Energia), OPEC and UNSD(United Nations Statistics Division)). In November 2005, the initiative was established as a permanent mechanism under the name JODI and the database was made public online. The IEF secretariat has promoted and supported the JODI as representing the single most important collaborative effort to address the issue of market data transparency (Van der Linde och Luciani 2012). It is a remarkable step forward as the initiative covers 90 percent world supply and demand (Harks 2010: 260). Furthermore, the IEF wishes for the initiative to be further expanded to include investments to further increase transparency in the market (JODI 2013).

Since JODIs public launch in 2005 data is available on their website and reporting assessments are published yearly, a compilation of those reports is available in Appendix 1. As the tables in Appendix 1 show there is neither a great increase nor

decrease in the data available and reported. Perhaps what is more worrying is the fact that even though reporting is becoming more institutionalized and systematized this is no guarantee for accuracy. With the exception of the IEA countries[4] all other data are based on estimations, which in most cases are educated guesses by bankers, industry traders, or journalists. The lack of transparency in most cases is a result of two realities. Firstly, it is a result of confidentiality of such data in certain countries and secondly there are cases where neither companies nor the states themselves actually have any data (Harks 2010:249).

The JODI is by many seen as a step in the right direction to enhance transparency. However, the initiative is reliant on voluntary contributions and operates without sharp teeth. The driving force and motivator to submit data is a common need for an efficient market. Hence, as Florini and Saleem points out; not all states may find this as a motivator, rather in the short-term some may be beneficiaries of a less transparent market (2011:146). There are three main motivations and desired governance outcomes that drive disclosure initiatives in the energy sector: (1)making markets work more efficiently, (2) inducing corporations to internalize negative externalities and (3) improving democratic processes for better energy governance outcomes (Florini och Saleem 2011:146).

EITI

Another initiative is EITI, which sheds light on another important aspect of transparency, namely inter-payments between companies and governments. The initiative was primarily a reaction to the 1999 Global Witness Report *Crude Awakening Angola* and Human Rights Watch report *The price of oil in Nigeria*. Global Witness and Transparency International UK formed an alliance and in 2002 they created the campaign PWYP (Publish What You Pay). Later in the same year, on the initiative of Tony Blair at the sustainable development summit in Johannesburg the launch of EITI was announced (Eigen 2007:333-34). In 2003, Azerbaijan and Nigeria were the first countries to commit to the initiative, in the same year the World Bank also endorsed the EITI. Norway committed as the first developed country to the initiative in 2007. An overview of compliance is available in Appendix 2.

[4]IEA members have signed a legally binding international agreement making data submission compulsory.

In 2008 the World Bank announced EITI ++ which aims to attain transparency in the entire value chain rather than just revenue inflows (Benner and Soares de Oliviera 2010:297). The EITI process has also inspired and collaborated with other initiatives, such as Open Society Institute through the Revenue Watch Institute and the International Monetary Fund has published a guide on resource revenue transparency. Furthermore in 2004 the European Parliament amended a directive to promote disclosures (Benner and Soares de Oliviera 2010:297).

Regulatory measures

In addition to voluntary cooperation there are also regulatory measures taken. A recent example is the EU who mandated publicly listed European companies to stricter disclosure of payments for oil, gas and mining projects in April 2013. Prior to that, in 2010 the U.S. amended the Dodd-Frank Act, which several IOCs have taken action against. IOCs are fighting against stricter requirements by backing the American Petroleum Institute (API) in its law suit against SEC (Securities and Exchange Commission) in order to stop (Kaufmann 2013). Hence, there have also been calls for harder legislative measures such as new accounting standards for extractive industries as proposed by the European Parliament in 2007 as well as in the U.S there are ongoing discussions in the U.S. Congress on the Extractive Industries (Benner and Soares de Oliviera 2010:297).

As earlier mentioned many of the major players are state-owned companies that are not obliged to reporting standards of stock-listed companies and this is argued to add to the dilemma of increasing transparency (Goldthau 2012:74). On that note, we have seen several NOCs become stock listed; they have become what the World Bank calls Partial NOCs. Partial NOCs have the state as a majority shareholder but due to an external minority stake they need to increase reporting standards. However it is not only reporting standards that are the cause of loose reporting, researchers also point to the fact that in many cases the size of for example subsidies is unknown even to the companies and the government themselves (Benner and Soares de Oliviera 2010:297). The business model and performance of Statoil and Petrobras, appears to be a appealing to other NOCs, and in the past decade we have seen giants such as Rosneft and Petrochina becoming stock listed.

Trends and findings

This section will translate what we have learnt about the oil market in the 21st century into market conditions. The market conditions used are drawn from classical economics and the perfect market hypothesis. The hypothesis states that a commodity is in perfect competition of free trade if the following five characteristics prevail (Aumann, 1966 et.al): (1) that the commodity is a homogenous good, (2) that there exists multiple actors on both demand and supply side and thereby avoiding monopolies or oligopolies, (3) that all participants have the same information, (4) that entry barriers are low and (5) that all participants are price takers. Drawing from the literature review I expect that I will not find perfect competition in neither of the periods. However, the ambition is to extract changes, some indicators may have decreased whereas others have increased. This information will be very helpful in chapter 4 and 5 where I try to answer the questions of why and how.

Market mechanisms

Below the four indicators; multiple actors, information, entry barriers and price setting are analysed in order to visualize changes and trends.

Multiple actors

This indicator reveals an increase in demand side actors and a stagnant amount of supply side actors. There are no traits of monopoly, monopolies or oligopolies on either side of the equilibrium equation.

The most significant change during this period is the increase in demand; the largest consumers such as the U.S and Japan are stagnating, whereas new large consumers are emerging, in particular the BRIC countries. Hence, we can also read from table 3.1 that large producers have also increased their domestic demand. Most likely, this is an effect of subsidizing domestic oil consumption for a very long time, as in Saudi Arabia and Venezuela. In the BRIC countries, on the other hand, the increase of demand is more related to economic growth. An additional angle to this change is that the new major consumers are all represented by NOCs, so in a sense the last decade have seen a rise of NOCs on the demand side.

There has been no major change on the supply side, reserves are spread across the globe creating a vast amount of suppliers and about 90% of reserves are nationalized. Even though resources are scattered across the globe there are a few countries such as Saudi Arabia, Venezuela and Iran that hold an immense amount of reserves, see table 4. Those reserves that are not nationalized are likely to be found in a difficult geology such as ultra-deep seas and the Arctic.

Transparency

In terms of transparency, we have two opposing trends; on the one hand consumer NOCs who lack comprehensive reporting standards (at least to the public) are increasing their market share and thereby decrease transparency to the rest of the market. On the other hand, we have seen both voluntary and regulatory interventions to correct for the lack of transparency. Perhaps not optimal yet, but an institutional framework for dealing with the issues is taking shape, represented by initiatives such as JODI and EITI.

Transparency and equal information of market actors and stakeholders is at the core of the free market. It is evident that the oil market is still struggling to achieve high reporting standards. Even though some practices are expected to improve, there are some problems related to transparency that appears to be inherent to the oil industry, such as how much oil is left in the ground and economic rents.

Entry barriers

A market can have many different types of entry barriers, the most significant identified in the previous chapters for the current decade is government policy and specialization. Government policy refers to the nationalization of resources and the market dominance of NOCs in the domestic market created by protective policies. The second entry barrier is specialization, both in terms of technology and investments required. The entry barriers for NOCs and IOCs look slightly different. However both barriers discussed here applies to both as a result of many NOCs expanding on the world oil market.

Common for both IOCs and NOCs are that a main barrier is specialization and investments required. The previously mentioned report by Ernst & Young proposed that the major opportunities in the industry in 2011 belonged to frontier acreage, unconventional sources and difficult geology. These opportunities do not only require investments but also they require specialization. "A combination of high oil prices and limited access to reserves has pushed many oil companies in non-OPEC countries to explore new frontiers"(Fattouh and van der Linde 2011). New frontiers are found in ultra-deep waters along the Brazilian coast, under the melting ice of the Arctic and in unconventional sources. According to the latest EIA International Energy Outlook; "global production of unconventional liquids will increase from 3.4 mb/d in 2007 to 12.9 mb/d in 2035, accounting for 12 percent of the world's total liquids supply in 2035". All in all the two major obstacles for IOCs and NOCs alike are specialization and government regulation.

As compared to ten or twenty years ago, both of these barriers have lowered for NOCs as they have increasingly received financial collaboration from their governments which leads to increased specialization and regulatory advantages. Whereas for IOCs the entry barriers have risen rather than lowered, due nationalized resources and the credit crunch in the aftermath of the crisis.

Price-takers

If all participants to a market are price takers then no single actor should be able to affect the price significantly, all actors should be price takers not price makers. The analyses in the chapters above indicate that the market exchange is still the preferred price setter in the first decade of the new millennium.

The emerging economies, in particular the BRIC countries are argued to be of more importance in the brewing paradigm. They are likely to become the new rule-makers in terms of supply, access and sustainability. This does not necessarily mean that the OECD countries will be excluded from the oil market, rather that they now will become rule-takers rather than rule-makers (Goldthau 2012). Some scholars predict that with the power shift in international economics from the U.S. to China we will also lead to a change in the chosen currency of pricing oil. Either by an absolute change in currency or through a basket of

currencies (Noreng 2012:121). As for now it appears as if the market exchange is still the preferred price-setter. Hence, we may see an increase in bilateral purchase agreements, but for now we have a global oil market where the market exchange is a common price setter. Furthermore strategic reserves and spare capacity create additional protection against potential attempts to influence the price.

All in all research cannot prove any sign of cartel building, furthermore as demand has increased and spare capacity might be in decline, rather some scholars point to the fact that there is an increased likelihood of bilateral agreements and a change of currency. In other words, the past decade show a higher likelihood of consumer-producer agreements rather than producer-producer cartels; hence as of today all actors are price takers just as in the 1990s.

Table 5 summarizes the findings in this chapter and answers the question of how the market conditions have changed.

Table 5 Market mechanisms

Market mechanism	***Comment***
Actors	Increase of demand side actors whereas supply remains stable
Transparency	Increased cooperation and regulatory measures for stock listed companies on one hand. Increase of state-owned companies that lack reporting standards on the other.
Entry barriers	Regulation by host governments and specialization
Price-setting	Free market exchange remains as price setter

Case Selection

From this chapter we have learnt about major changes of the oil market in the 21st century. In order to get a deeper understanding of why these changes have occurred as well as identify consequences of the changes the next two chapters are based on six NOC cases. The selection of NOCs is based on choosing actors that appear to play a major role and appear to be driving the changes in the oil market today. Table 6 is a compilation of data drawn from PIWs yearly rankings and shows the top 15 companies by output and reserves in 2001, 2004 and 2011. According to the findings above as well as data presented in chapters one and three, I have selected six companies to look further into; CNPC (China National

Petroleum Corporation), Saudi Aramco, PDVSA (Petroleos de Venezuela S.A), Rosneft, ONGC (Oil and Natural Gas Corporation) and Petrobras. These were selected based on their significance in the current oil market as well as being identified as drivers of change. In the history of the oil market we identified some key drivers of change for each paradigm, they do not necessarily have to be the largest company, hence they are/were either new to the market or had such great market share that their strategies and motives and perceptions of oil as a good had consequences for the entire industry.

Table 6 Top 15 companies by oil output and reserves

Oil output	**2001**		**2004**		**2011**	
In million barrels per day	Rank	Volume	Rank	Volume	Rank	Volume
Saudi Aramco	1	8,30	1	9,83	1	10,01
NIOC	2	3,77	2	4,08	2	4,29
PDVSA	4	3,00	4	2,60	3	2,97
Pemex	3	3,56	3	3,75	4	2,90
CNPC	8	2,09	9	2,12	5	2,84
KPC	11	1,76	7	2,42	6	2,56
ExxonMobil	5	2,54	5	2,57	7	2,42
INOC†	6	2,41	10	2,03	8	2,40
BP	10	1,93	6	2,53	9	2,37
Rosneft	40	0,30	36	0,43	10	2,32
Petrobras	14	1,38	16	1,65	11	2,15
Lukoil	17	1,20	12	1,74	12	1,94
Chevron	9	1,96	11	1,74	13	1,92
Royal Dutch Shell	7	2,22	8	2,33	14	1,71
ADNOC	16	1,28	18	1,36	15	1,54
Oil reserves	**2001**		**2004**		**2011**	
In billion barrels	Rank	Volume	Rank	Volume	Rank	Volume
PDVSA	5	77,78	5	77,14	1	296,50
Saudi Aramco	1	261,80	1	262,70	2	264,50
NIOC	4	89,70	2	132,50	3	151,82
INOC†	2	112,50	3	115,00	4	143,10
KPC	3	96,50	4	89,40	5	101,55
ADNOC	6	53,79	6	52,62	6	52,81
Libya NOC	8	23,60	7	28,78	7	32,96
CNPC	15	10,96	14	11,02	8	25,68
NNPC	12	14,40	8	21,18	9	22,30
Rosneft	25	6,39	26	4,75	10	18,11
Lukoil	9	17,36	9	15,97	11	13,32
ExxonMobil	14	12,31	13	11,65	12	11,67
Pemex	7	43,21	10	14,80	13	11,39
Sontrach	17	8,74	15	10,99	14	11,30
Petrobras	20	7,75	17	9,95	15	10,77

Source: PIW rankings 2001, 2004 and 2011

4. Goods and strategies

This chapter investigates what is driving the selected NOCs and how their motives, strategies and obligations have changed since the mid 1990's. The chapter analyzes the six cases selected in the previous chapter; CNPC, Saudi Aramco, PDVSA, Rosneft, Petrobras and ONGC. The analysis is based on three dimensions; corporate governance, domestic market structure and non-commercial activities. Corporate governance relates to whether the companies are mainly influenced by state or corporate values and strategies. The domestic market structure relates to whether NOCs enjoy monopoly or if they are part of a competitive market. Lastly non-commercial activities relates to the amount of socioeconomic responsibilities and obligations that the NOCs have. Furthermore, in the beginning of each NOC presentation there is a brief historical overview. At the end of the chapter there is a summary of findings and a comparison among the NOCs on the different dimensions.

China National Petroleum Corporation

During WWII both production and consumption of oil gained importance in China and militarized efforts to find oil started, by early 1970 China had become a net exporter. However, the industry was working inefficiently and by 1988 the entire petroleum industry was losing money. The central government abolished the MPI (Ministry of Petroleum Industry) and assigned its assets and responsibilities to CNPC. Responsibilities included setting and maintaining standards and regulation for the petroleum industry, as well as coordination with the state and Sinopec (Jiang 2012).

China became a net importer of oil in 1993 and it marked a major shift for the domestic industry. The Chinese oil consumption doubled in the past decade, from 4.5 million barrels per day (mb/d) in beginning of 2000s to near 9 mb/d[5] in the end of the 2000s. Even though the future is always uncertain, most predictions indicate that consumption will double again by 2030.

[5] In order to gain perspective, global consumption is roughly 90 mb/d.

Corporate Governance

In the period between 1988 and 1998 CNPC was governed by the state and top management was appointed by the government (Jiang 2012). Since 1998 the governance issue has become more blurred, researchers and analysts have difficulties distinguishing pure commercially driven strategies from those imposed by the state. Particularly debated is the so called 'going abroad strategy' which by some is claimed to be a mercantilist approach to securing resources and by others to be a market driven commercial expansionary strategy (Jian 2011:3). The truth may lie somewhere in between, CNPC and the Chinese state do have a common task; to supply China's growing demand for oil.

The going abroad strategy of the Chinese government has been through five distinct phases. In Phase 3 (1993-1998), CNPC was chosen as one of the first State Owned Enterprises (SOE) s to make investments abroad. In Phase 5, which started in 2002 (and is still ongoing), the Chinese state has entered a role of encouraging overseas investments and facilitation of such strategies, by for example backing favorable loans (Bellona and Spigarelli 2007). Therefore, one could say that the relationship between company and government rather is one of symbiosis than control (Ziegler 2008:162). Many scholars agree to the fact that it is both commercial objectives and government strategies that drive this form of energy diplomacy, hence some argue that NOCs are in the driver seat (Goldthau 2010) (Jian 2011:3). Other researchers emphasize that Chinese NOCs are still tied to the Chinese culture and political system and that a transition towards more internationalization and autonomy will take decades (Xu 2007:25).

All in all, CNPC is not transparent enough for outsiders to fully grasp the corporate governance structure; hence what we can say is that there are mutual benefits for cooperation between CNPC and the state. There is no doubt that there is a growing demand for oil in China and that this in conjunction with China becoming a net importer of oil has triggered Chinese companies to venture abroad in order to supply the domestic market. At the same the global financial crisis gave China new opportunities to utilize its large foreign exchange reserves and expand its investments in the global market (Jian 2011). However an important step towards more openness and transparency has been the listing of PetroChina on the stock exchange. PetroChina is the holding company for CNPCs most

attractive and financially viable core assets. PetroChina has been an important source of raising revenues and for engagement in the overseas market. CPNC controls 86 percent of PetroChinas stock, in other words it has ultimate control (ibid).

Domestic monopoly

In 1998, the government ordered sweeping reforms that restructured the entire Chinese oil industry. The impetus for change was the government's desire to create a Chinese petroleum industry that would be competitive with IOCs in the global market. Reforms concentrated on 3 main actions; recentralizing the oil industry, swapping assets between CNPC and Sinopec in order to create two fully vertically integrated companies and the creation of PetroChina as a holding company of the most valuable assets(Jiang 2012).

Today there are five major oil companies in China; CNPC, CNOOC (China National Offshore Oil, Sinopec, Sinopec star petroleum and Sinochem, together they account for 90 percent of Chinas oil and gas production, all of these companies can historically be traced back to the ministries. Onshore oil production has been and still remains largely limited to Chinese NOCs, offshore and unconventional production is open for IOCs. IOCs are invited to PSC (Production Sharing Contracts) on the condition that Chinese NOCs holds a majority stake. As these market segments are increasing Chinese NOCs are dependent on IOCs for expertise and technology (EIA, 2013). However, the midstream and downstream markets can almost be seen as a duopoly between Sinopec and CNPC (Sinopec in the South east and CNPC in the North West) (Jiang 2012).

State responsibilities – non-commercial activities

Even though it appears as if CNPCs non-commercial burden has decreased since it was separated from the ministry, several obligations still exist. Firstly, CNPC is a major employer, with over 1, 5 million employees it beats any other NOC with a million (PIW, 2011). Another costly activity is the subsidization of domestic consumption, hence the exact size of these are not known (Jiang 2012). The Chinese government has adjusted the price slowly, a consequence of being reliant on imports, big differences does still occur. For example when international oil prices picked up after the crisis in 2010 and 2011, the NDRC (National

Development and Reform Commission),price setting authority, did not increase downstream fuel prices at the same rate, forcing NOCs to incur profit losses and negative margins in the downstream segment. In 2012 the NDRC has administered several increases in the price to try to match international prices more closely (EIA 2013). In a global setting, China is ranked fifth in terms of fossil fuel subsidization and is one of the countries that are still subsidizing coal. Of China's 31,05 billion in fossil fuel subsidies in 2011, oil receives the most with 59 %, then electricity with 36 % and coal at 4%.

CNPC is different from other NOCs in that their operations accounts for a very little part of the country´s GDP (only 0,4 %). So the government does not need it as a fundraising vehicle, rather it is the government that offer assistance in investments abroad (Beeson, Soko, and Yong 2011).

Saudi Aramco

For the past decade Saudi Aramco has been ranked as the largest oil company in the world by Petroleum Intelligence Weekly's yearly ranking. Apart from having some of the largest oil reserves on the planet, Saudi Aramco is famous for its particular way of combining the Saudi culture with the inherited multinational governance structure from the west. The success of the 1973 oil embargo hastened nationalizations in many countries and paved the way for Saudi Arabia to press its plans to obtain ownership of Aramco. The Kingdom began by taking a minority stake in Aramco´s ownership, which was followed by a gradual increase as well as training and placement of Saudi nationals into key management positions. The nationalization was different in Saudi Arabia compared to other countries. For example there was little public mobilization and most elites believed that continued collaboration with U.S majors would be more lucrative to the kingdom than outright nationalization. Therefore when compared to other NOC´s in the region, nationalization had little impact on the organizational structure and operations (Stevens 2012).

On September 5th 1980 the Government of Saudi Arabia announced its complete purchase of Aramco´s assets, meaning that the Kingdom gained control over the company and thereby 90 percent of the Kingdom´s production. In the years

following the complete purchase, Saudi Arabia controlled the company de facto but Americans still administered Aramco on a daily basis under the orders of Saudi leadership. Ironically, the final paperwork for full nationalization was not signed until 1990, two years after the reorganization of Saudi Arabia´s oil industry into a single state monopoly, Saudi Aramco (Jaffe and Elass 2007).

Corporate Governance

Saudi Aramco´s American roots can still be seen in the structure of the management and exemplified by its committee format and voting boards of directors and the working language is still English. However, the inherited closed Saudi culture is argued to have become a vital part of the company and a reason for the nontransparent behavior. Furthermore King Abdullah has final decision-making power on all matters involving oil production, investments, external policies and domestic energy pricing and subsidies(Jaffe and Elass 2007). Due to the company's importance for the Kingdom, major decisions tend to be taken by consensus between the king, senior members of the Al-Saud family and energy experts. The ruling family has ultimate control of the oil industry, but as a practical matter it delegates authority to public administration. A key institution is the SPC (Supreme Petroleum Council). The SPC acts as a conduit between the king and his small group of advisors who pass onto the ministry questions and directions (Stevens 2012). However, there are situations in which the Kingdom have used the company as a foreign policy tool, as for example during the Gulf war in the 1990s when Saudi Aramco replaced the production of Kuwait and Iraqi oil companies after being allied with the international coalition.

Operational expenses and investments are financed out of retained earnings, but additional funds for major projects need to be allocated through the national budget via the Ministry of Finance (Jaffe and Elass 2007). The last decade have seen investments in human capital, in particular through its Exploration and Petroleum Engineering Center (Saudi Aramco, 2012).Furthermore investments have been diverted towards downstream rather than upstream activities both at home and abroad (Stevens 2012). The financial structure is different from many other NOCs, Saudi Aramco is allowed to keep revenue from crude and product sales and then pays royalties and dividends equal to 93 percent of its profits (ibid).

Domestic monopoly

Ranks as the largest oil company in the world, and it has done so since 1993 when the Saudi government authorized that Saudi Aramco should absorb all downstream functions in the kingdom (Sinclair 2008). Saudi Aramco dominates all segments of the oil industry in Saudi Arabia. It produces and sells 95 % of the oil produced in the kingdom. In addition, the company has the sole concession right of the kingdoms reserves. However the company has the right to subcontract any domestic or international company for service contracts. Insofar international companies have only been hired for operations in the Neutral Zone bordering Kuwait and for natural gas development (Revenue Watch 2013a).

State responsibilities – non commercial activities

Saudi Aramco's mission statement declares investment in Saudi nationals to be "a national obligation and a strategic goal" (Jaffe and Elass 2007:68). It is a large national sponsor of technical education and training. In its 2005 annual report, the company pays attention to its involvement in building and maintaining government schools since 1953. Since 1994, 4 800 have completed university degrees at the company´s expense (ibid). Saudi Aramco is the core of the kingdoms economy, the oil and gas sector accounts for 90% of government income and 88 % of exports (Revenue Watch 2013a). In addition Saudi Aramco is a major employer in Saudi Arabia.

Another aspect is its subsidization activities of domestic supplies. "It sells oil to domestic refineries at a steep discount, effectively subsidizing national energy prices and adheres to employment quotas favoring Saudi citizens" (Revenue Watch 2013a). The exact size of these is difficult to calculate due to lacking data and Saudi Aramco has been criticized by several organizations such as Revenue Watch for its poor reporting standards. For example annual reports do not include information in royalties, dividends or other payments to the state. Saudi Arabia is the second largest country in the world by subsidizing end-use fossil-fuel prices, providing 76 % of it's almost $ 61 billion in fossil fuel consumption subsidizes to oil and 24 percent to electricity. In 2011 the average subsidization rate was 79,5%, subsidy per person was $2291,1 and total subsidy as share of GDP is 10,6% (IEA 2012).

Rosneft

After the collapse of the Soviet Union, in September 1991 Rosneftgas Corporation, an association of Russian oil enterprises was formed to replace the U.S.S.R Ministry of Oil industry. A year later massive privatization reforms were passed and three privatized companies were created; LUKOIL, Surneftegas and Yukos. The remainders of the Russian oil industry formed a state entity called Rosneft (Poussenkova, 2007).

Corporate Governance

When created Rosneft was appointed to carry out trust management in 259 out of the 301 oil enterprises operating in Russia at that time. Furthermore, Rosneft was appointed several regulatory and policy related functions such as ensuring stable deliveries of oil, gas and petroleum products, represent interests on boards, coordinate state investments in the oil industry, promote R&D and facilitate investments (Poussenkova, 2007).

Liberalization continued throughout the mid 1990s, even though Rosneft remained many of its assets and subsidiaries were lost. In April 1995 Rosneft was transformed into an open Joint Stock Company. At the same time assets were further diminished and it's regulatory and policy obligations were decreased (IEA, 2007). Hence Rosneft still had state obligations such as trust management, sponsorship of R&D efforts and Representation of state interests in PSCs (ibid). The diminishing structure of Rosneft is said to have reached its peak during the 1998 financial crisis when many core assets were lost.

However, the new millennium was a turning point for the company, Putin came to power and he had different plans for the company then his predecessors. In 2000 Rosneft got permission from the RF Anti monopoly ministry to increase its stake in subsidiaries to 75% and began to buy their shares through affiliated companies. The beginning of the 2000s saw an expansionary strategy from Rosneft. In October 2006, Rosneft completed consolidation of its subsidiaries (ibid).

Rosneft's IPO was launched in the summer of 2006, and the company sold 14,8 per cent of its total equity for $10.4 billion, implying a value for the whole company of just under $80 billion, (BP 1,2%, Petronas 1% and CNPC 0,5%)

(Henderson 2012). Since then it is however once again more difficult to distinguish commercial and state initiatives and strategies. An important change occurred in March 2011 when Russia's President Dimitry Medvedev announced that there would no longer be government representatives on the boards of companies over which they had any regulatory influence (ibid).

When elaborating on the future of Rosneft, Henderson points out two major challenges for the company ahead. First, many of its fields are in decline and second the pressure from the majority owner (the Russian government) to serve as a major component of Russia's overall economic strategy (2012). Rosneft has articulated that its overall goal is now to reach the status of super-NOC. And the communicated strategy to get there is by international expansion, technical expertise and diversification. This combination of objectives and its status as a partially privatized, places the company in a peer group defined by the World Bank as Partial NOCs (Stevens, 2011).

Domestic monopoly

Rosneft is today the biggest oil company in Russia, hence it does not have a monopoly position, there are several large market players such as Lukoil and TNK-BP. Theoretically foreign companies are welcomed to invest and operate and there has been great interest in particular due to new geologies such as the Arctic and Siberia. Hence, foreign companies have found it difficult to enter the market and make agreements. If IOCs are to operate in Russia it will be in partnership with a Russian giant, most likely Rosneft or Lukoil (EIA 2012).

State responsibilities – non commercial activities

Russia does not subsidize oil, even though Russia is third largest country in subsidization of fossil fuel consumption. Of the $ 40 billion spent yearly on subsidization, 54 percent is spent on natural gas and 46 percent on electricity (IEA 2012). Hence for Rosneft non-commercial responsibilities are more related to the fact that the company is viewed as a part of a broader strategy for economic growth in Russia and to carry out state representation in energy related issues.

Petroleos de Venezuela S.A

Venezuela nationalized its oil industry in 1975 and created a national oil company; PDVSA. Since its creation the relationship between the state and the

company has been through several phases. During the late seventies and early eighties the company was tightly bound to the needs and wants of the government. President Perez envisioned the oil industry to be a means to develop the Venezuelan economy (Yergin 2011:111). Hence in the late eighties and early nineties PDVSA encountered an era of more independent strategic planning and autonomous corporate governance. This relationship shifted yet again by the new millennium when Hugo Chavez took over as president, he reinforced the state control of the company and the industry.

Corporate Governance

When Chavez gained presidential power in December 1998, it marked the beginning of a new era for PDVSA. Luis Giusti, the CEO at the time, resigned even before Chavez could fire him. Chavez had earlier expressed his thoughts about Giusti; the devil who had sold the Venezuelan soul to the imperialists (Yergin 2011:120). Chavez issued several policy changes both regarding the internal structure of the company as well as standpoints on more restrictive production quotas in the OPEC cooperation. Chavez rhetoric clearly stated that PDVSA now was a tool of the government with remarks like: "PDVSA workers are with this revolution, and those who aren't should go somewhere else, go to Miami" (BBC, 2006).

The minister of energy and mines is also the CEO and Chairman of the Board of Directors (BoD) of PDVSA. Of the 10 members of the BoD, two are independent directors. BoD members are appointed by the President of Venezuela for a period of two years; they can be removed at any time and can be reappointed indefinitely by the president. Furthermore the ministry establishes policies on production, operation and expenditures whereas the BoD is responsible for implementing the policies (Tordo, Tracy, and Arfaa 2011).

Domestic monopoly

In 1975, the Organic law Reserving to the State the Industry and Commerce of Hydro Carbons was enacted, allowing the government to take full control of the oil industry. Since then PDVSA has been responsible for the development of Venezuela's hydrocarbon industry, as well as Venezuela's petrochemical sector and coal resources since 1978 and 1985 respectively.

In the middle of the 1990s Luis Gusti launched La Apertura (the opening, or reopening) which invited IOCs to return in order to attract investments and ultimately increase production (Yergin 2011:116). However, since Chavez came to power cooperation with foreign companies have been more restrictive. According to Venezuelan law PDVSA is today required by law to have a minimum 60 percent interest in any crude-oil exploration. Furthermore, PDVSA enjoys a monopoly position in the downstream sector as it operates all pipeline, storage, and cabotage operations. Technically regulatory functions are divided between PDVSA and the ministry, hence the line between the two is blurry and there is no independent regulatory body for the oil sector. PDVSA controls about 80 percent of Venezuela's oil equivalent production and essentially all refining capacity.

The company continues to implement its Plan to Sow Petroleum to sustain and expand hydrocarbon revenues. A 25-year plan (from 2005-2030), with main focus on exploration in the Orinoco oil belt, a project in which several foreign companies have a stake (Ministerio de Energia y Petroleo, 2005). Several foreign companies have created partnerships with PDVSA to utilize the Orinoco oil belt opportunity, most are however other NOCs rather than IOCs.

State responsibilities – non commercial activities

Domestic consumption of petroleum products is heavily subsidized. In 2007, the market price for oil products sold in the domestic market was on the order of $7.29 per barrel, while the average price of a barrel of oil was $64.70. In 2011 the average subsidization rate in Venezuela was 80, 5% and the subsidy per person was $ 919,9 and the total subsidy as a share of GDP was 8,6% (IEA 2012).

Noncommercial obligations are estimated, in the most recent annual report, to be on the order of $14 billion annually, PDVSA´s transformation under Chavez is part of a broader political agenda. The increase in social spending by Chavez is mainly funded by PDVSA (Hults 2012:435). There is also a Fund for Economic and Social Development of the Country (Fondespa) sponsored by PDVSA, the fund is invested in infrastructure, electric power generation, transport systems, water systems, housing and education among other things (Ministerio de energia y petroleo, 2005). A major downside of all these noncommercial burdens is that

PDVSA is unable to make necessary investments in new and existing projects. Furthermore, in 2008 the government enacted a windfall profits tax of 50 percent when Brent crude rises above $70 per barrel and 100 percent when it rises above $100 (Gallegos and Luhnow 2008).

Oil and Natural Gas Corporation

The company started as a directorate in the government of India's Ministry of natural resources and scientific research in 1955 and a year later the directorate was renamed as the Oil and Natural Gas Commission.

Corporate Governance

ONGC is a publicly listed company with the state as the majority owner. The state owns 74,11 per cent of ONGC, foreign institutional investors hold another 8,3 percent, individual investors hold roughly 2 percent and the rest is cross investment from the Indian oil and gas industry . Researchers claim that many aspects of ONGC´s existence today, its structure, behaviour and relations with the government has much remained the same since its creation in the late 1950s. ONGC is seen as key player in two broad goals of India's government, namely economic development and self-sufficiency of energy (Madan 2007). The BoD of ONGC has five directors; three of these are independent whereas two are government representatives (ibid). Furthermore, the strong ties between the government and company can for example be seen in the fact that the government allocates a large portion of ONGC's crude production to refiners (the volume is specified in MOU's (Memorandum of Understanding) between ONGC and the refiners) (ibid).

The NDA-government which ruled from 1998-2004 decided that ONGC, Indian Oil Corporation and the Gas Authority of India had to buy shares in each other that previously belonged to teh government. It was a strategic move to raise revenues, however the government always kept at least 51 percent of the shares (Madan 2007). Overall India's energy interest will not trump its broader strategic goals and any of ONGC's international energy initiatives will have to fall in line with India's efforts to become more influential globally (Shegal and Mulraj 2008). Company officials admit that one of the major reasons for ONGC's poor performance is lack of access to modern equipment and technology (ibid).

Domestic monopoly

In October 1955 a directive specified that the public sector should dominate the oil and gas industry of India, hence that foreign companies would be invited to carry out exploration tasks (Mandan 2007). So it remained until the beginning of the 1990s when the Indian government started to pursue a more liberal economic policy, which also spread to the petroleum sector (Shegal and Mulraj 2008). Around the same time India also went from being a net exporter to once again become a net importer. As a result of the more liberal policies 100% foreign equity was allowed in private refining ventures and 79% foreign equity was allowed in petroleum products marketing in India (Singh and Singh 2004).

The liberalization process started in the downstream sector and in 1997 it spread to the upstream sector. The Government approved a New Exploration Licensing Policy to attract private and foreign investments in upstream activities through tenders, no joint venture agreements with domestic companies were required, though sought after by ONGC (Warrier 2008). From 1993-1997, in an effort to raise domestic production, the Indian government awarded 28 blocks to private companies or joint public-private venture for exploration (Mandan 2007). Today ONGC accounts for approximately three quarters of Indian crude oil production and two thirds of its natural gas (ibid).

State responsibilities – non commercial activities

The government of India controls the pricing of petroleum products in the country and intervenes in prices charged by ONGC from state-owned refineries. Petroleum prices are kept low and ONGC along with other upstream companies are obliged to absorb a third of the subsidiary[6] burden (Mandan 2007; Gupta, Gupta, and Hothi 2011). India ranks fourth on the global ranking of fossil fuel subsidization and totalled $ 39, 7 billion in 2011. In 2011 the average subsidization rate of oil in India was 18, 6% of the total price and the subsidy per person was $ 33, 4 and the total subsidy as a share of GDP was 2, 4% (IEA 2012).

[6] An example; between September 7 2002 and September 7 2005, the price of Dubai crude rose almost 111 percent. The retail price of regular gasoline in the United States, during the same period increased 124 percent in India the retail price rose only 49 percent (Mandan 2007).

Petrobras

Since 1953 Petrobras has dominated all sectors of the hydrocarbon industry in Brazil. Petrobras is internationally recognized for innovation and expertise in deep and ultra-deep water exploration and production. The company is listed on the New York Stock Exchange since 2000, the Brazilian government owns 50 % of common shares and 28,5 % of capital stock.

Corporate Governance

Petrobras was established with majority state participation, however the company was granted with administrative and financial independence and a commercial mandate. Since 2000, the organizational structure of Petrobras focus on four business areas: E&P, downstream, gas and energy, and international, hence also involved in non-core activities such as finance and related services (Tordo, Tracy, and Arfaa 2011). The BoD is heavily influenced by the government, with seven out of the nine board members connected to Brazilian ministries or agencies. However, it is the executive board which to a large extent is independent from the government that is responsible for the daily management of the Petrobras.

Domestic monopoly

Petrobras is the dominant player in the Brazilian oil industry, in 2008 the company produced 98,5 % of Brazils total oil and gas. Petrobras is also active in the downstream sector where it operates 11 out of 13 oil refining facilities and holds 94 % of Brazil's reserves. In addition, Petrobras operates Brazil's domestic natural gas transport system and Transpetro, a subsidiary of Petrobras operates Brazil's crude oil transportation network.

Discovery of new reserves in 2007 triggered new concessions and the government chose a competitive model for distributing concessions, hence Petrobras ought to have at least 30 per cent stake in the pre-salt layers (Henderson 2012). Even though the company has such a dominant market position, the government has been careful to create a legal and regulatory framework that ensures Petrobras's focus on commercial operations, as well as the participation of domestic and foreign investors.

State responsibilities – non commercial activities

Similarly to the Chinese case, hydrocarbon sector revenues comprised a relatively small part of Brazilian government revenues. Taxation on average is about 33 percent of revenues and Brazil does not subsidize oil consumption. Petrobras have been praised for its transparency even though they have not committed to the EITI initiative, Revenue Watch gives Brazil the highest rating for reporting, even above Norway, which often is seen as the best student in the class. Revenue Watch highlights two main factors for the high levels of transparency and reporting; it's legislation for disclosure of public data on government webpage and the National Oil Company's participation in the stock exchange (2013b).

Trends and findings

Below trends and findings are presented and clarified along the three dimensions discussed above; corporate governance, domestic monopoly and non-commercial activities.

Table 7 Case study results; corporate governance, domestic monopoly and non-commercial activities

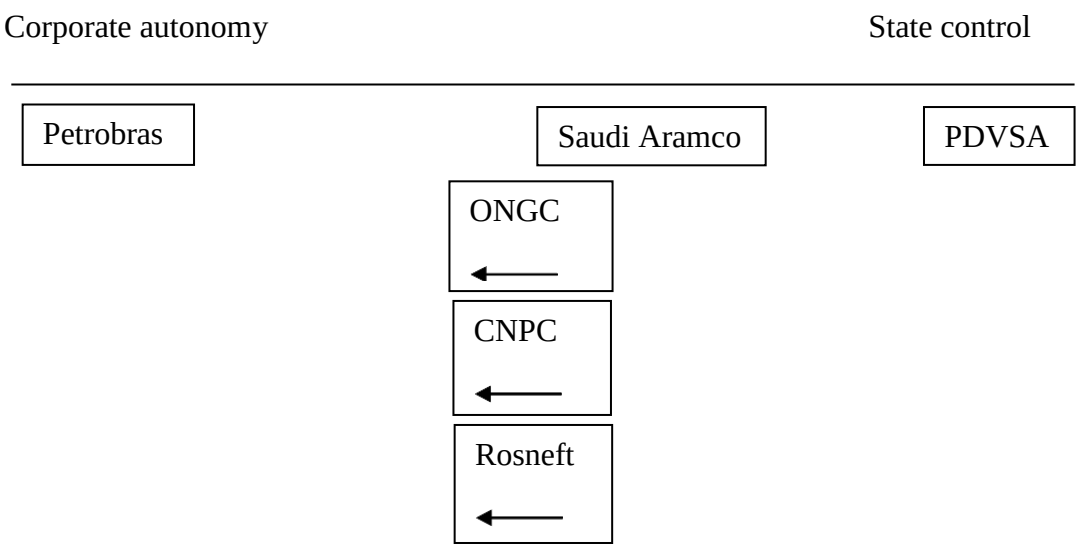
	Corporate governance	**Domestic monopoly**	**Non-commercial activities**
CNPC	-Symbiosis rather than control -PetroChina publicly listed -Lack of transparency = we don't know	- Upstream, foreign companies invited, difficult geology - Downstream, duopoly with Sinopec	- 1,5 million employees - Subsidisation - Oil industry Small part of GDP
Saudi Aramco	-Western influence, corporate structure -Saudi culture, secrecy -The King has ultimate power	- Monopoly position	- Oil almost 90% of GDP - Excessive employment - Subsidization, domestic consumption almost free of charge
Rosneft	-Regaining status as a state agency under Putin -Since IPO in 2006 more corporate governance structure	- Competitive market - Largest Russian oil company	- Unclear, still state responsibilities - No subsidization - State representative
PDVSA	-Since Chavez gained power in 2000 it's been a policy arm of ten government	-Monopoly -Open for foreign partners in Orinoco belt, only with NOCs	-Responsible for social programmes -Subsidizing, for domestic and Caribbean/Latin consumption
ONGC	-Hybrid, state still has some control -External investors	- Competitive - Large market share	- Subsidization - Education
Petrobras	-State majority owner -Corporate autonomy	- Monopoly - Invite foreign companies to raise capital	- Fund - Consistent

Table 7 summarizes the findings from the case studies. This analysis is followed by an elaboration on what this means for the provision of oil and motives of these key players.

Corporate Governance

There are two major clusters, the first being PDVSA and Saudi Aramco where the government have maintained or increased its governance of the company. It's fair to say that the line between where the NOC ends and the ministry starts is hard to define. The second cluster is that of CNPC, Rosneft and ONGC whom all appears to be moving more towards a status of partial NOC, like that of Petrobras. Partial NOC´s are stock-listed, hence they have the state as a majority owner. A major difference between these two clusters is that the former sits on vast reserves whereas the others are not exporting with any significance, with the exception of Rosneft. Figure 3 visualizes the six NOC's on a scale ranging from corporate autonomy and governance to state control. The arrows below ONGC, CNPC and Rosneft indicate their movement toward a corporate structure more like that of Petrobras.

Figure 3 Corporate governance

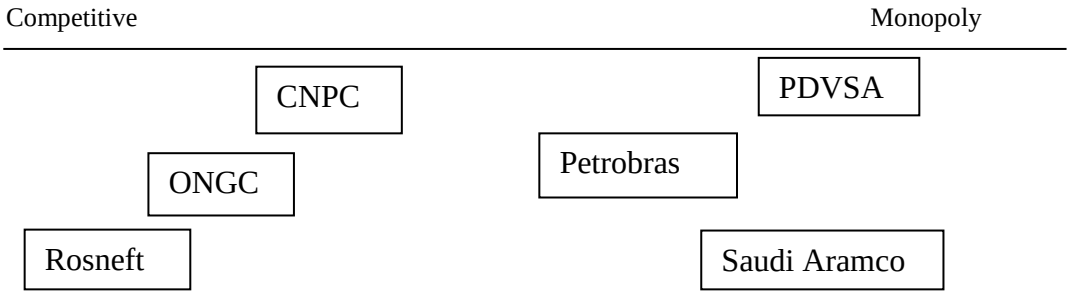


Domestic Monopoly

All NOCs analyzed are in a dominant position in their domestic market, with some form of arrangement where foreign companies are welcomed in areas where domestic actors would benefit from expertise from abroad, with the requirement

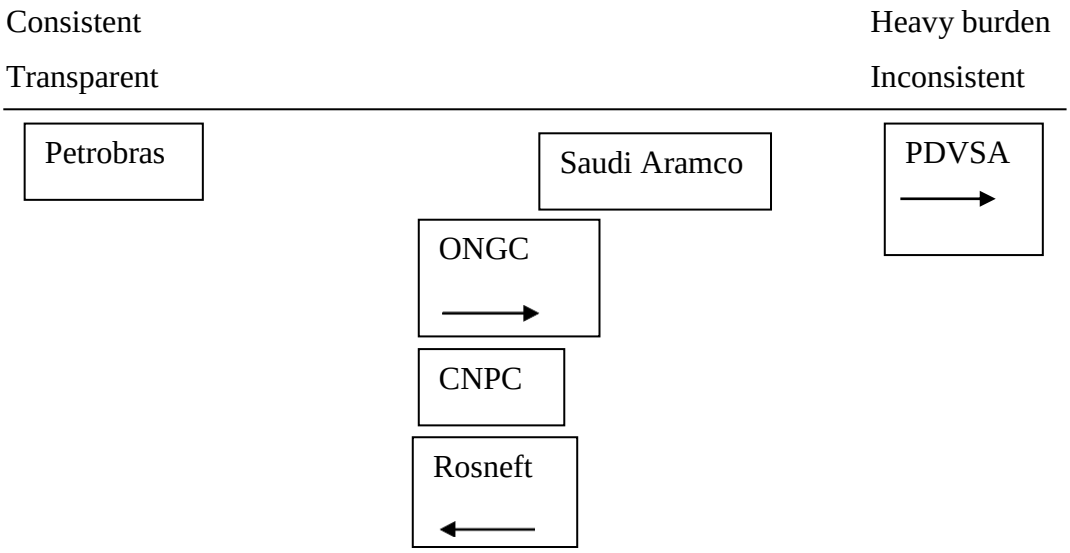
that a NOC must have a stake in the venture. However, we can see two clusters in those who have domestic competitions and those who do not. CNPC, ONGC and Rosneft have domestic competition created by the state in the past fifteen years. Whereas PDVSA, Petrobras and Saudi Aramco have around 95 % of the market share in their domestic markets. Figure 4 visualizes the two groups on a scale from competitive to a monopoly market set up.

Figure 4 Domestic Monopoly



Non-commercial activity

Figure 5 Non-commercial activities



On this dimension there is no clear division among the NOCs. Petrobras is an outlier; it does not have large inconsistent non-commercial burdens, whereas PDVSA, Saudi Aramco and CNPC are involved in excessive employment and other socioeconomic initiatives such as education. The two former are also involved in foreign and social policies. Subsidization is traced among all the cases except Rosneft; hence the most significant cases are those of countries with vast

reserves; PDVSA and Saudi Aramco. Another division is that except for Petrobras and CNPC, the other company's revenues play a vital role for their country's GDP. Figure 5 shows the trends above on a scale ranging between consistent and small contributions to heavy and inconsistent.

The findings along these dimensions are important because they tell us something about the motives and strategies of the NOCs selected. More specifically, they help us answer the initial research question set out for this chapter; What type of good is oil in the eyes of key drivers of change? Each case analyzed is different; hence there are two clusters, firstly the BRICs with Petrobras as the role model and a second cluster of resource rich PDVSA and Saudi Aramco.

Motive for changes

The BRIC cluster sees oil as a strategic good, a good that is vital for economic growth and a necessary tool for further development. Efficiency of the oil sector and economic growth is stressed by the states, whom to varying degrees are still heavily involved in the steering of the companies. The relationship between government and NOC is hard to determine due to transparency issues, hence it appears as if the relationship not necessarily needs to be neither top-down nor bottom-up but rather one of mutual dependency and strategic collaboration. The NOCs have been created to break the entry barriers presented in the previous chapter, and this has been possible by help from government. On the other hand these companies have helped to increase supplies needed by the government to create economic growth and thereby solve the puzzle of security of supply. Still inefficiencies are obvious, such as the 1,5 million employees in CNPC.

All in all, due to the lack of transparency and sometimes complicated governance structures it is hard to determine the role of the state in these cases. However, there appears to be a relationship of symbiosis and mutual benefit between the state and corporate objectives. Companies are in need of investments and state negotiation power in overcoming entry barriers, at the same time oil is seen as a strategic good by the government, oil is needed to be secured for economic growth to prosper. Therefore oil has quasi-public good characteristics; the state is trying to make the good less of a rival by ensuring that domestic supplies do not

run out. Of the goods presented in table 1, oil has traits of a toll good to these actors.

In the second cluster, that of resource rich nations, there appears to be more public goods motivations for more state involvement. Subsidization has gone as far as almost providing oil for free. This can also be seen in a third country of equal reserves; Iran. "Iran leads the world in fossil fuel consumption subsidies providing over $ 82 billion from its government resources in 2011 to lower the cost of fossil fuels to end users in its country..." (IEA 2012). From this point of view it appears as if oil is seen as a natural resource, which should be treated as a common pool good. At the same time oil is likely to serve as a way for the government to stay in power; by obliging the companies to pay for socioeconomic projects, education and employment.

If we go back to the theory of public and private good, this analysis hints that the first cluster (BRIC´s) state intervention is mainly motivated by the hope of creating a non-rival element to oil consumption, by increasing supply but not significantly subsidizing (in an extreme sense creating a toll-good). Whereas for resource rich nations, oil is more of a common pool good, where the public demand non-excludability of the resource, hence limitations of domestic supply makes it rival.

5. Integration

Traditionally NOCs have been rather passive players primarily focused on granting concessions and negotiating contracts. However in the previous chapters we have seen a transformation of these companies into more active market players. This chapter is dedicated to visible consequences of the new form of NOCs. Consequences are analyzed in the form of vertical and horizontal integration. The same cases will be used as in chapter 4 and similarly to the previous chapter they will be presented one by one. First a brief introduction to integration is given.

Vertical integration relates to the number of market segments that a company is involved in. The value chain of the oil market has three major segments: Upstream, Midstream and Downstream. There is an abundance of sub-segments; hence in order to capture major changes in integration these three segments will be used. For each case analyzed there is a table provided showing, which segments a particular company was active in at four different points in time; 1995, 2000, 2005 and 2010.

Traditionally horizontal integration relates to the strategy by a company to merge and acquire companies that are active within the same industry and segments in order to capture a larger market share. However, horizontal integration can also relate to the creation of strategic alliances, these are typically formed in order to pursue a common goal and/or to engage in risk sharing (Dicken 2011:156). As the analysis below shows, JVs (joint ventures), consortiums and MOUs are all common features of the oil market in order to overcome market barriers, risk sharing and pooling of investments and capabilities.

Horizontal and vertical integration are tightly linked, strategic alliances (horizontal integration) are created in order to cover new market segments and value chain expansion (vertical integration) opens up opportunities for further alliance building (horizontal integration). Below are the results from the six case studies; CNPC, Saudi Aramco, Rosneft, PDVSA, ONGC and Petrobras. The case studies are followed by a summary of trends and findings.

China National Petroleum Corporation

Oil consumption rapidly increased in China during the 1980s and 1990s and in 1993 domestic consumption outpaced domestic production. In 1998 the government enforced sweeping reforms to change the Chinese oil industry and to enhance Chinese oil companies to be competitive with western IOCs (Jiang 2012).

One of those reforms was a forced swap of assets between CNPC (traditionally upstream) and Sinopec (traditionally downstream), the motive behind this reform was to create two fully vertically integrated companies. Table 7 visualizes vertical integration by CNPC, (for a more detailed overview see Appendix 3).

Table 2 Vertical Integration, China National Petroleum Corporation

	1995	*2000*	*2005*	*2010*
Upstream	*x*	*x*	*x*	*x*
Midstream		*x*	*x*	*x*
Downstream		*x*	*x*	*x*

As mentioned in chapter four, in the mid 1990s CNPC was one of the first SOEs selected to conduct outward investments in Chinese history. This is also visible in table 8, where Peru marks the first investment abroad. Furthermore, the previously discussed Phase 5 of China's going abroad strategy is also visible in table 8 from 2002 and onwards. In this last phase the state is entering a position of both encouraging overseas investments and being a facilitator of such strategies, with for example backing favorable loans.

Much criticism has been granted towards the Chinese approach, and much of the critique is focused on the perceived long-lasting consequences that it may have on the developmental model of its trade partners (Beeson, Soko and Yong 2011). Chinese oil companies have been criticized for their no-questions-asked policy (Taylor 2006:945) clear examples are Iran and Sudan (Jian 2011:15). Also in Eurasia, governments supporting Asian NOCs have proven to be more tolerant of authoritarian regimes and human rights violations than western counterparts. In addition, Chinese companies are accused of exploiting the work force and host country laws, on top of that Chinese investments are accused of generating fears of mass in-migration (Ziegler 2008:161,162). Whereas other researchers point to the fact that Chinese NOCs are making the well needed investments (Taylor 2006:951) which in turn is helping to increase world supply and capacity (Xu

2007:24), so in a sense we are all benefiting from the expansion of Chinese economic activity and their ventures abroad (Beeson, Soko, and Yong 2011).

Table 9 Horizontal integration, China National Petroleum Corporation

Table 9 is based on CNPCs annual reports since 2003 and the following articles (Caixinonline 2013; The Wall Street Journal 2013a; Reuters 2011; News 24 2009, 24; Bloomberg 2010a; Bloomberg 2010b; Reuters 2010b; China National Petroleum Corporation 2013b; China Daily 2010; Reuters 2013a; Reuters 2010d; Rigzone 2012; Caixinonline 2009; China Daily 2013; The Wall Street Journal 2013b; Petrochina 2011; Reuters 2013b; Reuters 2010a).

There is not only an increase in alliances aboard; the state council has since 1985 authorized Sino-foreign cooperation in designated onshore areas of southern China. In 2011 there were 36 ongoing joint exploration and development projects in China. In upstream activities there are many JVs with IOCs such as Shell. However in the mid- and downstream sector it is more common to cooperate with other NOCs, such as JV-refineries with Saudi Aramco and PDVSA.

Saudi Aramco

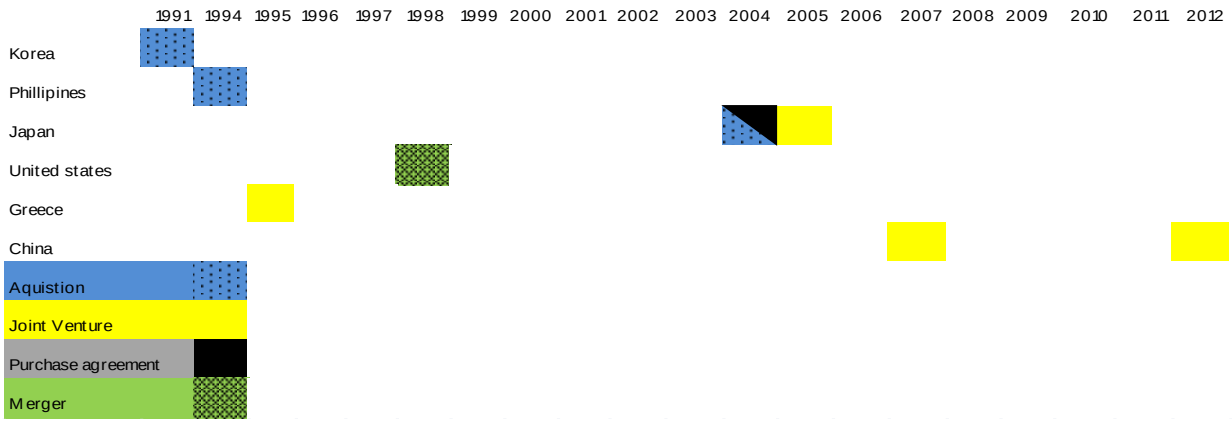
When Saudi Arabia decided to nationalize its oil reserves and operations Saudi Aramco was an upstream company focusing on exploration and production. Determined to move into the downstream sector, Saudi Aramco established a shipping subsidiary called Vela International in 1984(Saudi Aramco 2012). Today Vela is one of the largest crude transporters in the world. In 1993 another subsidiary was created, through a merger with Samarec, a Saudi based refining company. As table 10 shows, Saudi Aramco has operated as a fully vertically integrated company throughout the research period.

Table 10 Vertical integration Saudi Aramco

	1995	*2000*	*2005*	*2010*
Upstream	*x*	*x*	*x*	*x*
Midstream	*x*	*x*	*x*	*x*
Downstream	*x*	*x*	*x*	*x*

Due to having one of the largest oil reserves on the planet, Saudi Aramco has played a major role in the global market for oil for decades. However in the past two decades it has also become a major player through alliances and investments abroad.

Table 3 Horizontal integration Saudi Aramco



A difference between CNPCs and Saudi Aramco's strategy abroad is that Saudi Aramco's operations abroad are exclusively in the mid and downstream segment, particularly in refining and marketing. Table 11 is based on Saudi Aramco's annual reports and the following articles (WorldOil 2013; Reuters 2013g; Saudi Aramco 2013).

Rosneft

Rosneft was created as a state enterprise in 1993, due to privatizations in the oil sector during this period the company lost almost all its assets. Hence as table 12 indicates, Rosneft always maintained some operations in all segments. By 1995 its assets base had been reduced to eight oil producing subsidiaries, four refineries and seventeen marketing companies[7]. Since that time Rosneft's expansionary activities have mainly been centred on becoming the largest oil company in Russia.

When Putin came to power he stated that raw material resources, such as oil would be the basis for Russia's economic growth and put Rosneft as one of the tools to achieve this (Henderson 2012). By 2005 Rosneft had re-emerged as a major player in the Russian oil sector.

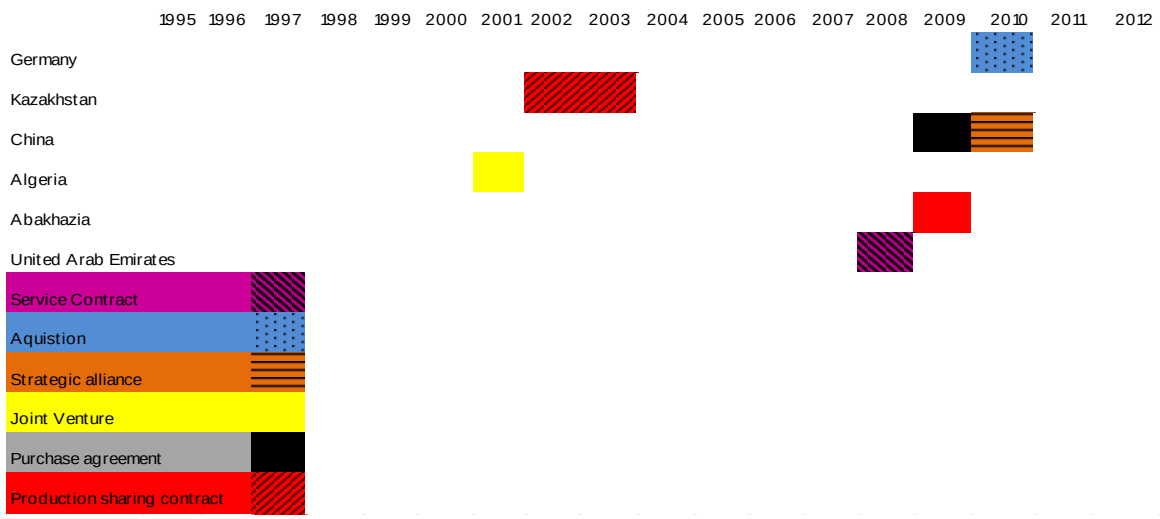
Table 124 Vertical integration Rosneft

	1995	*2000*	*2005*	*2010*
Upstream	*x*	*x*	*x*	*x*
Midstream	*x*	*x*	*x*	*x*
Downstream	*x*	*x*	*x*	*x*

Rosneft's broader aim is to become a global company and has started to venture abroad. As table 13 shows, Rosneft's international strategy is in its initial phase which mainly focuses on neighbours and former Soviet republics such as Kazakhstan (Poussenkova, 2007).

[7] The September 1995 government Decree #971 determined the new composition of Rosneft. *E&P:* Purneftegas, Sakhalineftegas, Krasnodarneftegas, Stavrpolneftegas, Termneft, Dragneft, Archangelskgeoldobycha, Kalmneft. *Refining:*Komsmolsk, Krasnodarnefteorgansyntez, Tuapse and Moscow. *Marketing:*Altinefteproduct, Severoosefinnefteproduct, Kabbalknefteproduct, Karachaeva, Cherkessnefteproduct, Kemerovoneftaproduct, Krasnodarnefteproduct, Krasnodar oil depot, kurgannefteproduct, Murmansknefteproduct, Nakhodnefteproduct, Severnefteservice, Smolensknefteproduct, Stavropolnefteproduct, Tuapsenefteproduct, Tamalnefteproduct, Masnefteproduct.

Table 5 Horizontal integration, Rosneft



In addition to annual reports from Rosneft since 2005, data for table 13 was gathered from the following articles; (RT 2013; Rigzone 2010; Rosneft 2013; Rigzone 2009c; Bloomberg 2010c).

Petroleos de Venezuela S.A.

According to Venezuelan law PDVSA is required to have a minimum of 60 percent interest in any crude-oil exploration activity within the nation's borders. Furthermore PDVSA operates all pipeline, storage, and cabotage operations in the domestic market, including natural gas distribution and related activities (Gallegos and Luhnow 2008). Table 14 shows that PDVSA has been a fully vertically integrated company during the past decades.

Table 14 Vertical integration, PDVSA

	1995	*2000*	*2005*	*2010*
Upstream	*x*	*x*	*x*	*x*
Midstream	*x*	*x*	*x*	*x*
Downstream	*x*	*x*	*x*	*x*

Most activities are within the borders of Venezuela; hence the company has made some strategic international investments. The last few years PDVSA strengthened its ties with China's CNPC and Cuba, a strategy Chavez claimed to be undertaken to decrease dependency on the U.S. (PIW 2012).

Table 6 Horizontal integration, PDVSA

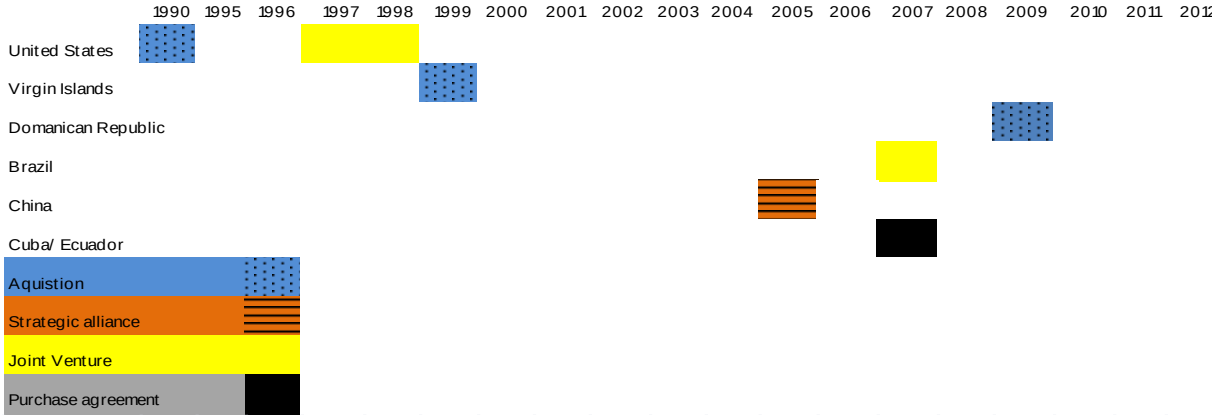


Table 15 is a compilation of information from official PDVSA documents and articles including; (China Daily 2005; Corrales and Romero 2013; PDVSA 2013; Oil and Gas journal 2009; Bloomberg 2013; El universal 2012b; Reuters 2012; El universal 2012a; Reuters 2009). In comparison with other NOCs PDVSA has not acquired many assets nor engaged in many joint ventures abroad. One of the few assets held outside Americas, Ruhr OEl refineries in Germany were sold to Rosneft in 2010.

Oil and Natural Gas Corporation

ONGC was traditionally an upstream company whereas Indian Oil Company, since its creation in 1959 was the downstream major. Overtime both companies have been vertically integrating and hold cross shares (Mandan 2007).

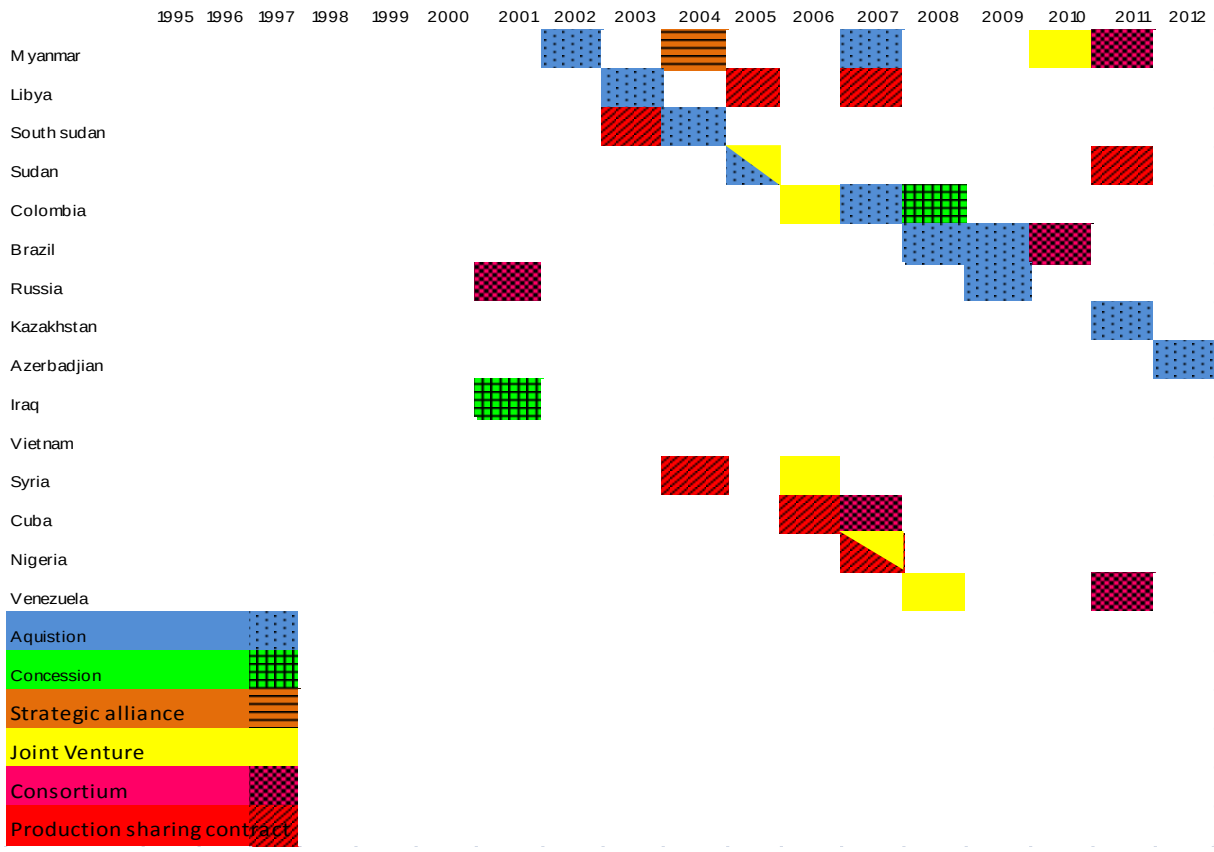
Even though vertically integrated, ONGC differ from the other NOCs presented in this thesis due to the lack of significant holdings within the marketing and distribution segments. In 2003 ONGC acquired 71,62 percent of the Mongalore refinery and Petrochemicals Limited (MRPL), marking an important step downward in the value chain. MRPL sources its crude from a variety of domestic and international supplies. Among international suppliers are Saudi Aramco, National Iranian Oil Company, Yemen and Nigeria (Mandan 2007). Table 16 shows ONGCs steps towards becoming a fully vertically integrated company by the mid 2000s.

Table 7 Vertical integration, Oil and Natural Gas Corporation

	1995	*2000*	*2005*	*2010*
Upstream	*x*	*x*	*x*	*x*
Midstream		*x*	*x*	*x*
Downstream			*x*	*x*

ONGC's international operations are mainly carried out by its subsidiary ONGC Videsh Ltd (OVL). OVL has made the most investments abroad in absolute terms of all Indian companies, by 2007 acquisitions abroad accounted to between $5-6 billion. One of OVL's stated strategic objectives is to source 20 million tonnes of equity oil from abroad per annum from 2018. In the long-term OVL aims to six-six fold its production by 2030 (Ministry of Petroleum and Natural Gas 2011). ONGC has many subsidiaries and joint ventures not only in the oil sector but also in for example LNG and natural gas[8]. ONGC's overall corporate strategy is built on four pillars; increasing domestic E&P, improving recovery, integration and diversification and international as we can see in table 17 (Mandan 2007).

Table 8, Horizontal integration, Oil and Natural Gas Corporation



The table above is based on information from ONGC's website as well as a variety of articles ; (Reuters 2010e; Bloomberg 2008; The Wall Street Journal

[8] ONGC is also a partner in a number of joint ventures It has a 12,5 percent stake in Petronet LNG Ltd, which owns and operates a liquefied natural gas (LNG) terminal at Dahej in western India and is building another terminal at Kochi in the south. The other partners are IOCL, GAIL, BPCL and Gaz de france. ONGC also has a 23 percent interst in Petronet MHB Lts, the owner and operaterof the Mangalore-Hassan-Bangalore pipline (with HPCL and Petronet India Limited). The ONGC Tripura Power Company is another one of the ONGC's joint ventures (with the state gov. of Tripura and IL & FS). The company in which ONGC has a 26 percent stake, will run a natural gas-based power-generating project. In addition, ONGC has a 21,5percent stake in Pawan Hans helicopters Ltd, which among other things, provides helicopter service to its offshore facilities. ONGC also has stones in three special economic zone (SEZ) projects in the country.

2013c; Reuters 2013a; The Business Standard 2012; Offshore 2013; Business Standard 2010; Times of India 2010; The Economic Times 2003; The Wall Street Journal 2012; Reuters 2010d; The Economic Times 2013; Reuters 2012b)

Petrobras

Petrobras was created as a SOE with majority state participation. From the start the government granted Petrobras a commercial mandate as well as administrative and financial independence. Participation in joint ventures, both domestic and international, was encouraged already from the start as a process of learning. Since 2000 the organizational structure of Petrobras focus on four business areas: E&P, downstream, gas and energy, and international. (In addition two support areas; financial and services.). Petrobras is the dominant player in the Brazilian market. In 2008, Petrobras produced 98,5 % of Brazils total oil and gas production, Petrobras operates 11 out of 13 oil refining facilities and holds 94 % of Brazils reserves. In addition, Petrobras operates Brazil's domestic natural gas transport system and Transpetro, a subsidiary of Petrobras operates Brazil's crude oil transportation network. This situation is expected to continue, especially since a new legal framework was established in June 2010, following large discoveries in a pre-salt offshore area near Rio de Janeiro. Two bills approved by the Brazilian congress underline a fundamental policy change with respect to control over, and access to, the country's petroleum resources. Table 18 shows that Petrobras has been a fully vertically integrated company since the 2000s.

Table 9 Vertical integration, Petrobras

	1995	*2000*	*2005*	*2010*
Upstream	*x*	*x*	*x*	*x*
Midstream		*x*	*x*	*x*
Downstream	*x*	*x*	*x*	*x*

Petrobras was commencing its international operations already in 1972, when it entered the Colombian market. Another early bird was Angola, where operations started in 1979 and since 1993 also a wide presence in Argentina. Table 19 shows a vast increase in international operations and horizontal integration from 2003 and onwards.

Table 10 Horizontal integration, Petrobras

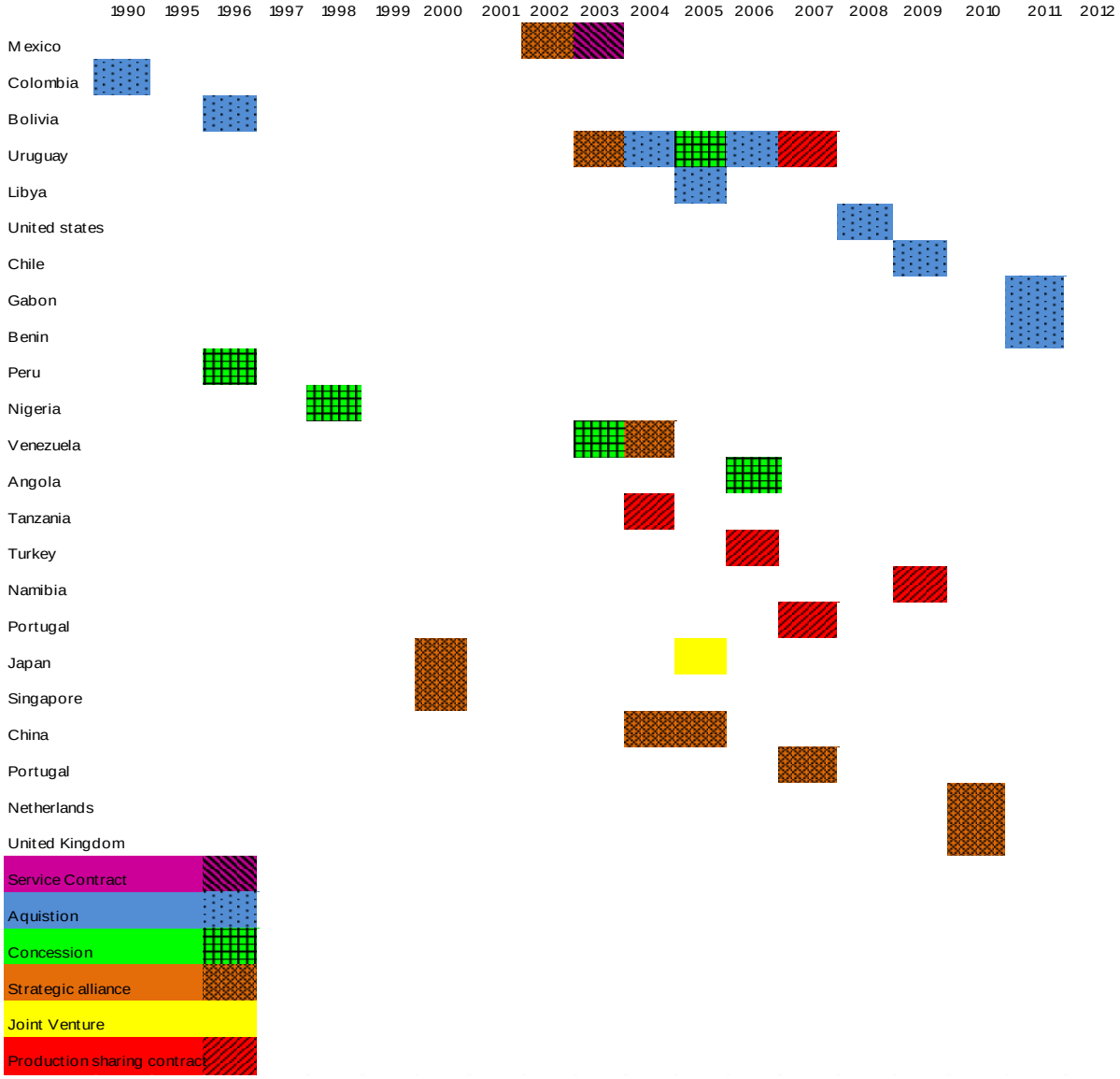


Table 19 is based on data from Petrobras website and complementary articles; (Mecropress 2005; People's daily 2010; The Economic Times 2008; The Wall Street Journal 2013d; Latin Trade 2012; Macauhub 2007; Oil and Gas journal 2003; Reuters 2011d; Reuters 2012c; Bloomberg 2013b; Rigzone 2007; Reuters 2013d; Reuters 2011b; Reuters 2013f; Rigzone 2009b; Bloomberg 2011; Oil and Gas journal 2005; Rigzone 2009a; Reuters 2011a; Reuters 2013c; SubseaUK 2013).

Trends in NOC integration

The NOCs analyzed are a diversified group of companies; hence over the past two decades they have developed some similar characteristics and strategies. In the early 1990s these companies were specializing in upstream operations and in some cases regulatory activities inherited or appointed by host governments.

Vertical integration

During the 1990s vertical integration was in focus, either led by the company itself or by the government, in most cases a combination of the two. Liberalization processes of domestic markets such as in China, Russia and India, created new opportunities and constraints for the traditional set up of the industry, which led CNPC, ONGC and Rosneft to take on new strategies. PDVSA, Petrobras and Saudi Aramco were the companies that were vertically integrated already at the start of the period analysed but have taken very different paths since. PDVSA's attention and capital has been drawn to non-commercial business activities whereas the Petrobras and Saudi Aramco have geared attention and capital to more specialized business activities. The former has focused on offshore drilling and the latter in domestic R&D and overseas refining and marketing. At the end of the day, they may have taken different routes to get there but by 2012 we are looking at six vertically integrated They may have taken different routes to get there, The result however, is at in 2012, we have six fully vertically integrated companies.

Horizontal integration

No matter whether primarily economically or politically motivated, the rise of partial NOCs has created a new dynamics in the industry. New alliances are born between consumer nations wanting to move upstream and producer nations whom are moving downstream. As previously discussed due to the peculiarities of oil, changes require time and financial stamina. Hence in the past decade and particularly after the financial crisis the BRIC countries are in a position to perform such strategies due to its financial reserves. "The Chinese ability to integrate oil and gas investments with general development loans and infrastructure investment has proved especially popular with governments in some African countries. A new scheme offers the possibility of cross investment with Middle East producers, allowing equity in the national downstream against upstream developments" (Keun-Wook Paik et.al 2007:4).

Already from the start of the 1990s these NOCs started to seek horizontal partnerships, alliances and assets. However, a common trend is a vast increase in these from the mid 2000s, once fully vertically integrated they have looked abroad to form new alliances, formed partnerships and acquired assets to capture market

shares in other countries. Assets are acquired in South America, Asia and Africa but also some in Europe and North America. There is no clear trend that alliances are exclusively formed with other NOCs, however as the number of NOCs venturing abroad increase so does the alliances in-between them.

6. Increased competition through state interaction

The 4th era of the oil market is in a process of development, it is too early to conclude its final structure. Hence the previous chapters help us understand how and why the international oil market is structured the way it is today and this structure has some important implications. Old market and government failures have been solved and others have been created or worsened. This chapter focuses on tangible characteristics of the brewing 4th era; first a recap of the findings in previous chapters and thereafter a discussion on the implications of these findings for the present and possibilities for the future.

Findings

From chapter three, four main conclusions were drawn regarding the market conditions of the oil market; first there has been a growth in demand for oil, in particular from developing and emerging economies. Secondly, the most significant entry barrier to the oil market is regulatory access by host governments of vast reserves. Third, after a long period of increasing prices, price volatility has been damaging for both supply and demand actors. Lastly, lack of transparency in the oil industry has been a major issue throughout the 2000s, even though institutional initiatives have been taken, key actors are not reporting to a satisfactory level. Furthermore six NOCs were identified as being part of the new key drivers of these changing market conditions and these were selected for case studies.

In chapter four we learnt about new key actors of the 4th era, namely NOCs of the BRICs and countries holding vast reserves. These NOCs are different from their traditional passive predecessors; many of them are developing a hybrid connection to the state, where the line between the state and the company is vague. This hybrid form of private-public partnerships has proven successful in overcoming the entry barriers, such as regulatory measures of access and investments and from the governments point of view these NOCs have helped to increase security of supply. Furthermore these NOCs often enjoy a privileged position the domestic market. However, with rare exception these new giants are obliged to non-commercial activities in their home economy, creating barriers to expansion both domestically and abroad. In addition chapter four concluded that

there are two main clusters of NOCs in terms of their perception of oil as a good. The first cluster sees oil as a strategic good due to the significance of oil to economic prosperity. Whereas the other clusters, which are NOCs owned by governments holding vast reserves tend to act as if oil was a common pool good for its citizens.

As a consequence of the strategies pursued by these new key actors we have seen some visible consequences in the market structure. The NOCs analyzed have all successfully pursued strategies of becoming fully vertically integrated companies. Once fully vertically integrated, they have looked abroad for new opportunities through horizontal integration. These strategies are in most cases a combination of commercial and state initiatives. In chapter five the main conclusion is that domestic and international expansion is taking place both vertically and horizontally, increasing competition in the international oil market. Table 20 is a replication of table 2 which was presented in chapter 1, with our new insights included.

Table 20 Eras of the oil market

Era	Key actors	Good	Motive	Consequence
Post war period	Seven sisters	Strategic	Security of supply	Demand side capture economic rent
1970s- 1980s	OPEC	Strategic	Nationalism, economic rent, politics	Supply side capture economic rent
1980s-1990s	BP, Shell, Exxon etc.	Private good	Efficiency	Market concentration, volatility
2000s	Net importer NOCs / NOCs with vast reserves	Toll / common pool	Economic growth /domestic politics	Increased competition / Lack of transparency

All in all, we have new key actors, with a new approach to the oil market. However, this is not to say that they are the only key actors but they are the new key actors. We are still in the making of this paradigm and it is too early to say its final structure. The new key actors appear to believe in state intervention as a tool to overcome barriers such as lack of investments and security of supply as well as

a tool to provide oil as a good. Below I will elaborate on the implications of table 20.

Implications of the new players

During the past decade, we have seen NOCs play an increasingly larger role in the global oil market, many variations exist hence in particular we have seen two large groupings of NOCs; traditional and partial NOCs. Traditional NOCs have strong ties to the government and often part of a wider strategic and economic perspective. Whereas partial NOCs are a hybrid form of traditional NOCs and more commercially driven IOCs. These two groups of companies are likely to be key drivers of the new oil era, the former due to its vast reserves and the latter for increasing both the demand and supply of oil. This is not to say they are the only actors that matter in the new era, hence they are key drivers in that they are new key drivers and therefore are interested in a change and possess capacity to drive that change.

Below I will elaborate further on four implications of the findings above. First of all, the partial NOCs were in part created to overcome the market failure of imperfect competition. This has lead to a more competitive oil market where alternatives to the giant IOCs are increasingly available. Secondly, the fact that we see more NOCs with at times dubious reporting standards and no-questions asked policies can be argued to increase another market failure, that of imperfect information. Transparency and imperfect information keep reappearing in the discussion and history of the oil market, may it be so that this is an inherent trait to the oil market. Thirdly, traditional NOCs, increasingly treat oil as a quasi-public good, this have consequences both for the domestic population and the market as a whole, it is creating a government failure, through inefficient allocation of resources. This leads to an under investment in future and current capacity and lock-in effects of oil consumption. Lastly, the emerging partial NOCs see oil as a strategic good, which in a sense repair the government failure. This chapter is concluded with some thoughts on the future, where global governance and fragmentation, ironically appear to be two possible routes forward.

Repairing market failure - Increasing competition

In the 1990s we saw the (re)creation of the super IOCs, through mergers and acquisitions some of the world's largest corporations were born. Competition authorities were concerned with the development, if mergers and acquisitions would have continued for much longer we might have ended up with one major company.

Meanwhile the BRICs have had tremendous economic growth since the mid 1990s. As oil is the engine of the economy, it would only be natural for them to also be involved in a larger share of the oil market. A dilemma occurred; how were their companies supposed to compete with the IOC giants? The solution was help from the state. This solution, I argue helped repair the market failure of imperfect competition.

Competition they created, chapter five showed how NOCs have been able through a mix of state-intervention and commercial goals to become vertically and horizontally integrated companies and increasingly of a global character. This is not to say that IOCs have lost their importance on the market, they are still highly valued for their expertise and often seen as clusters of knowledge and investments. From the analysis in chapter 5 we see that even though there is an increase of NOC-NOC alliances when venturing abroad, they often partner with IOCs in projects requiring frontier engineering and technology. Another opportunity for IOCs is the increase in demand which has increased the price of oil and thereby also made very costly projects such as the Arctic feasible.

The constraints of IOCs are in a sense the complete opposite to those of NOCs. The lack of state interference gives them corporate and financial autonomy and lack of non-commercial burdens give them a competitive advantage. However, the increased competition from NOCs has complicated negotiations with host governments where they IOCs have a competitive disadvantage in not being able to offer the same loans or benefits. In addition, IOCs have a competitive disadvantage in not having a domestic monopoly. As discussed in the previously NOCs are new alternatives and they open up for new alliances and collaborations. Hence there are also NOCs with strong political ties that avoid IOCs, as means of being sceptical to former imperialists, they now have an alternative

Creating market failure – imperfect information

During the past decade there has been an intensifying concern for the lack of transparency in the oil market. The concern is based on three main aspects; how much oil exists? Where does the economic rent go? And an emerging concern with regards to bilateral agreements that fragment the global market.

As for the latter two concerns the reporting standards of the majority of the NOCs studied are questioned. Furthermore, as these NOCs have spread through the global value chain there is an increased chance for a drop of oil to be taken out of the ground and pass through the entire value chain without passing through any actor that by regulation is obliged to publish data to the public. Therefore, one market failure may have been solved but one may have been created (or in at least worsened), namely that of imperfect information.

However I would like to add that these NOCs, just like the market itself, are in a development process. The relationship between state and NOC is different in each case and may be about to take another turn, perhaps one of separation, perhaps not. It appears if they have looked around for *best practice transfers* and companies like Petrobras and Statoil seem to have been studied. If this is the path chosen, the issue of imperfect information may slowly be erased. The role models may also have some skeletons in the closet, but in oil market terms they are praised for their transparency by Revenue Watch and similar organisations.

As with regards to concerns of peak oil and the amount of reserves in the ground; we have never known and most likely will never know. This fact is not only a result of unwillingness, but also a due to lacking capacity. Voluntary and cooperative efforts as well as regulatory measures have increased reporting standards of countries and companies. However, most facts are very difficult to verify. Consumers and citizens of producer countries would benefit from more sharing of best practices, a successful case often highlighted is Statoil. Best practice transfers are trying to be revealed through EITI for example, hence the fundamental problem may lay in the undemocratic practices where the state and/or elite do not see an incentive to publish data. So in a sense, just as with the so called resource course it does not necessarily have to be the oil itself but rather undemocratic forces that surrounds it that creates these failures.

A brewing institutional network of transparency has put pressure on both state and market actors to become more transparent both in voluntary and regulatory terms. There has been resistance from both camps, so in a sense it is both a government and a market failure to create complete information. Furthermore, during a conference this past month Klare also highlighted that this lack of information is not a new problem (2013), these practices have been done by western companies since the seven sisters, hence the concern may be new.

Repairing government failure – oil as a toll good

As previously stated, we have seen an increase in NOCs belonging to net importers of oil. For these actors oil has traits of a toll good, the government is trying to create a good which should be close to non-rivalry to its consumers. And the states have helped NOCs in global shopping sprees to increase supplies. It is a good which provision is to vital to the functioning of the economy to be left entirely to market forces, yet it is increasingly seen as excludable as finances are directed towards increasing supply rather than subsidizing consumption. The creation of these partial NOCs are seen as the most efficient allocation of resources to provide the strategic good and repair for previous market arrangements which has not been able to efficiently provide the good to these countries, they are in a sense repairing for old government failures.

Creating government failure - oil as a common pool good

In those countries with vast reserves, Russia being the exception, oil appears to be close to a common pool good. The public is enjoying close to free consumption of oil, subsidization rates have exploded and can be as high as 80% of the price. This courtesy has increased the use of oil, see for example table 2, it creates a lock in effect. For example we can see countries like Saudi Arabia climbing the lists of top consuming countries. Furthermore this often leads to poor re-investment rates, in the recent weeks we see countries like Mexico having to open up for international investments, not only to increase production but also to maintain a stable supply (PIW, 2013).

Instead of reinvesting in production capacity and expansion have to spend revenue on subsidization. This paired with a limited market access from foreign actors have led to a lack of investments. Oil as a strategic good in the view of resource holders makes access to new resources increasingly difficult. As in the previous

section, this development also adds to the debate on resource nationalism and an increased concern for transparency in the market.

The future road; global governance or regionalization?

It is impossible to predict the future; however I would like to end this thesis with some thoughts about what these implications may mean for the future of the oil market and the brewing 4th era of the oil market. Furthermore, as pointed out in the section on public and private goods in chapter one. Changes to the oil market is fairly slow compared to other markets of other commodities, it can take a decade from the time when a decision to make an investment is made to the fact that we have oil drops coming out of the ground. However, there appears to be two opposing, yet not mutually exclusive scenarios. One where we see an increasingly fragmented market, such as the regionalization we have seen in the international gas market and another where we see an increase in global governance of the oil market and the emergence of an international regime.

Due to the different logistics of oil, as compared to gas, a fragmentation does not necessarily have to be based on geographical criteria. Rather, it would be based on needs and as a way to avoid volatility in prices, exchange rate risks and a way to secure supply/demand. A phenomenon that strengthens the fragmentation argument is the emergence of bilateral purchase agreements between consumer and producer NOCs/governments. We may see more bilateral agreements between consumer NOCs wanting to secure supply and exporting NOCs wanting to secure (a non-transparent) income. In addition, volatility in prices has increased the rationale for substitutes, in particular for unconventional sources. For example the development of unconventional sources in the U.S. has now started to pay off and this is a trend that could further increase the fragmentation argument.

Another possibility is that we will see more robust forms of global governance emerge. An increase in the number of actors, an increased complexity, a concern for transparency and perhaps foremost a concern of price volatility on both sides of the supply chain have triggered calls for a more interconnected global governance. To date there has not been created a rigid regime that has the capacity to involve all market actors. Traditionally much dialogue has been centred around IEA and OPEC, hence as the last decade has passed those

countries and companies outside this dialogue have increased their significance both on the supply and demand side. The IEF has emerged as a major dialogue between consuming and producing nations. However, the failure to be able to incorporate key players such as China, India and Russia, may lead to a collapse or at least less significance of that dialogue. As for now we do not have a clear hegemonic power of the oil market and this may also be the reason for the lack of a clear and leading regime.

The future is uncertain, leaving external factors apart, we can see trends of both fragmentation and an increase of global governance. Which will be the stronger trend or if they can co-develop only time can tell.

Conclusion

The international oil market is in a period of transformation, for the past decade fundamental market mechanisms have changed. There has been an increase in large demand side players, entry barriers have increased, transparency issues have received attention hence little action, but the free market exchange remains as the price setter of oil. From analysis of these mechanisms, key drivers of change were identified as National Oil Companies of emerging economies and countries with vast reserves. Six of these were selected for case studies and it became apparent that they had adopted different relationships to their host governments and markets. However some trends were visible, such as public good characteristics in the provision of oil as well as hybrid state-private partnerships to create vertically and horizontally integrated companies that are competitive with International Oil Companies. The 4th era of the oil market is still in the making and whether it will be one of more global governance or more fragmentation is yet to be seen. Insofar we can conclude that old market and government failures of imperfect competition and inefficient allocation have been replaced by a worsening of others, such as imperfect information.

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Appendix 1 – JODI

Table 21 JODI reporting assessment, submission

Description
1 = Good
2 = Fair
3 = Poor
n/a = not submitted

	2012	2010	2009	2008	2007	2006	2004
Algeria	1	1	1	1	1	1	2
Angola	1	1	1	3	2	3	3
Argentina	2	1	1	1	1	2	n/a
Australia	1	1	1	1	1	1	1
Austria	1	1	1	1	1	1	1
Azerbaijan	1	1	1	1	1	1	...
Bahrain	1	1	1	2	2	...	...
Barbados	3	3	n/a	n/a	n/a	3	n/a
Belgium	1	1	2	2	2	2	3
Bolivia	2	1	n/a	n/a	3	3	n/a
Brazil	2	1	1	1	2	1	n/a
Brunei Darussala	1	1	1	1	1	1	3
Bulgaria	1	1	1	1	1	1	1
Cameroon	...	...	...	...	...	...	3
Canada	1	1	1	1	1	1	1
Chile	1	1	3	2	2	3	2
China	2	2	2	2	2	2	2
Chinese Taipei	1	1	1	1	1	1	1
Colombia	3	1	1	1	2	2	n/a
Congo	...	...	...	...	...	...	3
Costa Rica	3	1	1	1	1	1	n/a
Croatia	1	1	1	1	1	1	...
Cuba	n/a	n/a	n/a	n/a	n/a	3	n/a
Cyprus	1	1	1	1	1	1	1
Czech Republic	1	1	1	1	1	1	1
Denmark	1	1	1	1	1	1	1
Dominican Repub	2	3	1	1	n/a	3	n/a
Ecuador	1	1	1	1	3	3	n/a
Egypt	2	2	2	2	3	3	2
El Salvador	2	n/a	n/a	n/a	n/a	3	n/a
Estonia	1	1	1	1	1	1	1
Finland	1	2	2	2	2	1	1
France	1	1	1	1	1	1	1
Gabon	n/a	n/a	n/a	n/a	n/a	3	3
Germany	1	1	1	1	1	1	1
Greece	1	1	1	1	1	3	1
Grenada	n/a	n/a	n/a	n/a	n/a	3	n/a
Guatemala	3	3	2	1	1	3	n/a
Guyana	3	n/a	n/a	n/a	n/a	3	n/a
Haiti	n/a	n/a	n/a	n/a	n/a	3	n/a
Honduras	1	3	1	1	1	1	n/a
Hong Kong, Chin	1	1	1	1	1	1	1
Hungary	1	1	1	1	1	1	1
Iceland	1	1	1	1	1	1	2

Iran	1	1	1	1	1	1	3
Iraq	1	1	1	1	3	3	...
Ireland	1	1	1	1	1	1	1
Italy	1	1	1	1	1	1	1
Jamaica	1	2	1	1	2	3	n/a
Japan	1	1	1	1	1	1	1
Kazakhstan	n/a	n/a	1	1	3	1	1
Korea	1	1	1	1	1	1	1
Kuwait	1	1	1	1	1	1	1
Latvia	1	1	1	1	1	1	1
Libya	n/a	1	1	1	1	1	1
Lithuania	1	1	1	1	1	1	1
Luxembourg	1	1	1	1	1	1	1
Malaysia	1	1	1	1	2	1	1
Malta	1	1	1	n/a	n/a	3	...
Mexico	1	1	1	1	1	1	1
Morocco	1	...	...	...	...	...	...
Myanmar	n/a	n/a	1	1	3	3	1
Netherlands	1	1	1	1	1	1	1
New Zealand	1	1	1	1	1	1	1
Nicaragua	3	2	1	1	1	3	n/a
Nigeria	1	1	1	1	1	1	3
Norway	1	1	1	1	1	1	1
Oman	1	1	1	1	n/a	3	1
Panama	1	3	1	3	n/a	3	n/a
Papua New Guin	1	1	3	1	1	3	3
Paraguay	1	1	1	1	3	1	n/a
Peru	1	1	1	1	1	1	2
Philippines	1	1	1	1	1	1	1
Poland	1	1	1	1	1	1	1
Portugal	1	1	1	1	1	1	1
Qatar	1	1	1	1	1	1	1
Romania	1	1	1	1	1	1	1
Russian Federati	1	1	1	1	1	2	1
Saudi Arabia	1	1	1	1	1	1	2
Singapore	1	1	1	1	1	1	2
Slovak Republic	1	1	1	1	1	1	1
Slovenia	1	1	1	1	1	1	1
South Africa	1	1	1	1	2	2	1
Spain	1	1	1	1	1	2	2
Suriname	n/a	n/a	n/a	n/a	n/a	3	n/a
Sweden	1	1	1	1	1	1	1
Switzerland	1	1	1	1	1	1	1
Syria	n/a	n/a	n/a	n/a	n/a	3	3
Thailand	1	1	1	1	1	1	1
Trinidad &Tobag	1	1	3	3	n/a	1	n/a
Tunisia	1	1	1	...	...	...	...
Turkey	1	1	1	1	1	1	1
Ukraine	1	...	...	...	...	...	...

Table 11 JODI reporting assessment, timeliness

Description
1 = Good
2 = Fair
3 = Poor
n/a = not submitted

	2012	2010	2009	2008	2007	2006	2004
Algeria	3	2	3	3	2	2	3
Angola	1	1	1	1	3	3	3
Argentina	1	3	3	3	2	3	n/a
Australia	3	3	2	2	1	1	3
Austria	1	1	2	1	1	1	2
Azerbaijan	1	1	1	2	1	1	...
Bahrain	1	1	1	1	1	3	...
Barbados	3	3	n/a	n/a	n/a	2	n/a
Belgium	1	1	3	1	1	3	3
Bolivia	3	3	n/a	n/a	3	3	n/a
Brazil	1	3	3	3	3	3	n/a
Brunei Darussala	3	2	1	1	1	3	3
Bulgaria	1	1	1	1	1	1	1
Cameroon	...	...	...	...	...	...	3
Canada	1	1	1	1	1	1	1
Chile	1	2	3	3	3	3	3
China	2	3	1	2	3	2	3
Chinese Taipei	1	1	1	1	1	1	1
Colombia	3	3	3	3	3	3	n/a
Congo	...	...	...	...	...	...	3
Costa Rica	3	3	2	3	1	1	n/a
Croatia	1	1	1	1	1	1	...
Cuba	n/a	n/a	n/a	n/a	n/a	3	n/a
Cyprus	1	1	1	1	1	1	1
Czech Republic	1	1	1	1	1	1	1
Denmark	2	1	1	3	1	2	2
Dominican Repub	3	3	3	3	n/a	3	n/a
Ecuador	1	1	1	1	3	3	n/a
Egypt	1	2	3	2	3	2	1
El Salvador	3	n/a	n/a	n/a	n/a	3	n/a
Estonia	1	1	1	1	3	2	3
Finland	1	1	2	1	1	1	1
France	1	1	1	1	1	1	2
Gabon	n/a	n/a	n/a	n/a	n/a	3	3
Germany	1	1	1	1	1	1	1
Greece	1	1	3	1	1	3	3
Grenada	n/a	n/a	n/a	n/a	n/a	3	n/a
Guatemala	3	3	3	3	3	3	n/a
Guyana	3	n/a	n/a	n/a	n/a	3	n/a
Haiti	n/a	n/a	n/a	n/a	n/a	3	n/a
Honduras	3	3	3	3	3	3	n/a
Hong Kong, China	1	1	1	1	1	1	2
Hungary	1	1	1	1	1	1	2
Iceland	1	1	1	1	2	1	2
India	1	1	1	1	1	2	1
Indonesia	1	1	1	2	3	1	1

Italy	1	2	1	1	1	1	1
Jamaica	2	3	3	3	3	3	n/a
Japan	1	1	1	1	1	1	1
Kazakhstan	n/a	n/a	1	2	3	2	1
Korea	1	1	1	1	1	1	1
Kuwait	2	1	1	1	1	1	2
Libya	n/a	1	1	1	3	3	1
Lithuania	1	1	1	1	1	1	1
Malaysia	1	1	3	3	3	2	3
Malta	1	2	2	n/a	n/a	3	...
Mexico	1	1	1	1	1	1	1
Morocco	2	....	...	...	...	...	....
Myanmar	n/a	n/a	1	1	3	2	1
Netherlands	1	1	1	1	1	1	1
New Zealand	1	1	1	1	1	1	1
Nicaragua	3	2	3	3	3	3	n/a
Nigeria	2	1	3	3	3	3	3
Norway	1	1	1	1	1	1	1
Oman	1	1	1	1	n/a	3	3
Panama	3	3	3	3	n/a	3	n/a
Papua New Guin	1	3	3	1	3	3	3
Paraguay	2	2	2	3	3	3	n/a
Peru	1	3	3	2	3	3	3
Philippines	1	1	1	1	1	1	3
Poland	1	1	1	1	1	1	2
Portugal	1	2	2	2	1	1	2
Qatar	1	1	1	1	1	1	3
Romania	1	1	1	1	1	1	1
Russian Federati	1	2	1	2	1	3	2
Saudi Arabia	1	1	1	1	1	1	1
Singapore	1	3	1	1	1	1	3
Slovak Republic	1	1	1	1	1	1	1
Slovenia	1	1	1	1	1	1	1
South Africa	1	1	3	3	3	1	1
Spain	1	1	1	1	1	2	3
Suriname	n/a	n/a	n/a	n/a	n/a	3	n/a
Sweden	1	1	1	2	1	1	1
Switzerland	1	2	1	1	1	1	1
Syria	n/a	n/a	n/a	n/a	n/a	3	3
Thailand	1	2	1	1	1	1	3
Trinidad &Tobag	2	3	3	3	n/a	3	n/a
Tunisia	1	3	2	...	...	...	...
Turkey	1	1	1	1	1	1	3
Ukraine	1	...	...	...	...	...	...
United Arab Emir	3	3	2	1	2	2	3
United Kingdom	1	1	1	1	1	1	1
United States	1	1	1	1	1	1	1
Uruguay	3	3	3	3	3	3	n/a
Venezuela	1	1	2	1	1	3	3
Vietnam	n/a	3	3	1	3	1	3
Yemen	n/a	n/a	3	2	3	1	1

Table 12 JODI Table 23, JODI Reporting assessment, completeness

Description
1 = Good
2 = Fair
3 = Poor
n/a = not submitted

	2012	2010	2009	2008	2007	2006	2004
Algeria	1	1	1	1	1	1	2
Angola	1	1	1	3	2	3	3
Argentina	2	1	1	1	1	2	n/a
Australia	1	1	1	1	1	1	1
Austria	1	1	1	1	1	1	1
Azerbaijan	1	1	1	1	1	1	...
Bahrain	1	1	1	2	2	...	...
Barbados	3	3	n/a	n/a	n/a	3	n/a
Belgium	1	1	2	2	2	2	3
Bolivia	2	1	n/a	n/a	3	3	n/a
Brazil	2	1	1	1	2	1	n/a
Brunei Darussalar	1	1	1	1	1	1	3
Bulgaria	1	1	1	1	1	1	1
Cameroon	...	...	...	...	...	...	3
Canada	1	1	1	1	1	1	1
Chile	1	1	3	2	2	3	2
China	2	2	2	2	2	2	2
Chinese Taipei	1	1	1	1	1	1	1
Colombia	3	1	1	1	2	2	n/a
Congo	...	...	...	...	...	...	3
Costa Rica	3	1	1	1	1	1	n/a
Croatia	1	1	1	1	1	1	...
Cuba	n/a	n/a	n/a	n/a	n/a	3	n/a
Cyprus	1	1	1	1	1	1	1
Czech Republic	1	1	1	1	1	1	1
Denmark	1	1	1	1	1	1	1
Dominican Repub	2	3	1	1	n/a	3	n/a
Ecuador	1	1	1	1	3	3	n/a
Egypt	2	2	2	2	3	3	2
El Salvador	2	n/a	n/a	n/a	n/a	3	n/a
Estonia	1	1	1	1	1	1	1
Finland	1	2	2	2	2	1	1
France	1	1	1	1	1	1	1
Gabon	n/a	n/a	n/a	n/a	n/a	3	3
Germany	1	1	1	1	1	1	1
Greece	1	1	1	1	1	3	1
Grenada	n/a	n/a	n/a	n/a	n/a	3	n/a
Guatemala	3	3	2	1	1	3	n/a
Guyana	3	n/a	n/a	n/a	n/a	3	n/a
Haiti	n/a	n/a	n/a	n/a	n/a	3	n/a
Honduras	1	3	1	1	1	1	n/a
Hong Kong, China	1	1	1	1	1	1	1
Hungary	1	1	1	1	1	1	1
Iceland	1	1	1	1	1	1	1
India	1	2	2	2	2	3	2

Iran	2	2	2	2	2	2	1
Iraq	1	1	1	1	3	3	...
Ireland	1	1	1	1	1	1	1
Italy	1	1	1	1	1	1	1
Jamaica	2	2	1	1	2	3	n/a
Japan	1	1	1	1	1	1	1
Kazakhstan	n/a	n/a	3	3	3	3	2
Korea	1	1	1	1	1	1	1
Kuwait	1	1	1	1	1	1	1
Latvia	1	1	1	1	1	1	1
Libya	n/a	1	2	2	2	2	1
Malaysia	3	2	2	2	2	2	3
Mexico	1	1	1	1	1	1	1
Morocco	3	...	...	...	...	...	...
Myanmar	n/a	n/a	1	1	3	3	1
Netherlands	1	1	1	1	1	1	1
New Zealand	1	1	1	1	1	1	1
Nicaragua	3	2	1	1	1	3	n/a
Nigeria	1	1	1	1	1	1	2
Norway	1	1	1	1	1	1	1
Oman	1	1	1	1	n/a	3	1
Panama	3	3	1	3	n/a	3	n/a
Papua New Guin	1	1	1	2	1	3	3
Paraguay	2	1	1	1	3	3	n/a
Peru	1	1	1	1	1	1	2
Philippines	1	1	1	1	1	1	1
Poland	1	1	1	1	1	1	1
Portugal	1	1	1	1	1	1	1
Qatar	1	1	1	1	1	2	1
Romania	1	1	1	1	1	1	1
Russian Federati	2	2	2	2	2	2	2
Saudi Arabia	1	1	1	1	1	1	1
Singapore	3	3	3	3	3	3	3
Slovak Republic	1	1	1	1	1	1	1
Slovenia	1	1	1	1	1	1	1
South Africa	1	1	1	1	1	2	1
Spain	1	1	1	1	1	1	1
Suriname	n/a	n/a	n/a	n/a	n/a	3	n/a
Sweden	1	1	1	1	1	1	1
Switzerland	1	1	1	1	1	1	1
Syria	n/a	n/a	n/a	n/a	n/a	3	3
Thailand	1	1	1	1	1	2	3
Trinidad &Tobag	2	1	3	3	n/a	1	n/a
Tunisia	1	1	1	...	...	...	...
Turkey	1	1	1	1	1	1	1
Ukraine	2	...	..	...	...	...	...
United Arab Emi	2	2	2	2	2	2	1
United Kingdom	1	1	1	1	1	1	1
United States	1	1	1	1	1	1	1
Venezuela	1	1	2	3	1	3	1

Appendix 2 – EITI

Table 13 EITI compliance

Country	Year	Comment
Albania	2009	
Azerbaijan	2003	
Burkina Faso	2008	
Central African Republic	2006	suspended
Republic of the Congo	2004	
Ghana	2004	
Iraq	2009	
Kyrgyz Republic	2004	
Liberia	2008	
Mali	2006	
Mauritania	2005	suspended
Mongolia	2006	
Mozambique	2008	
Niger	2005	
Nigeria	2002	
Norway	2008	
Peru	2004	
Tanzania	2009	
Timor-Leste	2008	
Yemen	2005	suspended
Zambia	2008	
Afghanistan	2008	Candidate
Cameeroon	2002	Candidate
Chad	2007	Candidate
Cote d'Ivoire	2006	Candidate
Democratic Republic of Co	2007	Candidate but suspended
Guatemala	2009	Candidate
Guinea	2005	Candidate
Indonesia	2009	Candidate
Kazakhstan	2005	Candidate
Madagascar	2007	Candidate but suspended
Sao Tame and Principe	...	Candidate
Sierra Leone	2006	Candidate but suspended
Solomon Islands	...	Candidate
Tajikistan	...	Candidate
Togo	2009	Candidate
Trinidad & Tobago	...	Candidate

Appendix 3 – Preliminary Thesis Report

Student: **Sandra Wessman**
Supervisor: **Nick Sitter**

Preliminary Thesis Report

The Oil Market: Are National Oil Companies changing the rules of the game (again)?

Hand-in date:
15.01.2013

Academic Institution:
BI Norwegian Business School, Campus Nydalen

Examination code and name:
GRA 19002 Master Thesis

Programme:
Master of Science in Political Economy

Contents

Introduction to Research Topic

Few commodities are as fundamental to economic development and industrialisation as oil. Nearly all of our modern activities are indirectly or directly connected to oil either by transport, manufacturing or heating. There are certainly alternatives in the making, hence transitions in energy are slow and willingness to do so is doubtful. "While alternative energy sources are increasing, hydrocarbons are still projected to dominate energy supply through at least 2030" (National Petroleum Council 2007). As the main source of energy it is important for consumers, producers and policy makers to understand how this good is governed. Previous research have left gaps in the literature, gaps that are important to fill in order understand the oil market. Such as understanding the perception of oil by key players and what the new market conditions means for non-state actors.

This master thesis aims at contributing to the collective knowledge of oil market governance and National Oil Companies (NOCs). It intends to do so by asking fundamental questions that yet have not been answered in the existing literature. First of all by asking and answering the question of what happened in the 2000s, is there more political governance now than it was a decade ago. Furthermore, I try to answer how and why by analyzing whether oil is perceived as a public, private or strategic good by the new majors. Secondly, by asking how strategic choices by NOCs affect the supply chain.

My ambition is that this thesis will be able to give some constructive input to actors who try to understand what types of changes are happening in the oil market. Changes in the market will have implications for all actors along the supply chain from the citizens of host governments, via companies and states to the end consumer. Even though I cannot predict the future, I hope to be able to give a picture of where we are now and how and why we got here.

Because this is a master thesis, certain constraints such as time and financial resources exist, for these reasons I will not be able analyze every detail of every actor. In addition, there are constraints pertaining to the topic such as language barriers and lack of transparency. Acknowledging the constraints, I still believe that the data available is rich enough to present general trends in the oil market and more specific contribution on key players.

Literature Review

This literature review attempts to serve three purposes; present a historical overview of the main changes in oil market governance, introduce the main debates of the last decade and to summarize the main characteristics of the oil market today. The aim with this chapter is not to give a theoretical review, but rather to summarize what we know and don't know about the oil market and its governance. The history of the oil market is long and every twist and turn would not possibly fit in this chapter. Therefore more emphasis is put on debates and issues closer to today whilst still summarizing the major shifts in the past.

The history of oil governance

The beginning of oil

Oil production took off in the United States in the mid 1850s, hence this literature review has its starting point at the end of WWII and therefore the prewar structure will to a large extent be left untouched. However, the most extensive documentation of the period can be found in Yergin's book *The Prize: The epic quest for power, money and oil.* In great detail the author guides the reader through the rise and fall of Standard Oil, the importance of Baku, how oil changed the WWI, the clever maneuver of Mr. five percent and the adventure of Rockefeller. Furthermore Yergin explains the prevailing model of the American oil industry at the middle of the century. The underlying assumptions of that system were that the demand for oil would not be significantly sensitive to price movements and that each state should have its natural share of the market. However, due to the uncontroversial nature of this period we quickly move to the post-WWII world.

State-centrism in the postwar oil market

After WWII the importance of oil and its significance to power and economic growth was realized among politicians across the globe. Oil had changed the rules of war and became a matter of winning or losing. During the war, tremendous efforts were assigned to securing oil supplies to your own army as well as cutting your enemies supply.

The decades following the war were dominated by a state-centered approach in oil market governance. First it was dominated by International Oil Companies (IOCs)

from the Western world and later by producer government's trough the Organization of Petroleum Exporting Countries (OPEC) (Yergin 1991:500). The widespread drive towards state intervention in the oil market following WWII was mainly supported by three arguments among the OECD countries; market failure, the Keynesian legacy and the Soviet example (Stevens 2008). In more general terms a state-centered approach is based on two assumptions. The first assumption is that in some cases protectionism can raise social welfare. Whereas the second assumption states that governments can operate independent from interest group pressure (Oatley 2012).

The seven sisters

In 1948 the U.S became a net importer of oil and the western world (including Japan) were dependent on IOCs to supply sufficient supplies of "foreign oil" to cover domestic demand (Yergin 1991). The most important IOCs in securing that supply came to be called the seven sisters and in the immediate period after the WWII they were the majors of the global oil market (Claes 2001). The steady increase in demand and low production costs in the Middle East generated great profits for the seven sisters and security of supply for western governments.

The seven sisters were the "Anglo-Iranian oil company, the four Aramco partners-Jersey, Socony, Texaco and Standard of California- plus Gulf, which was Anglo-Iranian's partner in Kuwait; Shell, which was tied to Gulf in Kuwait; and the French company, CFP. The American and British governments were also intimately involved" (Daniel Yergin 1991:476).What they had in common was that they all were involved in large scale joint ventures in the Middle East and through a consortium they controlled almost the entire industry. The Seven sisters controlled the entire upstream segment and host governments were mainly perceived as passive players engaged in the industry as competing sellers of licenses or oil concessions. However in the downstream segment in the domestic western markets competition over consumers could be fierce (Fattouh and Van der Linde 2011: 26).

In the decades to come resource rich nations developed a state centered approach that would have vast consequences for the seven sisters. Already before the WWII

a new form of resource nationalism had started. For example, in 1938 the nationalization of Mexico's oil industry and the creation of Pemex would come to serve as a role model for other resource rich countries across the globe (Jaffe och Soligo 2010). In addition there were three other factors that were very important for how the industry would develop; the rise of 'permanent sovereignty' over natural resources, dissatisfaction with the concession terms agreed in the previous period and rising oil demand (Stevens 2008).

The main battle between these two "blocks" (seven sisters and host governments) was about economic rent. Rents had a much greater meaning to many of the host governments than its meaning in pure financial terms; it was also a matter of sovereignty and nation building. Host-governments were eager to show the world and in many cases its own population the power, influence, significance and status these resources gave the country. This was an opportunity to build a strong nation-state based on power and pride (Yergin 1991:431). For the consuming nations that had put their faith in the hands of the IOCs joined the battle for strategic reasons. They all understood that they needed to secure supplies of oil in order to grow economically and for many oil was also a great source of direct and indirect taxes (Yergin 1991:433).

There was a great dissatisfaction among the producing countries over the distribution of profits from the industry. In many cases IOCs paid more in taxes on consumer markets than they did in royalties to host governments. An event that really marked a shift in the battle was the Saudi-Aramco fifty-fifty deal in 1950. When the Saudi-Aramco deal was struck it opened up a door for new arrangements in the distribution of rents. The era of the seven sisters were broken down by several factors, increased competition, lack of unity and the argument that has received the most literature; the establishment of OPEC.

The era of OPEC

The major reason for the creation of OPEC was a growing anger towards the international oil companies. IOCs were cutting posted prices simultaneously as it was the posted price that was the basis for the producer countries taxes and royalties (Claes 2001). In a Gentlemen´s agreement leading up to the creation of

OPEC, a leading figure, Perez Alfonzo urged that the concerned countries should defend the price structure and establish NOCs. It was also urged to build domestic capacity to move further along the value chain, in particular downstream and into refining.

A major shift in power in OPECs favor happened in 1971, there were two agreements signed between OPEC members and IOCs that year. They marked a significant shift because they covered topics such as tax and price increases, inflation compensation and fixing of such rates for future years. "The effects of the agreements were a 21 percent price increase for Saudi Arabian crude (from $1.80 to $2.18), and an increase in revenue of 38.9 percent"(Claes 2001:63).

The nationalization of resources in the 1970s was in many cases also rooted on a much deeper level. Both the creation of NOCs and the creation of OPEC was for Latin American, African and Middle Eastern producing countries a way to affirm their independence in relation to foreign interests and an assertion of independence (Noreng 2006). The postwar period did not only see an increase in demand but also in supply. In the beginning of the 1970s most nations in which supplies were found created a NOC. By October 1973 producer governments took over the prerogative of oil prices and unilaterally announced increases to the price, this was the first oil shock (Stevens 2008).

In October 1973 the first Oil crisis spread across the globe. It was a result of OPEC´s, Syria´s and Tunisia´s response to the third Israeli-Arab war through a proclaimed oil embargo; it was “in response to the U.S. decision to re-supply the Israeli military”. The embargo lasted until March 1974 and during this period the price of oil increased from $3 to $12 per barrel. The oil embargo signaled a new era for oil and the years that followed, 1974-1978 can be seen as the golden years of OPEC (Daniel Yergin 1991).

From 1983-1984 OPECs role as a price setter started to be diminished for two major reasons; first, a halt in oil demand due to the economic downturn and a huge inventory dump which now was considered unnecessary and secondly new producer competition outside of OPEC (Claes 2001). In March 1982 OPEC reduced its quota in order to maintain the price, but it was the end of an era.

Furthermore, the way that OPEC influenced the oil market in its golden years and up until the mid 1980s can be characterized by price setting whereas since 1986 the strategy has been producing quotas (Wirl 2012).

Oil as a private commodity

In the 1980s there was a shift towards a more market oriented approach. "As was said, sometimes with approval and sometimes with horror, oil was becoming, just another commodity "(Yergin 1991:721). Oil was no longer considered a strategic good which had to be under state control, but rather a commercial commodity with private good characteristics. The Washington consensus and the fall of the Soviet Union finalized the arguments for privatization and deregulation. The Washington consensus symbolized an ideological swing away from government involvement in the economy and the oil market. Furthermore there were arguments that NOCs had the potential to become too powerful in domestic politics (Stevens 2008). The early 1980s can be seen as the shift away from a statist paradigm and towards a liberal paradigm based on deregulation and privatization of the oil industry. The new policy agenda was to make oil a private good governed by free market exchange (Goldthau 2012).

The era of liberalism conquered the western world and with it came a wave of privatization of state-owned enterprises (SOEs), some of which were large energy companies (Parra 2010). Furthermore NOCs were criticized for being ineffective due to conflicting objectives imposed by governments and rent seeking bureaucrats (Stevens 2008). "The development of new oil in Alaska and the North Sea played an important role in the recovery of many companies as significant market players, helping them to regain some of their market power in the rather stagnant oil market of the late 1970s and first part of the 1980s."(Fattouh and Van der Linde 2011:39)

The market as price setter

During the 1980s the entire pricing system had changed, in the late 1970s crude sales were nearly exclusively long-term contracts whereas by 1985 seventy percent of sales were based on spot price (Claes 2001). Saudi Arabia started to pursue netback pricing and the futures and forward markets exploded; this meant at least in the short term that it was market traders that decided the price of oil.

By mid 1980s North Sea crudes, particularly Brent, was a major feature of an increasingly price-transparent market. Parra argues that this was visualized in two trends, firstly the Dated Brent was a feature of making the spot market an integrated part of the supply channel and secondly Brent became a "marker" crude. Contract prices of other crudes came to be fixed by reference to the price of Brent, subject to appropriate adjustments for quality and location (2010). From 1987 Saudi Arabia started to set crude prices monthly in advance according to a formula. World oil prices has since been set by reference to the prices of the marker crudes; Brent, WTI and Dubai. Furthermore Parra argues that OPEC still played a role in price setting but now without precision. OPEC continued to set producing quotas, but the effectiveness and outcome was highly uncertain. As for demand, it did not reach back to peak levels until 1989.

The Gulf War was a turning point in producer-consumer relations, most likely because it proved how sensitive the global market still was to such supply shocks. On October 1, 1990 in the UN General Assembly, the Venezuelan President Perez called for an urgent meeting of producers and consumers. He claimed that the arrangement at the time only would favor speculators and opened up for a dialogue between OPEC and IEA. The first meeting took place in Paris in the summer of 1991 and these meeting are now held on an annual basis under the name of the International Energy Forum (IEF) (Fattouh and Van der Linde 2011: 59).

Market concentration

Throughout the 1990s both financial and physical reserves were to be concentrated among fewer companies. This trend of mergers and acquisitions intensified at the turn of the next decade; from 45 IOCs in 1998 only 16 remained in 2004(Claes 2001:85). What had unfolded in these years was the largest and most significant remaking in the oil history since 1911. The companies that came out of mergers were not only bigger but also capable of larger and more complex projects than ever before (Yergin 2011:105). In conjunction and correlated with the industrial concentration three realities appeared. First there was a growing importance of attracting FDI as the basis of development strategy. Secondly, a low oil price following from the collapse in 1986. Thirdly it was manifested that

oil from now on would be coming out of a much more difficult geography and geology (Stevens 2008). Another trend in the industry was streamlining, which is the process where company´s focus on the core business, in this case oil, gas and chemicals (Parra 2010).

The 1990s also opened up new opportunities, in particular the opening of the Soviet Union. The Caspian basin offered great opportunities for development and today this region produces four times of what they were just a decade ago. "Today the total output of Azerbaijan and Kazakhstan is 2.8 million barrels of oil, equivalent to more than 80 percent of North Sea production"(Yergin 2011:82).

A new millennium

The state regains control

In the early 2000s a new paradigm was in the making, even though the market as a price setter to a large extent remains, the literature indicates more state intervention than in the previous decade. For example, large oil exporters like Russia and Venezuela has since the beginning of the new millennium entered a stage of re-nationalization and upcoming exporters such as Chad and Uganda have created NOCs to govern new supply (Tordo, Tracy, and Arfaa 2011). Furthermore, China became a net importer of oil and its NOCs are now considered global giants.

Every year the consultancy company Ernst & Young presents the main opportunities and risks in the oil market. For 2011 access to reserves was listed as the main risk followed by political constraints and competition for proven reserves. "Indeed, our multi-sector survey found that oil and gas respondents were more likely than those in any other sector to report difficulties in managing the risks associated with the expansion of government's role"(Ernst & Young 2011:4).

National Oil Companies

The main tool of a state wishing to interfere with the oil market is by creating a NOC. In the past five years there have been several studies of NOCs; here I would like to highlight three that have influenced the recent debates on the topic. In 2007

the James A. Baker Institute for Public Policy conducted a series of in depth case studies on a range of NOCs. The presentation of the case studies entailed the following six conclusions. Firstly, NOCs have noncommercial objectives that differ from IOCs objectives, for example; redistribution, foreign and strategic policy, energy security, wealth creation for the nation, domestic politics and economic development. Secondly the extent to which the noncommercial objectives govern the behavior of a NOC has a huge impact on its ability to replace and expand its oil and gas production. Thirdly, the institutional structure and regulatory framework can make a NOC much more effective. It reduces the impact of noncommercial activities upon the core business and in addition, multiple NOCs can improve the efficiency. Another point which the study revealed was the importance of international capital markets in facilitating corporate responsibilities. A new trend was also discovered; NOCs have long been excluded from downstream and marketing segments in consuming markets, however lately NOCs have been seeking to gain market share in these segments and by doing so creating opportunities for new strategic alliances between NOCs and IOCs. Finally, the study emphasized the growing importance of NOCs in the global oil market and that this should be of concern for importing countries in particularly concerning insufficient reinvestment rates and responses to vertical integration.

A second study was published by the World Bank in 2011, it focused on value creation among NOCs. Four particular questions were asked and answered in the study. Firstly, internal governance structures appeared to be more important than external. Furthermore, there is a tendency for NOCs that are wholly owned by their governments to have more national missions to oblige and thereby have fewer incentives to improve efficiency. However, cultural differences explain why similar corporate governance structures may function in a dissimilar way. Secondly, the study concluded that large resource endowments are a disincentive to efficient production, hence that it is the manner in which they are exploited that matters. Thirdly, they found that sheltering a NOC from competition by restrictions on access helps the NOC to focus on developing necessary competence and economies of scale. Hence, such measures can have decreasing effects on value creation over time. And finally, they concluded that national

mission objectives hamper value creation when their pursuit is in conflict with other value added functions (Tordo, Tracy and Arfaa 2011).

The third study was conducted by PESD (Program of Sustainable Development at Stanford University) and published in the book *Oil and Governance: state-owned enterprises and the world energy supply*. First of all this study asks why a NOC is created and maintained and what they found was; fear that IOCs were not delivering adequate revenues and benefits, nationalism, contribution to the nation's industrial base and lastly for NOCs to take over from IOCs when the risky part is over. Another research topic was what influenced the performance of a NOC. The study found that state goals, geology and consistency in the state-NOC interactions to be important indicators of a NOCs performance.

Or maybe not?

In the first decade of the 2000s there were also NOCs taking an opposite approach; Norway, China and Brazil has for example partially privatized their national giants(Tordo, Tracy, and Arfaa 2011). As previously mentioned, during Putin's time in office Russian energy companies underwent a form of renationalization. This may still be true for the gas giant Gazprom and some other energy companies, hence in the last few years the oil giant Rosneft appears to be taking steps to reduce government influence (Henderson 2012:53).

In addition European countries have recently received some attention for their lack of state interference in the oil market. The debate often belongs to a wider debate of whether or not the EU should have a common energy policy and whether it is nation-states or the European commission that should provide energy security. European companies have found themselves in fierce competition with both producer NOCs and Asian investors (Youngs 2009:169). Some argue that the so called new "resource nationalism" gives the EU a reason to protect itself, not necessarily by creating NOCs but at least to take a more active role (Umbach 2010:1239). This could also be a space for improved of economic and political integration that strengthens cohesion of its members. However to date the EU institutions have not played a role in securing this strategic resource, and European vulnerability is far too high(Palazulelos and Fernandez 2012:280).

Investments

In the report from Ernst & Young mentioned above, the three main opportunities in the oil industry were frontier acreage, unconventional sources and conventional sources in challenging areas as the three main opportunities (2011). All of these are very investment intensive, even in relative terms for the oil industry. This coupled with the fact that almost all current reserves are under the control of NOCs, leads to an under investment. Several scholars argue that in many exporting countries, the relationships between the states as owners and NOCs are too complex and inefficient and this yields very low rates of investment in the oil sector. For example, revenues from the oil industry that could be used for reinvestments are instead used to subsidize domestic oil prices (Jaffe and Soligo 2010). Furthermore more, the financial crisis thought to have affected the rate of investment negatively both by lowering the oil price and secondly by general precaution towards investments and credit constraints (Fattouh and Van der Linde 2011:103,127).

Peak oil and resource scarcity

Hubbert developed his theory of peak oil already in the 1950s, hence still today it is a very controversial topic. The term peak oil refers to the point of maximum global production, however the debate of whether this point is reached, ever will be reached or already has past is continuous. A popular modification of the model is to call it peak cheap oil, meaning that oil with relatively cheap production costs will no longer be found. So there is no lack of resources as such but rather that the new discoveries will be found in very tricky geology and in unconventional sources (Noreng 2012:121).

Peak oil is connected to our perception of how scarce resource oil actually is. No matter whether the scientists or economists (or perhaps both) are right, the debate has created concern in the political community as how to ensure energy security, here a sufficient supply of oil. "Energy security exists when there are energy sources large enough to meet the needs of the political community (the energy demands), which include all military, economic and societal activity. Those sources must be able to deliver such quantities of energy in a reliable and stable manner and for the foreseeable future. As soon as these conditions are not met, there exists a problem of energy (in) security"(Raphael and Stokes 2010:379).

Actors have different views upon how such security should and can be achieved. There are two main approaches a more liberal or a more realist approach. For the liberal actor, energy security is best solved by interconnecting economies and to create interdependencies. "As long as this economic order exists, conflict between major powers over energy resources is highly unlikely" (Raphael and Stokes 2010:383). According to previous paragraphs this may be exemplified by the acts of the European Union. Whereas resource nationalism can be interpreted as the realist response and most of the attention in the current debate on resource nationalism has been granted to China."A more objective idea of the supply of oil on the market, however, encourages a more mercantilist approach to securing preferred positions in the competition for oil. China is an example"(Noreng 2012:39). Where a mercantilist strategy is one built on partnership between the state and companies involved. The state's financial resources are used to ensure long-term access, in this case, oil from primarily in Africa and the Middle East. However many argue that the reinforced urge to protect national interests hardly is exclusive to China (Beeson, Soko and Yong 2011).

This review previously touched upon some debates regarding NOCs, another trend closely related to this topic and that of resource scarcity is the rise of the so-called importing NOCs and their growing importance on the oil market. Importing NOCs seek to acquire reserves and invest in properties abroad to supplement inadequate domestic supplies (such as China and India) or because domestic supplies are largely nonexistent (as in South Korea or Japan) (Ziegler 2008:134). Some argue that the consumer NOCs of Asia resembles the characteristics of the seven sisters in the middle of the past century(Harks 2010).

Asia, in particular China

The emerging economies of Asia and in particular China are widely argued to be of more importance in the brewing paradigm. They are likely to become the new rule-makers in terms of supply, access and sustainability. This does not necessarily mean that the OECD countries will be excluded from the oil market, rather that they now will become rule-takers rather than rule-makers (Goldthau 2012). Some scholars predict that with the power shift in international economics from the U.S. to China we will also lead to a change in the chosen currency of

pricing oil. Either by an absolute change in currency or through a basket of currencies (Noreng 2012:121).

China´s economic and political expansion and growing importance appears to have caught the attention of oil market analysts. Some emphasize negative side effects of Chinese energy companies' strategies such as human rights violation and lack of transparency. Whereas others point to the fact that Chinese NOCs are making the well needed investments (Taylor 2006:951) which in turn is helping to increase world supply and capacity (Xu 2007:24), so in a sense we are all benefiting from the expansion of Chinese economic activity (Beeson, Soko and Yong 2011).

Much of the criticism towards the Chinese approach is focused on the perceived long-lasting consequences that it may have on the developmental model of its trade partners (Beeson, Soko and Yong 2011). Chinese oil companies have been criticized for their no-questions-asked policy (Taylor 2006:945) clear examples are Iran and Sudan (Jian 2011:15). Also in Eurasia, governments supporting Asian NOCs have proven to be more tolerant of authoritarian regimes and human rights violations than western counterparts. In addition, Chinese companies are accused of exploiting the work force and host country laws, on top of that Chinese investments are accused of generating fears of mass in-migration (Ziegler 2008:161,162).

But on the other hand, the American and European activity in oil-rich nations may not be that of strong ethics either. Non-democratic governments have been supported by major powers and their oil corporations for a long time. Attempts to correct social injustice created by these arrangements have been forcefully shut down in order to ensure stability and secure supply (Raphael and Stokes 2010:387).

Another debate that has received a lot of attention is to what degree Chinese NOCs are policy tools of the Chinese government or whether they have strategic autonomy. There is no doubt that there is a growing demand for oil in China and that this in conjunction with China becoming a net importer of oil has triggered Chinese companies to venture abroad in order to supply the domestic market. On

the one hand some argue that this going abroad strategy is mainly a result of a more capitalistic China in rapid economic growth with companies that see market opportunities (Jian 2011:3).

Whereas other arguments point to government strategy, since around 2000 and up until the financial crisis Chinas energy security policy was characterized by the slogan "go abroad". Later on, in the years following the financial crisis Chinas policy has turned into "go abroad and buy". The crisis gave China new opportunities to utilize its large foreign exchange reserves and expand its investments in the global market (Jian 2011). Therefore, one could say that the relationship between many Asian NOCs and their host governments is rather symbiosis than control (Ziegler 2008:162). Many scholars agree to the fact that it is both commercial objectives and government strategies that drive this form of energy diplomacy, hence some argue that NOCs are in the driver seat (Goldthau 2010). Other researchers emphasize that Chinese NOCs are still very tied to the Chinese culture and political system. And that a transition towards more internationalization and autonomy for the company might be coming but that such a transition will take decades (Xu 2007:25).

No matter whether primarily economically or politically motivated, the rise of Asian NOCs has created a new dynamics in the industry. New alliances are born between consumer NOCs wanting to move upstream and producer nations whom are moving downstream (Fattouh and Van der Linde 2011:8). For a consuming nation it requires stamina and money to be able to move upstream (Parra 2010), hence after the financial crisis China is in a very particular position due to its financial reserves. "The Chinese ability to integrate oil and gas investments with general development loans and infrastructure investment has proved especially popular with governments in some African countries. A new scheme offers the possibility of cross investment with Middle East producers, allowing equity in the national downstream against upstream developments" (Keun-Wook Paik et.al 2007:4).

Increasing price

In the past 40 years the oil price has risen by 780 % in real terms, this in comparison with other minerals which only have managed a 50 % increase

(Radetzki 2012). Some argue that the price performance can be explained by the cartel behavior of OPEC and the increasing costs of production at least in the short-run. Whereas other such as Radetzki argue that the reason is that almost all proven oil reserves today belong to NOCs and that their investment rate is too low because of host governments whom use the rents from oil production to pursue other goals than increased capacity (2012). Whereas others simply blame the increased demand from emerging economies (Harbo 2008:42). And some believe that financial speculators played a major role (Yergin 2011). It may be a combination of all factors, but no matter which one is the strongest, it is clear that in the period from 2002 to 2008 the oil market underwent its longest period to date of sustained price increases, reaching peaks not seen before (Fattouh and Van der Linde 2011). However in the years following the crisis we have seen an intensified price volatility (Harks 2010). This recent volatility in prices has had a negative impact on investments and in addition it triggers opportunistic behavior on the part of whoever has the temporary advantage (Bressand 2010).

Not only did the financial crisis bring a fall in oil prices it also brought a shift of power in the international economy from the U.S. to China which may in the future lead to other changes for the price of oil. Noreng elaborates on the topic; China is becoming the most important trading partner of many oil-exporting countries and this together with the rising convertibility of the Yuan may well lead the way for pricing oil Chinese currency in the future (Noreng 2012:22).

Specialization

The previously mentioned report by Ernst & Young proposed that the major opportunities in the industry in 2011 belonged to frontier acreage, unconventional sources and difficult geology. These opportunities do not only require investments but also they require specialization. "A combination of high oil prices and limited access to reserves has pushed many oil companies in non-OPEC countries to explore new frontiers" (Fattouh and Van der Linde 2011: 102). New frontiers can be found in ultra deep waters along the Brazilian coast, under the melting ice of the Arctic and in unconventional sources. According to a latest EIA International Energy Outlook; "global production of unconventional liquids will increase from 3.4 mb/d in 2007 to 12.9 mb/d in 2035, accounting for 12 percent of the world’s total liquids supply in 2035".

Strategic Alliances

As mentioned in the previous part, there are new alliances and dynamics in the making. There has been an increase in strategic alliances both between NOCs and between NOCs and IOCs (Xu 2007). "This period (2000s) witnessed the renegotiation of contract terms and conditions for many projects which signaled a shift in the balance of the relationship between NOCs and IOCs. Contracts between NOCs and services companies grew in size and importance over the same period" (IEF 2012:4).

Hence, one should recall that it is not only NOCs that benefit from partnering up. Today the share of oil reserves available for IOCs is very small, its considered to be less than 10 percent (IEF 2012:5). This may be something to consider for consuming countries whom are reliant on IOCs for external supplies (Palazulelos and Fernandez 2012:279). According to PIW´s yearly rankings 17 of the 25 largest oil companies today are NOCs. In addition, its suggested that service companies are taking over the many tasks from IOCs (IEF 2012:7). In addition, NOCs like Statoil and Petrobras have become industry leaders worldwide within their specific expertise (Henderson 2012:45). Still IEF claim that IOCs are the preferred partners for long-term ventures, in addition to technology and finance, IOCs bring a package of operational expertise and project management capabilities as well as market knowledge and access (2012:7).

Previously much of the dialogue between consuming and producing states and companies has been centered between IEA and OPEC. However, the new millennium has seen the rise of the new consumers and producers. On the demand side in particular Asian countries and on the supply side new fields were resources were developed in Africa and Caspian Basin. This means that the emerging key players are not in the old debate, they neither belong to IEA nor OPEC. And these new players have different interests, aspirations and perceptions of the energy challenges (Fattouh and Van der Linde 2011:86). The IEA has in later years been reaching out for a dialogue with new consumers such as China and India, hence interest of membership has been fairly low both from the newcomers and existing members (Kohl 2010).

Summary of the 2000s

In sum the first decade of the millennium has meant vast changes for the oil industry. However, it appears as if research still has not reached consensus as to what is going on. With regards to political interferences, we do see some more involvement than in the 1990s but we cannot claim that it is the same statist approach as was seen in the post WWII era, it may be a new form of state intervention (Goldthau 2012). Producer and consumer NOCs have reached the attention of researchers whom are trying to fill the knowledge gaps of these organizations. It is argued that these originations do not provide the sufficient investment in capacity building that is needed to meet the rising demand. At the same time research on peak oil triggers debates on whether we have reached maximum production capacity as well as debates related to resource scarcity and resource nationalism.

For the first nine months of 2012 Asian NOCs spent $ 37 billion acquiring assets outside their home market and there are no signs of slowing down (Ernst & Young 2012:1). Asia and in particular China has been mentioned several times in this review. There is no doubt that China will play a more important role in world politics in the years to come and thereby also in energy politics. Throughout the past decade China´s 'going out' strategy has received particular attention and there is still confusion as to how the relationship between the state and Chinese NOCs actually is functioning. Furthermore what impact these companies have on host governments. "It is argued that Chinese oil diplomacy in Africa has two main goals: in the short term, to secure oil supplies to help feed growing domestic demand back in China; and in the long term, to position China as a global player in the international oil market."(Taylor 2006:938)

The situation described above appears to have triggered new dynamics and relationships in the oil market, new risks and opportunities appear for all actors involved. Some implications of the new dynamics are yet to be discovered. Hence, what we do now is that the 2000s has brought a continuous increase in the price of oil followed by a few years of increased volatility. The reasons for the increase appears to be many and there are wide debates as to which are the most important. Furthermore, scholars wonder what implications the new dynamics will have for Europe and IOCs. It is debated whether the EU should approach the oil market

with a more realist approach as opposed to the liberal approach taken (Youngs 2009:181).

Research Questions and design

The objective of this thesis is to provide an understanding of major changes in governance of the oil market and to analyse how and why these changes occurred. In order to do so the following chapters will try to answer the following questions:

1. Is the oil market characterized by more political governance today than it was 10 years ago?
2a. Why has it changed? What type of good is oil in the eyes of key actors?
2b. Is there more vertical integration than previously and is the vertical integration NOC driven?
2c. Are we seeing more NOC-NOC alliances? If so, what does this mean for the role of IOCs?

The questions and their related research design are organized into two parts. The first part pertains to the question of political governance and free market constraints. Whereas part two covers case and comparative studies that will answer the why and how questions.

Part 1 – Governance

Is it more political governance of the oil market compared to 10 years ago?

The intention here is to be able to capture recent changes and in the governance of the global oil market. In economic theory a commodity left entirely to market forces will have it's price and quantity determined by the equilibrium of supply and demand. Another possibility is for a commodity to be politically governed; hence political governance can come in many different shapes. It may therefore be easier to look at what the market would look like if it was a free market. The perfect market hypothesis says that a commodity is in perfect competition of free trade if the following characteristics prevail:

1. A homogenous good
2. Multiple actors on both demand and supply side (No monopoly, monopsony, oligopoly etc.)
3. All participants have the same information.
4. Low barriers to entry
5. All participants are price takers

When all these conditions are in place, we have perfect competition according to economic theory. From now on, I will treat them as indicators (I), due to that the first condition has not changed in the past two decades I will treat it as a constant. Leaving me with the following four indicators:

I_1 = Multiple actors

I_2 = Information

I_3 = Entry barriers

I_4 = Price takers

If these were true I would except to find the following facts: If there is a wide range of actors then it should be possible for consumers to diversify their supply and for producers to sell to a variety of consumers. If information was available to everyone, it should be easy for me to find information regarding for example reserves and production rates. The most significant entry barrier that I found in my literature review was government policy and therefore this will be used as a measure to see whether barriers have increased or decreased. Lastly, if both supply side and demand side actors are price takers, if no actor alone can change the price by disrupting supply or change the demand.

I will try to look at the market as a whole, look at general data regarding the industry and when company or country specific data is need I will look at the major producer and consumers. The idea is then to compare the results at four different times in order to capture changes. The format for collecting, organizing and analyzing data will follow the outline in table 1.

Table 1. Indicators, measurements and time periods for research question 1

Indicator	**Measurement**	**1995**	**2000**	**2005**	**2010** (2012)
I_1 = Multiple actors	Measure: Number of suppliers and consumers for a particular country				
I_2= Information	Measure: Was/Is information on reserves and production available				
I_3 = Entry barriers	Measurement: Government policy				
I_4 = Price takers	Measurement: Supply/demand disruptions/increases				

Already now I expect that there was neither a free market a decade ago nor today. But what I might find is that the state-centered approach might have changed and that some indicators may have decreased whereas others have increased. I have already conducted some preliminary research on a few actors in the market and it confirmed my notion that I will find different but intensified political interference in the oil market. By using the variables of the free market, I expect to be able to find not only whether the state has more control over the oil market, but perhaps more interestingly on what variables it changes over time. This information will be very helpful in part 2 where I try to answer the questions of why and how.

Part 2 – Goods and strategies

2a Why has it changed? What type of good is oil in the eyes of key actors?

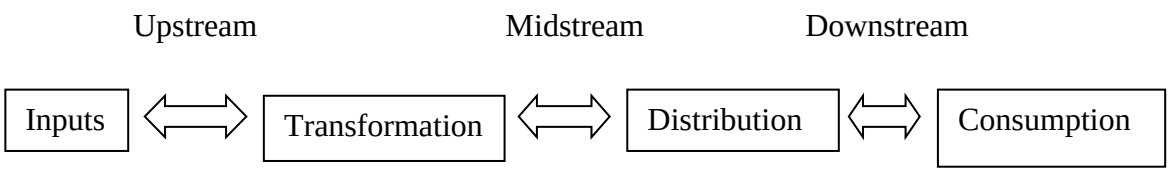
Why is there a different approach from states today compared to 5,10 or 15 years ago? From the analysis in part one, I expect to get an idea of what has changed and who the actors are that account for these changes. I expect that these actors are National Oil Companies and possibly governments controlling them. I will select 5-10 companies that appear to be driving the change(s) and perform case studies on these. Primarily I will try to understand *why* it has changed and this will be done by looking at what the motive or the goal of the state policy behind the

NOC. A useful tool for doing this will be by looking at how governments view oil, is it a public, private or strategic good?

The second question is then *how*? There are two main ways in which NOCs can expand their influence either by vertical integration or by building strategic alliances which from now on will be referred to as horizontal integration.

2b Is there more vertical integration in the oil market today than 10 years ago? And if so, is the vertical integration NOC driven?

There are three major segments[9] in the value chain of the oil market:



If a company is pursuing a strategy of vertical integration, they try to capture more segments than previously, for example a company that historically have been involved in Exploration in the upstream phase, decide to move into the business of refining the crude oil (transformation). In order to answer the question at hand, I will analyze several companies and their non-or-existent paths of integration.

Dependent variable: Vertical integration
Independent variable: Number of segments per company

This section will be a comparative study of the same periods used in the first question as well as a comparison between IOCs and NOCs.

2c Who are the NOCs trading with, are there more NOC-NOC alliances? What will happen to IOCs?

Strategic alliances are formal agreements between firms to pursue a specific strategic objective; to enable firms to achieve a specific goal that they cannot achieve on their own by horizontal integration. It involves the sharing of risks as well as rewards through joint decision making responsibility for a specific venture. Three major models of horizontal integration exists; research oriented,

[9] These major segments can further be subdivided into many sub categories.

technology oriented and market oriented. Alliances offer the following (potential) advantage to participants:

- Overcoming problems of access to markets
- Facilitating entry into new/unfamiliar markets
- Sharing increasing costs, uncertainties and risks of R&D and of new product development
- Gaining access to technologies
- Achieving economies of synergy, for example by pooling resources and capabilities and by rationalizing production. (Dicken 2011:156)

By performing a similar study to that in 2b I will try to map the horizontal integration at different times and comparing whether it appears to be NOC or IOC driven.

Above is the main structure, hence I am aware that I will have to deepen the economic theory for the entire part two. In addition to the existing literature review, there will be an additional part covering the concepts of free-market, goods, vertical and horizontal integration.

Data

Data will be gathered from a wide variety of secondary sources. For first part I will use the three case studies on NOCs mentioned in the literature review; James A Baker Institute, the World Bank and PESD. Another important source will be annual reports from companies, consultancies and journals; Petroleum Intelligence Weekly, BP statistical review, Mckinsey and Ernst & Young to name a few. But also more academic journals such as Journal of Energy policy will be consulted. Furthermore industry reports from organizations such as International Energy Agency (IEA) and the U.S Energy Information Administration (EIA) will be useful.

As we move on to the second part of the study and the proposed case studies, more data will be needed in addition to the ones mentioned above. Here the annual reports from the selected companies (and perhaps their main trading partners) will be thoroughly analyzed. Also government reports will be useful in analyzing government policies. Here is also where some problems may appear, I expect that the case studies are likely to belong to companies/countries that use a

different language than what I can master. I am aware that language, transparency, time and financial barriers may pose some constraints to the availability of data. But at the same time I'm confident that I will obtain sufficient amount of quality data to perform the research proposed in this report. I have already looked into some possible help with translation of foreign documents, such as government and company reports in Chinese, Arabic, Russian or Spanish (what is needed will depend on cases chosen). Furthermore, even though not confirmed there appears to be possibilities for some funding from related research projects at the Central European University.

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