

**Diversity on the Norwegian Continental Shelf:
Example of how politics and behaviour of companies interact**

**Master of Science of Energy Management
EN310E 003**

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Bodø Graduate School of Business

May 2010



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PREFACE

This thesis is the final thesis of our Master of Science in Energy Management at Bodø Graduate School of Business and MGIMO University in Moscow. This thesis is mandatory in the master program and counts for 30 credits. The thesis aims to understand the driving forces of diversity on the Norwegian continental shelf, with the use of intuitional and evolutionary theories.

ACKNOWLEDGEMENTS

We would like to express our gratitude to all that have helped and contributed to the making of this master thesis.

“Honour to whom honours is due”

A special thanks goes to our excellent supervisor Anatoli Burmistrov, how has guided us through our work with this thesis. We are forever grateful for your contribution.

We are deeply grateful for the knowledge and insightful information that Helge Sørås have shared with us in the empirical chapter.

In addition we want to acknowledge the support from all governmental institutions for providing us with their data collections.

Bodø, 19.05.2010

Morten Bergstrøm Hillestad

Per-Arne Eliassen

SAMMENDRAG

Siden Norge for første gang ble kontaktet av et utenlandsk oljeselskap har det vært snakk om mangfold. Denne oppgaven tar sikte på å klargjøre hva mangfold er, hvordan mangfoldet blant selskapene på norsk sokkel har utviklet seg og hvordan norsk politikk har påvirket dette mangfoldet. Dette har blitt gjort gjennom å kartlegge aktiviteten blant aktørene på norsk sokkel, for så å sammenligne denne med informasjon samlet gjennom intervjuer og offentlige dokumenter. Det er også forsøk å gi en bedre forståelse av hva som blir lagt i begrepet mangfold når vi snakker om norsk petroleumsindustri.

Oppgavens konklusjoner bygger på bruk av institusjonell- og evolusjonsteori. Gjennom disse teoriene er det forsøkt å skape et bilde av hvordan utviklingen av mangfoldet har vært, samt å illustrere hvordan politikken har påvirkning på mangfoldet. Studiet har vist at norsk politikk la føringer for utformingen av regelverket som har hatt stor innvirking på mangfoldet på norsk sokkel.

ABSTRACT

The petroleum industry has over the last four decades grown to the largest, and arguably the most important industry in Norway. How Norway should regulate and administrate the vast petroleum resources has been a hot debated topic from the very beginning. One of the first decisions made was that there should be a diversity of companies on the Norwegian Continental Shelf. This policy has been present ever since. This study has focused on the role of governance in relation to the diversity among oil and gas companies on the NCS. Our research question was:

“How has diversity of oil and gas companies on the Norwegian continental shelf developed, and how is this development related to Norwegian politics.”

This research tries to clarify the term diversity and how diversity on the Norwegian continental shelf has developed over time and how it is related to Norwegian politics. This has been done by mapping the activity among the players on the Norwegian shelf, and then compared this with information gathered through interviews and governmental documents. Even though the diversity term is used in many field of research and is commonly used in everyday language, it has no real universal definition. It seems to be used differently under different circumstances. It soon became evident that the meaning of the term, regarding the NCS, has been different over the years. A purpose of the study has also been to give a description on the mechanisms that lies behind the governmental efforts on reaching diversity on the NCS. There are several different types of actors that have different interest and goals on this subject. To get a holistic picture of the situation an institutional approach is used and to get a better understanding of the processes that lead to the development of mechanisms, which influence the diversity. For examining how the different policies influenced the diversity on the NCS, the study also uses evolutionary economics to try to understand how the mechanisms were affected and how they shape the behaviour of the companies. The study has shown that Norwegian politics have had a major influence on the creation of a regulatory regime, which has influenced diversity on the NCS.

The research also shows how the government have very effective tools by which they try to control the industry. By having in place a licensing system the government had control of who was permitted to conduct petroleum activity on the NCS. It is tried to give an historical overview over the change in dynamics of the oil and gas companies on the NCS. Statistical

data, which mainly is presented in the empirical part, shows us that there have been identifiable changes in the dynamics and behaviour of the companies on the NCS, which have affected the diversity

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SURVEY OF ACRONYMS

CEO: Chief executive officer

DNO: Det norske oljeselskap

IOC: International Oil Companies

NCS: The Norwegian Continental Shelf

NOC: National Oil Companies

NOK: Norwegian Krone

NPD: Norwegian Petroleum Directorate

O&G: Oil and Gas

SDFI: State's Direct Financial Investment

SSB: Statistics Norway/ Statistisk sentralbyrå

SME: Small and medium sized enterprises

Definitions

Ministry of Petroleum and Energy: The main task for the ministry is to ensure and coordinate energy politics, in such a way that it gives high wealth creation through efficient and environmentally friendly administration of the petroleum resources.

NPD: The Norwegian Petroleum Directorate is the governmental tool for regulating all petroleum industry in Norway. NPD is a sub department of Ministry of Petroleum and Energy.

INTSOK: Is a foundation for Norwegian oil and gas Partners. The Norwegian government established INTSOK in 1997. INTSOK's main goal is to help and promote Norwegian petroleum industry internationally.

OLF: Non-governmental organisation representing the interest and work environment for the Norwegian petroleum industry.

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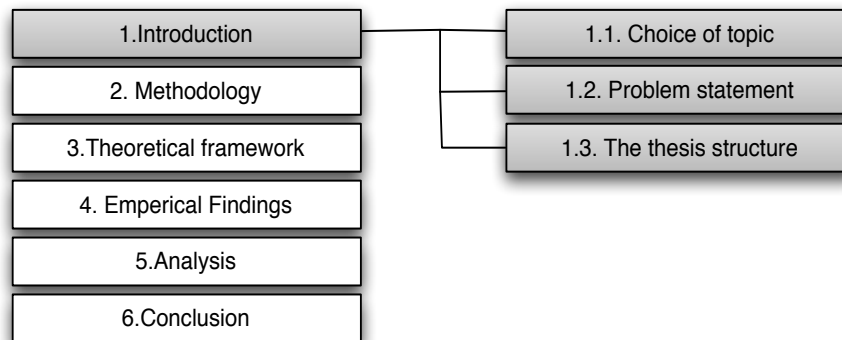
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1. INTRODUCTION

"The cure for boredom is curiosity. There is no cure for curiosity."

Dorothy Parker



In this chapter we will give an introduction of the thesis. We will present our background, motivation and purpose of the research. Furthermore we will give an insight in the data collection and theories that we have based our research on. The structure and limitations of the thesis will also be presented.

1.1. Choice of topic

We started our planning for this master thesis in the fall of 2009. Both authors wanted to take a closer look into a topic that has not been extensively researched. Since we are students in the Energy Management program, we found it most interesting to write our master thesis about a macro economical subject that involves the Norwegian oil and gas industry.

When we started reading different articles and books about Norwegian petroleum politics we found a common denominator, which triggered our interest. The characteristic was the high focus on diversity from a lot of the stakeholders in the industry.

When we started investigating the topic, we found that this is a highly debated topic in Norwegian newspapers and public press. The challenges and benefits that diversity has is also a topic that often comes up during dialogues between key players in the industry.

Erik Haugane from Det Norske has on several occasions spoken warmly about the benefits a broad diversity gives:

“A greater diversity on the Norwegian continental shelf will create stability in the industry, also in regard of jobs on land.”

Erik Haugane (Norwegian petroleum society, 2005)

It has not only been the players in the industry that has spoken and been concerned about the diversity on the shelf. As late in 2005 the governments Soria Moira Declaration stated that diversity is one of the key elements for further development the shelf and the industry

“To ensure a stable activity in Norwegian Oil and Gas industry; we need to be world class when it comes to technology and environment. To achieve this we need a broad diversity of private and state owned, small and large, companies.”

Soria Moria, 2005, chapter 14th

Much of the high focus on diversity we have seen the last years is much due to the merge between Statoil and Norwegian Hydro. The announcement of the merge led to a public debate on how the merge would affect diversity, and that the Norwegian continental shelf (NCS) now where controlled more or less by a single actor. To defend this, Helge Lund, the CEO of Statoil, went public with his opinions on the diversity on NCS at an oil conference in June 2009 (DN 16.09.09). Lund argued that there are room for both smaller and larger oil companies on NCS, but that the true challenge is to get a sustainable diversity. With this in mind, Lund says that NCS need a diversity of companies that have a long-term commitment.

We found that the government has done several political changes the last ten years to ensure that newcomers find their way into the market. A change in the tax regime in 2005 had big consequences for the ability for new small companies to establish in Norway. The tax regime gives the new and old companies in NCS a large plough-back ratio on their investments. This is done by letting the companies get reimbursed by the state of the portion of operating costs in the same way as a company in a tax position would be deducted from the income before taxation. This amounts up to 78% of the working expenses covered by the Norwegian government. For a small company with limited cash flow this could mean life or death in their early phases. The main result of this change in tax regime can already been seen. Today there are several small companies that have been founded since 2005. This is just the recent years evolvment, but the focus on diversity has been an

issue from the early beginning in the late 60s. The NCS has been based upon the principle of state control, combined with commercial diversity and competition. Many claim that this has been the key factor for the success on NCS for both the state as companies involved.

When all this is said, we can see that the problems and challenges surrounding diversity are complex, and not something that can be taken lightly. The complexity in the challenge we have outlined above is our main motivation for this master thesis. We will take a closer look into how the diversity has progressed since the early days and until now, what has been done to maintain diversity and how diversity has been affected by the change in politics.

1.2. Problem statement

This is not a open market, but a market controlled by the government. Through the granting of exploration licenses the Norwegian government has been able to exert control in the market, compared to other regimes that have a more market orientated allocation, e.g. through auction. In this thesis we would like to explore the connection between governmental control and diversity. To be able to analyse the context between diversity and the governmental politics our problem statement is as follow:

“How has diversity of oil and gas companies on the Norwegian continental shelf developed, and how is this development related to Norwegian politics.”

As stated we would like to explore a field that have not been done much research on before, as well as having the possibility to break new grounds in our research. Since the topic involves a broad aspect of economics and politics, we felt that our broad educational background gave us a good foundation to build our thesis upon. The question itself is broad; this is something we did intentionally to be able to map out a better overall picture and understanding of the situation and historical challenges. In regards of the term *diversity* its definitions are as diverse as the term it self.

1.3. Reflections over data collection and theoretical choices

A purpose of our study has been to give a description on the mechanisms that lie behind the governmental efforts on reaching diversity on the NCS. There are several different types of actors that have different interest and goals on this subject. So to try to get a holistic picture of the situation we found that an institutional approach could help us get a better understanding of the processes that lead to the development of mechanisms, which

influence the diversity. The institutional theories are built upon the notion that people and other actors do not, necessary, behave rationally, but that decisions are influenced by human emotions that is less rational such as the lust for power, ambitions, ideology etc. We think that a more mainstream economical approach where actors are viewed as rational, will miss out on much of the process that lead to the creation of institutions and mechanisms that influence the diversity among companies on the NCS. The institutional theory is used as a framework to explain how organizations act in conformity with their environment. We have describes the different authorities within the Norwegian oil and gas industry, and how they have adapted over time to cope with the changes made to ensure diversity on the NCS. To best understand the challenges we will also describe the interaction between the players that interact on the Norwegian petroleum industry and how the focus has changes over time.

To be able to answer a question like this we have done an extensive pre-study of the phenomenon to sort out what data that was important. Our data finding are presented together, but are combined from several sources to try to give a less bias presentation. We feel that this will give the best possible explanation for our problem statement. To do this we have used interviews, public available governmental documents and statistical data.

In addition to institutional theory, we have used an evolutionary approach to try to examine the dynamics of the companies in response to the changes in the institutional environment they operate in. We find the evolutionary approach suitable to our thesis as it is can help us understand how the situation is the way it is, and how it has got there.

Much of the data we used to describe the situation have been collected through secondary sources such as: White papers, statistics, and public accessible information from different companies. However as the topic we want to investigate is quite subjective we find that it will be important to get some primary data from different sources. To measure the impact of actions taken by the government we have used a statistical material to develop a historical overview of the changes in the numbers of active companies on the shelf. From this data we can get an impression on how the changes made from the government has impacted the numbers of new licenses granted to new and old companies.

To try to get a better understanding than we could get from secondary data alone, we have performed interviews with different actors and one expert within the field. This was done with two types of interviews: first, a general interview for the sake of mapping out different tendencies and thereafter a few in-depth interviews. The in-depth interviews were done with two different governmental authorities and an expert with many years of experience in the field. From the government's side we want to determine what they really mean when they use the word "diversity". Has it changed over time or is it still being used in its original meaning? Is their take on the term different from other market players? From our interview with the expert, we have asked much of the same questions to get the companies' angle and opinions about diversity. These questions are important since we were going to analyse the diversity in the different periods, and therefore need to know how these parameters have changed.

This thesis deals with an issue that is complex in nature and arguably has inexhaustible variables that influence the matter. An important element that gives limitations to the thesis is the choice of a theoretical framework, which gives greater emphasis on certain aspects. This is necessary to be able to make sense of a complex reality and not ending up with a swarm of different data and assumptions that would be hard to draw conclusions from. Factors that often are more central in other approaches such as the oil price are given less weight in this thesis. This is partly because it goes somewhat outside our problem statement, and that such factors are complex themselves and would require more time and resources than we had available for this master thesis. We hope that this research will shed light on certain aspects that are important, but are aware of the fact that it will not result in a complete description of the subject. This is arguable the case for most of research on complex social cases. We hope that our findings can be of value for the petroleum industry in general, for further research and other students. The biggest value that we think this thesis will bring is to highlight the importance that diversity has played in the development of the Norwegian petroleum industry.

1.4. The Thesis' Structure

The structure of this thesis is based upon formal requirements combined with how we find it logical to present the information. We have used the theoretical theories as a way to help us structure our empirical findings; hence we felt it best to present the theory before the empirical part. Our thesis are divided into six different main chapters:

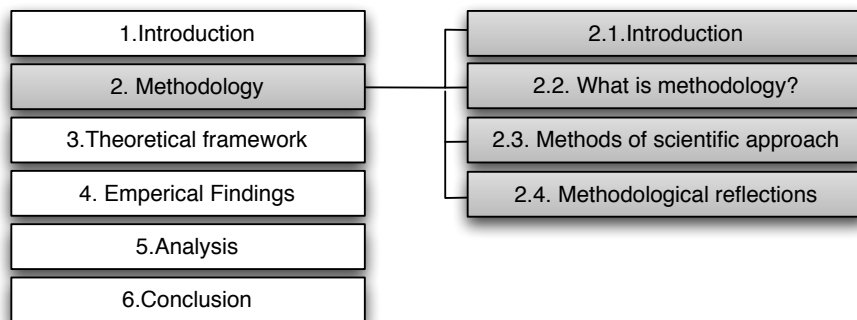
1. Introduction
2. Methodology
3. Theoretical framework
4. Empirical findings
5. Analysis
6. Conclusion

In the *introduction* chapter, we have summarized and elaborated the problem statement, as well as discussed the limitations and possibilities that our problem statements gives. *The Methodology* shows how we have worked during the research process and how the research has been done. The *theoretical chapter* describes and gives the theoretical framework that is being linked in the analysis with our empirical findings. In the *empirical findings* chapter we present our data collection. The context and history of Norwegian continental shelf (NCS) is presented in this chapter. The empirical chapter can be looked on as a first degree of our analysis. The main analysis is done in the *analysis chapter*. In this part of the thesis, we will draw lines between our empirical findings and the theoretical framework. In the conclusion, we have presented our main conclusions from this study, we have also presented some suggestions to further studies within the field.

2. METHODOLOGY

"If I have seen further than others, it is because I have stood on the shoulders of giants"

Isaac Newton



2.1. Introduction

In this chapter, we will give a presentation over our methodology and the scientific approach, and try to outline the reasons for the choices we have made during our research. It is important for several reasons to be aware of your, as a researcher, epistemological, ontological and methodological premises. It can help interpret data and context, and just as important, it will help see your own shortcomings and how your own worldview can impact and colour data. It is also important in developing research design.

The aim is not to have a give lengthy philosophical discussion, but rather to increase the general understanding of how we have done our research.

What is methodology?

The word method comes from the Greek work *methodos*, which means to follow the road to the goal (Johannessen, et al., 2004). The research methods are the tools the researches uses to collect, intrepid and analyse the data and shed a light on the topic at hand. Methodology concerns the collecting, analysing and interpretation of the collected data; this is the essence of empirical research. The most important factors of empirical science are systematic, thoroughness and openness (Ibid). Hellevik (2002) writes that the knowledge of methods helps us reach appropriate goals in our research. By using pre-tested methods of other researchers, we are more likely to find our results, then by trial and error.

2.1.1. The authors background

We are aware that our academic and social background affects the way we observe and intrepid in the research process. As social constructivist we found that interviews gave us a good insight in the complex phenomenon we are researching. To what extent this is a result of our academic training, which focused mostly on this philosophical direction, is hard to assess. We feel that social constructivism gives us a better way understand the complex of situations like to one we are looking at. Both authors of this thesis have attended the Energy Management program. The first semester in the program is similar to other programs and includes general economics, business administration and management. Before attending the Energy management program, we both have attended programs that include finance and traditional economy. We therefore have a great interest in economics and a broad background within economics. For one of the authors the challenge of being an researcher is new, while the other have already done a study within finance and monetary regimes in Norway. We both feel well prepared for the assignment as researchers since we have had several methodology courses and large assignments during our years as students.

The problem at hand is not an easy task to fulfil, one of the reasons is the lack of research that has been done within the field before. We feel that our background and commitment to the topic and macro economical topics can help us a long way on our study. To be able to present a complete answer to this complex question will be almost impossible, but we feel that this thesis will give deeper knowledge on the subject and open up for further study within the field.

2.2. Methods of scientific approach

The process of this research has been in accordance to the phases described by Smith et al. (2008). The four different phases in our research will be presented in this subchapter, as well as our thoughts around the challenges that the phases represent.

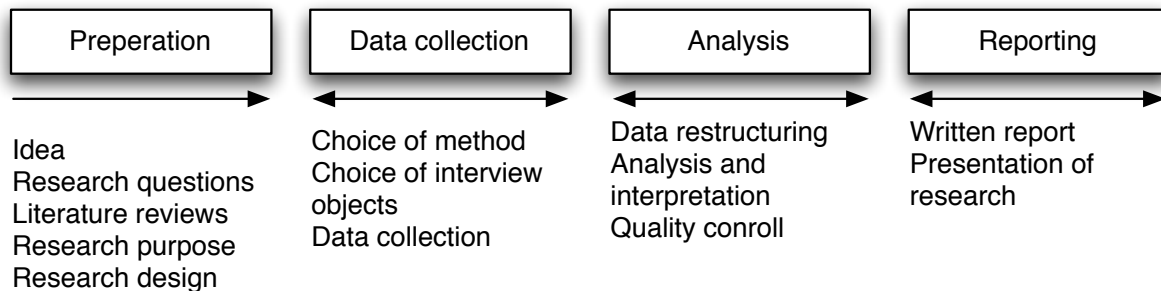


Figure 1: Summary of our research design

Since there are no obligatory oral presentation of the thesis this part of the reporting will not be described.

2.2.1. Stage one: Preparation of research

We started our planning for this master thesis the fall of 2009, both authors wanted to take a closer look into a topic that hasn't been extensively researched. Since we are students in Energy Management program, we found it most interesting to write our master thesis about a macro economical subject that involves the Norwegian petroleum industry. After an extensive amount of articles and books about Norwegian petroleum politics, we found a common denominator, which triggered our interest. The characteristic was the high focus on diversity from many of the key players in the industry. We found the challenges in regards of diversity on NCS very interesting and a challenge that suited us well. We saw that this topic had not been deeply examined before both as a challenge and as motivating. From this we had an idea on what we wanted to research. Since the term diversity is a broad and not easy to define we need to start our data collection in order to get a good understanding of the topic before finalising our research question. When doing this we started with a broad perspective and then narrowed it down as we went along. This meant that we had to go back and forth between the different stages in the research. When we felt that we had a good understanding from our review of available data and information, we took our idea and narrowed it down to our research question.

Our philosophical point of view also reflected in the choice of theories. The theories that we have chosen describe social interaction among humans and organization, and do not automatically base decisions on rational behaviour, like most neo-classical theories. The finalisation of the research question lead way to find theories that was relevant and could be used to analyse the topic. In dialogue with our academic supervisor, we found several good theories that could be used. We found it important to use theories that had the ability to give greater insight to the empirical material. Since we are using the theories to understand our empirical findings, our research would be described as a deductive research. Since we have done such a extensive research in our preparation stage of the research we feel quite sure that no one has a research that cover the same exact field before.

In the process of getting an understanding of this complex phenomenon, we have used circular process; we found that this was the best way to conduct the research. During the research we have moved back and forth between the different stages of the research.

Research design

To be able to do an organized and a well-structured research the choice of research design is important. What or who is going to be researched, and how it is going to be researched is what we call research design. Easterby-Smith et al. (2002) argues that the research design is key to be able to reach the goal of the research and the researcher.

Quantitative or qualitative method?

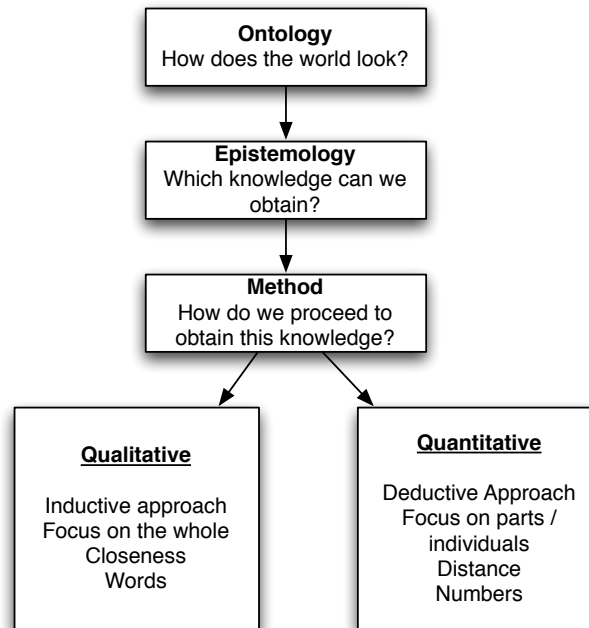


Figure 2: Qualitative and quantitative methods (Nyeng 2004)

Since the phenomenon we are researching is a social one, it is hard to only use a quantitative method. We are analysing a social phenomenon and we therefore find the qualitative approach as to best suitable for this. This means that our research will be a qualitative thesis, something that leads to the fact that it is hard to generalize our findings. When this is said we also need to emphasise that we are going to use some statistical data to be able to triangulate and interpret the effects the governmental action have had on the market of companies on the NCS. The statistical data that are used will be analysed and presented in a qualitative fashion. It is important to choose the method that can answer the research question and to be able describe all elements in the process (Johannessen, et al, 2004).

Case study

Furthermore we found that the case study was particularly valuable when illustrating an abstract concept. Since we wish to collect data from several sources, both statistical and personal options in interviews, we found that case study had qualities that would allow us to try to get a broad understanding of a situation, as it is not a linear research process. Our goal is to identify the elements that affect the diversity in the population (companies) on the NCS. The ambition to try to give an in-depth description of the situation, the entities and the nature of the community through secondary data and interviews is also a characteristic that suits the “case-study” well. By not choosing a case study for this research, we would have had a hard time setting the boundaries of the research. Yin (1994) describes the case study as a good method to give meaningful characteristics to *real life experiences (social)*, and be able to understand them in a more holistic way.

2.2.2. Stage two – Data collection

When we started looking for data we found that the best way to do this was to start by reading about our topic in articles, newspapers and other public available journals. This was important to get an overall better understanding of the objective of our research, to be more qualified to distinguish between relevant and irrelevant data.

Secondary data

When we are talking about secondary data in this thesis, this is articles, public governmental papers and historical statistics. This data has in general been constructed for other purposes than the one at hand. The secondary data we have collected are available for the public, and are mostly used for providing a historical perspective and better understanding. How other researcher and institutions have understood a phenomenon and data interpretations is useful to create a foundation of our research.

The biggest advantage of using secondary data is that it is less time consuming to collect, compared to primary data (Zikmund and William, 2003). In our research we have used many sources of secondary data. This includes scientific literature, e-books, laws and regulations, public governmental articles, statistics (SSB) and public accessible information from different

companies. The secondary data has been collected through different databases; ProQuest, Scopus and Google Scholar. With Google Scholar, we have been able to find research papers that are public available on other databases than the once found in our main databases at the university. We have also found useful data through previous thesis and research's reference lists.

We have also build a tool in Visual Basics to help illustrate the changes the governmental policies have had on the amount of companies on NCS. This data was also collected from public available statistics.

Primary data

From our secondary data we built an understanding on where to find the important inputs in regards of whom we where to interview for our primary data. Our primary data is collected through interviews and correspondence on email. To shed light on the problem at hand, we needed some first hand experience. From our secondary data we had already mapped out what authorities to interview. We also found that we needed to interview someone experienced and has a long history within the Norwegian petroleum industry. This would be our expert in the field. From the public available governmental documents, we already knew that the challenges of diversity were a priority among both the government and the players in the industry. We therefore found it important to get a understanding from both perspectives.

To find informants to interview, we spoke to with representatives from governmental institutions on how we could get hold on persons who would be most suited for our thesis. This is often referred to as a snowball sampling research, after a few phone calls and emails we had our representatives from the government. A few days after we had spoken to our informants on the phone, an introduction letter was send to them with our problem statement and the topics of the interview. After this the actual date and time for the interview was set. To get in touch with someone that had a long history from the petroleum industry we thought would be a challenge, but our supervisor had already located an expert for us that met all our demands.

From the government we interviewed Eldbjørg Vaage Melberg from Ministry of petroleum. Melberg is currently a press contact from Ministry of petroleum and energy, and hold several years of experience in the Ministry. The Ministry is responsible for energy, including petroleum and natural gas production on NCS.

Our other represent from the authorities was Espen Haugen from The Norwegian Petroleum Directorate. Haugen works as an adviser in the oil and gas department for The Norwegian Petroleum Directorate. Haugens position is within the exploration section that deals with the exploration licences.

To represent the oil industry we needed someone that had a broad history from the market, for this Helge Sørås was the perfect match with more then 40 years of experiences. Sørås started working with the tax system of the Norwegian oil industry in 1972, and has since then worked for Phillips Petroleum/ConocoPhillips, OLF and ENI. Sørås' main tasks have been governmental tax system and tax reduction for the companies, as well as policies, communication and commercial sale.

Since we are doing a qualitative study the ideal sample size should be around 10 interviews (Johannessen, et al, 2004). Since our time was limited and we had an extensive amount of both statistical and governmental documents, we felt that three in-dept interview was enough to answer our question. The combination of the three informants we also felt that we have made a good representation of both the companies' side and the governmental point of view.

The interviews

When the guidelines for our interviews where written it was important for us to keep the interview progressing as natural as possible. We therefore made a semi structured interview guide. The interview guide was divided into different topics that we wanted to know more about. When the interview started we had no strict structure on what questions was to be asked, but tried to control the topic discussed. This made it possible to jump back and forth between the different questions, something we found useful since it gave us more information then we actually asked for, it also opened up for follow up questions. All our interviews had this semi-structure disposition, with predetermined topics and a set of

questions. The questions that we made for our interviews were based on the knowledge we gained from our literature reviews and secondary data collection.

For the interview questions themselves, we found great guidance from literature. To not ask questions that are statements, but questions that encourage a discussion and reflections around our topics. (Johannessen, 2004:149). Another technique we found useful was to listen to what the object actually are talking about, this was important to be able to ask good follow-up questions.

In regards of our interviews, we divided them into two different types of interviews. The representatives from the government was interviewed by phone, and asked follow-up questions by phone and email. When doing an interview by phone this restricts the time one can use, this therefore gave the interview a more strict guidance than the other interview. Before our interviews, we had done a lot of research on the departments roles and influence on the NCS. Since we wanted to make the interview as natural as possible, we started by asking a few “warm up questions”. We felt that this could make the interview get a better flow, but found this somewhat hard to do, due to the time limitation of the representatives. This was especially hard in one of our interviews. The interview object expressed few personal opinions, and gave us mostly textbook answers. This could have several reasons, but we feel that we could have got a better interview if we had done a face-to-face interview.

The interview with Sørås was done in person in an office at his hotel. The reason for this choice was more or less for it is convinces, since he is a busy man who has little spare time.

During all our interviews, we used a digital voice recorder, as well as writing down key points. This has made it much easier for us to transcribe the interview afterwards, and gave us the opportunity to focus on what the person interviewed said, rather than taking notes. Another thing this helped us with was the ability to encourage the informant by being *active* during the interview, for instance asking for examples. We believe that this made the interviewed more confident and made them feel more helpful. Johannessen (2004) describe that the relation between the interviewer and the interviewed is important to gain good information and that this is the key element in a valid reliable research. We feel that

we manage to achieve trustworthiness and confidence in all our interviews, but then again this hard to tell from a phone interview.

2.2.3. Phase Three – Analysis

When we started our research we found it important to use a theory that could help us analyse our empirical findings, as well as structure the thesis as a whole. In our analysis, we are therefore using the theoretical framework as a tool to analyse the elements that has made an impact on the diversity on the NCS.

When we started to collect data we always kept in mind that the data that was collected should be able to shed light on our objective, with this in mind our analysis and data collection started at the same time (Easterby-Smith, 2002). During the collection of data, we constantly analysed all data and measured up against our goals for the research. This made it easier to distinguish irrelevant and relevant data from each other. Since we both have strong interest in the topic we often had long discussions in regard of our findings, something we feel has strengthen our thesis. To get a better understanding of our empirical finding, we found it important to organize our empirical finding in such a way that it was easier to analyse with our theories. This was done in the presentation of the data findings in the empirical chapter; doing this during the data reduction we thought was a good idea as a first degree of our analysis. This also helped us not to lose or overlook any important data.

We feel that one of the challenges during the thesis has been to deal with the term diversity, due to the nature of the term. Since diversity has a wide set of understandings, it has not always been easy to see the mechanisms and elements that we want to analyze. The theoretical framework we have used has helped us greatly to structure and interpret the data, as it clarifies a blurry concept.

2.2.4. Phase four – Reporting

Form

Since this is our master thesis, this set certain requirements to the presentation and form of the research. Our presentation needs to be structured in such a way that it can easily be understood by the reader. The thesis also tried to be written in a way that a reader that are not familiar or have extensive background knowledge about the NCS, would be able to understand our findings and results. This will make the research easier to use for further research on this subject. To be able to do this we decided before starting our writing that the thesis should be understandable for academic students and other researchers, as well as for oil companies. This is one of the reasons that the thesis is written in English, and not our mother tongue Norwegian.

To make the thesis more understandable we have made list of all figure and table used, as well as a survey of all acronyms. This is of course in addition to all the structuring and general “*language washing*” we have done through out the whole research process. We feel that it is critical that the thesis is clear and understandable to be able to contribute to this field of research.

Findings

Our findings are presented in the empirical chapter of this thesis. The empirical chapter has been divided into three main periods. The periods are chronological, and have further been divided into subcategories to understand the influence of the different elements during the period. This has been done to make it easier for us as researchers to analyse the findings, and for the readers of this thesis to understand the different elements in the period. Since the empirical findings is presented in a linear historical line, it will be easier to read and grasp the changes in the period, rather than presenting each element for themselves from the start in 1958 until today.

Analysis

In our analysis chapter, we have used our theoretical framework to present and analyse the different elements presented in the empirical chapter. We explain how we understand the changes and how this can be understood using our theoretical framework.

2.3. Methodological reflections

Our research have several strengths and limitations, this has much to do with our choice of methods and design. The case study allows us to go in-dept of the phenomenon of diversity, this also make the conclusions and results from the research hard to generalize. Another limitation is the fact that a source for empirical data is people's opinions and interviews. This type of empirical data can affect the credibility of our thesis (Easterby-Smith et. al, 2008). To be able to see the meaning more objective we made a statistical model that we have used as an external variable to control our informant's information. This triangulation of statistical data, interviews and public available governmental documents we feel is the biggest strength in our thesis' credibility. The validity and reliability of the research is also important to take into account.

We have controlled the validity by ensuring a conceptual/expressions validity through out the thesis, both internally and externally. What this in general means is that we, as a researcher, have understand what has actually been measured. To test the validity we have let other professional in the same field go through the research. The professional have then given us feedback upon if he thinks the results are valid and reliable.

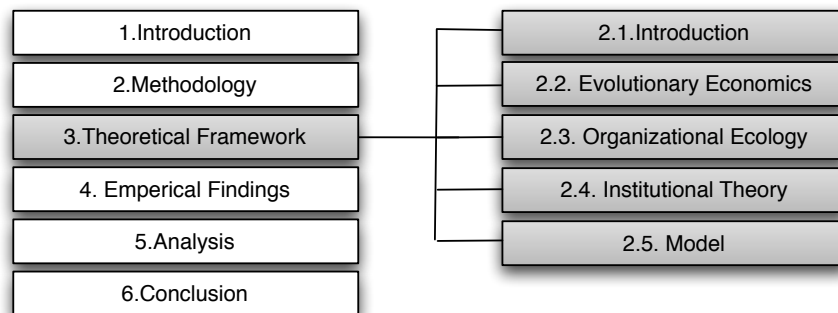
The main cause of error in a study like this is wrong interpretation of the collected data. Since we have researched a somewhat social phenomenon it can be hard to test this with other methods then the once we have used. Both since the circumstances around our interviews with our informants and the fact that the term diversity can be interpret differently in another time and place. This is why we find this methodological chapter important. In this chapter, the reader will find our methods, and thereby understand how our work process has been conducted.

2.3.1. Ethical considerations

During the process of this research, we have both been clear upon what the guidelines are in regards of the ethical considerations. Since our thesis are not involving people directly, we have not encountered personal or other potentially private information that should not be included in the thesis. Therefore, we have focused more on the way our data from the interviews has been handled and how we interpret it. To be consistent on how the

sentences are being translated into English, and not to twist and turn on the informants words and sentences in a way that would make them more interesting has been an important consideration. This could easily have been done, but we have taken our role as researches serious and kept all on a professional level. As researchers, we take full responsibility for the research and for how it is presented. The responsibility does not only regard the interpretation, but we do also take the responsibility that all the methods and data we have used are correct.

3. THEORETICAL FRAMEWORK



3.1. Introduction

In this chapter, we will introduce the theoretical materials that have served as an analytical framework for this thesis. We used a couple of theoretical approaches to try to describe and understand the processes that have an influence on the diversity on the NSC. We have not seen those theories as separated, but rather having a bit different focus. Both the institutional theory and evolutionary economics and organizational ecology, which we have used, we feel are very relevant to the situation we want to describe. They are more closely described later in this chapter.

As we wanted to look closer in what influenced the diversity on the NCS, a logical first step was to try to define diversity, this proved to be a bigger challenge than we anticipated.

The term diversity is used in many situations and to some extent has a positive sound to it. The first think many think about when they hear the word is probably racial and cultural diversity, which has been a hot topic for many years in most of the Western world. In these sorts of circumstances, the word has, to a certain degree, a value in its own right.

Diversity has also been an important notion in economics. Many economical theories and models uses factors were diversity, often implicit, plays an essential role, such as competition, labour, and consumer choice (Stirling, 1998). It is not only the neoclassical economical theories that rely on diversity; in a wide range of fields of economic interest there are attempts to explain diversity, both empirical and theoretical, such as science (Campell, 1974), technology (Nelson and Winter, 1977) organizational forms (Hannan and

Freeman, 1989), business organization (Chandler, 1962) and strategic management (Levinthal, 1995).

Even though the diversity term is used in many field of research and is commonly used in everyday language, there is no real universal definition of it. It seems to be used differently in different circumstances. Laursen (1996) find it striking that the term is used in many discussion without defining the concept at all. Andrew Stirling (1998) has surveyed the broad literature that includes diversity in multiple disciplines. Stirling tried to find the general properties of the term and claimed that there are three distinct general properties. He categorized them as variety, balance and disparity.

- **Variety.** The number of categories a quantity can be divided into. Greater variety translate into greater diversity, all else being equal.
- **Balance.** Describes the distribution of a quantity over the categories. Greater the balance, when all else is equal gives greater diversity.
- **Disparity.** Describes how much the categories themselves differ from one another. Disparity is context dependent, but more disparity is equal to greater diversity.

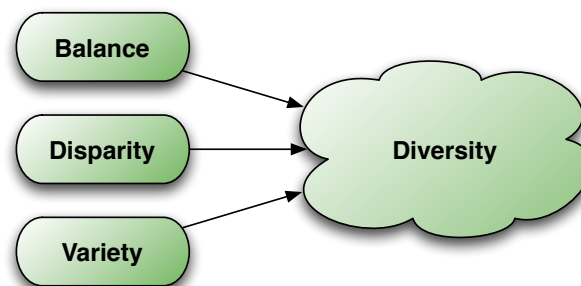


Figure 3: Elements of diversity

Stirling (1998) argues that when the diversity term is used under different conditions it is usually referred to a combination of the properties described above and not one of these in isolation.

After reviewing a lot of theories and models on how to describe and explain diversity, we quite early on figured out that the mainstream economic models, i.e. neoclassical economics, did not suite our particular case very well. It can be argued that the situation on the NCS lacks many of the characteristics that underpin the neoclassical model, such as a free market. As we also wanted to examine how the political situation had influenced

diversity, we wanted to use theory that helped explain the context, which mainstream economics usually puts less weight on.

After much review over different theoretical approaches we decided to use a combination of theories as we felt they separately had strengths on certain elements we wanted to explore. We will here give a short description of the theories and why we felt it suited our thesis well. A more thorough description on each theory will follow.

Institutional Theory

Institutional economics can be described as holistic and systemic. It is less focused on the resource allocation through a price system and has more focus on the organizations and control of the economy. In other words, neoclassical models work within certain parameters while institutional theory analyse the evolution of the parameters. The fact that institutionalism tries to take the whole context into account was important, as we wanted to try to explain not just how the diversity have changed, but what influenced it as well.

“Institutional economics has had an appreciation for the centrality of power and conflict in the economic process.” (Samuels 1988: 71).

Evolutionary Economics

Evolutionary economics builds on experience and terminology from biological evolution and Darwinism. The purpose is to try to explain why a certain state is the way it is and how it got there. As organizational ecology stems from the evolutionary approach, we give a description on the mechanisms that influence the selection process.

Organizational Ecology

There are many theoretical approaches that stems from evolutionary economics.

Organizational ecology is one of them. We felt that this approach suited us well as its emphasis is environmental influence on population over a long period. It focuses on the whole rather than the individual. The choice is also influenced by how accessible the data is. The level of analysis, the population, fits well with public available data.

3.2. Evolutionary Economics

The process of evolution consists of three basic elements, according to Levinthal (1992), namely variation, selection and retention. These concepts also work in such a fashion to give rise of diversity among companies.

3.2.1. Variation

There are several mechanisms that create variation. The motivation for profit is important in a capitalistic system as this works as an incentive for entrepreneurial efforts. These are not always successful, but they give rise to variation on a population level. Innovative activity can also take place in already existing companies. In this area, it is done much research to try to design incentive systems to help improve quality or efficiency in a company. (Ghemawat, 1992)

March and Simon (1958) claims that a mechanism for creating variation is an organization's search for new solution in the same area as their current alternatives. Leventhal (1994) argues that there might be many local solution for a certain problem, and that a local search is highly dependent on the starting point of the search process. Thus, the tendency to start from current alternatives makes the new solutions partly path and history dependent. In other words, the diversity in a population at any given time could be the result of an evolution of already existing diversity from an earlier point in time. Ecologists, (Hannan and Freeman, 1977), have focused more on the niches of the environment as a mechanism driving variation. Contingency theories, (Lawrence and Lorsh, 1967) also argue that features of companies relates to the environment they operate in.

Levinthal (1996) claims that the variation observed comes from a combination of the founding conditions in combination with local search.

The term feedback is used to describe the tendency for companies to focus on areas where they are already experienced in some way. It could be that a market leader could cut cost as it has a big share of the market, and thus helping it grow its share, a positive feedback. This trend of exploiting existing knowledge can make organizations less likely to react to changes in the environment, as the already established paths feels more certain. Past search for knowledge might even stimulate for greater commitment to this path, as they develop various competency learning. This process amplifies the heterogeneity in a population.

The managements' role of choosing directions and strategies for a company is constrained by feedbacks, but the structure of a company could also act as a constrain. The people in charge are likely to be committed to the current course of action. This tendency is explained by several reasons such as psychological (Staw, 1981) or that changes in strategy represent a threat to already established power structure (Boeker, 1989)

3.2.2. Selection

Phenotypic and genotypic are two terms that comes from biology, but have comparable meanings in evolutionary economics. Genotype describes the fundamental elements that a phenotype consists of. In biology it is the genes (genotype) that give rise to certain features of a creature (phenotype). In economics, the genotype is the different traits and functions (Nelson and Winter labelled it as 'routines') in an organization (phenotype). The organization is the entity that actually goes through the environmental selection, as is the creature in biology. As described in 'variation' above there are mechanisms that produce variation of genotypes and thereby phenotypes.

As the phenotypes are the one who undergo the selection pressure it can consist of genotypes that is not necessarily the best under the circumstances. The selection pressure at one level does not need to be as strong at a lower level. Therefore, if you want to explore the organizational capabilities (genotype), a focus on the phenotypic selection can be misleading. Levinthal (1996) suggest that trying to map the various genotypes of an organization to an effectiveness measure, as survival rates in a population, can be exceedingly complex. They claim that the attempt to combine this to levels of analysis is underdeveloped in evolutionary economics.

Selection environment

The selection mechanism of business enterprises is usually analogue to a competitive market where less effective organizations are driven out. This fitness-based selection is by Levinthal (1992) thought of as a 'natural selection environment'. Meyer and Zucker (1989) argue that the selection process don't have to be based upon performance measures per se.

Organizations can be shield from such 'natural selection' by different rules or governmental intervention.

The selection criteria change over time. This does not have to be the result of an exogenous change from the external environment, but could come from changes in a population. This is more closely described in the section of organizational ecology, which is mainly based upon the work of Hannan and Freeman. Perrow (1986) also points to the possibility for dominant organizations to influence the selection environment in which they operate.

3.2.3. Retention

Levinthal (1996:35) describes retention as: *“retention constitutes the mechanism for the preservation, duplication or propagation of positively selected forms.”*

The tendency to imitate or duplicate routines between organizations is another mechanism that influences the patterns of diversity in a population (Winter, 1984). Contrary to the biological view of retention, a certain characteristic is more valuable to a company the more unique it is, referring to resource theorists. The organization who posses it will have an enhanced competitiveness. This difference between biological evolution and resource theory stems from the different level of analyses.

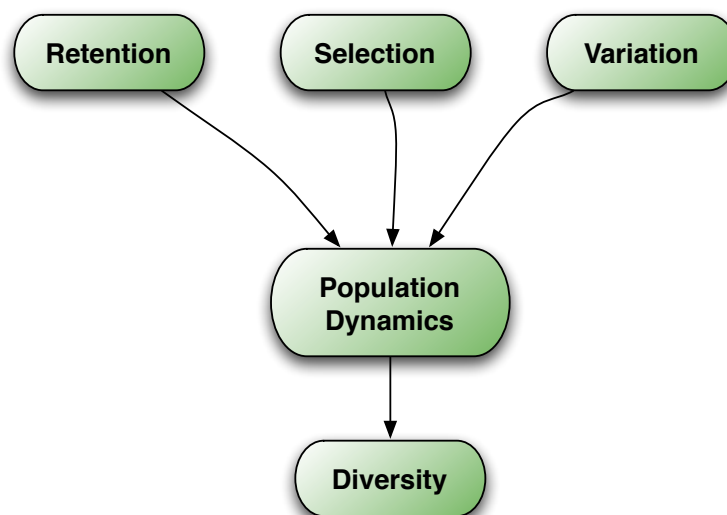


Figure 4: Mechanisms behind evolution

3.3. Organizational Ecology

Organizational ecology has got much attention since its introduction in 1977. The theory tries to identify what influence organizational populations and diversity of organizations when they emerge, die, grow and decline. We found that this theory gave us many insights regarding how the environment the businesses operate in influence them. It uses many aspects from biology, sociology, and economics to try to explain the underlying characteristic when it comes to organizational change.

When it comes to the environment in which organization and businesses on the NCS operate under it is highly regulated. Politician actively tries to influence it by laws and regulation to achieve certain goals. Changing national policies involve a fundamental change in the structure of many organizations. Whether the policies intentions can be absorbed quickly and efficiently is largely dependent on the responsiveness of the already established firms in the economy. Therefore, a thorough understanding of the dynamics of the organizational populations is necessary to try to identify what could be the outcome of such policies. How will the change in the environment influence the diversity? (Hannan and Freeman, 1989).

As we are living in a rapidly changing world, the ability to react to unsure future changes is a crucial ability of a society. Most efforts in trying to explain the effects the environment has on organizational diversity, emphasis the capacity to control uncertainty. It is a classic evolutionary argument that diversity of firms is a helpful hedge when it comes to unsure future environmental changes.

“Stable and certain environments almost surely generate low levels of diversity.” (Hannan and Freeman, 1989:9)

The organizational ecology theory has it perspective from the selection theories. We find it very suitable for trying to get an insight of the situation on the NCS as it has a focus on the populations of organizations as a whole rather than a perspective from a single organization, as many other theoretical approaches have. This method makes it easier to concentrate on the diversity and homogeneity of organizational structures. A key aspect is the emergence of new organizational forms and the termination or alteration of existing forms. The theory

tries to map the population dynamics amongst diverse organizations as they compete for limited resources.

An important part is to get an understanding of the demography of organizations.

“Demography of organizations considers variegations in vital rates of organizational populations. Founding rates, merger rates and disbanding rates. It considers variations in these rates both over time and between populations and seeks to identify basic regularities in such rates. It also tries to relate variations in the rates to patterns of change in environments” (Hannan and Freeman 1989:14)

3.3.1. Population

Population ecology tries to recognize demographic regularities when it comes to central happenings in organizations. This is not for the sake of explaining organizational change per se, but to better recognize the dynamics of organizational diversity and how environmental changes influence the blend of organizations. Diversity of forms is a characteristic of a population, and it is normal to develop proposal on the processes that is going on at the population level. Therefore, the unit of analysis is the population, not individual organizations.

You could go from the population ecology to a theory of organizational evolution if you connect the long-term patterns to the adaptations made in cross-sectional patterns. This attempt to explain the dynamics of organizational diversity by focusing on the selection processes resembles the Darwinian evolutionary position. Sewall Wright describes the term evolution as: *“Evolution always involves to some extent the opposite idea of persistence. It always refers in short, to processes of cumulative change”* (Wright 1968:1) Hannan and Freeman argue that the difference among forms and the historical progression can be described by the Darwinian principles and that the processes of change are general. In other words, the variety of forms does not only reflect the recent changes but is a result of a long history of founding and termination of forms. It is important to notice that this is from a population perspective. The organizations themselves have a fairly unchanging character. This is due to inertia in the organization, internal forces hinder most organizations to undergo a drastically change of strategies or forms. Diversity on a population level occurs

because there is a selection process favouring certain forms not as a result of changes within organizations.

Dynamics

The diversity of a group of organization can increase because of new forms are formed or because of a more uniform distribution of organizations over forms. Environmental influence can have an impact on the number of forms or by impact the relative quantity of forms. You also have organizations that change their fundamental characteristics and thus change from one form to another. When it comes to the terminations of organizations in a population, there are two main ways that happened, namely disbanding and mergers. In the most radical form a whole type of form can cease to exist. Historical examples are utopian labour unions (Commons et al. 1927) and the party press (Schudson 1978)



Figure 5: Diversity in a population

Hannan & Freeman (1989) argue that the selection process of organizations favour inert organizations that cant adjust strategy and structure at the same rate as the environmental changes. This is a reason for the argument to examine the rate organizations leave and join, and change in structures in a population as a reaction to environmental threats and opportunity. From the result, however, it is not possible to conclude that a certain form is better per se. A form that has been successful in one place or in one industry at one time do not imply that it would be best or even usable at some other time and circumstances. Under uncertain and unpredictable conditions, the apparent successes will vary from time to time as the environment change. Furthermore, it is not necessarily the case, that the selections in a population always produce the most efficient producers. Other factors, such as political connections, could be more vital for survival than efficiency.

Darwinism asserts that organisms only change when they go from one generation to the next. Stinchcombe (1965) claim that new types of organizations derive from a fairly short time period, and that after the initial spurt they change slowly. He also argues that organizations preserve traces of the socio-political environment of the time of the founding. This claim can give associations to the role of gene in Darwinism.

Boundaries of forms and Populations

An important part of organizational ecology is the notion of a population of organizations. Hannan and Freeman (1989) have several assumptions when trying to define a population. A key element is that the organizations have a mutual standing when it comes to the processes of interest. If members of the population are influenced in the same way by changes in the environment or other populations, it can be defined as unity or a population. In other words, the population display a very comparable environmental dependency. But this way to define a population requires an environmental change to be able to identify responses in growth rate, etc. Their second assumption calls for the possibility for a population to be recognized in a reasonable way on the basis of structures and social boundaries. This also gives the opportunity to give falsifiable predictions. A sensible way to classify organizations into forms includes core technology, stated goals, marketing strategy and forms of authority. These elements of the original constructions guide an organization to certain environmental dependencies and influence the long-term strategy.

Because of the inertial strength of organizations and the burden connected with starting new routines a normal way to change structures of organizations are mergers or acquiring other organizations. When this happens it tends to blur the boundaries between former forms of organizations. Another way to make organizational forms less distinct is joint ventures. Such blending processes can have a direct consequence for organizational diversity within a population. There are both segregating and blending processes involved in changing organizational forms over time. An important part of research is to identify what affect these boundary dynamics.

The chance for organizations to change strategies and structure complicate the use of ecological models. If the case is that organizations make essential changes fast and regularly,

it is problematic to say that a population have a unitary characteristic. To be able to use ecological models sensible you have to be able to identify stable forms and populations.

When organizations have a long history it acts as a damper on fundamental change. Organizations that have been around for a long time often develop standards of procedures. A normative behaviour for task and authority is established, thus raising the costs of change. These tendencies work as a constraint on change, either by preventing or by slowing it. It may also get in the way of considering radical responses to environmental threats and opportunities. In addition to internal pressures towards inertia, external factors also play a significant role. Barriers to enter and exit from a market are many, both legal and fiscal. Such barriers play a significant role in many theories and models trying to depict a market and the forces that influence it. Exit barriers may a significant cause when it comes to inertia (Hannan and Freeman 1989). It is important to notice that many researchers on organizational change do not share the assumption that organizations rarely change. For instance, March (1982) claim that organization change easily and continuously.

3.3.2. Organizational Mortality

Liability of Newness

Stinchcombe (1965) claims that young organizations have a greater rate of mortality because individuals and the new organizations themselves have a learning process when becoming social actors. They have to compete with already established organizations, which have established channels with customers and clients. Hannan and Freeman (1984) claims that forms that are perceived as reliable and accountable are more likely to succeed because of the selection process. For an organizational form to have these qualities it necessitate that it is very reproducible. With age the reproducibility of organizational forms increase as coordination, internal learning, external legitimating and other processes progress. They argue that increased inertia is a result of increased reproducibility, thus reducing the mortality rates with age.

Liability of smallness

How the size of an organization influences mortality rates is also an important field of research. Hannan and Freeman (1984) propose that inertia are positively linked to size, since selection processes in modern societies are such that they favour organizations with greater

structural inertia, larger organizations must have lower mortality rates. In an attempt to try to explain the liability of smallness, Aldrich and Auster (1986) have pointed to several disadvantages small organizations have in comparison with larger ones. It is often more difficult getting capital. The tax regulation of capital gains can be a motivating factor for owners of small companies to sell to larger companies. As government usually tries to deal with country and federal levels of government, their regulations have more impact on small organizations. The small organizations have a disadvantage when trying to compete with larger organizations for labour, as they cannot offer an internal labour market or the long-term stability.

Founding conditions

Stinchcombe (1965) claims that there is a connection between when an organization is created and under what kind of circumstances it took place, and how the organizational processes are formed. These processes then get institutionalized and withstand changes. So characteristics that is imprinted under the initial state of organizations can be transmitted by organizations their whole life. This argument has the consequence that current organizations is affected by their different founding conditions, thus some of the diversity we can observe stems from this mechanism. The different conditions an organization is formed give them different rate of mortality; therefore, this is interesting in the respect of selection processes that operates in a population.

Organizational change

The majority of ecological theorists claim that the most part of change in a population is due to changes that take place in the population level processes, i.e. selection processes based on founding and mortality rates. The changes within individual organizations play a significant less important role in the changes of a population (Singh and Lumsden 1990). Hannan and Freeman (1984) claim that there are several reasons why this is true. A key aspect is the internal structures and external environmental limitations, which lead to powerful internal pressures that severely restrain the organizational capacity to change. This has been claimed to be truer for the core organizational characteristics like the stated goals, core technology, forms of authority and marketing strategies.

It also been claimed that the special focus on the population level is a right perspective as the changes in individual organizations are of secondary interest.

From a more practical view it can be argued that a focus on a population of organizations is practical as most ecological studies depend on historical data gathered over long periods of time. The attempt to gather internal organizational data may be harder as much of this information may be harder to get your hands on (Singh and Lumsden 1990).

Inertia

Hannan and Freeman (1984) assume that certain forms of organizational changes often happen in organizations, even radical changes can occur. But the selection process function in such a way that organizations with inert characteristics have a lower mortality rate. And as stated previously, the older an organization is the more inert it gets. Aldrich and Auster (1986) claim that the liability of aging in older organizations comes from a mix of internal and external factors. The vested interest in organizations hardens with age, due to power distributions that get institutionalized. They also claim that organizations become internally more homogenous, this tendency lessens the organizations sensitivity to external changes, thus reducing the change of an internal change. Older organizations have a tendency to be more ingrained with their environment as they build exchange relationships that limit their independence and ability to change.

3.4. Institutional theory

Two of the most popular research fields connected with organizations have been organizational ecology and institutional theory. They were originally seen as distinct theoretical views, but in recent years there have been a development to suggest a convergence of these theories (Singh and Lumsden 1990). There are two main aspects that have been highlighted – how changing institutional environments influence the ecological dynamics, and how the ecological dynamics affect institutional change. We find the idea of trying to connect these theories interesting. We think it may help us better understand what might influence the dynamics on the NCS. Since the government has such an integrated role in forming the environment for companies on the NCS we feel that a combination of institutional theory and organizational ecology could give us a broader picture. An interesting aspect would be to look on how the effects of institutional variables affect rates of births and deaths in a population. Carroll and Huo (1986) found, when examining the vital rates in a newspaper industry, that institutional variables had a significant affect.

3.4.1. Legitimacy and population dynamics

A term that is widely used both in organizational ecology and institutional theory is legitimacy. It plays a role in the population dynamics as support from other organizations decrease the selection pressure on organizations. One of the reasons behind the liability of newness is that new organizations have less legitimacy than older organizations. By trying to achieve legitimacy from external organizations, organizations go through an isomorphism with the environment, which could decrease diversity.

3.4.2. The institution

The expression 'institution' has several meanings, depending on where and by whom it is used. It is often used in range of settings about organizations such as universities, companies, religious actors, hospitals, etc, and is often used to imply a special status with certain organizations. It can also be used when someone wants to describe governmental actors or 'super organizational' phenomenon like the state, the economy or a religion. Certain professions that are connected with institutions, for instance law and medicine can be called institutions themselves. Individuals who become part of institutions that are of a controlling nature can be referred to as institutionalized: military personnel, persons in prisons or patients. It is often the case that they are under obligatory rule of some sort. Even special customs and practices can be referred to as an institution such as marriage.

Scott (2001: 48) define the institution as *"Institutions are composed of cultural-cognitive, normative, and regulative elements that together with associated activities and resources provide stability and meaning to social life"* The term institutionalization is widely used when describing processes that is connected with how institutions function and how they arise.

Meyer and Rowan (1977: 341) describe the term as *"the processes by which social processes, obligations, or actualities come to take a rule like status in social thought and action"*

North (1990) describe the institution as the constraints that people have built to direct human behaviour. This construction provides a structure that reduces uncertainty by reducing choices, which individuals have to make. Since choice is limited it drives individuals towards homogenisation, and thereby the organization itself.

DiMaggio and Powell (1983) claim that an organizational field is a set of organization that can be seen as an institution. The field can come from a range of forms, but when the field is

set there are forces that will develop similarities between the organizations. The process that leads organizations to become homogeneous is called 'isomorphism'. DiMaggio and Powell (1983; 149) uses Hawley's (1968) description on isomorphism "*a constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions*".

How institutions influence organizations are guided by the nature of an institution. Lammers and Barbour (2006) claims that an institution has certain features, which are hierarchical, rational, formal and the power to control and shape both action and the structure of organizations.

The structure of organizations can be seen as ceremonial and not exceptionally constructed for meeting operative requirements of efficiency and performance.

Meyer and Rowan (1977) claim that the aim for an organization is to be legitimated by their environment. This can be achieved through the implementation of myths. An organization tries to protect the "*symbolic and ceremonial activities and stories about their activities*" (Meyer and Rowan, 1977:344). These actions institutionalize an organization. The myths, which are produced, are in harmony with what is socially agreed upon in the environment, thus creating a respectable face for the organization, helping it survive. DiMaggio and Powell (1983) suggest that the organizations push for legitimacy is behind much of the behaviour, implying that certain behaviour is not enhancing efficiency, per se.

Scott (1994) suggested that some decisions that concern instrumental, programmatic and founding issues are not evenly distributed among the organizational environments. Especially in the governmental area decisions regarding founding are more centralized than programmatic ones, which are in turn more centralized than the instrumental.

3.4.3. Institutional isomorphism

DiMaggio and Powell (1983) try to understand what makes institutions and organizations so alike. They use the terms coercive, normative and mimetic to explain the forces that are making organization less diverse, and producing organizations with similar organizational structures. They view bureaucratization as a force that make organizations homogenised. They also argue for greater isomorphism in fields that are well established: "*Once a field*

becomes well established, however, there is an inexorable push toward homogenization" (DiMaggio and Powell 1983:147). As the oil industry in Norway gone from a new form of industry in the country to one of the biggest and most influential, it would be interesting to see if this transformation has had an influence on the diversity of organizations within the industry. Coercive isomorphism is linked to the environment around the organizational field. The mimetic and norm forces work within a field and are a driving force when it comes to the diffusion of structures and roles. Actors that are under outside coercive forces such as evaluation and regulation usually react defensibly and this contributes to the isomorphism of an organizational field. (Frumkin and Galaskiewicz, 2004) DiMaggio and Powell suggest that when leaders, managers and employees of organizations implement and follow institutional rules the organization develop more similarities with one another. They recognized two kinds of isomorphism: competitive and institutional. Regarding institutional isomorphism they suggest that there are three kinds of forces that play a vital part: coercive, mimetic and normative.

Coercive

The term coercive can be understood as an external force that is applied to gain a result. This could come as a result of both formal and informal pressure influenced on organizations by other organizations or institutions. The coercive pressure often comes from institutions that they are dependent upon in certain ways. Cultural expectation within a society where organizations operate may also function as a coercive force. It can be felt in different ways – persuasion, force, laws, regulations etc. The government is often seen as a key actor when it comes to coerciveness. DiMaggio and Powell (1983; 150) argue that organizations adopt: *"standard operating procedures and legitimated rules and structures."*

Normative

The word normative comes from the Latin word *normati*, which means "from a standard". A normative pressure can be seen as professionalization of the industry. DiMaggio and Powell (1983; 152) interpret it as: *"The collective struggle of members of an occupation to define the conditions and methods of their work, to control 'the production of producers'"*. In the oil business the demand for formal education and knowledge is high. This could make the oil industry highly susceptible this kind of force, which leads to isomorphism among organizations in the field, since the different professions are susceptible for the same kind of

forces as organizations are. As a result professions such as accountants and engineers can resemble their counterparts in other organizations, even more than other persons or groups in their own organization. An important aspect causing these effects is the filtering of personnel on the basis of their education level and background. DiMaggio and Powell claim that especially industries that are technology driven has this phenomenon, as they often require personnel who has a high degree of formal education. People with the same form of education background often create professional networks, which extend beyond their own organization. They are also often linked with a common professional language and culture. This can lead to the creation of groups within an organization consisting of personnel with the same background and education. As companies in the oil industry often consist of similar professions by necessity it is plausible that this leads to a lesser degree of diversity of organizations in the field.

Mimetic

Mimetic has its origin from the Greek word *mimēma* 'that which is imitated'. The power of uncertainty is a strong incentive and force that encourages imitations in organizations. In markets where there are high levels of uncertainty, in terms of technology and unclear goals, the organizations seems to mimic themselves to other, often successful organizations (DiMaggio and Powell, 1983). The economical aspect causes the reason for the mimic; when an ambiguous problem with an unclear solution occurs, a smaller fiscal expense is demanded to find a solution. (Cyert and March, 1963). It is a mimetic process when an element of a culture or system of behaviour is passed from one individual or organizations to others by monogenic means. DiMaggio and Powell (1983) use the term modelling for the adaptation and imitation of other organizations when it is used to diffuse uncertainty. Employees that have worked for the other firms, the rental of similar or same consultants, or even industry associations, could be sources of imitations. A good way to observe mimetic processes in a market is by analyzing the market leader with other companies in the same competing market. Often this is the case for firms that look upon their main competitor as a stronger, better and more successful organization.

Institutional isomorphism and public sector organizations

The public sector has been considered one of the key forces driving the institutionalization of companies and NGOs. But the public organizations themselves have been studied to a

lesser degree when it comes to isomorphism and institutionalization. The tendencies in organizational research have been to consider the actors in the public sector as a catalyst and an initiator of the institutionalization process in other organizations by their regulation control, licensing, inspections etc. (Frumkin and Galaskiewicz, 2004).

Certain organizational practices generate myths that are transferred through relational networks since they are conceived as rationally effective. But a lot of myths gain legitimacy based on legal mandates (Meyer and Rowan, 1977).

Frumkin and Galaskiewicz (2004) studied how public organizations was affected by the institutional forces, based upon data from the National Organizations study. They found that the institutional forces do not influence organization in the same way. The governmental organizations were more susceptible for institutional pressures than for-profit organizations. They found that normative and coercive forces transformed government organizations from traditional bureaucratise structures to more like pro-profit organizations. The mimetic force, on the other hand, on government organizations moved them towards more traditional bureaucratise. *“ One way to understand these findings is that when public managers are subject to external oversight or when they are embedded in professional networks, they are liberated to some extent from the internal pressures they face on a daily basis to bureaucratize. (...) We therefore believe that one possible interpretation of these results is that the presence of external influences on public sector organizations may rival internal controls within the agencies and open the door for more liberating structural transformations”* (Frumkin and Galaskiewicz, 2004: 303)

3.4.4. Industrial networks

Companies are not regarded as autonomous players in a market. They must interact with other companies and institutions to have efficient activity. Often such actors are governmental representatives such as ministries and regulatory commissions. These relations may become stable and lasting. They are often constructed over a long time, as their development use time and resources and lead to future commitments (Brito, 2001). The behaviour of a company can be described as a process where associations are created and developed to assure the companies' control over resources they require.

A normal goal in an industrial network is for members to try to increase their power. This can be obtained by an extended control over resources or activities. To achieve this it is normal to develop indirect or direct forms of control. A strengthening of relationships with other organization is more indirect, and a direct form could be developed through ownership. Both direct and indirect forms require resources to achieve (Birto, 2001)

Håkansson (1992) argues that when an organization wants to exert control indirectly, especially if the aim is to induce change, it has to develop new connections. This often leads to a reduction of the commitment with other actors, and thus comes with a cost. In other words, the creation of new relationships will disrupt other relationships that a company is engaged in. So for a company trying to achieve control will leads to different types of links with other organizations. Organizations with similar interests may introduce cooperating relationships, which come at odds with other organizations that have conflicting interests. The term mobilization is used about organizations that form groups or organizations that pursue collective goals (Scott, 1987). It is more likely for the mobilization processes to develop more easily if organizations in a field share many common goals and objectives (Lundgren, 1992). But even if there is a group of actors with common goals, industrial network undergo changes. This can be caused by the dynamics of the economic cycle or by actors who struggles for control (Håkansson, 1992)

3.4.5. Model

In a study about institutionalization Bergevärn et. al. (1995) focuses on the processes that have lead to institutionalization of the accounting system in Norway and Sweden. This is a comparative study on the differences between the two countries. This might seem as quite far from our research, but the study uses institutional theory to try to explain the processes. They address how the environment, the internal processes and the communication between organizations and the environment affect institutionalization. They have constructed a model taking into account the different aspects of institutionalization, which we find very interesting and think can be very suitable as a structure and framework for out thesis.

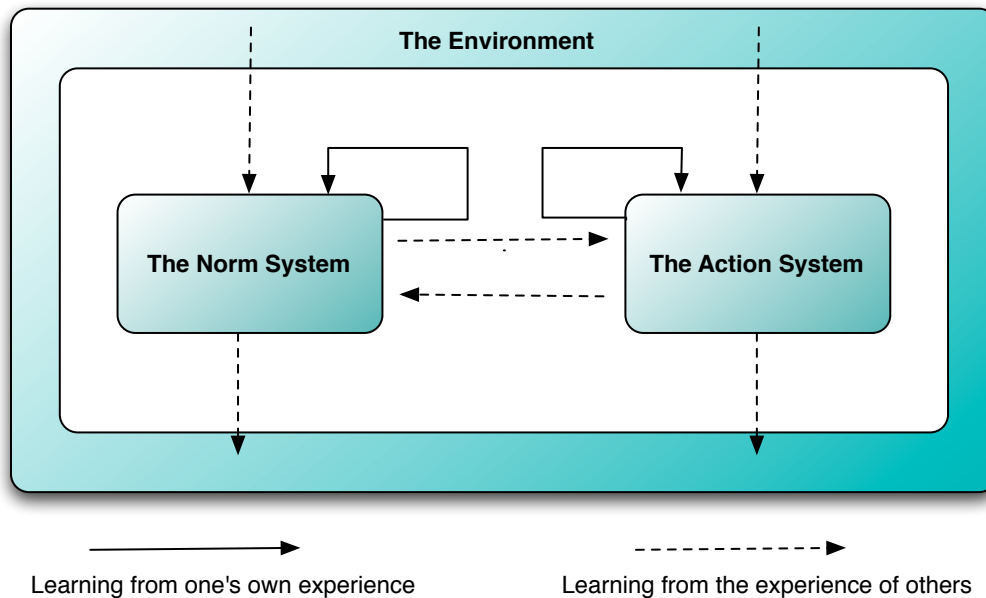


Figure 6: Norm and Action system

The norm system in our case will describe the changes of regulation, actors and structure. The action system will show the changes in the dynamics and diversity. The environment consists of political visions and other conditions.

Bergevärn et. al. (1995) also uses DiMaggio and Powell's (1983) to describe these processes where organizations adapt to the symbolic elements in their environment, namely coercive, normative and mimetic processes. They emphasize the range of sources such influences can come from – law, regulatory structures, governmental requirements, ideologies, institutional systems and professions. It is not hard to imagine that all of these sources can influence both the institutions that companies on the NCS interact with, and the companies themselves.

Bergevärn et. al. (1995) wanted to study how the relationship between the action and norm system had developed over time. They tried to map out the processes on the basis of organizational learning. They refer to the work of Levitt and Mach (1988) where they identify that organizational learning can come from both your own experience and from experience made by others. The process of learning from other organizations are based upon DiMaggio

and Powell's (1983) forces, which are described earlier in this chapter, while the process of learning from your own experience comes "*in the shape of experimentation involving trial-and-error and organizational search*" Bergevärn et. al. (1995:28)

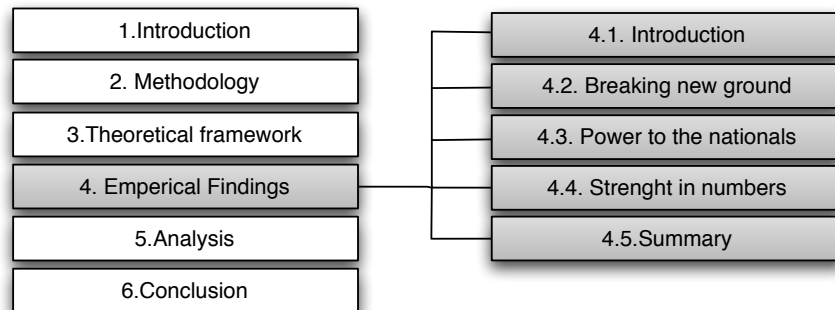
3.5. Summary

In this chapter we have presented theories that has served as our theoretical framework for this thesis. The theories presented in this chapter are institutional theory, evolutionary economics and organizational ecology. The first objective was to try giving a definition of diversity. We have also tried to give a basis for our theoretical choices, and why we feel that they suit our case. At the end we presented a model that we feel could help us structure and analyse the empirical chapter.

4. EMPIRICAL FINDINGS

“The ability to simplify means to eliminate the unnecessary so that necessary may speak.”

Hans Hoffmann



4.1. Introduction

In this chapter of our thesis we are going to present our data findings. The data collected are both from first and second hand sources, and the methods used to collect them are presented in the methodology part of this thesis. Our data are collected from interviews, telephone interviews, newspapers, books and governmental public documents.

4.1.1. Structure of chapters

To be able to get a better understanding of the elements that has influenced the diversity on the NCS we have divided our empirical finding into three different periods. We have tried to integrate our statistical data, interviews and secondary data in a period based description addressing major issues in each period. The reason for the three periods can best be displayed in a graph that shows the numbers of both new and old companies license granting's over the last 45 years. The graph is build on some of our data collection:

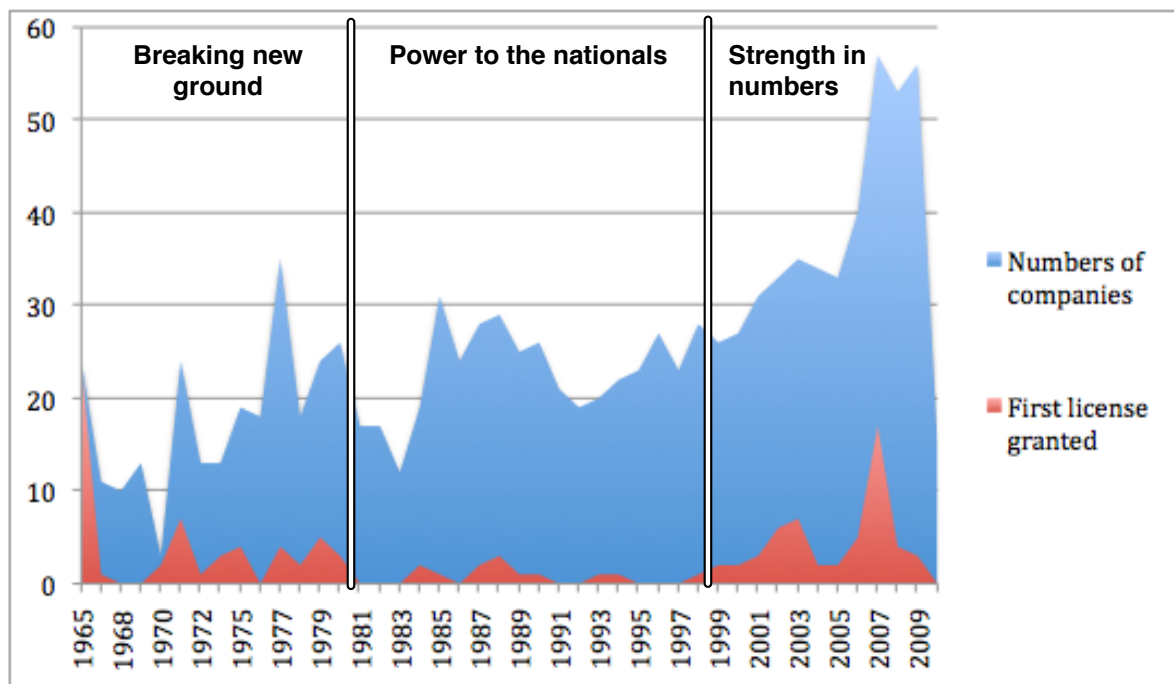


Figure 7: Historical periods from 1965 to 2010

From the graph, we can see that there is three distinct periods. The numbers of companies granted licenses in the periods are represented in blue, while the numbers of new companies are represented in red. These three periods is how we have divided the parts of our empirical findings. To better understand the elements that have affected diversity in different periods we have several subcategories in each of the periods. In the subcategories we will describe the different changes and happenings that can have affected the diversity and development in the period. This will make it both easier for us as researchers and for the reader to get a more complete picture of the situation in the period and a clearer understanding of the complex picture of diversity in the four decades.

4.2. Breaking new grounds (1958 - 1980)

In this part of the chapters we are going to take a closer look at the period from 1958 to 1980. The period was the first period of the Norwegian oil era, and a period where there was much to be learned both for the companies and the Norwegian government.

4.2.1. Events influencing political ideas and driving forces

In the late 50s, there were few Norwegians that thought Norway could become one of the largest oil and gas exporters in the world. A discovery of gas outside the Netherlands in 1959 changed this perception. The news of the discovery created a large interest for the possibility of hydrocarbons deposits below the seabed out side Norway in the North Sea. At this time era, most European countries relied on coal and imported oil as their main source of energy. The experts in geological research in Norway were doubtful regarding the possibility for any hydrocarbons outside their own country. However this has no impact on the large effect the findings outside the Netherlands had, since the oil companies where thrilled to get their hands on new areas to drill for oil.

A major settlement that paved the way for the present situation was made at the 1958 United Nations Conference on the Law of the Sea. 87 countries, including Norway, signed the Convention on the Continental Shelf. Here the premises for a definition of the continental shelf were laid down.

Since the early beginning of the Norwegian oil era, the question surrounding diversity has been an issue. In 1962, the first oil company contacted Norway on the prospect of searching for oil. The company was Phillips Petroleum. In the letter sent to the Norwegian Government, Phillips Petroleum applied for permission to search for hydrocarbons on the Norwegian site of the North Sea. In return for the possibility to search for oil, Norway would get a monthly compensation of 160 000USD. This offer was rejected, as it was deemed as an attempt to get exclusive right to the NCS.

“ The offer from Phillips Petroleum was seen as an attempt to get exclusive rights, and for the authorities it was out of the question to hand over the whole shelf to one company. If the areas were to be opened for exploration, more companies had to participate.”

Ministry of Petroleum and Energy, 2007

The Norwegian Government decided that if the NCS was to be opened for exploration and drilling, it had to be opened to several companies, not only for a single monopolist. The reason for this was to secure diversity and sustainable development and growth on the NCS (Kindingstad and Hagemann, 2002).

In May 1963 the Norwegian Government created a new law. Through the new law in 1963, the Norwegian parliament declared that subsea natural resources were state property and only the government would grant licenses. The same year the first seismic surveys were approved. Oil companies were given rights to prepare for drilling, this meant that they could search for oil with seismic surveys, but not do any actual drilling.

1965 - 1973

While the first legal steps in defining the continental shelf was being resolved, there was not much of a legal framework in place for the petroleum industry as such. A significant person in the early process was state secretary in the Foreign Ministry Jens Evensen. He was made chairman of the council, which in 1965 came with the first suggestion on a framework, and shortly after the first licensing round was a fact. Although the IOC's had begun searching for oil in 1965, the definition to where the borders of the NCS actually was, were still unclear. The clarification between where the borderlines between Denmark, Great Britain and Norway was on the seabed was settled in March 1965. To much relief the UK settled for the midline split, this meant that Norway now officially owned the area believed to have the highest probability of discovering/finding hydrocarbons. Norway now had sovereignty over 131 000 km² by the so-called midline principle.

The first licensing round

In the initial phase, there was very little data at hand, and the data that was produced was thin lines of blurry 2D information. Extremely meagre compared with the 3D and 4D information available today. Based on the accessible information, the companies had to try

to develop theories on where it could be possible to find oil and gas. In this situation, the government thought it would be sensible to bring in companies from different areas and with different experience. It would be an advantage that the American geologists had a different background than the French geologists, which again differed from the British-Dutch ones. (Sørås, 2010)

In addition to letting big oil companies from different parts of the world in, the government also wanted to have a range of Norwegian companies. Already from the first licensing round in 1965, there has been participation from Norwegian companies. Both Hydro and the newly formed Norwegian Oil Consortium (Norco) were given parts of licenses (Ibid).

The first licensing round where held in April 1965. Under the first licensing round, where a total of 22 drilling licenses for 78 blocks/areas where granted to a large number of international oil companies, there was only two Norwegian companies. The main criteria for participation were experience and financial strength. There was also a goal for contribution to the Norwegian economy. The licenses came with obligations to drill 30 wells over a period of six years. Esso was the first to drill a well on the NCS, this took place 180km south west of Stavanger in 1966. The "Ocean Traveller", a drilling facility that had travelled all the way from New Orleans, did the drilling. The drilling it self took 84 days and was 3015 meters deep. To the great disappointment the well was dry, but much needed samples of geological data was collected. The samples collected showed that the there was hope of finding hydrocarbons in the area.

The turning point came in 1969. Phillips Petroleum first found gas and gas condensation on block 7/11 in 1968, but further drilling showed that the well was not profitable enough for production. The summer of 1969 there was still no companies that had found any oil. The lack of success was a damper on the moral. In late 1969 the companies started to doubt if there were any oil resources that could be exploited in the North Sea. Shell and Elf even was at the point leaving and abandoning all drilling activities on the NCS. Phillips Petroleum considered doing the same, but had a costly leasing agreement on a drilling vessel, and therefore decided to give the NCS a final try. The drilling started on 21st of August in 1969. After a few days the drill hit a gas pocket that almost led to a blow out. The well was sealed with cement to prevent from it from having an uncontrollable blow out. The drill vessel was

moved 1 km, where the drilling started again. On the October 25th the new drilling well hit an oil reservoir, but due to harsh weather it was not possible to perform production tests. After a long break, the drilling vessel started drilling again on 7th of December. When the personnel left the facility for Christmas break on December 23rd, many of them already knew that they had found something big.

Ekofisk

In June of the summer of 1970, the announcement was made, Phillips Petroleum had found a gigantic oil field in the North Sea. They had found an elephant, Ekofisk the elephant. An Elephant is an oil field containing more than 500 million barrels of oil. Ekofisk was so large that the annual production from the field was two times as much as the annual consumption of oil in Norway. From this point on Norway were set to become a large oil exporter in the world. This was more than anyone in Norway had ever dreamt of.

Phillips Petroleum started the production two years later in 1971. Ekofisk is still one of the most important oil fields on the NCS. In the period after this, several large fields were found on the NCS. The area allowed to search and drill in was expanded more and more after the findings of oil.

In the first couple of years the NCS was dominated by IOCs, but in 1972 the Norwegian Government created Statoil. The main goal of Statoil was to learn how to run an oil company and to gain technology from the already established companies on the NCS (Kindingstad and Hagemann, 2002). To do this a new law was created. The law stated that Norway had to be the operator on at least 50% of all new exploration licenses (The Ministry of Petroleum and Energy, 2007).

1971-1980

In the summer of 1971 Esso and Shell discovered a large oil field on the British continental shelf. The field was close to the midline, separating Norwegian and British shelf. Geologist thought that it was possible that the field stretched over to the NCS was large. Esso and Shell therefore applied for a drilling license on the Norwegian side of the line, but got rejected. After much negation, the Norwegian government agreed on granting the licenses for two blocks in August of 1973. As operator on the field Mobil was chosen, the newly established Statoil got an ownership of 50%. The drilling started not long after in December, and two

months later Mobil announced that they had found a large oil field. The field, Statfjord, was the largest oil field ever discovered offshore.

Since Statoil owned 50% of one of the largest oil fields in the world, it was soon a fact that the Statfjord would generate enormous revenue for the Norwegian government. As a part of Statoil's ownership, this was a golden opportunity to learn and build competence in the state-owned company. Statoil managed to obtain and gain knowledge fast, and already in 1980 they were looked upon as a fully integrated oil company.

In just a few years, the Norwegian government had managed to take Statoil from a small office in Stavanger to becoming the largest owner of NCS as well as one of the largest sellers of crude oil worldwide.

Diversity has been a factor from the beginning, but it is possible to find differences in both the handling and the emphasis on the subject. These variations often occur because of two main factors, the reality on the field and the political situation.

Helge Sørås claims that the focus on diversity has always been more than just the number of companies.

"Pretty early it became clear for the Norwegian Government that companies could have different strategies when trying to solve a problem"

Helge Sørås, 2010

But in this period the government was more interested in building diversity among the Norwegian companies, rather than diversity in general. Hydro was therefore meant as a supplement to the other two companies, since they come from an industrial background. The Norwegian government interpreted the trio of Saga, Hydro and Statoil as diversity (Sørås, 2010).

4.2.2. Governmental structures

To better understand the government's actions and situation we have found it important to present the changes made in the governmental structures, as well as new governmental

departments and regulations. The changes made in the period will be presented in this part of each period.

The Norwegian Petroleum law from May 1963 states in § 1-1 that the Norwegian state has superior ownership rights to all hydrocarbons found on NCS and has right to administrate them. Taken into account is also the Norwegian Constitution § 19, that the government should administrate the governmental property in such a way that it for the Norwegian populations best interest. The Petroleum law should therefore be in appliance these laws. All changes in the petroleum law have to pass through the Parliament. The petroleum law further states that the resources should be administrated in a long-term perspective (Petroleum taxation act § 1-2). The reason for this is that it should be a good for all the Norwegian community, today and for generations to come. The revenue generated from the petroleum should secure welfare, steady employment and good environmental condition. The petroleum politics should also take other industries into account. The administration of the petroleum industry should not be administrated in a way that has a negative effect, at an expense to other industries.

For administration of the enormous wealth that are produced on the NCS, there has to be a strict regulations and laws to meet the demands of the Parliament. Different departments within the public petroleum industry handled all the laws and regulations. To get a better understanding on how the system worked and works, we think it's important to know what the different departments responsibility are. The Norwegian Parliament has the highest position in the hierarchy, and the overall responsibility for all underlying departments (NPD, 2009). The Parliaments main task is to regulate and develop all the laws and regulations for the petroleum industry. All major changes that are made in the petroleum politics have to be brought up in hearings in the Parliament. The Parliament also regulates areas for exploration and production activity. To make sure that the petroleum politics are followed accordingly, the Parliament uses the Government as a tool.

The Norwegian Government

The Government responsibility is to administrate policies given by the Parliament. Since petroleum politics concerns a vast set of rules and regulations it would be inefficient for one

department to manage them all. Therefore, the Government has several Ministries and directorates that all have different responsibilities. The subdirectories responsibilities are divided into several different areas (NPD, 2009):

- Resource management for the NCS is handled by The Ministry of Petroleum and Energy
- The Ministry of Labour and Social Inclusion handle all regulations and managements regarding work environment, safety and health.
- The Ministry of Finance has the overall responsibility for revenues generated by the petroleum industry. As well has handling all state revenue.
- The Ministry of Fishery and Costal Affairs regulates the rules and regulations in regards of environmental spills, such as oil spills and pollution made by petroleum related activities.
- The Ministry of Environment has the responsibility for the overall environmental effects petroleum activities may cause.

To limit this part of the thesis we are only going to look closer on the ministries that influence the most on who are granted licenses, and therefore control which companies that are taking an active part on NCS. In our view, the main controller of this is The Ministry of Petroleum and Energy. The other Ministries also effects by comments and advises in regards of their fields of responsibilities.

In 1972, The Norwegian Petroleum Directorate's (NPD) was established. NPDs main task is to handle all advisory that in regards of issues concerning the petroleum industry. NPD also has a responsibility to secure that all exploration and production on NCS are done according to the Norwegian rules and regulations issued by the Ministry.

The Ministry of Petroleum and Energy was established first later in 1978 by the Parliament. The ministry administrates all the oil and gas resources on the NCS. The administration includes the responsibility to ensure that the companies on NCS follow the rules and regulations of the Norwegian petroleum law. The main purpose of the ministry is to allocate access to specified areas on the NCS to be utilized for exploration. This is done through

dialogue with players and other stakeholders in the industry.

Economical experts often describe the key of success on the NCS by political stability, the broad competition and openness from the government. This has been a governmental goal since the beginning. The Norwegian petroleum *model* started from ten simple rules. The ten rules were the guidelines for what we today know as the Norwegian petroleum politics and have since then grown into a complex but sustainable framework of laws and regulations. The politic is mostly grounded upon the objective to retain a wide measure of control over the industry (Parra, 2005).

The ten rules of oil (White paper 14th 1971)

- 1)** *National management and control of all activities on the Norwegian continental shelf.*
- 2)** *The findings should be exploited in such a way that Norway is independently of others when it comes to crude oil.*
- 3)** *The petroleum industry has to spur the development of new economic activity*
- 4)** *The development of oil activities must be done taking into account the other industries and environmental protection.*
- 5)** *Flaring of gas that can be exploited, are not acceptable, only except in the short test periods.*
- 6)** *Petroleum from the Norwegian continental shelf will generally landed in Norway, unless the national interests call for a different solution.*
- 7)** *The state is engaged at all appropriate levels and contribute to the coordination of Norwegian interests, and to build an integrated Norwegian oil environment with national and international objectives.*
- 8)** *Create a state-run oil company that can protect the state's business interests and who can cooperate with domestic and foreign oil interests.*
- 9)** *North of 62 latitude the activity pattern must be chosen in a satisfying way to specific societal factors that relate to the region.*
- 10)** *Norwegian findings set a Norwegian foreign policy towards the new tasks.*

The rules gives a good picture of what the government wanted to do to succeed with their further petroleum politics. From the rules, we can see that the government wanted to establish Statoil. We can also see that the government is concerned about the establishment

of Statoil could have an impact on the foreign policy, and therefore lead to consequences in security within the fields of environment. Further, we can see that the government expresses a wish of national control by using Statoil as a tool to gain both competence and knowledge in the petroleum industry.

"(...) Statoil would become an important player, and government was aware that the group of companies, and Statoil, needed to learn from the international companies to be able to grow."

Helge Sørås, 2010

Sørås summarizes the policy making process in the governmental structures: You have to think at two, maybe three levels when it comes to policy making. When I worked with tax policies it became clear that it was very important to talk to those who worked at the "third level". It was them who did the calculations and the economical analysis. To make sure that the bureaucrats at the "third level" had a shared understanding with the industry was an important affair. Then you had top bureaucrats, which act like a filter between their level and the politicians. The top bureaucrats were at times very important, as they from the political signals, governed the third level, but also in the sense that they, to a certain degree, controlled the information who went up to the political level. They functioned as a channel between the different levels. To only work with politicians can be quite futile, but they have an important role as well. It is important that the leaders of companies meet Norwegian politician on a high level and the top bureaucrats. It is through such meetings they get an understanding of what is and what is not possible in Norway. But it is on the third level the comprehension of the technical side is developed. And the technical aspects are produced to best coincide with political goals, such as diversity.

"It was all about the exchange of information, to create a common understanding. And creating a comprehension of the other side, I don't like to call it counterpart, a understanding for their demands and problems."

Helge Sørås, 2010

4.2.3. Governmental management tools

In this subchapters we are going to present the changes and establishment of governmental managements tools and how the tools have evolved over time. Since the rules and regulation have a large influence on the activity on the shelf, this could have a direct effect on the diversity.

“To ensure a high level of revenue to the state, we need to do this with efficient and environmental friendly management of the resources on the shelf. It is all about utilizing the resources in the right way.”

Espen Haugen,OED, 2010

As Haugen told us, resources on the shelf need to be managed in a certain way, to do this the different management tools play an important part.

Petroleum Fiscal system

All countries that have petroleum production have different types of fiscal regimes. Most countries are unique in the way they structure their taxes. The solution that Norway has chosen is therefore of high importance of how the petroleum industry adapts to it. In this part our thesis we will explain how the Norwegian petroleum tax systems is structured, and why this is important for the diversity on NCS. In our interview with Haugen from NPD, Haugen brings up how to Norwegian government has learned from other countries in regards of the tax system. There was a strong dialog between the Norwegian government and other countries like UK, USA and Canada. This dialogue has continued until today (Haugen,2010).

In the world today there are more petroleum fiscal systems than there are countries. The reason for this is that many countries negotiate terms with the politicians and the companies. But all countries have something in common; they all deal with how cost is recovered and how profits are divided. From a government point of view the contractor share of profits a seen as a cost. Exploration, development, and operating costs are also viewed this way because the contractor may ultimately recover those costs out of production.

When governments develop the fiscal terms must account for this risk. The challenge for a host country is to balance the risk and the economic rent in such a way that the shelf is seen

attractive by the host companies, and that the country at the same time is able to maximize its rent (Kjemperud, 1995). In general governments seek to capture the economic rent through signature bonuses, through production royalties and sharing, or taxes.

The rent should be seen as the excess profits in the operations. In the petroleum industry this is the difference between the value of production and the costs to extract it. (Rent = value – cost). These costs consist of normal exploration, development and operating costs as well as an appropriate share of profit. Rent is the surplus. Governments attempt to capture as much economic rent as possible through various levies, taxes, royalties and bonuses. This means that the government and/or the industry had possession of all information. If there were now asymmetrical information the bonus bid would equal the present value of the economic rent. The opposite of a pure bonus bid would be pure profit profit-based taxation. The profit-based taxation is a more realistic since many oil companies dislike bonuses and royalties that are not based on profits. The profit-based taxation system is also what the Norwegian government decided to use. There are several challenges in regards of choosing the fiscal regime. This is consistent with giving the industry a reasonable share of profit, or take. But the level of industry profit considered to be reasonable is debatable.

The government objective was to try to maximize the wealth created from its natural resources by encouraging appropriate levels of exploration and development activity. The fiscal system therefore must be able to (Kemp, 1987):

- Provide a fair return to the state and to the industry.
- Avoid undue speculation.
- Provide flexibility.
- Create healthy competition and market efficiency.

The balancing between these elements can be best illustrated as showed the figure below:

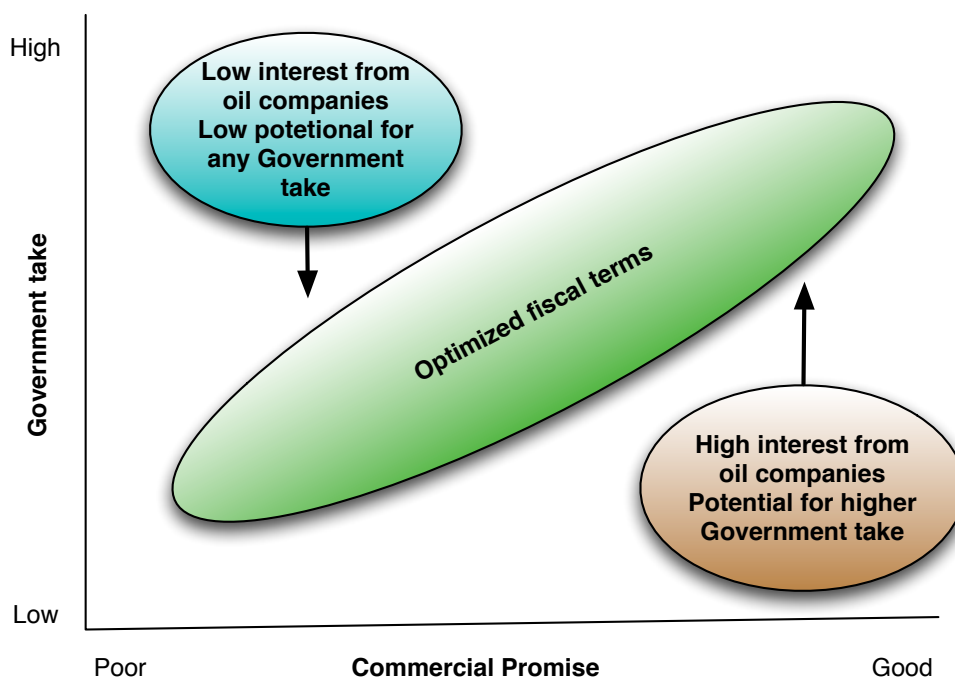


Figure 8: Exploration market (Kjemperud, 1995).

The figure above illustrates the balancing between the commercial promise and the government take and how the balancing can be understood. The fiscal system must take into consideration the political and geological risks (commercial promise) as well as the potential rewards (governmental take).

From the oil companies objectives it is in general the possibility to build equity and maximize wealth by finding and producing oil and gas reserves at the lowest possible cost and highest possible profit margins. If possible this should be done under political and economical stable conditions (Kjemperud, 1995). When developing the Norwegian fiscal regime the government had to try balance the risk and reward, for both the state and the companies. Most of the regulation, in regards of taxation, was formed by a small group of bureaucrats led by the minister of finance Arne Øien.

Helge Sørås tells us that the government always have had some understanding on how to use the tax regulations as a management tool within the petroleum industry. "It has been actively used to regulate the industry". Further, Sørås tell us that Arne Øien and his bureaucrats created the taxation system with the ambition to: "His (Øien's) focus was to have the best exploitation of resources and that the Norwegian society should capture the

maximum, he did not say the optimum, but the maximum share of it. But at the same time give enough back so that the companies did not leave”

Espen Haugen agrees, and explains that this has been a deliberate choice from the government since the early beginning.

The licensing system on the Norwegian continental shelf

One of the most important mechanisms for creating diversity in the initial phase was the licensing policy (Sørås, 2010). To be able to explore and produce petroleum on the NCS companies have to be granted a license from the government who is the only authority with the power to do this (Petroleum taxation act § 1-3). The license granted gives the owners exclusive rights to all exploration and production in the licensed area (ibid § 3-3). These areas on the NCS are divided into different areas, so-called blocks. The blocks are granted to companies in their whole or partly with a production license. A license can contain a whole block, parts of a block or several blocks. The license can be granted to a single company or a group of several companies, whatever the government thinks is most suitable in regards of maximizing the possibility of sustainable production. The licenses are granted through licensing rounds every second year, held by the Norwegian government.

The steps in a licensing round

Before the areas on NCS can be announced and opened for licensing, the area must be approved for petroleum production and exploration.

The ordinary licensing round starts with an invitation from the Ministry of Oil and Energy to the companies to nominate areas. The companies then nominate fields that they wish to explore or see possibilities in. After the ministry has considered all the nomination of areas, a list of blocks is announced for the licensing round. The ministry now opens up for the companies to apply for the different licenses.

The Ministry then grants the licenses to the companies or groups of companies that are found the most suitable for the license. A license can be given to one company or a group of companies. The Ministry also includes a recommendation on how they feel best suits as an operator on the license. When a company applied individually it can be included into a group of for a single license; this means that they are granted a cut of the license i.e. 35%. Which

again means that they will be responsible for 35% of all cost, and therefore also gain 35% of the revenue created with the license.

When granting the licenses the ministry looks at several different aspects of the companies' qualities, this is technical, economical/ fiscal, general- and geological-knowledge. When the license is granted and the company accept the license, the license it self comes with several duties and commitment that the company has to follow. When accepting the license the company has to act accordingly to all governmental laws and regulations. The law and regulations are often unique on each license, since the license covers different areas and therefore needs to have unique specifications for the specific areas. The license gives the owner the single right for exploration, test drilling and production within the licensed area.

The license

When a license first is granted to a company or a group of companies it only valid for 4-6 years. The reason for this it to assure that the process of exploration starts as early as possible. This is called the initial period, and can be extended up to 10 years if the company applies for it. In this period the owner of the license have a pre-assigned list of duties that has to be done to reapply for a production license for the field. If all seismic surveys and test drilling are done accordingly to the license another period can be granted. This period of the license is basically the production license, and grant the owner the right to drill and produce on the area. The production license can be granted for a period up to 30 years at a time. If the owner of a license doesn't find any incentives to start production on the licensed area the license should be returned to the government within the initial period of 4-6 years.

The first licensing rounds

In the first round the companies themselves was allowed to create groups. Whom they collaborated with was often a result of already established connections on the international arena (Sørås, 2010). A feature that is quite special for the oil industry, not just in Norway but everywhere, is that companies are competing fiercely and at the same time cooperate with one another. The situation in Norway has been somewhat different since the government has forced the companies into groups, which they created. This decision is based on the goal

to create diversity. Had this not been done the situation could easily have been that companies grouped together according to international structures.

The first round was a big round and it helped the government gain experience. After the first round, they tighten the grip in many ways. One thing they did was to start to regulate the groups of license holders. It was no longer up to the company themselves; now the government put together who would become owners of a license. These restrictions were not done anywhere else, so in a way it was an innovation from the Norwegian side (Ibid). Norwegian policy was in many ways revolutionary. The foreign companies accepted all these restrictions mainly because they were finding several elephant fields on the NCS in the initial phase. The hope for another Stratford or Ekofisk made them quite cooperative (Ibid).

The government tried to put together companies with different approaches and In other words they actively tried to create diversity. Not by taking in more companies, but by constructing groups of companies, which under other circumstances would not have been formed (Ibid).

One of the groups parted by the Norwegian Government was the so-called Phillips Group, which Phillips, Fina and Agip was a part of. These companies were the original ones who applied and got the license for Ekofisk. The other companies who later joined came through barter trade. These companies can be placed in a French group, consisting of Hydro, Total and Elf. The companies in the Phillips Group had an agreement where they divided the responsibilities internationally. Phillips was supposed to be the operator on everything the three companies got on the NCS. ENI, the owner of Agip, was supposed to be the operator on everything in Nigeria or Angola. Such agreement within groups was common for this period, and something the Norwegian Government did not agree to and therefore did something about (Sørås, 2010).

We can also see that in this period the three Norwegian oil companies, Statoil, Saga and Hydro, were favoured in the licensing rounds. This can be easily seen as early as the fourth licensing round in 1978, where all three were granted each their operator license for large fields (Midtun, 2004). The Norwegian government says that this was to ensure diversity in the way companies solved the tasks, and to gain vital progression in technological

development (Melberg, 2010). Though all of the three companies were Norwegian, did not put a damper on the competitiveness among them (Sørås, 2010).

4.2.4. Behaviour of Companies

To be able to analyse the diversity on the shelf we find it important to present the behaviour of the companies in the periods. In these subchapters we are therefore present our informants' opinions and data collection on the companies behaviour.

Another phenomenon Sørås talks about is the high numbers of companies established in the period: After striking oil in 1969 there popped up several new public companies that tried to sell shares to the general population. Det Norske Oljeselskap, Norse Petroleum, Vikingolje and Norminol are all examples of companies that emerged in this period and had tens, and sometimes hundred of thousands of shareholders. The term "tanteselskap" or "Aunt Company" was coined in this period. The huge demand after shares in these companies made some introduce ration. This led many to sign aunts and even dogs and cats as shareholders. Most of the Norwegian companies *died* out pretty quick, but Saga Petroleum, which was established in 1972, was a successful exception.

This is not too hard to understand, since the government in this period believed that the numbers of companies in it self would be enough to ensure a broad and well diversified shelf. A result of this was that many companies only had marginal ownerships in the licenses granted. Even as the operator, there were many companies that only were granted a modest fifteen percent share in a license. This was frustrating for the companies, since the governmental owned Statoil had the right to be granted a 50% ownership (Lerøen, 2008)

4.2.5. Diversity in the period

In these subchapters, we are presenting our statistical findings on how the activity levels has been during the period. How the general trends in licensing rounds were and if we can see any distinct trends.

Several researcher (Lerøen, 2008) claims, that the diversity on the shelf in this early period was static and had little or no dynamics. The general trend was that if a company had been

granted a license, the thought of selling it or trading it was out of the question (Ibid). This led to the fact that several of the large operators in this period were involved in most of the licenses granted, but with only a small ownership in each of the licenses. The companies then found out that it was inefficient to own the amounts of licenses, and therefore started optimizing their portfolios (Ibid). The government responded to this by agreeing that larger ownerships needed to take place in order to ensure the efficiency and attractiveness of the shelf (Ibid).

Sørås do not fully agree on this, but tells us that Norway had stronger control than most other oil nations, but at the same time there was an understanding that diversity was positive. Strong management and at the same time aiming for diversity, can be seen as an incompatibility. But Sørås claim that the government was able to maintain a balance between the two:

“We had both strong control and broad diversity, as I see it”

Helge Sørås, 2010

Activity level among the companies

In our quest for a method to measure diversity on the Norwegian continental shelf, we found out quickly that it would be difficult to measure this with cash flow, tax revenues or any monetary factors. In our interview with the Ministry of Petroleum and Energy, we were made aware that they do not categorize the companies based upon their qualification, nor do the ministry count the numbers of companies that claim to be in the petroleum industry. When the Ministry of Petroleum and Energy looks at companies they only sort them into preapproved and not approved for licensing application.

“When we look at the companies we only distinguish between companies that are qualified to apply for licenses or to be operators. “

Espen Haugen, Ministry of Petroleum and Energy

Since the NPD only addresses the companies in this way, we found that our data would be good enough to display what we wanted to see. Our goal was to sort out and get information on how the activity level on the shelf has evolved over time. From an advice

from Haugen, we then decided that the best way to do this was to look into the licenses for exploration. We were able to get a complete datasheet with a list of all license transactions from 1965 until today, made by Ministry of Petroleum and Energy. The datasheet is public available from the homepage of the Ministry (NPD, 2010), and is updated with the latest data continuously.

In this datasheet it is possible to obtain several good indicators on the level of activity:

- How many licenses that are granted each year.
- Where the licenses are granted. (Barents Sea, North Sea or Norwegian Sea)
- Which areas that are granted.
- What licensing rounds that different licenses was granted in.
- What limitations the different licenses have, if any and if it's a so-called strategically granted license.
- What companies have been granted which licenses and how much of the license.

From this we have made an overall comprehensive data material tool¹ that can be used for further researches within many different topics related to NCS. In this tool its possible to compare all companies activity to each other, see when companies first entered, what licenses they have been granted and what companies that have merged. To be able to map out the activity, we have a prioritized to look at the activity levels that are in the market for licenses on NCS. We have used the transactions and trades of ownerships of all exploration licenses to display the activity. This shows the companies that are taking an active part on NCS by committing to execute the governments demands for development and exploration for each license. It also gave us the possibility to see when a company gets their first license for exploration; this is good to measure to amount of new players to the shelf. The amount of newcomers can be interpreted as the dynamics in the market. The "Numbers of companies" shows the actual number of different companies that are granted license. From the data we are able to see if there are periods with less or more companies and if the companies actively seek to expand their activity.

¹ The tool is included in the appendix: 8.1. CD: Datasheets and tools.

From the data we could see that the first couple of years we can see that there was a many new companies that wanted to take part in the race for oil. From 1965 to 1980 there was a total of 58 different companies entering the shelf. In 1977 there was a total of 35 different companies that was granted licenses during the year. From this we can see that the companies found the shelf interesting and saw possibilities on it.

In our statistical findings we saw that the three different periods had there are differences characteristics in the activity levels. The other periods will be looked closer at in the other subchapters.

Our statistical findings for the from the first license round until 1980 are displayed in the figure below:

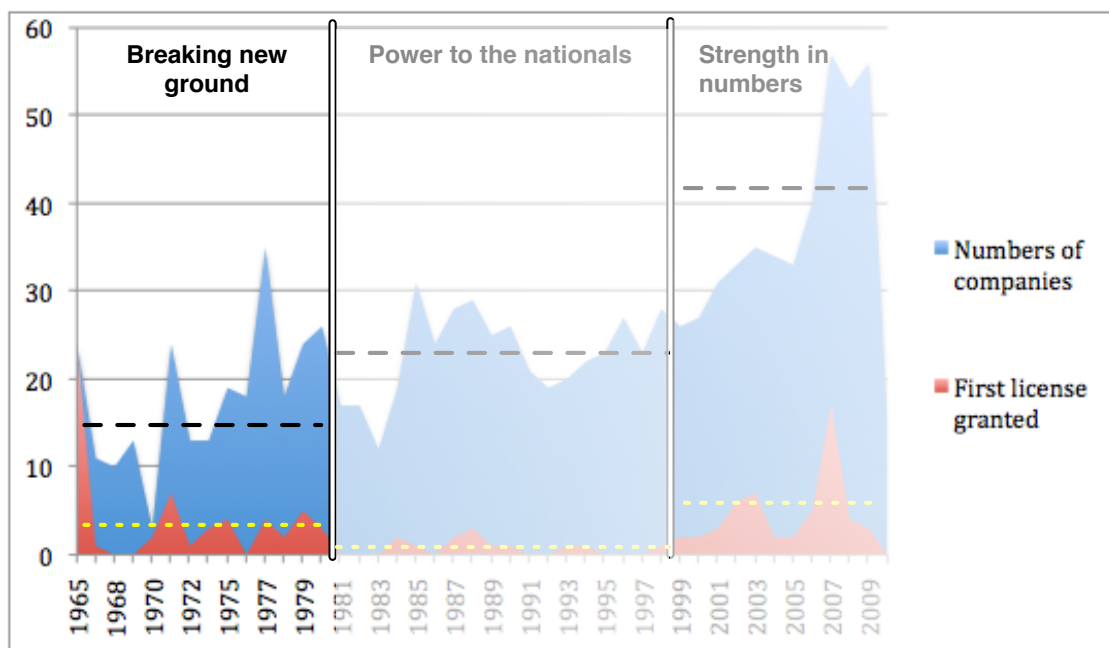


Figure 9: Historical periods from 1965 to 1980

The period from 1965 until 1970 has many new entrances, many of which are large IOCs. From 1970 – 1980 there was a steady growth in both newcomers and the numbers of companies that are granted licenses. In average there was 3,53 newcomers (yellow line), relatively high compared to the total average in all three periods of 2,83. The was 15 companies (black line) in average per year, a bit lower then the total average of 25,3 companies.

Numbers of leaving companies

To better and more complete understanding of the development among the companies we found it important to also present the numbers of companies that have left the shelf in the period. By analysing the numbers of companies that has been granted a license, for then being inactive for more then five years after this, we have found the numbers of leaving companies. If a company is granted a license in 1965 and then again later in 1980, it will be seen as active and therefore not counted as a “leaving company”. The year that has been plotted as the *leaving* year is the year the company was grated its last license. We call this the mortality rate. The period from 1965 to 1979 is presented in the figure below:

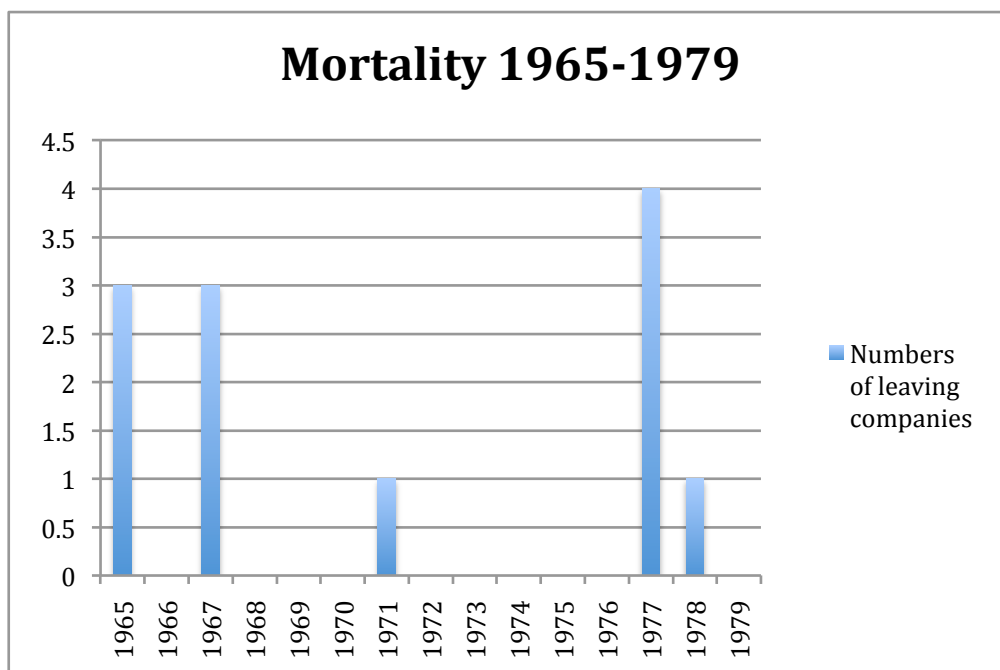


Figure 10: Number of companies leaving the NCS per year from 1965-1979

From the figure we can see that there are only some of the years that have companies leaving. One of the factors of this is that the licensing rounds were only every second year, but there were transactions between companies outside the rounds as well. From this period the average annual mortality rate was 0,86, less than one company per year.

4.3. Power to the Nationals (1980-1999)

In this part of the chapter we are going to take a closer look at the period from 1980 to 1999. The Norwegian companies have gained knowledge and are starting to take over more and more of the power on the shelf.

4.3.1. Political ideas and driving forces

“Under this period there is more and more pressure for not giving anything to the foreign companies”

Helge Sørås, 2010

This was a policy that in many ways was intentional. The Norwegian Government felt they did not need any more companies at that time (Lerøen, 2008). So why change the system, when you in a way have diversity. They were content with the situation. They had three thriving Norwegian companies, which had an aggressive policy and to some degree a different policy. Some of the big international companies were there, Conoco, Phillips, Exxon, Mobil, BP and Shell. So you had at least eight to ten big foreign companies that competed intensely. Therefore, with three Norwegian and ten foreign companies they were not very interested to change the system so it would be easier to enter the NCS. They felt it was ok that the NCS was relatively barred. (Sørås, 2010)

In 1982, when Statoil was ten years, the director of the company, Arve Johansen, concluded that the Norwegian companies in the petroleum industry was sufficiently developed to such a degree that the need for foreign companies on the NCS had vanished. Johansen thought it was time for the Norwegian companies to take control for themselves (Lerøen, 2008).

In 1980 the Norwegian Conservative Party (Høyre) announced that they did not agree on the terms that were given to the players on the NCS. Their concern was that Statoil were gaining too much market power and that this was leading to a weakening of the market powers on the NCS (Ministry of Petroleum and Energy, 2007). So when The Conservative Party was elected in 1981 and formed a government, this was a main priority for change (Ministry of Petroleum and Energy, 2007). Saga and Norwegian Hydro were granted better agreements, due to the new limitations of Statoil’s market power in 1984 (White paper #73,

1983-84). The international players also gave feedbacks that stated that this was a step in the right direction, which gave them and the other Norwegian companies better possibilities to expand.

The change in the petroleum politics did not go so well. After the change, there were large and public discussions about the changes. The main accusation was that the change would dampen the possibilities for growth of Statoil. After much debate, over several years, an agreement upon a change in structure in the government's engagement on the NCS needed to take place. By this settlement it was also agreed that Statoil should keep their share of 50% in Statfjord.

Sørås claims that a large part of the policy premises, in the mid-eighties, was being constructed from the bureaucracy in the Ministry of Petroleum and Energy. But he also emphasizes the differences between political parties when it came to policy-making. The Labour Party (Arbeiderpartiet) had big fractions that thought it was absurd that Norway should give away large parts of the oil revenue, the national treasure, as profits to the foreign companies. Regarding the political pressure for retaining most of the profits in Norway Sørås says: "I think it was important that there were a core of both politician and top bureaucrats who saw the value of diversity"

There was also disagreement around the policies that the Ministry of Finance presented regarding the NCS. Helge Sørås was one of the critical voices. He remembers an episode in the Ministry where the new taxation policy was discussed and he asked what would happen if the new stricter taxation were imposed and the oil price fell under 20\$. "They just laughed at me". From the reaction he got it seemed like they found the idea preposterous.

From the side that wanted to maintain certain diversity among the companies on the NCS, the focus was on the resources that other companies may hold. Especially big foreign companies such as Exxon, Shell and BP were considered leading in many ways. They had enormous resources, in particular human and knowledge-based capital. And it would be a bad decision to say no to these resources. The side that tried to preserve most of the revenue in Norway argued that the knowledge we needed could be bought, Sørås think this view was just partly right.

In 1985 the Norwegian commitment in the petroleum industry was reorganized. The Norwegian ownership in the petroleum sector was divided into two main parts, one part for the ownership in different companies and one to the direct economical commitment. State's Direct Financial Investment (SDFI) is an organization that owns parts in the different fields, pipelines and other property related to oil and gas development. The share that is owned by SDFI is set on each license that is granted, this means that SDFI also need to take its part in the cost of field developments, and therefore also gets its cut of the revenue generated.

Harald Norvik succeeded Arve Johansen as the director of Statoil in 1988. He had a different approach than his predecessor. He thought that State owned companies should be commercialized. Peter Mellbye (Executive vice president International Exploration & Production in Statoil) thinks Norvik's biggest contribution, as the director of Statoil, was the de-politicization of the company (Økland,2009).

Sørås says that the balancing act between regulations and requirement, and the attempt to be interesting for foreign companies are behind much of the Norwegian governments policies. The government has always claimed that the license goes to the one whom has the best applications. But the pattern is so clear that it's hard to avoid concluding otherwise. But when you get to a certain point there is actually quite a strong will to revise and change the system, to achieve, and get back to a more diverse situation.

4.3.2. Governmental structures

The period in the 80s and early 90s was a period where there were few large structural changes in regards of the government adaption towards the petroleum industry. It is in this period we can see resource nationalism in full blossom. Something that in the mid-eighties was a cause of concern for the public and some of the political parties. The conservative government claimed that the concentration of power that Statoil represented was too large, and therefore suggested to limit this. After more ten years the cuts and limitation of the power of Statoil becomes a reality in 1984 (White paper #73, 1983-84). This led to the fact that the government took over parts of the companies revenue and costs (Olsen, 1989:108). Some years later this would result in a massive loss for the government due to the fall in oil price.

Several researchers and journals claim that the 80s and 90s were a transformation period, where the Norwegian government gradually went from being *hardcore nationalist* to becoming “international capitalist”. From being mostly focused on developing a national industry, there was a growing willingness to try to understand the perspective that the international oil companies had. This was partly done by initiating various research projects that were founded by the government and the oil companies, which attempted to gain a better understanding of the oil industry. Later this made the regulatory regime in Norway more able to communicate with the international oil companies, and construct regulations that ensured a better exploitation of the petroleum resources. This change in focus was also in place to make the NCS more attractive for companies. In these research projects different universities, colleges and institutions paid a considerable part, in addition to research groups within the governmental structure (Research Council of Norway 2009). The changes made in the governmental politics were described as: “a more mature and symbiotic relationship between multinational enterprises and governments”, by (John Dunning, 1992).

4.3.3. Governmental management tools

In the earlier part of this period there had been *tradition* to give the Norwegian companies an advantage. It also seemed to be a clear hierarchy with the foreign companies. First were Exxon served, then Shell and then BP. Last in line were the rest of the foreign companies and they often got licenses that were not worth much. This is something also Sørås talks about in our interview with him. The general view of the government on this time were:

“If someone wanted to try to get in on the shelf that was fine, but then they had to take the rules as they were.”

Helge Sørås, 2010

The tendency to favour national companies and certain foreign ones was combined with a tax increase in 1982, when the taxes were increased to 85%. Clearly some changes had to be made, to once again be able to gain companies interest in the shelf. After a huge drop in oil price in 1986, the taxation was reduced to 78%.

“The tax system was made to gain as much as possible from the international companies, but at the same time give them so much that they stayed. “

Helge Sørås, 2010

Composition of licenses between companies

A change was made in the licensing policies. The companies could now apply for a license in a group, and were judged by NPD as a single unit. NPD therefore looks at the groups as a whole, and how the group of companies are combined. The structure of the group and what company that are set as the operator is important for the judgment from NPD (Norwegian Government, 2007). NPD says in their report that its not desirable to have too many companies in one license, they recommend the maximum number of companies in one license to be four. If there are more then four participants on a single license there is a risk that this will lead to a slow down in the decisions processes within the group. NPD also do not want the licenses owners to have less then 20% ownership in the license (ibid). When the allocation of who gets to be the operator on license NPD normally follows the suggestions done by the companies in their application. If there is more then one suggestion on the operator within the group, NPD determine who is the operator with the best application, and thus can ensure the best possible exploration of the area. The operator gets a bigger share of the license then the rest of the group, the reason for this is to secure that the operator works as a force to push the development forward (ibid). If there are more then one group of companies applying for a license, NPD does as overall judgement of the composition of the license. NPD thereby suggest a composition of companies for the license. The overall goal for the composition of the group-license is to ensure that all work requirements, set by NPD, are executed in accordance to the guidelines.

Communication between the companies and the government

The association that represented the oil industry on the NCS has been organized in several different ways since 1965. But since 1989 The Norwegian Oil Industry Association (Oljeindustriens Landsforening) has always been a central actor and a voice for the oil industry. In addition all the big oil companies have their own contacts. “It is inconceivable

that the big oil companies do not have their own contacts". (Ibid) The oil industry has, at least in public, managed to portray a common attitude and behaviour. It has required much effort sometimes, especially between Statoil and the foreign companies. Hydro is more difficult to define, it had its old connection to all the ministries, which they used. Regarding the big oil companies contact towards the government Sørås is not sure that lobbying is the correct term to be used, but he is aware and not naive when it comes to influence on policy makers from oil companies. Sørås' personal experience is that the bases for making a decision for many of those who make political decisions are weak. This is often due to a combination of lacking perceptive and political populism. So much of the lobbying in reality is there to try to give a better basis to make decisions. However, Sørås have never experienced inappropriate pressure from either side.

4.3.4. Behaviour of Companies

Some time into the 1980s the situation was different from the early phase. Norwegian companies had shown that they were capable of running operations themselves. This is also the period where operations on the NCS are generating a vast income

Many foreign companies felt that the grip was being tightened in this period, and from the government's side the focus was mostly on some of the major foreign ones. Gas de France (GDF) was an example of a company that was not especially welcomed. GDF had limited resources on the geological and technical side, in regard of offshore operations. They were mostly focused on downstream and gas sale. At this time Statoil and the Norwegian companies had exclusive rights on the sale of gas. (Sørås, 2010)

"You can say that this is the period where the diversity thought had the worst living conditions"

Helge Sørås, 2010

After a while these conditions impacted the interests from even the big established companies. BP almost stopped applying for new licenses. Shell just applied for a few they wanted and nothing else. To a certain extent this was the case for Exxon. The third line

companies such as ENI and Total and some others was a bit more willing to take a higher risk to get in, but it was clear that the companies started to lose interest.

When the oil price started to go up again it was still clear that the companies was not as interested as they had been. So it became clear that they had to do something. One of the first changes was to introduce more flexible rounds, which became annual. Some taxation changes were also made. These adjustments had some effects and the interest became slightly higher.

“It was clear that when compared to the initial phase, in which the companies had possibilities for giant elephant findings, the interest had gone down. A part of the drive had disappeared.”

Helge Sørås, 2010

It was not just the dwindling hope for big oil fields that had an impact. The fields that were found were smaller, less accessible and more expensive to exploit. The Norwegian system with many regulations, such as worker’s protection rules, environmental regulation etc. also played a role. These regulations played a part in when it came to attract foreign companies. The companies are dependent on countries like Norway, but at the same time Norway is dependant on companies finding the country interesting.

The big integrated oil companies had gone through a major consolidation phase. One of the first one, which influenced the NCS, was in the eighties. In this period, the many companies thought it was cheaper to *search* for oil on Wall Street than to go out in the field trying to find it themselves. In other words, they tried to build up reserves not by looking for oil, but by looking for companies to buy on the stock exchange or other places. This is a method that the big companies always have used. It is called fusion, but in reality the big companies devoured the small ones.

In the 1990s there was also a new consolidation phase, several huge merges that took place among the oil companies. BP and Amoco merged. This led to a larger and more consolidated in the upstream activity on the North Sea. When this happened several companies followed

in BP and Amocos footsteps; Exxon and Mobil, Total merge Petrofina with Elf, finally the Saga and Norsk Hydro merged. This led to a large concentration of power and a reduction in the numbers of players in the market. Øystein Noreng (2006) analysed this phenomenon and found that the general reason for the merges was the need for return on capital employed. Since it in the 1990s was a tough period for most of the large oil companies, the need to show growth for the investors was strong and therefore one of several reason way this happened. The urge to grow is strong even today among the companies and is a key factor for most of the merges that we see in this period (Noreng, 2006).

4.3.5. Diversity in the period

After 1980 the number of companies declined, as well as the number of newcomers. In a period of 19 years, between 1980 and 1999, there were only 13 new companies that entered the shelf. The numbers of new companies that is 0,9 new companies on average per year (yellow dotted line), compared to the average of 2,83 companies during all three periods, this is the lowest of them. The general numbers of companies that were granted licenses is in this period stabile. The average number of companies granted licenses this period was 23 per year (black dotted line), this is somewhat lower then the total average for all periods of 25,3 per year.

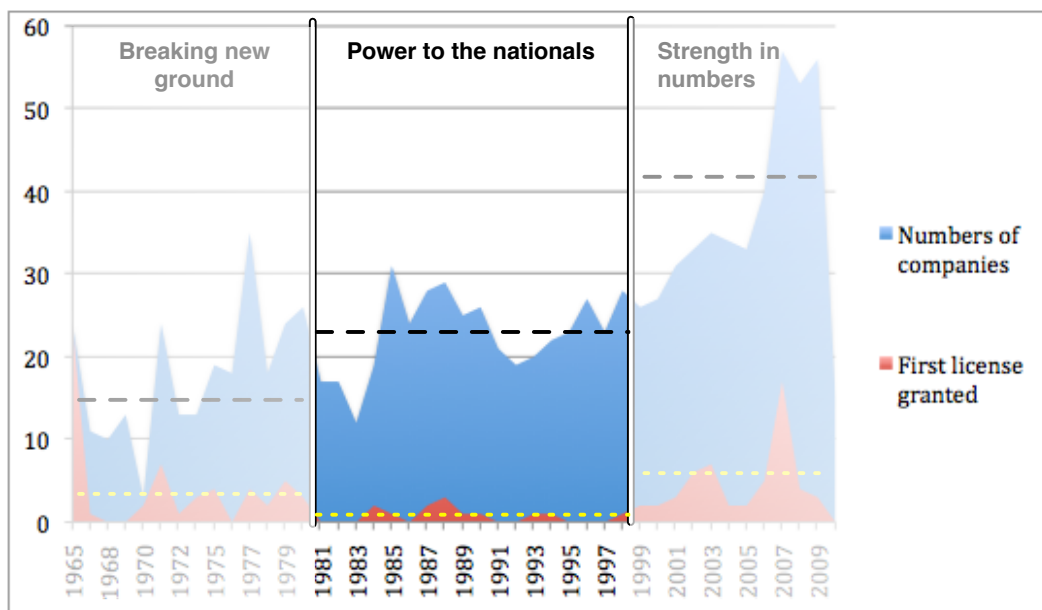


Figure 11: Historical periods from 1980 to 1999.

As we can see from the figure the number of newcomers is low. The numbers of companies already granted licenses is stable during the period.

Overall the consolidation of the shelf is clear in this period and can be seen as a result in little growth and low dynamic in the market. The early phase Sørås claims to have the following reason:

“In this period it became almost impossible, because of the political situation, not to give the best to Statoil, second best to Hydro and the third best to Saga. And this did not leave much for the foreign companies. (...) In many ways this was a frustrating time for the foreign companies”

Helge Sørås, 2010

The companies that did not have large ownerships on the shelf stopped to apply for new licenses and the once that had large ownerships only applied for the once they felt for, the licenses that had low risk. Several companies left Norway in this period, as prices for oil dropped and the shelf matured (Noreng, 2006).

During the conciliation period in the 1980s the general trend among the companies was to merge or buy other companies. This was done extreme efficiently. “They claimed that they merged with the smaller companies, but three months after nobody hear anything more from them.” Sørås claims that it in this period the oil companies were desperate to expand, and that this had a hard impact on the evolvement of the diversity.

The next conciliation period in 1990s the diversity was yet again reduced when several of the major players in the industry merged. It in this was then the Norwegian government started talking nicely about the smaller companies (Sørås, 2010).

Numbers of leaving companies

In this period we can see that the numbers of companies leaving has been higher then in the previous period. On average there were 1,25 companies leaving the market each year for this period, something that almost the same as the annual total average of 1,22 for all

periods. The number of companies leaving in this period is much more consistent, then the previous period. Our calculations is displayed in the figure below:

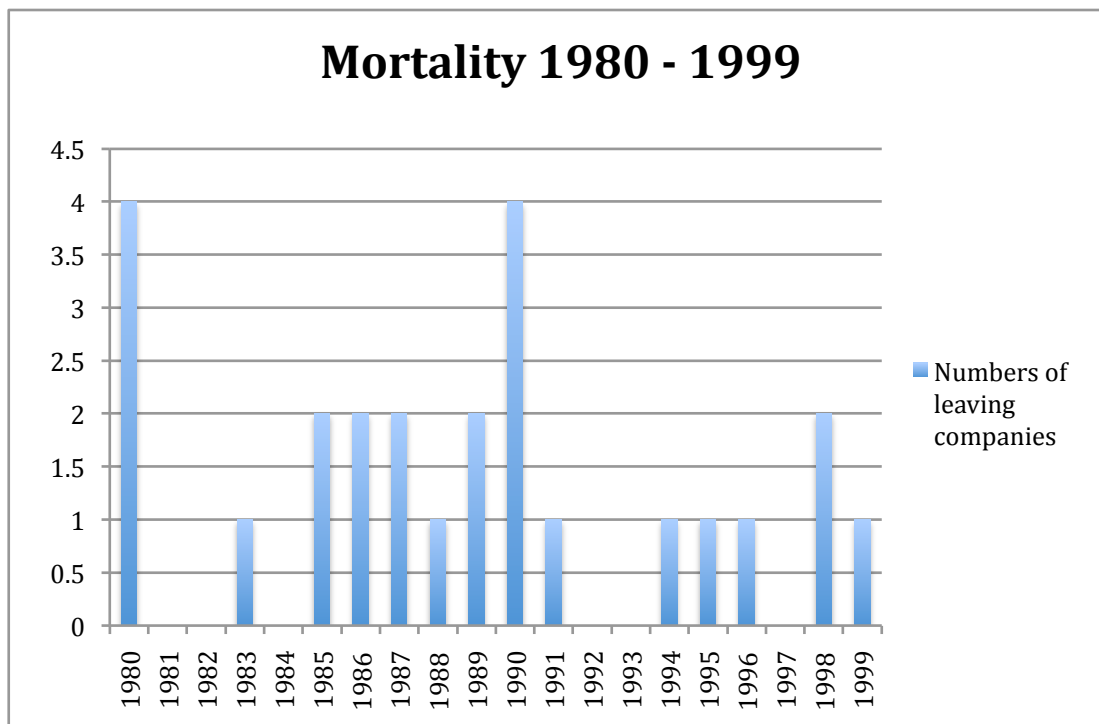


Figure 12: Number of companies leaving the NCS per year from 1980-1999

4.4. Strength in Numbers (1999-2010)

In this chapter we are going to take a closer look at the period from 1999 until today, 2010. Since the development and activity among the companies in the late 1990s was slowing down, the Norwegian government had to take action to make the shelf attractive again. Diversity among the companies has never been more important, due to declining production.

4.4.1. Political ideas and driving forces

Sørås tells us that the government now started to see that the diversity and numbers of petroleum companies was very reduced and that production also was declining. A change was needed. In an attempt to make NCS a broader and more diversified market, Norwegian government decided to start a liberation process of the shelf in 2000 (Norwegian Government, 1999:99). The liberalization process was done to make it easier for smaller Norwegian and international oil companies to take a part on NCS (ibid). The shelf production was declining and therefore needed both new technology and competition in the market. The result was that several new companies got operator status in the next licensing round.

The spring of 2001 Norwegian government decided that 21,5% the stocks in SDFI should be sold. 15% of the 21,5% was sold to Statoil since Statoil needed the stability of SDFI to have a successful entry into the stock market later in June that year. The main reason for the privatization of Statoil was to be able to compete on the same ground as other operators on NCS. The rest of 6,5% was sold to other stakeholders in SDFI.

The Norwegian government depends on the diversity to drive the innovation and improvements in several fields to grow and keep the production levels stabile. This changed focus has been presented in several governmental documents the latest was the Soria Moria declaration in 2007:

"To ensure an stabile activity level in the Norwegian oil industry it is important that Norway is the number one in both technology and environmental concerns. A diversity of public and private, small and large players is required to achieve this."

Soria Moria Declaration, 2005, chapter 14th

So why do the government depend on diversity? On the NCS alone there are several examples of how diversity has affected and led to great findings. The development of the Troll field was done by enthusiastic work from Hydro – although both the other owners, Statoil and Shell, did not see the same possibilities of the development. Another dispute took place between Statoil and Hydro. Where Statoil insisted on bringing the gas from Ekofisk onshore to Norway with pipelines. Hydro thought that the extreme depth in Norwegian Trench made the operation impossible, but Statoil proved them wrong. These are two examples on how the diversity has led to big leaps in technological progress. Without the combination of companies and competition, and thereby the diversity, the progress and production on NCS could have been much slower (Sørås, 2010).

The cooperation and competition is the key to a good and working diversified market and this is the model that NCS has been developed around. The strategic model of NCS where made to ensure that the companies do what is describe above, namely to create new and improved solutions, by diversity means (Haugen, 2010).

Since it all begun, more then 40 years ago, the petroleum industry in Norway has had both a massive economical and technological impact on Norway. The production on NCS has since the start and until now generated more then 6000 billion NOK in revenue (in today's NOK). In 2007 the petroleum industry alone gave Norway 24% of its value creation. The values created from the oil and gas sector are three times higher then the one from agriculture.

4.4.2. Governmental structures

In this period several governmental changes was made in the structure. This was done to meet the new challenges on the shelf. What was important for the government was to get a situation that gives new solutions for old problems and preferably new solutions to new problems (Sørås, 2010).

Tasks that go beyond the usual work area of the ministry are allocated to different departments within the governmental organization. These departments specialize on other types of petroleum related matters. In addition to the governmental departments, there are also several companies that take an active part in the daily operations on NCS. These

companies are fully or partly owned by the Norwegian government. The reason for this choice of structure is both fiscal and political. During this period there was several large companies and organization that was established. The larges companies are:

Petoro AS was established in May 2001. Petoro AS is fully state owned and has the responsibility to administrate The State's direct financial interest (SDFI). Petoro plays the role as an investor on NCS (Petroleum taxation act § 9-1, § 10-1). And take part as an active contributor in exploration and production licenses. Today SDFI are an active partner in 121 licenses. This makes Petoro one of the biggest license holders on NCS.

Gassco AS is a state owned operator of all pipelines from NCS. Gesso's main responsibility is to administrate and operate **Gassled** in a neutral and efficient way. In the operator role Gassco can do this since they have no ownership in Gassled. Gassled is cooperated operation between all gas producing companies on NCS. To be able to transport gas from the companies' production facilities to the market, the companies have to use the pipelines from Gassled. In order to gain access to the pipeline the companies has to invest in Gassled. In other words, it is a Dutch treat between all producers of gas.

These are the last changes as of today, and this gives the following structure of governmental institutions:

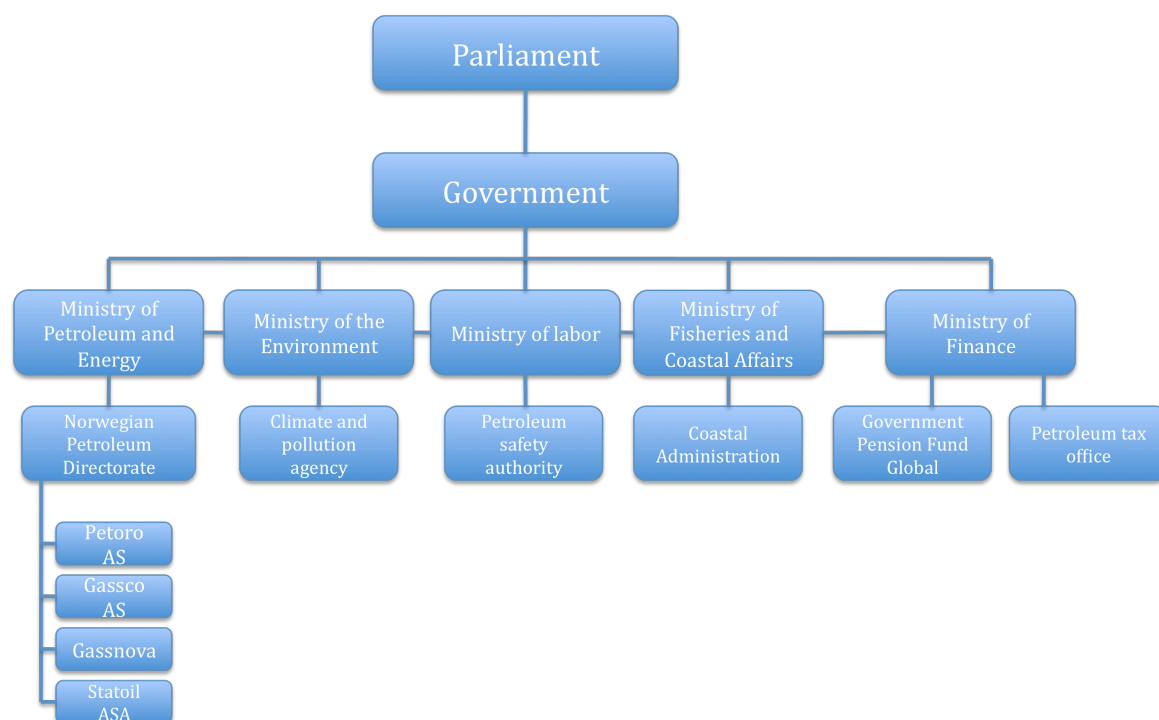


Figure 13: Governmental structure 2010

4.4.3. Governmental management tools

The government saw that a change in structure was needed to meet the challenges on the shelf. To achieve this the old regime, which was mostly build around the big oil companies, changes were made in the licensing structure and the taxation regime is made to open up for small oil companies, both foreign and national. With the new changes the Norwegian state takes a major part of costs and risks for the small companies (Sørås, 2010).

Liberalization

“We needed to improve to get in new players, this led to several actions from the governments side, first the added predefined areas to the licensing rounds.”

Melberg, 2010

The first step in the change was the introduction of Award in Predefined Areas (APA). The APA include areas that mature on the shelf, these are areas have a well-known geology and good infrastructure. Unlike the regular licensing rounds that focus on frontier areas and are held every second year, the predefined areas focus on mature areas and is held every year (NPD, 2010). The reason for the APA licenses is to ensure that the areas close and around already builds or planned infrastructures is available for the industry (ibid).

Changes made since 2000

In our interview with Espen Haugen, he told us there has been done several changes in the way the licensing system the last years. In the period from year 2000 there have been three major changes in the licensing done by the government:

1. There was set a fixed frequency on when the licensing rounds were held. The government stipulated that they should have licensing rounds for frontier areas with reasonable regularity and it was to carry out a round every second year. There was also created an annual system on the so-called predefined areas. This was to give better access to bigger areas around finished infrastructure.
2. A change in the process of the licensing system was changed. The government now should have a more proactive politic on allocation of areas. This meant that the government would be more open on inputs from the industry. It also meant that the government needed to have a stricter follow up routine on the companies. More specific requirements for the companies' exploration and drilling were

made. This way the government could be better set to measure what the actual activity on the license that was granted was.

3. One of the more important changes was the arrangement with pre-qualification of companies for licensing rounds. This is a pre-offer form the government to the companies and meant that the companies could get a feedback on how the authorities rated them. This meant that companies knew if they are qualified, before the actual licensing rounds. This was also actively advertised to spark interest around the world.

This is often what is referred to as the liberalization of the Norwegian shelf.

The liberalization led to the establishment of several new companies, but the level of production of petroleum kept declining. In 2005 the Norwegian government also liberalized the tax regime that had been more or less unchanged for decades.

“The tax changes were made in a period when the government thought that is was to little exploration on the shelf. We then needed to do something to get more players on to the shelf. “

Meldberg, 2010

The new tax regime is seen as an attractive and good system for both new and already established companies on NCS (Sørås, 2010). The reason for this is the possibility for reimbursement of the investments made of the companies. This provides the oil companies a more stable and predictable economy, since the Norwegian government with the new tax system reimburses 78% off all exploration investments. The government’s reason for this reimbursement is to secure production and development on NCS. The main focus has been to maintain production on small fields and tail end production stable and profitable even though the price of oil is low. The Norwegian government can do this since they have high taxation on oil revenues, and thus most of the revenue is generated by tax.

Sørås (2010) tells us that he thinks that this was a correct move from the government’s side. “My experience is that the government/bureaucracy leaders are extremely pragmatically

and skilled people. They analyze people and situations with similar experiences and see this in connection with the situation in Norway.” Sørås (ibid) also tells us that these action was greatly influences from the changes made in UK, a few years earlier: ”The changes that made it easier for smaller companies to establish on NCS was greatly influenced by the experiences made in the UK some years earlier.” Espen Haugen confirms this:

“It has always been a dialog between the Norwegian government and other governments, USA, Canada and Europe. The last changes done in 2000, is a result of actively seeking knowledge from countries like the UK.”

Espen Haugen,2010

Petroleum tax regime of 2005

Norway has one of the highest tax rates in the world on petroleum production. Since 2005 a revised tax regime was established to make NCS more attractive for new and foreign oil companies. The new tax regime is somewhat more complicated then the previous tax regimes.

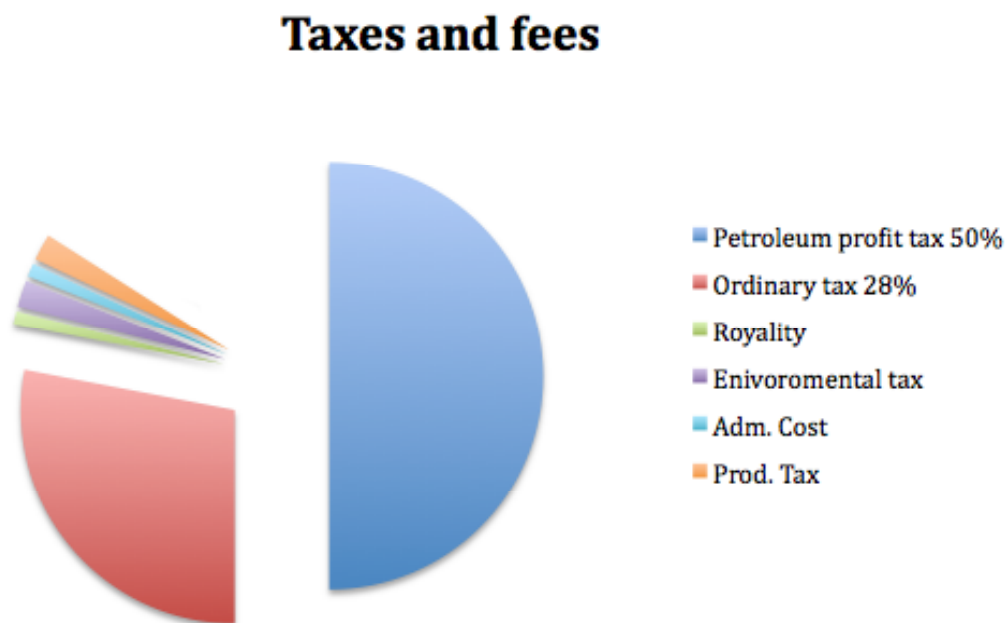


Figure 14: Tax regime of 2005

The tax regime from 2005 can be split into the following main categories:

- Petroleum taxes 50 %
- Ordinary business tax 28 % on net revenue

- Royalties for licenses
- Environmental taxes varies dependent on pollution. This is could be CO₂-fees for air pollution.
- Low administrative licensing fees (approx. 100 000NOK per license).
- Production fees. The production fees are more or less removed from all fields today.

In the 20th licensing round in 2008 another change has been made to how the process of the licensing rounds is held. In the 20th licensing round a public hearing was established. In the open hearings the stakeholders and the authorities can debate the suggested areas. The reason for this is to make the process more open for the general public, and to take their opinions in to consideration (Norwegian Government, 2008).

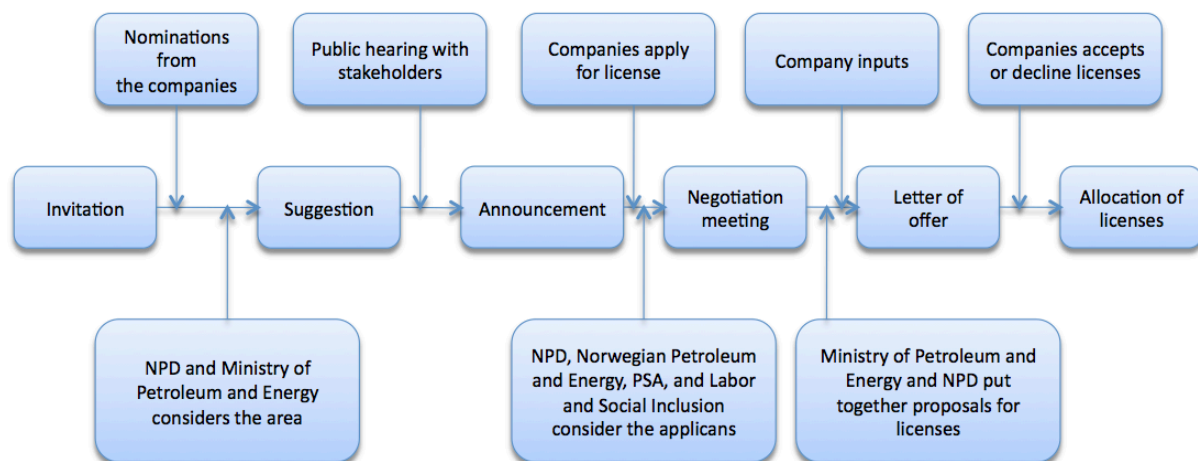


Figure 15: The steps in the Norwegian licensing system of 2010

The figure shows the steps in today's (2010) licensing round, but since the basic elements of the system is similar to the structure in early beginning, we found it more reasonable to presented it just one time then several times for each period.

During the first five years of this period the governmental side of the NCS had gone through large changes, in addition to liberalizing the shelf, the government also agree to merge the two larges oil companies in Norway. The merge of Norske Hydro and Statoil was done in 2001 to gain better international strength. This means that it today only is one of the three Norwegian oil companies left. Statoil has become the number one player on the NCS, after

both Saga and Hydro have merged together with Statoil. Statoil now produces more than 80% of all hydrocarbons on the NCS (Steensen, 2010). A massive amount of both fiscal power and technological knowledge has been combined into one huge Norwegian company. The willingness to compete against each other has been set aside, for a goal to succeed internationally. The diversity of the three Norwegian oil communities once represented, has been changed and has taken a new form.

Today Statoil is not seen as a political instrument, but the Norwegian state still owns the majority of the companies stocks. This means that there is no requirement for the company to participate politically in regards of diversity or any other political goals. But since Statoil now is by far the largest company on NCS, it's the required of the government to ensure that Statoil's size do not inflict on ideas and possibilities by smaller players on NCS. Because of a maturing shelf, the production of oil has been falling the last few years. This is a matter that has been taken serious by the Norwegian government. In order to generate a greater ability for solutions and risk taking it is more important then ever to maintain and encourage diversity.

The actions taken in this period has been seen as a step in the right direction in regards of the diversity among the companies. But there are still stakeholders in the industry that are not pleased. In an interview with Henrik Carlsen, executive vice-president in Statoil Carlsen says:

"We were not expecting them to change the tax regime on fields that are currently producing. The challenge for us is that we are discovering smaller and smaller fields on the Norwegian continental shelf and there are challenges with regard to having a good economic outcome from these fields. We had asked that the special tax be reduced, perhaps down to about 25% for such fields." (Fraser, 2004:*²)

To get a better understanding of the industries reaction to the changes made we need to look at the companies' behaviour in this period.

² *Quote from:<http://www.norway.org.uk/ARKIV/Other/Current-Affairs/business/news/norwayahavenforoilproduction/>

4.4.4. Behaviour of Companies

The news about the establishment of a far more favourable tax regime for the companies rapidly spread in the oil industry. Soon after the new petroleum tax regime was established a lot of smaller exploration companies was established in Norway. Many of the new companies got exploration licenses and operator status on the next licensing round.

Difference between reaction small/big companies taxation

An important part when the government constructed the Norwegian taxation regime was an attempt to alleviate risks for the oil companies. By reducing risks for companies, you could in theory, have them accepting lower returns. In economical theory there is a relation between required rate of return and the levels of risk. This was an aspect that never functioned properly. The foreign companies are used to consider the after-tax cash flow, which they discount to consider the profitability of a project. This approach does not take in to consideration that they de facto had a state guarantee for a large portion of the money. The fact that they were guaranteed 78% back from an investment was not clearly shown. The tax reimbursement was seen as a part of the positive cash flow, which they got after an investment. But they in their perspective they had invested the entire sum, not just 22% of the sum and the other 78% invested by the Norwegian state. The return of an investment appears much smaller when you calculate like the big foreign companies did. This was a fiscal overrating of risks in Norway by foreign companies. This had an impact on the assessment of which projects to invest in. The oil industry generally demand a huge rate of returns. Many of the new and small companies have a somewhat different approach. They are more likely too view their own risk as 22% of an invested sum. They have to finance the whole sum by loans for a short period, but then 78% is paid back (Sørås, 2010).

What is important for the government is to get a situation that gives new solutions for old problems and preferably new solutions to new problems. The big old mammoths do not easily react. *"We are really talking about the problem with the super tanker, it takes a long time to stop and turn around"*. (Sørås, 2010) The big oil companies contain a massive bureaucracy. Bureaucracy is not a phenomenon that is invented by or only dealt with by the government. These structures are also very real when it comes to big companies.

Another phenomenon that we observed doing our statistical analysis of this period was that several companies had been in passive for some time before the liberalization. Companies

that had been granted their first license in the earlier periods, but have had long pauses before applying for new licenses. To illustrate this phenomenon DNO is the good example of this:

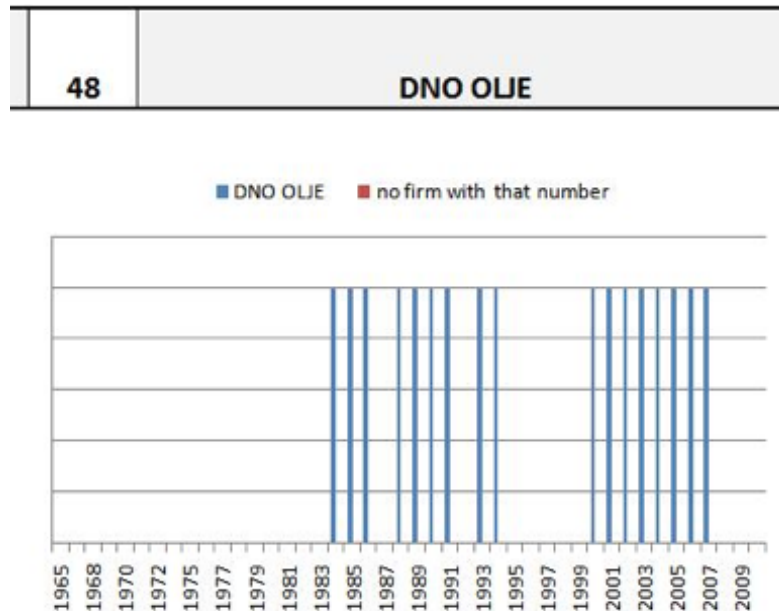


Figure 16: DNOs license history

The years DNO has been granted licenses are represented with the blue lines. As we can see DNO was granted licenses from 1983 and to 1994, when they getting new licenses. In 2000 DNO was granted their first license in 6 years. We have seen several instances of companies with behaviour like DNO. This could be an indicator that the changes made in the regulation of the shelf by the government are working.

Different types of companies on NCS

When mapping the diversity amount the companies on the shelf we would like to allocate the companies into different classifications. Sintef (Westby and Forseth, 2008) has done this in an extensive research for the petroleum industry in 2008. Sintef's research is based on interviews with representatives of 13 petroleum companies, the companies' own presentations, and publicly available information on the petroleum industry. In the report we are presented with a description of the operators on NCS and how they evolve, as well as the companies' goals, size, resources, expertise and financial strength. Our classification is

based upon this research. The different characteristics of the companies will also be presented.

The normal classifications of companies are shown in the table below:

Criteria	Examples on characteristics
Size	SME and BIG (Majors)
Nationality	Norwegian (NOC) and Internationals (IOC)
Phases	Exploration or production companies
Experience	Newcomers vs. experienced/ old on NCS.

Table 1: Normal classification of petroleum companies (Westby and Forseth, 2008).

When we are talking about the different types of companies they are classified as the once above. To be able to see the aspect of the importance of having different companies on NCS, we find it important de show what the different classes of companies *bring to the table*.

Characteristics of the different companies

In the report by Sintef they have found that small companies often have unique business concepts, this are for instance technological advantages or a large rig capacity. This is used to gain willingness companies that they are cooperating with on a license. Other small companies are characterized to have a more efficient organizational structure, and therefore be able to adapt new regulations faster then the large companies. An example of this is this is that the smaller companies have smaller administrations, are more goal oriented, and therefore get a better overview and is more flexible of what need to be changed in order to adapt. Smaller companies often claim that this makes them more energetic and cost efficient. Another characteristic found is that the newcomers often have a special “*mission*” or “*niche*”, compared to the larger and well-established companies. The small newcomers have a wish to challenge the way the established companies work, and adapt governmental policies in regards of competence and the management of competence. The newcomers describe that they outsource the fields of competence that they have little or no competence in, and rather focus on the things they do not consider as their core competence.

The small companies also have common activities, since most of them are exploration companies they are comparable, the focus on increased exploration, better tail-end production and marginal fields. These activities are all related to the organizational characteristics of the companies.

In our interview with Sørås he tells us that it is quite hard to compare the oil companies, but the international integrated companies have much of the same basic structure as other large organizations in other industries. Big organizations in general have some basic common features; this does not only apply to big oil companies. It is unavoidable to have a rather big bureaucracy. Another common feature is that you often see a strong centralized control in the organization. This varies between companies, but the oil industry has a strong centralized control. In an oil company you have to have clearance from the head office for almost any decisions. *“The theory that says you can control everything from Norway is a theory and will never be anything else.”*(Sørås, 2010). Statoil behaves in the exact same way. Anything else is just political nebulous talk. But you have individual differences between companies. Exxon is known to have strong centralized control, but an extreme strong culture. Their culture can be summed up in the word “excellence”. They are number one and that is what they are supposed to be. Period. They have succeeded to a certain degree. In the industry they are known as number one. Another category is the “national champions” (NOCs), like Statoil is for Norway and Total in France. They are often favoured in their countries of origin, and do not have such a strong commercial structure as the big American companies. *“Capitalism red in tooth and claw is more widespread in America compared to the more Europeanized organizations. The latter has a different approach and culture.*

As we can see from this the differences in the large IOCs and the small newcomers are considerable. Both the small and large companies have a great potential to contribute to the shelf in each of their own way. It is therefore important to ensure that there is room for several different types of companies, and that they are given the possibility to contribute in the petroleum industry in Norway.

4.4.5. Diversity in the period

When we look at the years after 1999 and until today we can see that the biggest growth in the whole period in the number of companies. All the years from 1999 until 2005 have a large growth of companies granted licenses, the numbers of newcomers are also growing until 2003. From 2003 to 2005 there is almost a pause in the number of newcomers, but in 2006, and 2007 there are a lot of both newcomers and *old* companies. On an annual basis we can see that in 2007 there was a total of 57 different companies, where 17 are newcomers. This is the highest numbers in the history both for *new* and *old* companies.

When this is said we can see that the actions taken by the government clearly has made an impact on the activity level among the companies. The first part of the period from 1999-2005 had a large growth in new companies and in companies that are granted license. The period after the tax changes from 2005 until today has a massive growth in the numbers of new companies entering the shelf. There is a large growth especially in the year 2007 in newcomers. On average there are 5,1 newcomers each year in this period (represented with the yellow line), something that's high if we compare it the average for all periods of 2,83 companies. The average number of companies in general is 42,5 per year (black stippled line), this is also a lot higher then the total average for all periods of 25,3 per year.

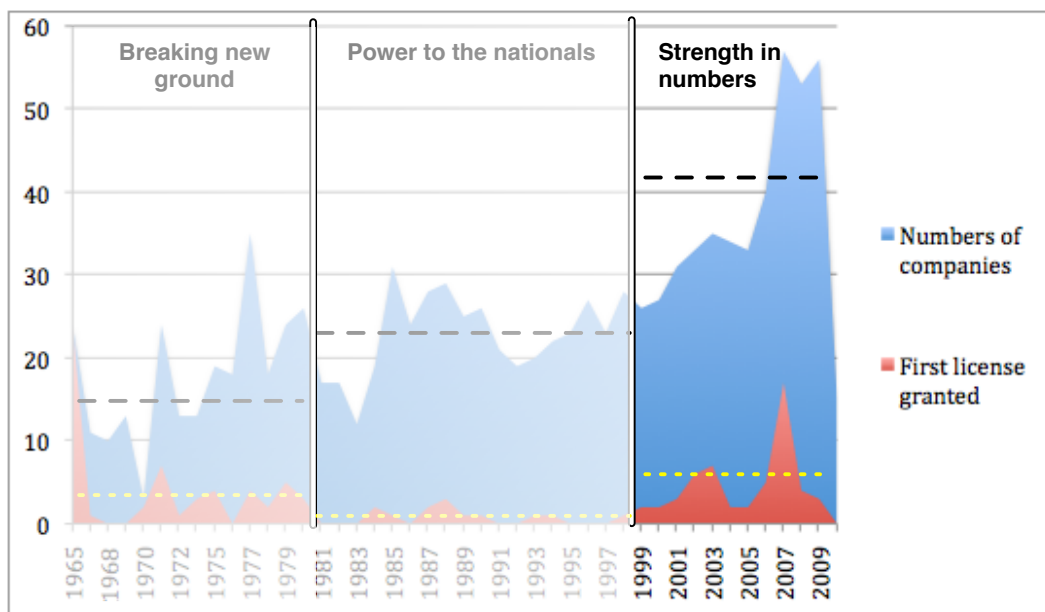


Figure 17: Historical periods from 1999 to 2010.

From our statistical data collaboration we saw that major IOC and NOC dominated the activity on Norwegian continental shelf from 1965 to 2000. There have been some medium sizes oil companies as well, but in general the majors have ruled the NCS in this period. From the period from 2000 until today we can see that the liberalization of NCS has given the smaller and medium sizes companies a possibility to become active players as well. But the governmental revenue still comes from the majors. In 2009 80% of the revenue comes from Statoil and almost all of the rest, 20%, come from the large IOCs (Petoro, 2009).

Companies leaving in the period

Since we have based our mortality rate on inactivity of more than 5 years, this gives us a slim data collection in the last period, since it is only ten years. But it gives us a good indicator of the trend. As shown from the last figure this period has much higher activity level than the earlier periods. This is something that also shows in the amount of companies that disappear from 2000 until today.

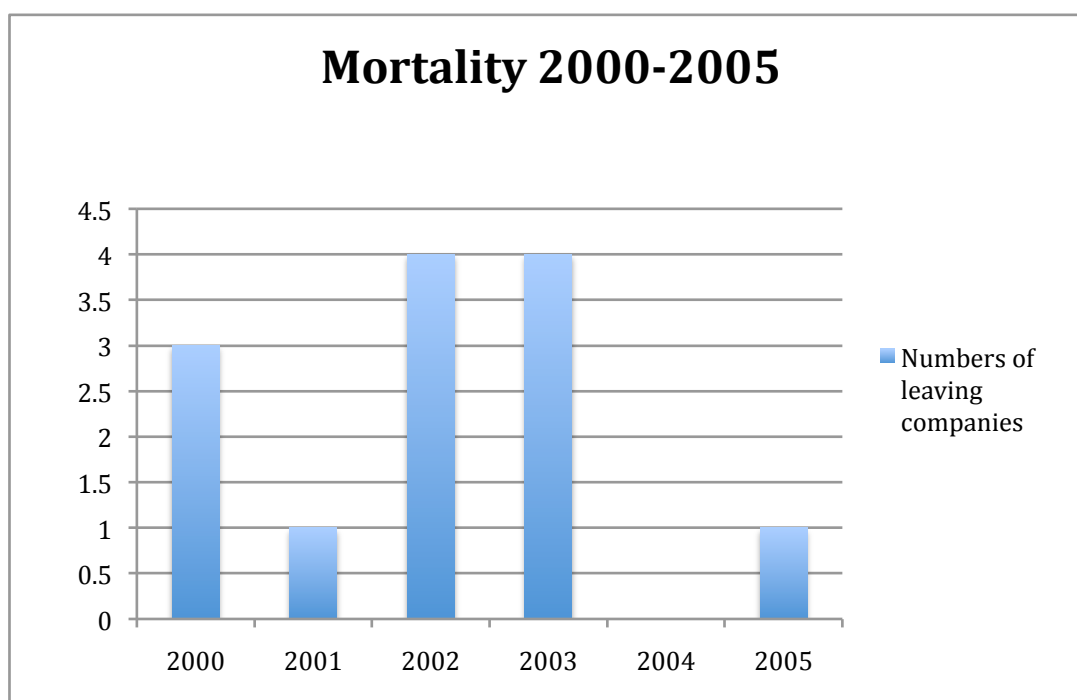


Figure 18: Number of companies leaving the NCS per year from 2000-2005

The average of companies leaving in this last period is 2,16 companies per year, which are the highest of all periods, compared with the weighted annual average of 1,23 for all periods it is a lot higher. Something one would expect since the growth in newcomers and

companies has been much higher. To be able to entered what has made this change we have collaborated our statistical data and the historical data.

A presentation of our findings

When we combined the historical facts and the interpretation of our statistical data collection they can be joint to getter to get a better understanding of how the governmental actions has impacted NCS.

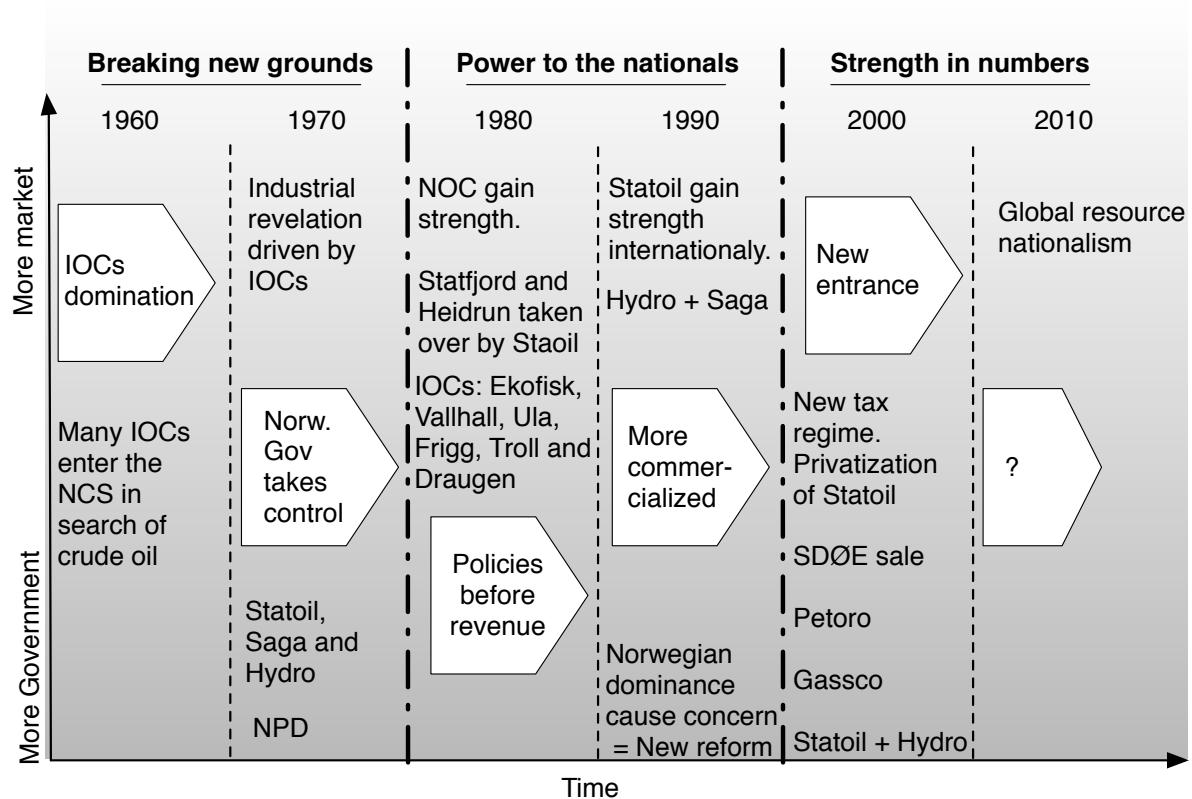


Figure 19: Historical presentation of the evolvement on the Norwegian Continental Shelf

In the figure we have displayed the most important changes and happenings during the decades from 1960s until today. We have also presented what we find as the level of governmental control versus the level of market control.

It is important to specify that the Norwegian government always has controlled and regulated the shelf, but the figure illustrate the changes in influence and power balance.

Have the Government succeeded?

When Sørås is asked about the success of the new reforms from the government he respond: If you judge from the statistics they have succeeded. It has never been as many applications for licenses as now, judging by the numbers. If you look at the competence they represent, it is somewhat a different question. But you should not underestimate the expertise that some of the small companies hold. It is clear that much of the expertise in the small companies comes as a result of the fusion processes undergone by other companies. Almost all the small companies that have shown themselves capable of surviving have experienced people from the industry. They are not there just because they think it is nice to still work in the industry. They are there because they think they have business concepts or technical concepts that are different and interesting which can compete against the big competitors. This is something Haugen agrees on:

“The last few years we have seen a development from 15 to 60 active companies today. Most of the new companies have entered with the new APA system.”

Espen Haugen, 2010

During this last period the Norwegian government has taken radical action that has resulted in a strong growth in the amount of small and medium sized companies. New state owned organizations has been established to make it easier for the companies to succeed on the shelf, as well as to ensure better communication between the companies and the state through the prequalification system.

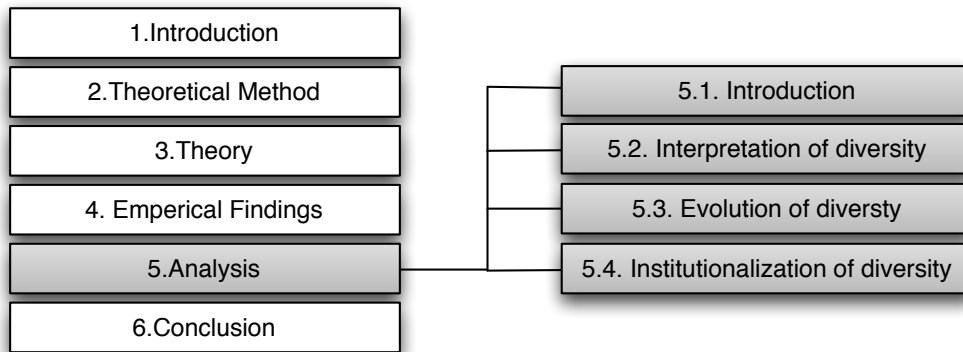
4.5. Summary

In this chapter we have presented our empirical findings. There are in general three types of data that is presented. The chapter is structured as a historical presentation on how the evolvement on the shelf has progressed, and what measures the government has implemented. All findings from our interviews with experts from governmental institutions and an expert from the industry is presented and combined with our statistical findings. The most important implementations and changes in the licensing and tax system been described in details, since the changes are made to stimulate diversity. The statistics presented include the numbers of active companies on the shelf and the companies activity levels based on licensing data.

5. ANALYSIS

“The real voyage of discovery consists not in seeking new landscapes, but in having new eyes.”

Marcel Proust



5.1. Introduction

In this chapter we are going to analyse our empirical findings with the help of our theoretical framework. We have used both the evolutionary economics and institutional theory in an attempt to gain better insight of the development of diversity and the political influence.

5.2. Interpretation of diversity on the Norwegian Continental Shelf

As mentioned earlier in the theory chapter, diversity is a term that is widely used under many circumstances. It can be argued that it is really comprised of three identifiable characteristics, which interact, but may have different emphasis in different situations (Sterling 1998). When we first divided the period we are examining into three separate parts, it was done because it became evident that there was a shift in policy from the government and a reaction from the actors on the NCS.

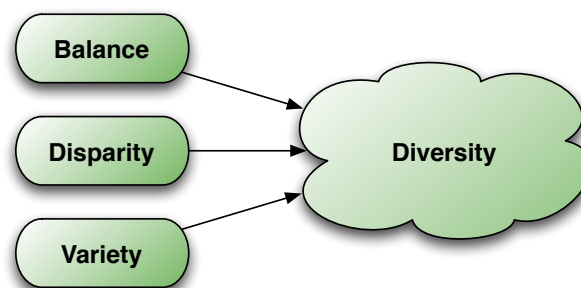


Figure 20: Elements of diversity

Diversity first period

The first period, as we have called 'Breaking new grounds', starts before Norway had any oil activity at all. Already here we see that the government has thoughts on who shall be allowed in on the NCS. They turn down an offer from Phillips who would have given the company the sole right to exploit, at that time, the potential oil on the NCS. This decision was, according to Hagermann (2002), made to 'secure diversity'.

Here we think the concept of diversity is quite easy to grasp. In the case of one sole company, the three general properties of diversity would have been reduced to such an extreme, that they arguably would have ceased to exist; hence, there would have been no diversity.

What do they do to 'secure diversity'? They actively choose companies that they think has dissimilar knowledge, in other words experience. They mainly try to achieve this by picking companies that are geographically distinct, both as where they come from and where they have operated. *"It would be an advantage that the American geologists had a different*

background than the French geologists, which again differed from the British-Dutch ones.”
(Sjørs, 2010)

As we now operate with more than one company, diversity gets more complex and the theoretical approach to diversity becomes more helpful. We see that from the get-go, they did not view ‘diversity’ as simply ‘more companies’, but that they emphasize the different characteristics of the companies, they see *variety*. At this time there were few Norwegian companies, or really any other than the IOCs that could fit the bill for the NCS. Therefore, the ‘diversity’ among the potentials was limited. The government tries to ensure more diversity by focusing on *disparity*, that is why they select the companies that are the most unlike. In addition to ensure diversity among the IOCs the government also early on wanted Norwegian participation and gave Hydro and Norco small parts of licenses, even though they had limited or no experience. However, the IOCs dominated this early period; the *balance* between NOC and IOCs was limited so at that particular time did not play a significant role in the diversity on the NCS.

In 1972, the government created Statoil. From a rather humble beginning, the state-owned company soon grew. Already one year later, in late 1973, it was awarded 50% of the huge Statfjord field. In 1972 the Norwegian company Saga was established, this was a fully privately owned company. We can now see a more diversified picture of oil companies emerging on the NCS, partly on the basis of action taken by the government. The number of categories of companies, or the variety, could be ‘put in’ grew and they were more different than earlier, the *disparity* grew. In the later parts of the period, the *balance* seems to become more in focus from the government’s side. The Norwegian companies, Statoil, Saga and Hydro began to be favoured in the licensing process. In the fourth licensing round, 1978, all three companies were granted an operating license for large oil fields. So we see a shift from the attempt of creating diversity by *disparity* in most of the period to giving more licenses to Norwegian companies at the end, thus focusing on the *balance* of the population.

Diversity in second period

Already in the later parts of the first period, we see a clear tendency to favour the Norwegian companies, and especially Statoil in the licensing process. This tendency is strengthened in the new period. The company gets large parts of big and lucrative oil fields.

In other words, the *balance* between the international and national companies is influenced. However, an increasing *balance* means a more even distribution of the quantity of categories. If one earlier smaller category, i.e. Norwegian companies, grows much more than others and it starts to become dominant, the *balance* is affected in a negative way, thus diversity as well. And this is the picture we see in the start of 'power to the nationals'.

The growing dominance of Statoil becomes a political issue in the start of the eighties. Certain fractions of the political establishment felt that they were getting too powerful. In 1985 it was decided to create SDFI, and thus the government took direct control over a large part of the licenses, which Statoil had previously owned. By doing this, they reduced the power of Statoil, but still maintained a strong national influence over much of the resources on the NCS. We argue that this act actually increased diversity as the *balance* between the active actors 'in the field' became greater. But still there was a tendency to give large shares of licenses to Statoil, but now a certain part of licenses that previously probably would have gone to Statoil was given directly to the state, via the SDFI. It is hard to argue that the *variety* increased because of the creation of SDFI, since it did not take an active part of the production, it was more of a silent partner.

In the 80s, and then again in the 90s, there were consolidation phases. In the first phase many of the big oil companies 'merged' with smaller ones. In practice, they bought the companies and after a short time there was little evidence that the small company had ever existed. This had a negative effect on diversity as it reduced the *balance* of companies. In the 90s' consolidation phase it was the big companies themselves that merged. These mergers are viewed as 'deaths' in the population by organizational ecologists, and a reduction in diversity. The trend at the time was that bigger was better. By merging the amount of licenses that was on foreign versus national hands did not change, but there was a reduction in distinct companies (*variety*). It is also easy to imagine that the different traits of the companies got more vague (*disparity*). At the very end of the period, in 1999, Hydro and Saga also merged.

Sørås claimed that "You can say that this is the period where the diversity thought had the worst living conditions" this statement we agree with. In the start of the period it was mainly

the case because of policies from the government, and later this tendency was enhanced because of the action and dynamics of the companies on the NCS.

Diversity in the third period

In the latter part of the second period, it became clear for the government that the situation on the NCS was unsustainable. We argue that this was very much related to the diversity situation. Not just because of the direct changes in the three properties, which mainly affected the diversity negatively, but also because of the change on the NCS itself. The shelf was now more mature and had a different profile, as described earlier. This changes the context in which diversity 'operates'. In a certain context the diversity could be enough to achieve wanted goals, but as the reality in the ground changes, it might demands a even more diversified population to handle new challenges.

From the Soria Moria declaration, which is the political platform for the government it is explicitly stated that they need "A diversity of public and private, small and large players". In 2000 they started a liberalisation process, where the goal was to make it easier for smaller Norwegian and international oil companies (*variety and disparity*) to enter the NCS.

Diversity – different emphasis

The advocacy for diversity had been strong for most of the period, but the clarification of the term made it possible to see that diversity had had different meaning under the period. Even though we find it suitable to portray the shift in focus as a shift between the properties of diversity described by Sterling, it should be noticed that all three was always present, but the emphasis might have changed between the three. In 'Breaking new grounds', the emphasis was on disparity. In 'power to the nationals', balance came more in focus, and in 'strength in numbers' the diversity had a strong focus on variety and disparity

5.1. Evolution of diversity: Politics is God?

The evolutionary economics tries to study the process that leads to change. They have based much of their methodology form the theory of evolution of organic spices. From an evolutionary perspective, the mechanisms that drive the evolutionary process forward is comprised of retention, selection and variation, as described in the theory chapter. In the

three periods, we can examine how the mechanisms work and influence the dynamics and diversity on the NCS.

In the beginning of the first period there is no real marked or environment in Norway, so naturally there is no evolution or mechanisms to talk about. But when the government in the 60s open up for exploration we can claim that they create a marked, and thus initiate the start of the evolutionary process on the NCS. And by claiming the ownership of the key resources through law, makes it self an important creator of the reality the oil companies had to operate in.

In the organic world, the evolutionary mechanisms explain the process of evolution and in many ways eliminate the need for a God, as this is a self-supporting system. Darwin and his revolutionary insight into the process showed that the system designed itself and answered the age-old question about who had designed life and all the life forms – no one.

Evolutionary economists do not claim that every aspect of the organic evolution is exactly the same in the world of economics. The mutation of genes in the organic world is truly a random event, which give rise to variation. Much of variation in a market comes from entrepreneurial attempts to create new forms or businesses that can thrive. It is hard to imagine that these attempts are totally random, but since the theory do not view human behaviour as fully rational, and that the information of all things that will influence the choices made are not clear, the aggregated result have many similarities with the mechanisms that give rise to variation in the natural world.

When we examine the world of oil companies on the NCS, it seems clear that the Norwegian government has, to a large extent, taken control over the fundamental mechanisms. They do not just open a new field of opportunity and let the evolutionary process sort out who will succeed, a 'survival of the fittest' scenario. They actively go in and tweak the mechanisms in an attempt achieve a certain result. The 'blind watchmaker³' has taken off his blindfold. Arguably the government tries to take on a role as God, politics is God.

³ R. Dawkins' argument to refute the necessity of a watchmaker, i.e. God.

5.1.1. The creative God

In the first period, we have argued that the policy is constructed on the notion that they want diversity, and given the context they have a focus on disparity.

We can argue that the intentions and needs from the government create an evolutionary period where 'God' tries to tune the mechanisms a certain way to create a wanted result.

To a large extent they have the power to control the selection mechanism, mainly through the licensing system, but they will have more trouble controlling the variability and retention mechanisms, as they are more dependent on the reaction of companies and the context.

The selection mechanism is in turn dependent on having something to select, and thus is also dependent on the variability and retention mechanisms.

In the first couple of years, the NCS was dominated by the IOCs. This is not a surprise as the government's main criteria for participation (*selection*) were experience and financial strength. I.e. the number of 'species' that could inhabit the NCS was quite limited. But as mention earlier they tried to get as diverse selection of the 'specie' as possible by selecting them from geographically diverse areas.

Even though the government tries to execute quite rigorous control over the situation, not everything is under their control. 'God' is not almighty. E.g. there is a 'blind' element to the *variation* mechanism. After oil was discovered in 1969 several new public companies emerged. Det Norske Oljeselskap, Norse Petroleum, Vikingolje and Norminol are all examples of companies that emerged in this period and had tens, and sometimes hundred of thousands of shareholders. We do not suggest that this was an unwanted development; just that this is not a direct result of governmental action. We feel that this aspect resembles more how the *variation* mechanism is described as a result of the motivation for profit. But in this period the government creates Statoil. This creature does not come into existence as a result of 'blind' *variation*. It is deliberately constructed as a tool for political means, though some of the motivation might have been profit-related.

Another act from the government that we argue is related to *variation* is their reluctance to allow companies to form their own groups. After the first licensing round in 1965 the oil companies was not allowed to construct their own groups. They could apply as a group, but

the government had the final word in the allocation. Companies, who applied by themselves for a license, could be put together with other companies who also were applying for the same license. The government decided the distribution. Other places the companies often applied as a group based upon international relationships, so you would get pretty predictable results. As the government actively created groups, in certain way they created new 'species', which would not have come into existence otherwise. The companies were autonomous, but they had to cooperate and had a voice under the certain license, thus the different companies had an influence on the result.

Different *variation* mechanisms created new forms of life, but mere fact that you are born do not entail that you will live a long life and prosper. Most of the new public companies that was created in the years after the discovery of oil had short lives. After a few years most of them was gone. An exception was Saga Petroleum; it survived (*retention*) until 1999. And as often is the case in the natural world, it did not just merely survived, it grew and 'spread'. The fact that they, but few others survived is of course connected with who is selected. And who is selected is in the hands of 'God'. The government also had other mechanisms that are arguably more directly associated with *retention*. When a company get a license there are several strings attached. They have to fulfil certain requirements, such a number of test drillings. If they do not fulfil the obligation they are fined, thus it works in a way to keep companies on the NCS, even if they under other circumstances would have left. Another feature of licenses is that they have a time limited. This has the opposite effect. Companies are first granted licenses that are valid for 4-6 years. If they do not come up with plans for further development the licenses have to be returned to the government. So the government ensures that companies who are willing to develop areas are retained.

In the first period, we see that the Norwegian government actively uses regulations to try to achieve political goals. One of them is the ambition to create diversity. Much of the regulations influence the evolutionary mechanisms to such an extent that it is hard to argue that they function as they do in nature or as in a free market context. There is no 'invisible hand'; on the contrary, the 'hand' is very visible. Their main tool is the licensing system (*selection*). But how the selection mechanism function also lay much of the foundation for how *variety* and *retention* acts. They are even actively creating new forms, and thus,

according to the theory of organization ecology, increase the diversity. In the beginning of the period the *selection* is limited by whom they can select, *selection* is dependent on *variation*. In the latter part of the period *retention* plays a more significant role. They are more likely to choose Norwegian companies. The way the tax system was constructed also influenced *retention*. As development and exploration costs only could be deducted from taxes on revenues, you had to have projects that were up and running to deduct the costs. This meant that companies that were not in this position had it tougher.

In many ways 'God' succeeded in creating his vision of the world, maybe not in six days, but by creating a regime that influenced the fundamental dynamics of the world. By the end of the first period, he had created a world that was inhabited of a diverse set of 'species'.

5.1.2. God gets greedy

In this second period, it seems that 'God' changes his focus. The creation of Statoil was in many ways very successful, and he now sees an opportunity to gain further control over the situation and the resources. It is claimed that the licenses goes to the one who has the best application, but the pattern (*selection*) is so clear that it is hard to avoid concluding otherwise.

The government did not entirely exclude foreign companies, but they did tighten the grip in many ways. If other companies wanted try to get in on the NCS (*variation*) they was welcome to try, but the regime that was in place made this possibility very slim. They increased the taxation of oil companies to 85%, and was very selective of who they gave licensing right to. *"You are now in the period where it begun to be impossible politically to do anything else than give the best to Statoil, the second best to Hydro and the third best to Saga. After they have had their share, there was not much left for the foreign companies"* (Sørås, 2010)

After the rise in taxes, the climate among the foreign companies changed noticeably. In the initial period the huge oil findings made the foreign oil companies lenient to accept (*retention*) much of the demands from the government. But when the tax was raised there era of finding elephants seemed over. The fields that now were discovered had less

resource; they were smaller and more expensive to develop. The old 'dinosaurs' hunting for elephants found less and could keep less of what they found. This development was partly due to the actions of the government and partly because of the reality of the resource situation.

In 1986 the oil price fell. The price dropped from 27\$ to under 10\$. That is equal to a fall from 62\$ to 21\$, in today's money. This tipped the balance further in a negative direction. These sorts of happenings were out of the government's control, but they had the power to react to them. Shortly after the price fell, the taxation was lowered to 78%. But still the environment was tough, especially for anyone new (*variation*) who wanted to enter the self. But it seems like 'God' was content after these adjustments, the taxation policy is hardly changes in this period after this. There are hardly any newcomers (*variation*), but there are a variety of companies on the field, including three big Norwegian ones, which was both state owned, partly private and private.

In the 90s the population goes through a consolidation phase. Many of the big foreign companies such as Exxon and Mobile merged. The 'dinosaurs' had been negatively affected by the *selection*, but now they start devouring each other. Arguably this lead to the creation of new forms (*variation*) as the merging process gave birth to new organizations. But this come at a higher cost as the 'specie's' number started to decline. On top of this there were other factors that was out of 'God's' control. The production from the elephants had begun declining and there was little to suggest that they would find any new ones.

5.1.3. God takes a step back

At the end part of the 'power to the nationals' period 'God' sees that the inhabitants of the NCS are not really up for the task. The existing population had in many ways evolved to tackle the environment they grew up in. The new environment with different challenges needed different 'species'. Now we see a move that is quite different from the policy that had been in effect up to this point. First of all they arranged a system with pre-qualification. This was done so that companies that wanted to apply for licenses could know that they met the basic requirements from the government before they applied. As this made it easier for potential newcomers to assess their potential it gave more room to the *variation*

mechanism, by giving an easier birth and by showing that they were wanted (*selection*). But still the tax environment still favoured companies who already had production (*retention*), as you deducted exploration and development costs from taxes. This changed in 2005 when these costs, or 78% of them, were reimbursed, in other words 'God' takes a major part of costs and risks for all of the companies, including small non-producing ones, thus making life for them less risky (*retention*)

In many ways we can argue that the government gave more room to the 'natural' evolutionary mechanisms than had been the case in the previous periods. 'God' takes a step back; by being less discriminate in the selection process and allowing more *variation*. By having more companies and a bigger population the *retention* mechanism also become less under his control, as it is clear that not all of the newcomers can survive. This is evident in the mortality numbers for the period, which are the highest of the three. The population becomes more dynamic.

5.1. Institutionalization of diversity

Diversity in it self is not an institution, licensing systems, tax systems and politics are. We can argue that diversity is a result of all of these institutional processes. On the Norwegian shelf there are institutions that influence the diversity, this is described as governmental actors or 'super organizational' phenomenon like the state. For our analysis this means that we need to analyse what changes in the institutional environment and which processes that influence the diversity. To get an understanding of these elements we have used the norm and action system, as we have described in the theory chapter. The norm and action system lets us isolate the elements in this strong regulated environment, this makes it easier to understand and intrepid the influences. Since there have been large changes in the Norwegian petroleum sector since the 1950s, the norm and action system is going to used as a sorting tool to analyse these changes.

The norm system describes the influence and the changes in regulation, governmental actors and structure has. Within the norm system we have defined several ministries and directorates: The Ministry of Petroleum and Energy, The Ministry of Labour and Social, The

Ministry of Finance, The Ministry of Fishery and Coastal Affairs and The Ministry of Environment. These departments all have different influence and responsibilities; they are all described in the empirical chapter.

With the action system we want to describe the changes in the dynamics and diversity, namely the companies and their behaviour on the shelf. The environment consists of political visions, ideologies and other conditions like international influence. The institutional theory tells us that forces that influence are categorised in the theory as mimetic, coercive and normative influence.

We are now going to take a closer look at the structural changes that has been made during the three periods, if there are any distinct features and how the learning within the structures has been.

5.1.1. The learning norm system?

In 1962 there were little or no regulations in what were to become the biggest industry in Norway. However during the year the Norwegian government had to make up their minds in regards of the opening for a possible petroleum industry in Norway. Since there were little knowledge about the petroleum industry the government had to learn and explore how other countries had solve their challenges. This was done to ensure that the Norwegian government was prepared. The high level of uncertainty we can assume was strong incentive and force that encourages *imitations* of other experienced countries (*mimetic*).

As a result of this a new law was created, the law claimed that all subsea petroleum was state property. If we analyze the governmental activities in the years after this, with an institutional perspective, we can see that a norm system was established as a legal framework based upon an ideological idea of exclusive rights for all Norwegian petroleum to the state.

The government felt ready and held its first licensing round. Since the license round had many companies, the norm system gained experience. In the next licensing round companies was no longer allowed apply in groups. The reason for this was to ensure diversity. These types of regulation was never seen in the petroleum industry before, and therefore we can say that the norm system had learned from its own experience.

Since the norm system was inexperienced the need for clearer guidelines were apparent, for both the legal norm system and the companies in the action system. This led to the institutionalisation of the government's ideology, the ten rules of oil was establishment. The ten rules of oil was a general guide to which the government wanted the norm system to follow and also an indicator for the industry on how they should behave. From the theory we can interpret this as a normative influence of the norm system, since the norm system now applied standards and guidelines on how the regulation of the shelf should be handled.

One of the key points in the ten rules of oil was the need for a national oil company. The company, Statoil, was set to learn and gain knowledge (*mimetic behaviour*) from the IOCs, and to one day be able to stand on its own as an independent oil company. Since the action system, at this time, was dominated with experienced international companies, the inexperienced Norwegian oil companies needed to learn as much as possible from the IOCs. To ensure that this happened, the government placed the NOCs and IOCs together on the same licenses (*coercive*). The institutional theory tells us that this can be seen as a coercive influence by the government, and a mimetic behaviour from Statoil. In regards of the structure this brought the norm and action system closer together, since Statoil now could be seen as an *extension* of the norm system into the action system. This made it easier for the two systems to learn from each other.

In the beginning in the norm system was only consisting of a small number of skilled people, Norway needed to establish specialized organisations to handle broad diversity of challenges with the petroleum industry. The NPD and the Ministry of petroleum was created. NPDs main task is to handle all advisory that in regards of issues concerning the petroleum industry, while The Ministry of petroleum should administrates all the oil and gas resources on the NCS. Even though this led to new individuals coming in to the norm system, the institutional theory tells us that they will inherit much of this knowledge from the previous generation of bureaucrats. The learning, and the norm system it self, is now starting to take form into a structured system, and is therefore, in theory, normative. The learning process in the norm system has now gone from an ideological driven learning process to a hierarchic learning process. Since there were originally few people that had extensive knowledge in the

norm system, the learning within the norm system had to go from learning from each other and experience to the next to putting learning into a system.

The fundamental knowledge learned in this period is critical for the further development for the institutionalisation of the norm system. This could not have been done without the influence of the action system and the knowledge gained from the norm systems experiences. Sørås (2020) says that it in this period was an exchange of information, to create a common understanding between the norm and the action system. This can be understood as an attempt to create a common normative understanding.

In the figure below we have illustrated how we view this periods interactions and learning between the systems:

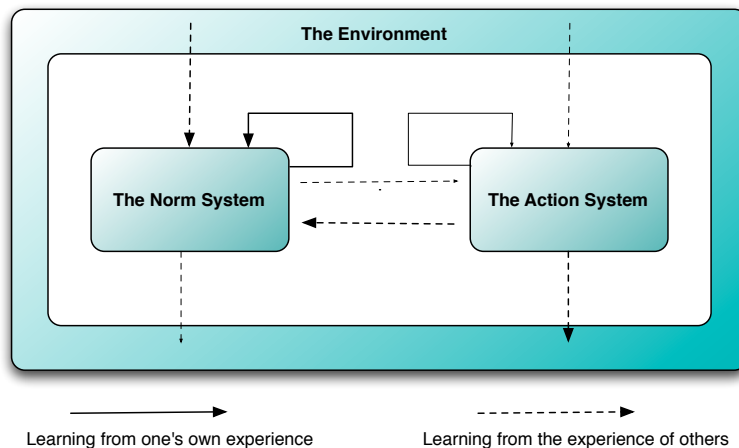


Figure 21: The Learning norm system

During this period, the government is trying to make standards and normative approaches to the many challenges. The norm system has gone from a small organization, of few people, that was being ideological driven, to become a more regulated norm system, which applies more coercive force to the action system. The action system had been forced to adapt to much by the norm systems, in form of the licensing system and regulations, but have had a large influence on the norm system development.

5.1.2. *The dominating norm system?*

For further growth in knowledge a series of studies and researches was started. This led to a development of knowledge bases in governmental research departments and universities around the country. The government financed most of these studies. One of the reasons for this was to help develop a better norm system and to understand how to challenges at hand could be best solved. This can be interpreted as a further professionalization of the norm system (normative).

Not long after the government had to deal with the dispute regarding the established policies from the previous period. The cause of disagreement was the increasing power and influence Statoil had gained over the last decade. Since the NOCs, then especially Statoil, had been given an advantage in the previous licensing rounds, a public argue on a nationalization of the petroleum industry occurred after Arve Johansen (Lerøen, 2008) publicly concluded that the need for IOCs had vanished. This led to a conflict within the Parliament and soon after this the power of Statoil was reduced, giving the other NOCs more market power. This ideological discussion had an influence on the norm system, which changed their licensing policy.

Soon after this a public discussions concerning the large amount of revenue given to IOCs, and that we would be better of running all the operation our self with the NOCs. This pressure resulted in further cuts in licenses (coercive) to IOCs, which became smaller and smaller. On top of this, the taxes were on its highest level. Combined this led to a dampening affected on the diversity in the action system, since many companies only got small ownerships in the licenses and thereby decreased the activity among the IOCs. As a result the diversity had it poorest living conditions in this period (Sørås, 2010). In general the political attitude in this early part of the period seems to have a more *take it or leave it* attitude towards the international companies. Since the possibility of new large findings was there, the norm system could more or less control the actions system. This was done through a coercive force applied with the licensing system.

Sørås claims that a large part of the policy premises, in the mid-eighties, was being constructed from the bureaucracy in the Ministry of Petroleum and Energy, the ministry had a normative learning from itself and the interaction of the action system. The profession of

the knowledge gained from the licensing rounds development made room for new ideas and departments within in the norm system. A reorganization of the governmental commitment on the shelf was conducted. We think this was done to get a more internationalized norm system, a normative behaviour according the theory.

During the period a stronger coercive pressure from the norm system to the action system were apparent, since the departments within the norm system had gained more knowledge and knew what results they wanted from the companies. The licensing system was increasingly coming more experienced, and the level of control with rules and regulations were becoming increasingly standardized (normative). In the figure below we have illustrated how we intrepid the influences in this period.

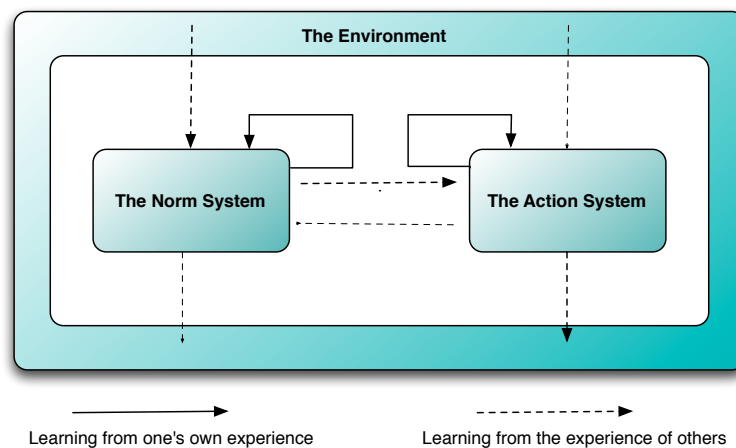


Figure 22: The dominating norm system

The influence from the action system is limited, but the adaption of rules and regulations applied by the norm system as apparent. The action system seems to be taken for granted by the norm system in this period. Since the norm system now has become a closed hieratic state system, witch applies coercive force to the action system to get a desired outcome. This has also led to the fact that the distance between the norm system and the action system is increasing, and that the norm system therefore cannot easily learn from the action system. The increasing distance between the systems this can have led to the fact that the government did not see that the action system is starting to loose interest in the NCS.

We observed a change in focus in the norm system during in the latter of the period. The number of companies applying for new licenses was declining, and because of this the

diversity as well. The norm system had to change to prevent the down sloping trend of decreasing activity.

5.1.3. A flourishing action system?

In the period from 1999 until 2010 there has been large structural changes. Since the decline of diversity among the companies and production on the NCS in the 90s, the norm system learned that something needed to be done. The politics of the state changed gradually over the last few years in the previous period and now it influences the norm system to change. Once again the government turned to UK to learn how they have solve the problem of declining production and leaving companies on their shelf in the early 90s. This was done a few years earlier, and Sørås (2010) claims that the changes were strongly influenced by the experiences made from UK. This is once again a mimetic behaviour from the norm system.

So the liberalization of the norm system took place. The international standards learned from UK, was adapted in to the norm systems. A change in the licensing process was made in the same norm as it had been in UK. The action system could now suggest areas related to the already opened areas, and the Norwegian government also turned to the action system with a desire to get smaller sized companies to enter the shelf. We think this brought the norm system and the action systems closer together, since the norm system now was more open for inputs from the action system. We think this also made it easier to exchange knowledge between the systems. In addition to this change the pre-qualification to licensing rounds, made it easier for the action system to understand what the norm system wanted. Since the companies now could get pre approved for licensing applications. The normative learning from the norm system to the action system is apparent.

Several other changes in the structure of the norm system were also made during the period. New departments were established to make the shelf more attractive, more cooperative, and thereby more open for new entrance by companies. The new departments, Petoro, Gassco and Gassled, all had specialized roles to act upon in the action system. Theses state owned companies are taking an active part in the action system, and is used to set standards and norms in the behaviour of the action system. This was a new way for the norm system to be able to influence the behaviour within the action system and it helped

the norms system to ensure that the companies do what is describe above, namely to create new and improved solutions, by diversity means. By theory this is a normative influence that the norm system applies to the action system, this was done to reach a goal of a more diversified shelf.

The changes made were not sufficient enough to gain the results wanted and accordingly the government also changes the tax regime. From this we can see that the norm system is learning from its own experience. The changes made it easier for the companies to enter, as the government now took over some of the financial risk evolved in the investments. Companies in the action system interpreted this as more stabile and predictable system (normative). The norm system now depended on the action system to carry the NCS forward.

In 2008 there were made a change in the inputs from stakeholders and the public before the licensing rounds. The public was now able, in some degree, to influence the decisions made by the norm system in regards of their licensing rounds during these public hearing. This means that the environment now also included the general public, and in this way the public can have a normative influence to the norm systems decisions.

If you look at the period's changes in an institutional point of view we can see that the interaction between the norm system and the action system is a lot more open and that the norm system is learning from the experience of both its self and the action system. The government precedes the mimetic learning process from UK as earlier. And the action system adapts the normative changes made from this in the norm system.-The figure below shows how we interpret this period interaction within the structures.

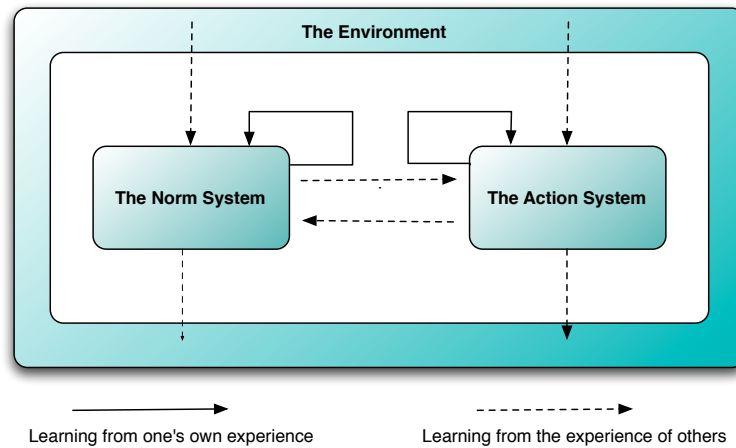


Figure 23: A flourishing action system

As illustrated we can see that there is a lot more interaction between all the elements involved in the industry. The companies in the action system applied pressure on the norm system in the early part of the period, by reducing the activity level, and as a result several changes within the norm system has been made. This could have been influenced by a change in the ideology in the environment, from taking the action systems diversity for granted, the norm system now sees that it is dependent on it. During the ten years the action system has gained more influence over the norm system. Since the action system gain a lot of new companies in the latter part of the period, we can assume that the diversity in this period also is growing as a result of the changes made within the norm system. It is important to underline the fact the control over the market have been in the hands of the government, and has been used through the norm system during all three periods. What we have observed in this period is a shift in the influence, not a shift in control.

5.2. Summary

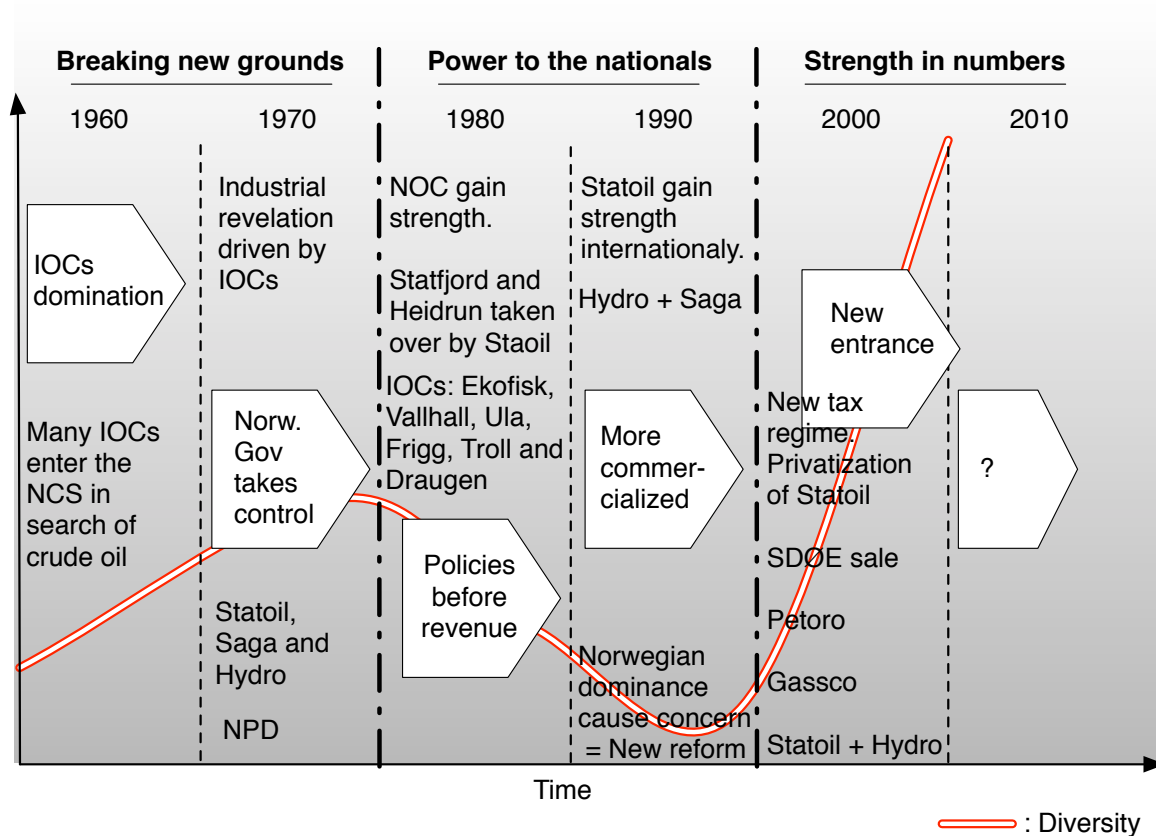


Figure 24: Diversity on the NCS

In the model above we have given an illustration on how diversity have changed over the periods. As mentioned earlier, the government or ‘God’ had different interpretations of diversity over the periods. Different politics and ideas were materialized through different structures, such as the licensing system, which influenced the diversity. The red ‘diversity’ line is not a representation of the number of companies, but rather an attempt to depict the changes in the three general properties of diversity. In period one, the increase in disparity and later balance had a positive influence on the diversity. In the second period the balance is affected in a negative way and later in the period the behaviour of the companies reduce variety on. In the third period we see a growth in especially disparity and variety and we arguably see the period with most diversity.

6. CONCLUSION

In this final chapter of our thesis, we will present the main findings of our research, and give proposals for further studies.

The problem statement:

“How has diversity of oil and gas companies on the Norwegian continental shelf developed, and how is this development related to Norwegian politics.”

This thesis has tried to give an historical overview over the change in dynamics of the oil and gas companies on the NCS. Statistical data, which mainly is presented in the empirical part, shows us that there have been identifiable changes in the dynamics and behaviour of the companies on the NCS, which have affected the diversity.

We saw that diversity has been a political issue right from the start of the petroleum industry in Norway, but we found that the interpretation of this term has differed. The interpretation of the term has laid much of the basis of which the regulation regime has been constructed.

The regulations, mostly the licensing and tax regime have had a great influence on the mechanisms that influence the dynamics and behaviour of the companies. When we look closer on the three periods, which we have divided the ‘oil history’ into, we can see that:

At the start of the first period, 1958-1980, the government decided that diversity was a goal on the NCS, and decline an offer from Phillips, which would have given them exclusive rights. A few key persons mainly established the regulatory regime that was put in place to ensure to ‘secure diversity’. This was later developed into a more formal structured system, which was influenced by the experienced gained in the first licensing rounds. Diversity had its focus on selecting diverse foreign oil companies and controlling the allocation of these.

In the second period, from 1980-1999, we saw, especially in the first part of the period, that there was political pressure to favour Norwegian companies, which materialized through the licensing system’s bias towards these companies. This decreased the diversity. Later this tendency was reduced, but it seems like they was content with the situation and did not changed the policy towards trying to increase diversity. In the end of the period, the

changing dynamics of the companies on the NCS made it apparent that the old regulations needed to be changed.

In the third period, from 2000, there were several changes made, mainly the licensing and taxation regime. These changes made it possible for a more diverse set of companies to enter the NCS. It has never been so many companies on the shelf as now. Arguably, we are now in the period that has the most diversity.

From this we can conclude that:

- The different politics and ideas were materialized through the regulation system, which had a strong influence on the diversity in the NCS.
- Diversity has been a key factor in the policy development.
- The interpretation of diversity changed over time and was context dependent. It was never a question of just the numbers of companies.
- There was a political willingness to change the regulations as a reaction to the dynamics of the companies on the NCS and as the shelf matured

6.1. Proposals for further research

We feel that the area we have studied have great potential for further exploration. Since our thesis mainly focuses on the governmental actions, an element that could be interesting to look closer on is the influence macro economical factors have. We especially are thinking about oil price and financial stability.

The reason for this is the important role the financial markets have in the petroleum industry. Changes in the situations in the markets often reflect how the general businesses in the industry are going. Since the markets impacts everything from the companies stock price to the price of rig rentals and the price of oil. The financial ability an oil company has is often dependent on these factors. In our pre-phase of this research we did a comparison of the oil price and the behaviour of the companies:

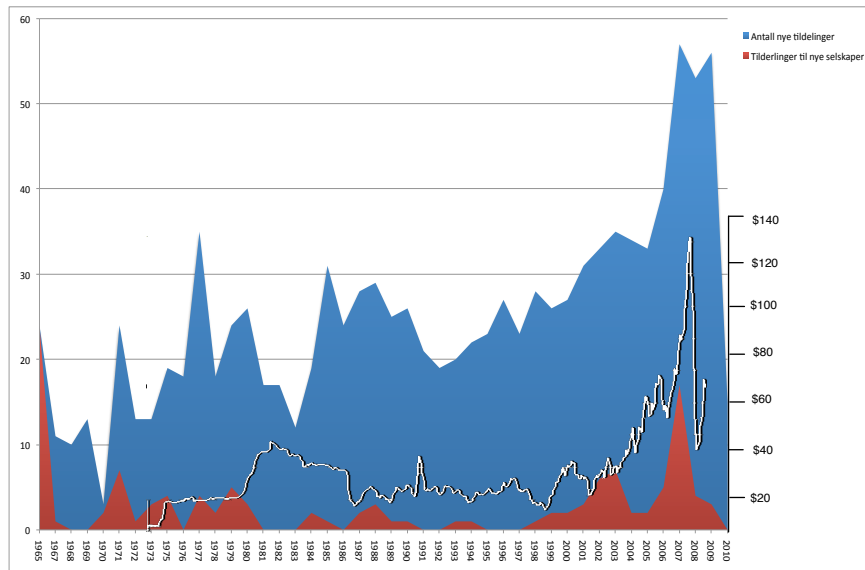


Figure 25: Comparison of oil price and the behaviour of the companies

At first glance it seems like the oil price could have had an impact of the great surge of new companies in the latter period. From our research it seems clear that the changes in the regulatory regime made this possible, but it would be interesting to see how much a macro economical factor such as the oil price influenced this tendency. Svein Gjerdrem claims that the oil price is an important factor in the increasing activity on the NCS:

“High oil prices have led to a sharp increase in activity on the Norwegian shelf. Many projects have been initiated to improve recovery from fields in operation.”

Svein Gjerdrem (2006)

Another possibility we see is to compare the development of diversity on the NCS with other countries development, for instance the Mexico Gulf or UK Continental Shelf Oil.

A third possibility we see is to take a different analyse level. We have had a population perspective, but a study focusing on the company level, we feel can give a broader understanding of the issue.

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8. APPENDIX

8.1. CD: Datasheets and tools

Content:

- Info: How to use the tool included
- Players activates tool: Analysing tool for mapping the activity levels of all companies that has been granted licenses on the NCS.
- Graphs: Several of the graphs used in this thesis, with connection of the data used.
- Raw information and Raw 2: Data raw statistical data used for making the analysing tool for players activity

In this CD with our data sheets its possible to do the following:

1. The main function is to measure activity levels on the shelf. This is presented in table in PQR. In this table you will find newcomers and the numbers of different companies that has been granted licenses this year.
2. The cells X2 and AA23 can be changed so that the single firms activity levels can be measured and compared to another company. This enables us to see if companies are more active then others, and if there are "sleep" periods for some firms.
3. In row MN we have presented when the different companies first entered the shelf.

Raw information:

Our initial raw data: In the excel table showing allocated licenses (production license) on the Norwegian shelf.

1. How many licenses that are awarded each year.
2. What area- North Sea, Norwegian Sea and Barents Sea.
3. What areas are awarded each year?
4. Number of licenses that returned each year. (Sort Column F - Date valid two. Cf also column K on active and inactive licenses.)
5. What company has been operating? (Please note that the column D shows the current status or who was the operator when the license was returned. Historical acquisition or merger of companies that have led to changes in the operator is not possible to observe in the data.)
6. The use of stratigraphic licenses. (See column D. stratigraphic license means that the area in addition to a geographical boundary has a horizontal boundary, such that the area related to above or below the rock chalk. Stratigraphic section was adopted in 2003.)
7. What round licenses are awarded in. (See Column G. See also Column H, related additional allocation of licenses of the last round of awards.)

NB: Remember to enable macros when opening this document, if this in not done the sheets function will not work.