- Final mini-dissertation -

THE OPTIMAL PETROLEUM TAX MIX: A COMPARATIVE ANALYSIS BETWEEN NIGERIA AND NORWAY

by

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ABSTRACT

The optimal petroleum tax mix: A comparative analysis between Nigeria and Norway

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Background

One of the most critical economic decisions that a government must make is the choice of its tax system (Abbas, Ali & Klemm, 2013:597; Mulrow, 1994). It is critical because the main source of government revenue is taxation, which is the cornerstone of any society. The choice of a tax system in various African countries is intended to address the uneven distribution of income (Barghini, 2016:98). Therefore, the relationship between optimal taxation, economic growth and income inequality is of the utmost importance (Scully, 2003:229).

Main purpose of study

The main objective of this study is to provide a comparative analysis of the Nigerian and the Norwegian petroleum tax system, with the latter as a benchmark for the optimal petroleum tax system. Thereafter, the Nigerian petroleum tax system will be compared with the Norwegian petroleum tax system to evaluate the extent to which Nigeria adheres to the criteria of the optimal tax mix.

Method

Several databases were reviewed to collect secondary data on the optimal tax theory as well as the tax systems of Nigeria and Norway. The literature was critically reviewed and synthesised based on inclusion and exclusion criteria. Thereafter data was extracted from selected studies to identify the characteristics of an ideal tax system, with which Norway's tax system (which was used as a benchmark) was compared. The ideal tax system was then applied to Nigeria to evaluate the extent to which Nigeria applies the optimal tax mix.

Results

The findings illustrated how Norway satisfies the characteristics of an optimal tax system. When applied to Nigeria, the study found Nigeria did not have an optimal tax mix.

Conclusions:

The Nigerian petroleum system would benefit from tax reform in order to better align the tax system with the characteristics of an optimal tax system. Furthermore, there are lessons to be learnt from Norway in terms of how oil revenue collected is efficiently and effectively managed through a dedicated fund.

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KEY TERMS

Table 1: Key terms used in the study

Key term	Description
Exploitation	Exploitation of oil generally takes place where technology is applied in existing reservoir's in order to increase the recovery of undrained oil (Nakhle, 2008).
Tax incentives	A tax incentive is a monetary benefit available to a taxpayer as a result of certain tax expenditure incurred by the taxpayer. The purpose of a tax incentive is to motivate a taxpayer to behave in a certain way (Tuomi, 2009:13).
Tax policy	Tax policy is the choice by a government regarding what taxes it is going to levy, how much tax it is going to levy and who will pay the taxes it levies (Boadway, 2014:48).
Natural resource tax	Taxes on materials or substances occurring in nature which can be exploited for economic gain (e.g. water, oil, minerals).

LIST OF ABBREVIATIONS AND ACRONYMS

Table 2: Abbreviations and acronyms used in the study

Abbreviation/Acronym	Meaning
GDP	Gross Domestic Product
OECD	Organisation for Economic Co-operation and Development
EEA	European Economic Area
WTO	World Trade Organisation
PPT	Petroleum Profit Tax

THE OPTIMAL PETROLEUM TAX MIX: A COMPARATIVE ANALYSIS BETWEEN NIGERIA AND NORWAY

CHAPTER 1

INTRODUCTION

1.1 RATIONALE/ MOTIVATION FOR THE RESEARCH

One of the most critical economic decisions that a government must make is the choice of its tax system (Abbas, Ali & Klemm, 2013:597; Mulrow, 1994). The tax system of a country is critical because the main source of government revenue is tax, which is the cornerstone of any society. The choice of a tax system in various African countries is intended to address the uneven distribution of income (Barghini, 2016:98). Therefore, the relationship between optimal taxation, economic growth and income inequality is of the utmost importance (Scully, 2003:229).

A tax system has active taxpayers which the policy formulators use as a basis for determining the fiscal budget (Chris Evans, 2017:28). The intention of the fiscal budget is to enable the government to meet, amongst other things, its social welfare function. Despite certain economic constraints, a government's ability to meet its social welfare obligations is largely dependent on the active taxpayers fulfilling their tax obligations (not avoiding or evading tax, which may result in market distortions) (Boadway, 2014:26; Mirrlees, 1971:206-207). When the government meets its fiscal budget for the relevant fiscal year, it strikes a balance and is most likely able to execute its social welfare function effectively within the set of economic constraints (Mirrlees, 1971:175-176; 207-208). However, if the opposite is the case, the result is loss of efficiency. The study of designing and implementing a tax that minimises loss of efficiency and market distortions within certain economic constraints while meeting social welfare responsibilities is known as the optimal tax theory (Slemrod, 1990:158). The optimal tax theory addresses the question of how to best raise revenue in a distorted economy (Boadway, 2014:5).

Africa is known for its richness in natural resources, and as a result the global economy is particularly interested in investing in Africa (Kasanganayi, 2009:54). The opportunities that

present themselves to do business in Africa are astounding. The probability of attracting an extensive amount of new investments may be greater when offering substantial tax incentives. Therefore, it is crucial for the tax policies of African countries to consist of a balance of tax incentives and other forms of taxation that will allow these developing economies to continuously attract investments.

The idea behind most tax policies in Africa is that the tax policy need not be one that is made up of the optimal tax mix, but one that is possible to implement (Tanzi & Zee, 2000:299). Petroleum taxes will be the focal point of the study because of the significant impact that energy-rich fuels have on the global economy. According to Nakhle (2008:153), in a modern society oil may be considered to be the lifeblood of society second only to water. Consequently, "national tax policies can greatly influence the petroleum industry's long-term global sustainability" (Nakhle, 2008:2). Therefore, the study aims to analyse, from a petroleum taxes perspective, the influence that the various classes of tax incentives, other forms of taxation and tax policy have on promoting savings, investments and economic growth in Nigeria (Liebenberg, Wolff & Gaarlandt, 2015:47). For this analysis, the tax policy of a developed economy (Norway) will be analysed and compared with that of Nigeria.

The study will focus on two countries. While Nigeria is a developing economy, it is one of the leading economies on the African continent (Organisation for Economic Co-operation and Development, 2012:2). Moreover, Nigeria is one of the top ten oil producers in the world (Organisation for Economic Co-operation and Development, 2012:2). There is a lack of faith in the ability of the Nigerian tax system to diversify the revenue portfolio, as the economy is primarily dependent on oil. As a result, the focus of Nigeria's tax system is on petroleum and trade taxes (Ekeocha, Ekeocha, Malaolu & Oduh, 2012). A study of tax policy reforms in Nigeria conducted by Odusola (2006), found that the Nigerian tax system is characterised by unnecessarily complex, distorting and largely inequitable taxation laws that are mainly applicable to the formal sector, which does not dominate the Nigerian economy.

The study aims to highlight the importance of Nigerian policy makers considering the optimal tax theory when analysing policy for the country's petroleum resources. The study further aims to highlight the extent to which the petroleum tax system of Nigeria has evolved as a result of the optimal tax theory being part of its formulation of policy for the country's petroleum resources.

The other country the study aims to focus on is Norway, a developed oil-dependent economy (Organisation for Economic Co-operation and Development, 2018b:8). The Norwegian government has implemented effective petroleum tax policies (Organisation for Economic Co-operation and Development, 2018b:4-5), which have ensured that the Norwegian economy remains resilient and continues to perform well despite the volatility of the petroleum markets and low oil prices (Organisation for Economic Co-operation and Development, 2018b:4-5). Consequently, the study aims to use the Norwegian petroleum tax system as a benchmark with which the Nigerian petroleum tax system will be compared.

This study may provide valuable knowledge to future researchers and policymakers, as it may guide the direction of future research efforts concerning optimal taxation of petroleum in Nigeria. The result of this study may also contribute to the work of future researchers. For policymakers, the outcomes of this study may provide further guidance on how to improve current tax policies and economic growth rates through better use of the optimal tax theory.

Previous research (Saibu, 2015; Tanzi & Zee, 2000:299) indicates that the optimal tax theory may be impractical to implement because it does not necessarily consider the many challenges faced by developing African countries. The framework of the optimal tax system can, amongst other things, provide guidance on the various trade-offs that arise from taxes and indicate potential areas that require further research. This will ultimately guide tax policy formulators of different countries with different circumstances (Alm, 1996:117). Regardless of the above, there is an important link to be made between the optimal tax theory and tax policies implemented by policymakers (Boadway, 2014:2).

1.2 PROBLEM STATEMENT

Several researchers (Alm, 1996; Mirrlees, 1971; Peter Birch, 2007; Scully, 2003; Slemrod, 1990) have studied optimal taxation, its link to economic growth and the positive influence that the optimal tax theory may have on tax policy formulation in developed countries. Existing literature also views optimal taxation negatively and as impractical for developing countries (Kanbur, Paukkeri, Pirttilä & Tuomala, 2018:64). Optimal taxation does not consider the significant challenges that developing countries face, which are accompanied by the lack of infrastructure to implement tax schemes that are complex in nature (Kanbur

et al., 2018:65). Generally, there is insufficient literature on the optimal tax mix in Africa. In the case of Nigeria, the issue of the optimal tax mix is less well explored, especially with regard to the natural resources industry.

The main objective of this study is to provide a comparative analysis between Nigeria and Norway. The Norwegian petroleum tax system will be used as a benchmark for the optimal petroleum tax system. Thereafter, the Nigerian petroleum tax system will be compared with the Norwegian petroleum tax system in order to evaluate the extent to which Nigeria adheres to the criteria of the optimal tax mix. By measuring the current Nigerian tax system against a good working system (Norway), it can be determined whether applying the optimal (or closest to optimal) tax mix has an impact the growth of an economy.

1.3 RESEARCH QUESTION

To what extent does the Nigerian petroleum tax system apply an assumed optimal tax system?

1.4 RESEARCH OBJECTIVES

The following objectives will be set in order to answer the research question:

- Development of a framework for an optimal petroleum tax system.
- Demonstration of Norway's application of the optimal tax theory by comparing its tax system with the optimal tax system criteria.
- Development of an "ideal" petroleum tax system by using Norway as a benchmark.
- Application of the "ideal" petroleum tax system to Nigeria.
- Evaluation of the extent to which the Nigerian petroleum tax system adheres to the optimal tax mix.

1.5 RESEARCH DESIGN AND METHODOLOGY

1.5.1 Introduction

In order to address the research question, a systematic review research method will be adopted. This is an effective and appropriate research method to answer the research question, as it allows one to identify and evaluate extensive literature efficiently. This part of the chapter discusses the theory of the research design and methodology, which will inform the decision to adopt a systematic review strategy.

1.5.2 Theory behind research design elements

1.5.2.1 *Philosophical stance*

According to Saunders (2011:129), researchers have different world views that set the tone for the study they are conducting, depending on their philosophical stance. The four main research paradigms are positivism, realism, constructivism and pragmatism. Only three of these research paradigms will be discussed.

Positivism relates to the philosophical stance of the natural scientist. According to Ponterotto (2005:128), the main objective of a positivist is to arrive at an explanation that leads to a prediction and control of a phenomenon.

One of the main objectives of a constructivist is to obtain an understanding of the way people construct knowledge; in constructivism, therefore, the aim is to understand phenomena from their perspective (Ponterotto, 2005:129). This approach allows for a balanced representation of views (Mertens, 2014:11).

A pragmatic researcher focusses on the conclusion of the research project (Lewis, 2015:22). Pragmatists are practical in their approach and in solving the research problem; they consider different viewpoints on research and the subject. Therefore, the relationship between theory and practice is emphasised by the pragmatist (Burke, 2007:18).

1.5.2.2 *Nature of the study*

The way in which a researcher asks the research question will determine whether the nature of the study is casual, descriptive or exploratory.

A causal study determines the cause-and-effect relationship of one or more variables (Sekaran & Bougie, 2016:44-45). In order to explain the relationship between variables, the researcher would study a problem or a situation and thereafter look for causal relationships between variables (Saunders, 2011:140).

A descriptive study allows the researcher to provide an accurate account of what is going on in the topic of interest and what currently exists (Sekaran & Bougie, 2016:43). The descriptive researcher collects data that describes events, situations or objects (Trochim & Donnelly, 2007:24).

An exploratory study is conducted when there is not sufficient literature or evidence available on a topic or existing research provides inadequate results in relation to the topic (Saunders, 2011:139). Alternatively, the topic may be highly complex and require further exploration in order to find new insights that would enable the researcher to view the phenomenon in a new light (Saunders, 2011:139).

1.5.2.3 *Method of reasoning*

A researcher can acquire knowledge through inductive, deductive and abductive reasoning.

The inductive approach entails building up a theory from specific observations (Smith, 2003:3). The deductive approach is the opposite of the inductive approach; here the theory is tested through evidence that the researcher collects to arrive at a conclusion that will support the theory (Ritchie, Lewis, Nicholls & Ormston, 2013:14).

Abduction reasoning, also known as uncertain reasoning, is used to obtain the best possible outcome after observing a number of possible outcomes (Psillos, 1996:32). According to Shank (1998:8), the abductive researcher does not consider anything as being unique; instead, the basic unit of observation is the clue.

1.5.2.4 *Time horizon*

The research question is one of the factors that determine the time horizon of the research assignment. Research can be limited to a particular point in time or over a period (Kothari, 2004:4).

According to Saunders (2011:155), the study of a particular phenomenon (or phenomena) at a particular point in time is referred to as cross-sectional.

A longitudinal study is the study of a phenomenon over a period of time (Kothari, 2004:4). Due to the period of time it takes to complete a longitudinal study, it will be more expensive than a cross-sectional study and it require more effort (Saunders, 2011:269).

1.5.2.5 *Unit of analysis*

The unit of analysis refers to the persons or things being studied; it is the level at which data is collected (Vogt, 2005:333). The unit of analysis may be individuals, two-person interactions (dyads), groups, divisions, an industry or a country, to name just a few (Sekaran & Bougie, 2016:102). The choice of a unit of analysis is of such importance that a researcher cannot disregard primary or secondary data, qualitative or quantitative data as well as the level at which such data will be collected for analysis in deciding on a unit of analysis (Sekaran & Bougie, 2016:102-103). Furthermore, it is at the stage at which the researcher formulates a research question that the researcher would decide on a unit of analysis, as the research question determines the appropriate unit of analysis (Sekaran & Bougie, 2016:103).

1.5.2.6 *Nature of the data*

Research projects may require a combination of primary and secondary data, which may be quantitative and/or qualitative.

Primary data is original data that a researcher would collect themselves through observation, surveys, interviews and so on. Primary data will assure a researcher that the data collected is accurate and relevant to their research problem (Adams, 2007:107). Secondary data is primary data that has been interpreted and recorded. It is readily available to answer the research questions, thus allowing the researcher to focus on analysing and interpreting the data (Walliman, 2011:52).

Saunders (2011:482) tabulates the differences between qualitative and quantitative research. Quantitative research is founded on numerical information, with numbers being used to derive meanings; the results collected are also numerical data and an analysis is performed using diagrams and statistics. On the other hand, one would use words to express qualitative research. Furthermore, the classification of results is done in a non-standardised format that needs to be categorised.

There has been a view that qualitative research is inferior to quantitative research, with many researchers trying to force qualitative methodologies into moulds formed by quantitative researchers (Cooper & White, 2012:128). However, over the past ten years, qualitative research has reached a stage of development where academic and policy communities are more receptive to qualitative research (Jones, 2004:1).

Quantitative and qualitative research methods are equally important, and therefore the demands of both must be considered when considering the standards of reporting literature (Booth, 2006:422). Consequently, several authors draw a comparison between the two (Kothari, 2004:3).

1.6 STRUCTURE OF THE MINI-DISSERTATION

1.6.1 Chapter 1: Introduction

Chapter 1 presents background on the optimal tax mix theory, which is the main research area addressed in this study. The academic importance of the optimal tax mix is explained and the existing literature is briefly addressed, as are the countries that will be the core of the study (Nigeria and Norway).

The chapter then describes the potential knowledge gaps that the study will endeavour to fill. The research question as well as research objectives that will guide this study are stated in this chapter. Chapter 1 also discusses the theory behind the research design and methods used by researchers to conduct their studies.

1.6.2 Chapter 2: Literature review

This chapter is closely linked to the research question and research objectives of the study. In this chapter, the criteria for including and excluding articles are presented, as are the relevant keywords and databases used. The data collected in accordance with the research design elements is analysed.

One of the main purposes of this chapter is to critically evaluate the work of other researchers by summarising, comparing and providing the different perspectives of researchers and academics. Most importantly, this chapter provides insight after consolidating the many existing views of other researchers. Finally, specific ethical principles applicable to the study are discussed in Chapter 2.

1.6.3 Chapter 3: Research design and methodology

Chapter 3 discusses the philosophical stance of the study and describes the inquiry strategy and the general characteristics of the study. In this chapter, reasons are provided for following a pragmatic and descriptive approach and applying inductive reasoning. This chapter also proposes to examine existing literature over a period of time (longitudinal time horizon).

1.6.4 Chapter 4: Data analysis and presentation of results

In chapter 4 the optimal tax theory is examined. The Norwegian tax system is studied with reference to this tax theory. An “ideal” petroleum tax system is developed using Norway as a benchmark. Finally, in this chapter, the “ideal” petroleum tax system is applied to Nigeria to evaluate the extent to which Nigeria adheres to the optimal tax mix.

1.6.5 Chapter 5: Conclusion

Chapter 5 concludes on the findings made in chapter 4. In addition, the chapter makes recommendations on how Nigeria can engage in tax reforms that will optimise the country’s

taxation system, thus increasing the growth potentials of one of the leading economies on the African continent.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter aims to unpack the theory of optimal taxation. First, the criteria for including and excluding criteria of selected literature are defined. Second, keywords used to conduct the search process and relevant databases used are provided. Third, articles are analysed in accordance with the research design elements. The chapter concludes with a critical and synthesised account of the existing literature on the optimal tax theory.

The optimal tax theory is analysed with reference to existing literature. The petroleum life cycle is briefly analysed, followed by a brief analysis of the environmental taxes, given the potential environmental impact that results from the exploration and exploitation of petroleum. In addition, literature on the Norwegian tax regime is cited and an overview of Norway's petroleum taxes is analysed. Lastly, a similar analysis is performed on Nigeria.

2.2 IDENTIFICATION AND RECORDING OF ACADEMIC LITERATURE

2.2.1 Inclusion and exclusion criteria

The study has several inclusion and exclusion criteria related to the context, constructs and theoretical aspects of the study. The current study will focus on Nigeria and Norway, both of which have oil-dependent economies and are rich in petroleum (McPherson, 2010:265). Nigeria was selected because it is one of the leading oil dependent economies on the African continent (Organisation for Economic Co-operation and Development, 2012:2). Therefore, the study will not be considering any other African countries. Norway is included in the current study because it is one of the largest oil exporters (McPherson, 2010:264-265). Furthermore, Norway is an Organisation for Economic Co-operation Development (OECD) member country with a developed oil-dependent economy that continues to perform well and experience economic growth despite the volatile petroleum market (Organisation for

Economic Co-operation and Development, 2018:4). Therefore, Norway can provide valuable insight in respect of tax policies to be implemented in developing countries.

Second, the study will focus on the optimal tax mix, specifically with regard to petroleum taxes. The Norwegian petroleum tax system will be used as a benchmark against which the Nigerian petroleum tax system will be evaluated. Therefore, all other taxes, such as taxes on wealth and agricultural taxes which are not directly relevant to petroleum are excluded.

Third, the literature review of the study will primarily focus on the discipline of the optimal tax theory, and related disciplines such as optimal economic growth will not be considered in the same level of detail.

Lastly, literature relating to the optimal tax theory dates back to 1927. Obviously, it would be impossible to take into consideration all the views expressed since then. However, the relevant literature dealing with Norway and Nigeria does not date back to before the year 2000.

The type of literature was not limited, although it mainly consisted of books and published, peer-reviewed academic articles.

2.2.2 Keywords

Optimal taxation has a direct relationship with the tax system adopted by a country. The optimal tax mix will comprise a basket of tax incentives and other forms of taxes (Boadway, 2014:7-10);, these may form the basis of tax policy formulation. Tax policy guides the economic growth of a country (Boadway, 2014:25). In order to maintain continuous economic growth, a country may have to engage in tax reform, which may ultimately lead to an optimal tax system (Scully, 2003:299-300).

Based on the above, the following keywords were used to search for the relevant literature:

- Optimal tax mix AND optimal tax theory
- Optimal taxation AND Nigeria
- Optimal taxation AND Norway

- Economic growth AND optimal taxation
- Optimal taxation AND tax policy AND tax system
- Petroleum life cycle
- Nigeria AND petroleum taxes AND tax system
- Norway AND petroleum taxes AND tax system
- Nigeria AND Norway AND environmental tax

2.2.3 Databases

Several databases were consulted as part of the research process to increase the amount of searchable and available literature for the study. The databases selected are reputable, reliable and are amongst the most comprehensive and diverse business databases available (Wong, Wong & Boon-Itt, 2015:7). These databases were also selected because they should contain sufficient literature to support the study (Wong et al., 2015:7).

The following databases were included in the research process:

- Proquest (accounting and tax)
- EBSCOhost
- Google Scholar
- ScienceDirect
- Wiley Online Library
- JSTOR
- Directory of Open Access Books
- University of Pretoria – Merensky Library

2.2.4 Recording of identified academic literature

The process of recording literature is of the utmost importance, and it must be done effectively and efficiently to get the best results. For each literature source found, it was determined how this item answered the research question and assists in achieving any one of the research objectives. Literature found was firstly saved in EndNote to record the references that are cited in the study. EndNote is a bibliographic software system used to record, store and manage references and assists in inserting citations once the references

have been imported into the library (Liamputtong & Ezzy, 2005:2). Lastly, the literature items were recorded and analysed in Qiqqa. Qiqqa is research management software which was developed by a doctoral student from Cambridge University (Graham, 2013:4). Qiqqa was developed to help with academic research in general as and allows researchers to search, find, comment, highlight, analyse and manage research articles (Graham, 2013:4).

2.2.5 Literature reviewed: Research design elements

2.2.5.1 *Philosophical stance*

The literature included in the study consists of both empirical and non-empirical studies. Most of the literature consists of research done from a pragmatic point of view, as the studies provide an objective view and proposed solutions on optimal taxation. The researcher's focus was mainly on the relationship between the optimal taxation theory, the practicality of this theory and its importance to developed and developing countries.

Researchers also considered the theory behind an optimal tax rate and economic growth together with the practicality of being able to determine the optimal tax rate to maximise economic growth. For some of the literature, the researchers' focus was on the importance of environmental taxes in the petroleum industry as well as the tax regimes of Norway and Nigeria. Two of the research articles were written from a positivist view, as the researchers formulated new theories which one would be able to replicate. Table 3 below is a summary of the results.

Table 3: Philosophical stance

Philosophical stance		
Positivism	Interpretivism	Pragmatism
2	0	66

2.2.5.2 *Nature of the study*

The majority of the literature studies included in the study consist of descriptive studies describing the optimal tax theory and its relationship to tax policy, the optimal tax rate and economic growth. The literature studies analyse the intricacies of optimal taxation. They also

describe the tax systems and petroleum tax regimes of Nigeria and Norway as well as the various taxes levied in the petroleum industry and their impact on the economy of a country. In two of the sources an exploratory study was conducted where the respective authors established the optimal taxation theory and the model for determining the optimal tax rate that maximises economic growth. Table 4 below is a summary of results.

Table 4: Nature of study

Nature of Study		
Casual	Descriptive	Exploratory
0	66	2

2.2.5.3 *Method of reasoning*

Most of the literature studies included in the study used an inductive method of reasoning. The researchers identified the problem area within the optimal tax theory, tested this theory and built on it. Once the optimal tax theory had been established, researchers built on it by conducting further research on the relationship between optimal taxation, tax policy, the tax system and the optimal tax rate that maximised economic growth. In addition, the researchers built on the literature around various petroleum taxes, how these taxes were managed and the effects thereof on the economy.

The optimal tax theory and the literature relating to petroleum taxes was narrowed down to optimal taxation for the petroleum industry. Deductive reasoning was adopted by two researchers, as they formulated certain theories and models. Table 5 below is a summary of the results.

Table 5: Method of reasoning

Method of reasoning		
Inductive	Deductive	Abductive
66	2	0

2.2.5.4 *Time horizon*

Most of the literature studies included in the study were conducted over a period of time, but the current study is conducted at a specific point in time; hence it has a cross-sectional time horizon. The literature studies commence by considering, for example, the original theory of optimal taxation, study the evolution of the respective theory and build on this theory by filling in the identified gaps of this theory. In the context of the specific countries, the history of the tax systems is considered in order to make conclusions regarding the current tax systems in place, how the tax system has been reformed and how it could reform further.

In addition, several of the researchers study the economic growth of a country in relation to the tax rate over a period of time to enable them to establish the optimal tax rate that maximises economic growth for that country. Lastly, some authors study the evolution of natural resource tax regimes, for example, the Norwegian tax model and how it has resulted in substantial economic success for Norway when compared to how Nigeria manages its petroleum taxes, and so forth. One of the literature studies' time horizon was cross-sectional, as the researcher studied the theory of optimal taxation by gathering the data at a specific point in time. Although the literature included in the study ranges over a number of years, the studies were conducted to reflect views at a specific point in time and are therefore cross-sectional. Table 6 below is a summary of the results.

Table 6: Time horizon

Time horizon	
Cross-sectional	Longitudinal
16	52

2.2.5.5 *Unit of analysis*

The unit of analysis varied in the literature studies. The researchers focus on various things as part of their studies. For some researchers the unit of analysis was tax systems, tax policy and optimal taxation. As regards countries, Nigeria and Norway are the focus of the current study, and here researchers studied the tax legislation, tax system, tax incentives or tax policies and so forth. Some of the researchers did not focus on a specific country in their

studies, but rather on categories of countries such as developed countries and developing countries. Table 7 below is a summary of results.

Table 7: Unit of analysis

Unit of Analysis	No. of Articles
Africa	4
Asia	1
Countries around the world	1
Countries with natural resources	1
Developing countries	3
Emerging and developing economies	1
Environmental tax	4
Mining tax	1
New Zealand	1
Niger Delta	2
Nigeria	4
Nigeria and South Africa	1
Nigerian tax legislation	4
Nigeria's tax system	4
Norwegian and Canadian petroleum tax systems	1
Norwegian petroleum tax legislation	5
Norwegian continental shelf	2
Norwegian tax system	3
Optimal taxation	6
Petroleum life cycle	5
Research (unit of analysis):	1
Tax incentives	4
Tax policy	2
Tax policy in Nigeria	1
Tax system	2
Tax systems of developing countries	1
United States of America	3
Total	**68**

2.2.5.6 *Nature of the data*

All the literature studies included in the study use secondary data. However, some of the literature used primary data in addition to the secondary data; here the researchers test the theories by observing the results yielded by models formulated by previous researchers.

Most of the literature studies use both qualitative and quantitative data in their research, as reliance will placed on economic statistics and data collected will be assessed for quality. Only some of the literature studies use only qualitative data. Table 8 below is a summary of the results.

Table 8: Nature of data

Nature of data				
Primary data	Secondary data	Quantitative	Qualitative	Mixed method
32	68	0	28	40

2.3 SUMMARY AND BRIEF DISCUSSION OF REVIEWED LITERATURE

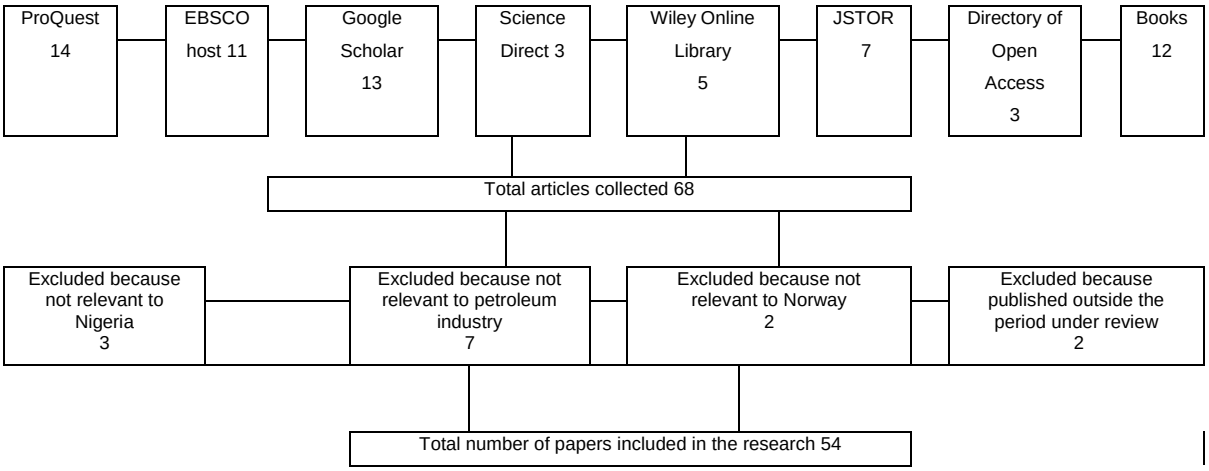
The literature found for the study comprised a total of 68 articles. Several databases were searched. Table 7 below is a summary of the results

Table 7: Literature reviewed

Database	Number of literature articles reviewed
Proquest (Accounting and Tax)	14
EBSCOhost	11
Google Scholar	13
ScienceDirect	3
Wiley Online Library	5
JSTOR	7
Directory of Open Access Books	3
University of Pretoria – Merensky Library	12

Of the 68 sources found, only 54 were included in the study, thus excluding 14 sources. Of the 14 sources excluded, three articles were excluded on the basis that although the literature was based on African countries that possess natural resources, Nigeria is the focus of the current study. Seven articles were excluded because they focus on taxes in the agricultural and manufacturing industries. Two articles were excluded because they focus on other countries than Norway. Lastly, two articles were excluded because they predate 2000. Figure 1 below is a summary of results.

Figure 1: Quality assessment: summary of results



2.3.1 Optimal taxation

The following section gives an overview of the optimal tax theory and how it correlates with tax policy, tax systems and economic growth.

2.3.1.1 The optimal tax theory

Extensive literature exists on the theory of optimal taxation. However, previous theories do not reflect the realities of most countries especially developing countries (Tanzi & Zee, 2000:300). There is a gap between the theory and tax policy which impacts tax systems, economic growth as well as commodity taxes (Boadway, 2014:1-4). Sir James A. Mirrlees is a British economist who is one of the pioneers of the theory of optimal taxation (Cambridge). According to Mirrlees (1971:207), under the optimum regime the entire population chooses to work, but an individual will earn income depending on their ability and the effort that they put into their work. In addition, revenue authorities impose higher taxes on individuals with high income-earning abilities and transfer it to those with a low or no income-earning abilities.

Imposing higher taxes may result in individuals being discouraged to put in more effort to earn income (Mirrlees, 1971:207-208). Furthermore, the imposition of high taxes may induce tax avoidance or evasion on the part of high income-earners (Alm, 1996:157). Therefore, revenue authorities must be cautious to ensure that the tax system does not induce such behaviour. Revenue authorities must, through the tax system, incentivise high income-

earning individuals to ensure that productivity remains high, as that will result in high income and therefore more tax (Boadway, 2014:12). The challenge that governments face is the trade-off between equality and efficiency. Mirrlees (1976) formalised this approach, and it is one that many academics favour. Lastly, the optimal tax depends on the information that the taxpayer provides to the revenue authorities (Slemrod, 1990:175). This optimal tax problem is one that (Mirrlees, 1976) outlined in his framework, which most revenue authorities consider when determining the practicability of a tax system.

Amgain (2017:47) supports the views of Mirrlees with regard to the correlation between high taxes and labour supply. However, Slemrod (1990:117-119) criticises the theory of optimal taxation on the basis that firstly, it does not consider that individuals will resist paying tax as they might feel government is bullying them by collecting revenue through the tax system. Furthermore, the theory does not consider the political requirements of formulating a tax policy in line with the theory, and the policy formulators' intention may not be to maximise the social welfare function (Alm, 1996:118).

As shown above, optimal taxation can still evolve further, as it may seem far-fetched and impractical for developing countries to apply. This would especially be the case for developing countries which have distinguishable economic features (Newbery & Stern, 1987:195-196). In conclusion, one may concede that based on previous studies, optimal taxation is an activity that is supported, as it provides guidance to policy formulators (Boadway, 2014:26).

2.3.1.2 Optimal taxation and tax policy

A tax system has active taxpayers whom the policy formulators use as a basis for determining the fiscal budget (Fjeldstad & Moore, 2008:18). The government's strategy for spending the revenue collected is contained in the fiscal budget (Reynolds & Neubig, 2016:11-15), as is tax policy (Newbery & Stern, 1987:243). The level of taxes a country can afford as well as the minimum taxes it aims to collect is determined in the fiscal budget (Chris Evans, 2017:224). The purpose of tax policy is to strike a balance between the taxes a government can collect and the taxes a government will spend (Talvi & Végh, 2000:11-12). Equally important are various trade-offs, such as: the trade-off between the equality and

efficiency of taxes, as these two may have a significant impact on tax compliance (Chris Evans, 2017:254-255). Tax compliance is especially important for developing countries, mostly because there is a lack of resources to monitor tax compliance, and this results in inefficient and inequitable taxes (Saibu, 2015:2-3).

A government cannot impose equal taxes on all taxpayers and at the same time expect that they will allocate resources optimally whilst serving every individual and minimising waste (Kanbur *et al.*, 2018:65-66). Mirrlees (1971:207) and Abuselidze (2015:603) echo these sentiments. It is evident that the development of the optimal model depends mainly on tax policy. However, Tanzi and Zee (2000:299) argue that in developing countries optimal taxation literature has not been of much significance and has had a relatively small impact on the formulation on tax policy. One would be inclined to agree with Tanzi and Zee when considering the economic and political landscapes of developing countries, especially on the African continent.

2.3.1.3 Optimal taxation and tax systems

For all countries, the optimisation of their tax system should be a main priority, because countries will only be able to meet their obligations if there is a functioning tax system (Newbery & Stern, 1987:236-238). In developing countries, the tax system should, amongst other things, allow them to meet their obligations (without resorting to excessive borrowing from international bodies) and raise revenue in an equitable and efficient manner without distorting the market (Tanzi & Zee, 2000:300).

There are a number of factors that would influence the type of tax system, such as: politics, technology, public opinion, administrative complexities and so forth (Boadway, 2014:1). Government may consult several stakeholders (for example, academics, professionals, corporates etc.) to provide input and consider all factors during the formation or the reformation of a tax system to avoid conflicts of any nature. The above views are also advanced by Abuselidze (2015:602) and Fjeldstad and Moore (2008:255), who emphasise the importance of a government obtaining recommendations from the public and engaging constructively with citizens on tax issues.

2.3.1.4 Optimal taxation and economic growth

A number of researchers (Scully (2003), Kennedy (2000), Newbery and Stern (1987) and Saibu (2015)) have researched extensive empirical literature on the correlation between the optimal tax rate and economic growth. The growth rate of an economy may rise as a result of government spending the revenue it collects on productive activities (Saibu, 2015:1-2). The Scully model empirically tests the growth maximising level of taxation (Scully, 2000:93). In the Scully model, maximising economic growth is government's main goal, with the assumption that tax revenue finances most of government's spending (Scully, 2000:93-96). The model also predicts that an economy is more likely to grow faster with a lower tax rate than with a higher tax rate. Lastly, on average, if a country's tax to gross domestic product ratio is no more than 19,3 percent, that country will achieve the maximum growth rate (Scully, 2000:93-96).

Scully makes a compelling case through the series of empirical studies on the growth maximising tax rate (Scully, 1991; Scully, 1996; Scully, 2000; Scully, 2002) in which he attempted to find the optimal tax rate for the United States of America (USA) and European countries. Scully's methods have also been used by other researchers, such as Keho (2010:164), who determined the optimal tax rate of Cote d`Ivoire to be within the range of 21,1% to 22,3% of GDP. However, Scully's methods have been criticised on the basis that some of his estimation techniques are inappropriate, as one cannot estimate an exact growth-maximising rate by only taking taxation into account (Kennedy, 2000:89). Despite the criticism, the Scully model is not entirely inaccurate, as previous research by Newbery and Stern (1987:136) also hold the view that a higher tax rate may result in a lower economic growth rate when considered in conjunction with other factors.

Saibu (2015:1) and Koch, Schoeman and van Tonder (2005:5) estimated that the growth maximising tax rate for South Africa is 15% of GDP and 30% for Nigeria. However, the optimal tax rate must be considered along with many other different factors, as economic growth is not only influenced by the tax rate (Newbery & Stern, 1987:136-137). Essentially, an economically strong state is generally based on a number of things, such as the quality of the country's administration, tax collected, a high tax culture and low unemployment, to name just a few.

2.3.2 Taxation of natural resources

“A well-designed tax system in the petroleum sector should have two fundamental features: The tax system should be so designed that the creation of value in the sector is the highest possibility. The highest creation of value is obtained when investments that are profitable for society are also profitable for the companies, and the other way around. As with other sectors, this may be obtained by maintaining a neutral tax system” (Sollund, 2002:415). This section unpacks the literature on petroleum taxes, which is the focus of the current study. For many countries (especially developing countries), the wealth of their country lies in the natural resources that the country owns (Newbery & Stern, 1987:18). This is specifically the case for many African countries, given that the continent is rich in natural resources. Consequently, the revenue that some African governments earn from their natural resources forms an important part of public finances (Ballard, Cline, Neubig & Phillips, 2012). Therefore, the importance of the resource tax design and how revenue from natural resources is managed cannot be overemphasised.

According to Boadway and Keen (2010:49-63), in most countries natural resource taxes strike a balance between royalties from the sale of natural resources and corporate income taxation. There are various challenges that a government faces when designing a resource tax regime. Tax-adjusted discount rates reflect the cost of capital, which is an indication of the risk that the investor is taking in developing the project (Boadway & Keen, 2010:49). For purposes of the optimal tax design, efficiency requires that the risk be borne more heavily by the individual who has an appetite for risk, and that would be the investor in most instances (Boadway & Keen, 2010:52). Projects in the resource sector span a long period of time. Therefore, governments are not able to give investors certainty regarding the future tax treatment of projects (Boadway & Keen, 2010). The question that then arises: What kind of tax design time does consistency requires? In addition, the political economy of time consistency must also be considered. The views expressed by Boadway and Keen (2010) confirm that the above are some of the things that need to be considered when designing a tax system for natural resources.

2.3.2.1 The life cycle of petroleum

A basic appreciation of the petroleum field life cycle is required to fully understand the taxation of petroleum. The life cycle of oil is characterised by six different phases (Nakhle, 2008:71). The first phase is the acquisition of a licence (Nakhle, 2008:72). To begin the exploration of oil, a prospecting right in respect of certain territorial waters is granted to an investor by the government of the country in which the investor wishes to look for oil (Advokatfirmaet BAHR AS, 2018:6). The second phase is exploration, which is the most risky and costly phase (Nakhle, 2008:72). During exploration, an investor conducts a geographical survey referred to as a seismic survey (Lyons & Plisga, 2006:4-82). This survey provides technical data and guidance on whether the conditions are appropriate to proceed further (Lyons & Plisga, 2006:4-82). If conditions are right, an exploration well is drilled, and if the well is dry, the exploration costs will be written off. However, if the well is wet, it is an indication that there may be oil (Lyons & Plisga, 2006:4-82).

The third phase is the appraisal phase, where the investor will appraise and verify the characteristics of the reservoir (Fahim, Alsahhaf & Elkilani, 2010:6). The fourth phase is known as the development phase (Nakhle, 2008:73). During this phase, the reservoir engineer will devise a detailed development plan, provided that the oil field is commercially viable (Hamil, 2014:40). This plan is to be submitted and approved by the respective government (Nakhle, 2008:73). The fifth phase is the production phase (Nakhle, 2008:73). The production phase begins with the drilling of productions wells. During this phase, the investor will account for operating revenue and costs (Advokatfirmaet BAHR AS, 2018:6). Therefore, any costs incurred before this phase will be of a capital nature. The last phase is the abandonment phase (Nakhle, 2008:73). It is during this phase that the field becomes depleted and is consequently decommissioned. The costs of decommissioning are high, hence this may be considered the second most expensive phase (Carlo, 2012:49).

2.3.2.2 Environmental impact of petroleum and the consequences

The petroleum industry is a highly regulated environment, and the industry's impact on the environment necessitates the levying of environmental taxes, which would go hand in hand with the petroleum taxes paid by organisations (Soares, 2012:116). Environmental taxes are

the taxes that are imposed to encourage environmentally positive behaviour by polluters or resource users (Milne & Andersen, 2012:15). Environmental taxes are a way of forcing the polluters and resource users to pay for the environmental resources they use (Milne & Anderson, 2012:16-17). The petroleum industry can affect the environment negatively by possible oil spillages, sewage and wastewater pollution and coastal and riverbank erosion, to name just a few (Soares, 2012:116). When a company decides that it wants to engage in the exploration and the exploitation of petroleum, it must provide an environmental impact assessment in the initial stages of the project (Preiss, 2012:140). In Europe, several countries (including Norway) are subject to environmental tax reforms (ETR), where the taxes collected on pollution or natural resource depletion are used to lower tax on economic activities that are valuable (Hoerner & Bosquet, 2001:1). In Nigeria, legislation such as the Oil Pollution Act was passed to control or mitigate pollution of oil in the petroleum industry (Kadafa, Zakaria & Othman, 2012:25). The above is not an exhaustive list, but serves to indicate that countries such as Nigeria and Norway consider the impact of the petroleum industry on the environment. There are also other taxes in place to address environmental affairs within the industry.

2.3.2.3 Taxation of petroleum

2.3.2.3.1 The resource curse

Petroleum constitutes an important source of revenue in several countries; therefore creditability and predictability must be the emphasis of petroleum taxes (Nakhle, 2008:31-32). Generally, if the exploitation of natural resources is optimised, such exploitation may encourage growth of an economy (Olaiya, 2011:57). This should be the case for oil-dependent economies, which rely extensively on petroleum as source of revenue. However, according to Olaiya (2011: 58), “in most resource-rich countries, natural wealth does not translate into prosperity for the majority of the inhabitants, but instead led to environmental and economic devastation, and encumbers democratic reform.” This is also known as the resource curse or the paradox of plenty (Djoumessi, 2009:41).

An example of a country that has been a victim of the resource curse is Spain, which colonised the New World (South America), resulting in huge amounts of gold for the Spanish

kingdom (Djoumessi, 2009: 41). However, this discovery did not have the desired effects on the economy, as the country's political and economic power in Europe weakened (Djoumessi, 2009: 41). The resource curse is not unique to Spain; many other countries such as Chile, Nauru and developing countries that depend on oil have suffered a similar fate because of this curse (Djoumessi, 2009: 41-48).

2.3.2.3.2 The petroleum fiscal regime

Resource projects are characterised by an incredible degree of uncertainty with regard to several aspects (Boadway & Keen, 2010:19), for example the quantity and quality of the oil extracted and the time frame of the project, to name just a few (Boadway & Keen, 2010:19). One of the main uncertainties in the petroleum industry is the oil price (Alley, 2016:199). The volatility of the oil price will have an impact on a fiscal regime that is linked to the oil price, which may have an impact on the ability of a government to achieve fiscal stability (Alley, 2016:199). Therefore, to maintain a consistent tax system it is wiser for a government not to amend fiscal policies in line with the volatile oil price, as this may affect investor confidence in a government's policy (Nakhle, 2010:115).

According to Nakhle (2008:21), the taxation of oil is not limited and can take many forms. There are four tax instruments which she discusses as the tax instruments that capture the economic rent from oil activity (Nakhle, 2008:22). The first instrument is gross royalty, which is a payment for the right to use one's property for gain, and this payment goes directly to the government (Nakhle, 2008:22). The second instrument is a brown tax, which is a flat rate that taxes the positive net cash flow of the investor project (Nakhle, 2008:22). The rent resource tax is the third instrument and taxes the positive net present value of the investor's company (Nakhle, 2008:22-23). The last instrument is income tax, which is not a tax on cash flow but on the profits that an investor's company makes (Nakhle, 2008:23). In conclusion, the type of tax instrument used to capture economic rent will guide the fiscal policy, and it would seem that the tax instruments used will determine the extent to which a fiscal regime applies the optimal tax mix.

2.3.2.4 Norway and petroleum taxes

2.3.2.4.1 The Norwegian tax system

Norway is one of the wealthiest oil-dependent countries in the world, with an economy that has remained stable even during the global financial crisis (Zielke, 2013:30). This is particularly evident when comparing Norway with other countries of the European Union (Zielke, 2013:30). The Norwegian tax system places a strong emphasis on income redistribution, the social welfare function being the core of the tax system design (Chris Evans, 2017:15). Norway has adopted a dual income tax rate structure (Bakko, 2002:387). Just like any other country, Norway grants tax incentives to businesses operating in certain areas of the country to attract investments and employees to the less attractive geographical regions. However, according to Bakko (2002:387) few incentives are granted, as the European Economic Area (EEA) Agreement and World Trade Organisation (WTO) issued a general prohibition against selective governmental support and incentives.

2.3.2.4.2 The Norwegian petroleum tax system

“In recent years some 50 governments have approached the government of Norway for advice. Yet, as the government of Norway is careful to explain, there is no ‘Norwegian model.’” (Daniel *et al*., 2010:85). The number of such requests is testimony to the fact that Norway has one of the best models of resource management and taxation in the world, to the extent that other governments want to emulate them. This view is echoed by Djoumessi (2009: 55), who argues that Norway is a good example of an oil-dependent country that did not fall victim to the resource curse, but has mastered to optimally exploit its oil revenue. The Norwegian Continental Shelf (NCS) is a petroleum-rich region on which the Norwegian government has full rights and control (Mohn & Osmundsen, 2008:303-304). The NCS is highly regulated and is considered to be the base of the Norwegian economy (Mohn & Osmundsen, 2008:303-304). Furthermore, Norway is a major shareholder of Equinor (Stratoil), a petroleum and wind company that effectively and efficiently manages the petroleum industry in Norway (Thurber & Istad, 2010:5-9).

Since the exploitation of oil in Norway is optimal, it is important to note that the Norwegian model operates under a concessionary regime (Nakhle, 2010:113). A concessionary system is one where the government grants a company an exclusive right of exploration for and exploitation of petroleum in a specified area for a fixed period of time (Nakhle, 2010:112-117). The full risks and rewards of ownership of the petroleum right are transferred to the company (Nakhle, 2010:115). Mommer (2001:1-2) supports the concessionary system, as it is considered to be more liberal because payments due to the government are based on net profit or excess profit. Mommer (2001:1-2) is more critical of the contractual system, which requires payment to be made to the government based on the gross income of a company, whether the company realises a profit or not. Although the Norwegian government has adopted a more liberal model, it is evident from the above that their fiscal regime is amongst the toughest despite its liberalism.

In 1975, the Norwegian government first enacted 'The Petroleum Tax Law' (later known as the 'Petroleum Tax Act' (PTA)) and regulations (Sollund, 2002:415). According to Sollund (2002:415-415), the PTA has two main objectives. The first objective is to determine the tax liability of a person or company that conducts business activities relating to the exploration or exploitation of petroleum resources on the Norwegian Continental Shelf (Sollund; 2002:415-416). There are special tax rules with regard to the income from the production and pipeline transport of petroleum within the geographical scope of the PTA; therefore, the second objective is to determine which special tax rules apply in this regard (Sollund; 2002:416).

Sufficient literature exists on the Norwegian petroleum tax system. Lund (2014:50) breaks it down into three main elements: corporate income tax, special petroleum tax and the royalty tax, which will be discontinued. Of these main elements, the following provisions are of relevance: tax rates, norm prices, allowances for depreciation, tax-free allowance, financing, transfers, loss and payment authorization, deadline tax and advance rulings (Zielke, 2012:30). Tax rates are the rates that determine the tax liability on income earned from the exploitation of the continental shelf (Deloitte, 2014:2). Norm prices relate to the price that a willing buyer will pay a willing seller for petroleum on an open market (Advokatfirmaet BAHR AS, 2018:7). This is to ensure that the sale of petroleum takes place at market value (Advokatfirmaet BAHR AS, 2018:7).

Pipelines and conveyancing units are important assets for the process of exploiting the continental shelf and will therefore qualify for the relevant allowances (Deloitte, 2014:2). A tax-free allowance is the special allowance granted for investments in conveyance facilities and pipelines (Advokatfirmaet BAHR AS, 2018:7). Financing relates to the limitation on interest deductions for tax purposes (Zielke, 2012:30). Transfers deals with transfers from the continental shelf which need the approval of the finance ministry (Zielke, 2012:30). Losses incurred on the activities on the continental shelf are carried forward, and in the case where a company is sold or merges with another, the loss may be transferred to the new owners of the company (Deloitte, 2014:4). Deadline tax refers to the current tax liabilities which are to be settled by a continental shelf company (Zielke, 2012:30). Advance rulings refer to those rules provided by the petroleum tax authorities with regard to potential transactions that a company will be involved in (Zielke, 2012:30).

In conclusion, it is worth noting that regardless of the instability of the oil industry and the various taxes imposed by the Norwegian government, the Norwegian petroleum tax policy has been consistent and stable in comparison with other countries (El Anshasy, 2012:120; Evans & Froydenlund, 2010:4-6).

2.3.2.5 Nigeria and petroleum taxes

2.3.2.5.1 The Nigerian tax system

Oil is a very important source of revenue for Nigeria, and the proper management of the country's petroleum revenue is paramount to the country improving its economy (Ugwumadu, 2015:35). There are three tiers of government that enforce taxation laws in Nigeria, namely federal, state and local governments (Ekeocha *et al.*, 2012:206). The major revenue is collected by the federal government, which runs a centralised revenue system (Ekeocha *et al.*, 2012:206). In general, the Nigerian tax system is based on a progressive tax regime (Ocheni, 2010:6).

Under this tax regime, taxpayers who earn more will pay more. Nevertheless, the Nigerian tax system is known as a complex system that does not entirely meet its objectives of raising adequate revenue, distributing wealth equally, managing the economy and encouraging positive behaviour towards the tax system among citizens (Umenweke & Aladegbaiye,

2011:49). Research by Odusola (2006:1), Anyaduba (2006:133) and Micah, Ebere and Umobong (2012:9) reveals that the Nigerian tax system is characterized by a lack of statistical data, poor tax administration, inability to prioritise tax effort, an excessive variety of taxes, an informal market (which is not adequately accounted for in the tax system), political instability and corruption.

2.3.2.5.2 Nigerian petroleum taxation

"Oil exploration and Nigeria's under-development have come to be intertwined. Nigeria generated between $400 billion and $500 billion from over forty years of oil exploration, yet it has no demonstrable effect on the infrastructure or livelihoods of citizens" (Olaiya, 2011:81). Based on the above and the previous discussion on the resource curse, it is evident that Nigeria – like many oil-dependent developing countries – has not been successful in optimally exploiting its petroleum resources. The views of Djoumessi (2009:41-42) are disconcerting, as he demonstrates how Nigeria is indeed a victim of the resource curse. In contrast to Norway, Nigeria does not have an effective and efficient petroleum tax system, even though their most significant revenue comes from petroleum (Ekeocha *et al.*, 2012:206). The above is further demonstrated by Kadafa *et al.* (2012:23), who discuss how Nigeria incorporated the Nigerian National Petrol Corporation (NNPC) to regulate the petroleum industry; however, the corporation appears to not be serving its purpose due to the mismanagement of petroleum revenue.

The Nigerian government faces quite a number of challenges that prevent the country from achieving its desired economic growth (Djoumessi, 2009:106). Citizens are dissatisfied with the manner in which the government manages the revenue it collects, to the extent that they will destroy the oil pipelines that are meant to generate oil revenue (Djoumessi, 2009:106). Djoumessi (2009:144-147) points out that Nigeria, like Cameroon and Angola, is one of the world's most corrupt countries, whose situation has been aggravated by previous oil-related civil wars that have also been experienced by the Congo. Watts (2004:50) demonstrates one of the many negative effects of the resource curse in Nigeria. Similar to Norway's NCS, Nigeria has the Niger Delta, which is also a petroleum-rich region (Watts, 2004:50). The Niger Delta has been riddled with conflict amongst Nigerian locals and foreign companies operating within the Niger Delta (Watts, 2004:50-51). In addition, ethnic groups residing

within the surrounding areas of the Niger Delta will fight amongst themselves for the wealth resulting from oil (Watts, 2004:50-51).

Umenweke (2011:52) discusses other challenges that Nigeria also faces, such as the lack of an effective and efficient tax administration due to a lack of competent and qualified personnel, inadequate information technology systems and lack of funds, to name just a few. Another challenge experienced by Nigeria, which Micah *et al.* (2012:9) refer to, is the multiplicity of taxes imposed on individuals and corporate bodies, which create a ripple effect and possible duplication of tax. The Nigerian tax system is also viewed as unequal, because it sometimes favours the self-employed individuals, who tend to earn more than the paid workers. There is a lack of compliance on the part of self-employed individuals (Micah *et al.* (2012:9); Umenweke (2011:52)). Furthermore, no tax statistics are available, which is further exasperated by the inability of the Nigerian government to prioritise tax efforts (Micah *et al.* (2012:9). Last but not least, exchange control, political risk and regulatory challenges confront companies that wish conduct business in Nigeria.

Nigeria imposes a petroleum profit tax (PPT), which is the country's main fiscal instrument (Abdul-Rahamoh, Taiwo & Adejare, 2013:2). The petroleum profit tax is administered under the Petroleum Profits Tax Act (PTA), which was first enacted in 1959 (Ocheni, 2010:136). Under the PTA, an oil company pays tax at a rate of 67,5 per cent for the first five years of its operations and 85 per cent thereafter (Abdul-Rahamoh *et al.*, 2013:2). Furthermore, the PTA provides for the following, amongst others: allowable deductions, capital allowances in respect of qualifying pipelines, storage and drilling, and a petroleum investment allowance for the acquisition or first use of the petroleum right granted by the government (Ochemi, 2010:136).

Nigeria also grants investors a tax incentive called the pioneer income tax relief, the main goal of which is to enhance investment. The pioneer income tax relief is granted to investors who apply for it to the Nigerian government. According to Akinyomi and Akinyomi (2011:86) and Adepoju (2016:38), this incentive aims to provide tax relief for businesses operating in Nigeria whereby they do not pay any tax for a period of up to three or four years. The effect of this tax relief is that unlike under the PTA, the Nigerian government earns no revenue from it.

Nigeria being the largest oil exporter to the USA, it has the potential to turn its economy around (Djoumessi, 2009:226). However, Nigeria must consider reforming its tax system by instituting credible tax mechanisms and more predictable structures, as proposed by Nakhle (2008:31-32). Furthermore, Nigeria may emulate Norway by revising its tax incentives and exemptions. Nigeria has lost out on potential revenue (through tax incentives) that could have been put into the country's social welfare function or invested in the infrastructure (Ugwumadu, 2015:35).

Reforming the Nigerian tax system will increase the potential for foreign direct investment, especially if regulatory certainty is created. Furthermore, Nigeria must consider diversifying its revenue portfolio in order to place less reliance on the revenue from oil. This view is echoed by Ekeocha *et al*. (2012:206), who insist that the heavy reliance on oil as the main source of revenue results in the tax system lacking the potential to diversify the revenue portfolio. Lastly, a lesson that can be learnt from Norway is the manner in which oil revenue collected is managed and utilised. To conclude, Nigeria must attempt to ensure that the spending of oil revenue is linked to the period in which the oil revenue is earned by the government; this has the potential to stimulate the economy (Holden, 2013:875). The above may assist Nigeria in achieving optimal taxation for its petroleum industry.

2.7 RESEARCH ETHICS

The following ethical principles apply to the study:

- The study adheres to the plagiarism declaration of the University of Pretoria. The work of previous researchers has been acknowledged in the study.
- The data provided in the study has not been fabricated.
- The research findings presented in the study are not misleading or false.

2.8 CONCLUSION

Nigeria still has room to reform its petroleum tax regime by aligning its petroleum taxes to the likes of Norway. Norway is an OECD country which has a successful petroleum tax regime that has enhanced economic growth in its country. Furthermore, Norway has

legislation in place that reassures potential investors; therefore, attracting investments is not as much of a challenge. Lastly, the Norwegian government manages its petroleum revenue in an equitable and efficient manner. There are adequate skills to administer the petroleum revenue and corruption is managed well. To summarise, one may argue that Norway has adopted the optimal tax theory in establishing its natural resource tax regimes, given the level of success it continues to experience economically.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

The purpose of this chapter is to apply the research design and methodology as explained in 1.5. This will allow the reader to understand the overall research design and methodology relevant to the study. In this chapter, the philosophical stance of the study will be discussed, followed by the nature of the study, method of reasoning applied in the study, time horizon, unit of analysis and nature of data used. The chapter ends with a discussion of the research methodology adopted in the current study.

3.1 RESEARCH DESIGN ELEMENTS AS APPLICABLE TO THIS STUDY

3.2.1 Philosophical stance

Generally, there is insufficient literature regarding the optimal tax mix in developing countries, more specifically in Africa. Existing literature on optimal taxation predominantly focuses on developed countries. With respect to Nigeria, the issue of the optimal tax mix is less well explored, especially with regard to the petroleum resources industry.

The main objective of this study is to provide a comparative analysis between Nigeria and Norway. The Norwegian petroleum tax system will be used as a benchmark for the optimal petroleum tax system. Thereafter, the Nigerian petroleum tax system will be compared with the optimal petroleum tax system to evaluate the extent to which Nigeria adheres to the criteria of the optimal tax mix.

The above is a goal that has practical relevance to a business or a problem. Furthermore, given the fact that literature constantly evolves and possible tax reformation in the future, the results of the current study will yield a provisional truth, as the results will change over time. Therefore, the present research falls within the ambit of pragmatism.

3.2.2 Nature of the study

The data collected will provide in-depth knowledge of the optimal tax theory. Furthermore, the data will describe the petroleum tax regimes of Nigeria and Norway. The data will demonstrate how the Norwegian tax system applies the optimal tax theory and serve as a benchmark to develop an “ideal” petroleum tax system, which will be applied to Nigeria to determine the extent to which Nigeria has the optimal tax mix. Therefore, the study will be descriptive.

3.2.3 Method of reasoning

The study commences by analysing the optimal tax theory. Thereafter, the study analyses the Norwegian tax system and demonstrates how this tax system applies the optimal tax theory. An “ideal” petroleum tax system will be developed, using the Norwegian tax system as a benchmark. Lastly, the “ideal” petroleum tax system is applied to the Nigerian petroleum tax system in order to evaluate the extent to which the Nigerian petroleum tax system has the optimal tax mix.

Nigeria will be compared with Norway to identify the lessons that Nigeria could learn from a country like Norway, which has applied the optimal tax mix. Furthermore, the comparison between Nigeria and Norway will reveal the impact that the optimal (or as near to optimal as possible) tax mix has on economic growth. Therefore, the method of reasoning is inductive reasoning.

3.2.4 Time horizon

To obtain an understanding of the theory of optimal taxation, the work of Frank P. Ramsey, the economist who established the optimal tax theory in 1927, will be considered. The work of Gerald W. Scully, who established a popular model for determining the optimal tax rate that will maximise economic growth, is also considered. This literature dates back to the 1990s. The remainder of the literature considered for the study was conducted between the years 2000 and 2018, as tax systems evolved significantly during this period. Although the

literature on the phenomenon studied covers a long period, the study is conducted at a particular point of time and is therefore a cross-sectional study.

3.2.5 Unit of analysis

The study will analyse the optimal tax theory. Furthermore, the study will analyse the Norwegian tax system in relation to the optimal tax theory in order to demonstrate how Norway has adhered to the optimal tax theory. The study will then develop an “ideal” petroleum tax system by using Norway as a benchmark. Lastly, the “ideal” petroleum tax system is applied to Nigeria to evaluate the extent to which the Nigerian petroleum tax system adheres to the optimal tax mix. Therefore, to achieve the objectives of the study, the unit of analysis will be petroleum tax regimes of Nigeria and Norway.

3.2.6 Nature of the data

No observation, experiments, surveys or case studies will be conducted. Therefore, no primary data will be considered in this study. The objectives of the study will use secondary sources of data, as the work of previous researchers will be relied on.

Data collected will also encompass economic statistics such as gross domestic product (GDP) and tax to GDP ratios. The above statistics represent numerical data from which information on the contribution petroleum makes to the economy as well as the contribution petroleum taxes make to the total taxes collected in Nigeria and Norway is derived (Organisation for Economic Co-operation and Development, 2018a:82; Organisation for Economic Co-operation and Development, 2018b:14). Furthermore, data collected will be assessed for quality and interpreted to understand the phenomenon that is being studied (Ritchie, Lewis, Nicholls & Ormston, 2013:3). Therefore, the literature considered for the study consists of both qualitative and quantitative data.

3.2 SYSTEMATIC REVIEW

3.3.1 Motivation

A systematic review is a sufficient method of review for the current study (an economic study), as it is a structured and thorough review process (David, David & Palminder, 2003:210). A systematic review is a good way of analysing literature that will allow one to develop a framework to compare the current Nigerian and Norwegian petroleum tax systems. Therefore, the research problem will be systematically solved (Kothari, 2004:8).

This research methodology can also provide researchers, practitioners and policy-makers with insights and guidance as a reliable basis for future decisions (Mulrow, 1994:597). In the case of Nigeria, there are potential lessons that could be learned from a country such as Norway, which has experienced success with regard to its petroleum tax regime. By measuring the Nigerian tax system against a good working system (Norway's), one may conclude whether applying the optimal (or a near-optimal) tax mix has an impact on economic growth. Therefore, the results of the study may be evaluated and utilised by various individuals or governments to reform the tax system of a country (Kothari, 2004:10).

3.3.2 Explanation

A systematic review is a comprehensive, unbiased literature search for studies which provides a chronological record of the reviewer's decisions, procedures and conclusions (Tranfield, Denyer & Smart, 2003:209). A thorough literature search during a systematic review significantly reduces the probability of bias (Mulrow, 1994:599).

A systematic review adopts a pre-planned approach (Saunders, 2011:602). The first step is to ensure that the research problem is articulated in the form of a clear research question (Khan, Kunz, Kleijnen & Antes, 2003:118). In the second step, specific keywords that define the search terms are used to search for literature. In addition, an explicit search criterion is also defined for the articles that will be chosen from various databases and sources (Petticrew & Roberts, 2006:62). The literature search may be limited to a specific period. The third step is that for each selected article an assessment is done on the quality and the

significance of the findings made in that article (Grant & Booth, 2009:94). The fourth step is to analyse and synthesise the data of each article (Sengers, Wieczorek & Raven, 2016:2). Lastly, after summarising the evidence, findings will be interpreted and presented in a comprehensive and impartial manner (Saunders, 2011:82).

CHAPTER 4

DATA ANALYSIS AND PRESENTATION OF RESULTS

4.1 INTRODUCTION

The purpose of this study is to provide a comparative analysis between the Norwegian and Nigerian petroleum tax systems and illustrate the extent to which Nigeria applies a supposed optimal tax system in Norway. This chapter outlines the research objectives in Chapter 1.

The chapter details the characteristics of an optimal tax system which are then analysed in the context of the Norwegian tax system to determine the extent to which Norway adheres to an optimal tax system. Once it has been determined that Norway adheres to an optimal tax system, a framework is established for the "ideal" petroleum tax system by using Norway as a benchmark for evaluating the extent to which Nigeria applies an optimal tax mix.

4.1 OPTIMAL TAX SYSTEM

4.1.1 Characteristics of an optimal tax system

There are certain characteristics that one may need to consider in an optimal tax system. Of the 54 articles included in the research phase, 21 were found to consider the theory of optimal tax. Of these 21 articles, six were analysed further and provided the general characteristics of an optimal tax mix. These characteristics are discussed below.

4.1.1.1 Efficiency

"The allocative efficiency concept has been the main point of departure for the economic theory of optimal taxation" (Nakhle, 2008:11). An efficient tax allows taxpayers to focus their efforts and resources on productive activities that will generate more taxes (Boadway, 2014:82). Efficiency is associated with the manner in which a government allocates resources within an economy (Chris Evans, 2017:38). This criterion is measured by the

change in behaviour observed in consumers and suppliers in an attempt to avoid tax (Boadway, 2014:82-83).

Based on the above, it is evident that if a tax is not efficient, the efforts and resources of taxpayers will be directed towards unproductive activities. This will further result in a distortion of resources available for allocation, which may potentially affect the living conditions of individuals (Boadway, 2014:82-83). For the natural resources industry, efficient taxation is of particular importance, as it will increase productive capacity and will not result in one natural resource or type of investment in natural resources being favoured at the expense of others (Boadway, 2014:46).

4.1.1.2 Neutrality

A neutral tax is one that allows a taxpayer to make decisions on economic merits rather than on the impact that the tax will have on the taxpayer (Boadway, 2014:224). Essentially, a tax becomes neutral when a project or investment that is considered to be financially viable remains financially viable in the absence of that particular tax and after the tax has been imposed (Hogan & Goldsworthy, 2010:132). For the petroleum industry, a neutral tax will have a positive impact on the decisions made on the development of oil fields that have not been exploited for a long time (Nakhle, 2008:11). In addition, the exploitation of oil field sizes, the price of petroleum projects and production decisions will not be deterred where there is a neutral tax (Nakhle, 2008:12).

4.1.1.3 Equity

Equity tax can be assessed from a horizontal and vertical perspective. From a horizontal perspective, those with a similar taxable capacity are treated equally by being taxed equally (Chris Evans, 2017:28). From a vertical perspective, taxpayers are treated according to their taxable capacity. Those taxpayers with higher taxable capacity will be pay more tax than those with a lower taxable capacity (Chris Evans, 2017:28). Based on the above, petroleum companies with similar economic circumstances should be taxed in the same way, and where oil fields have similar characteristics, such oil fields will be taxed in the same way. This will result in horizontal equity being achieved.

In the instance where petroleum companies gain higher profits from their operations or own oil fields with high prospects of profitability, such companies will pay a higher tax, given their higher taxable capacity. In light of the above, equity considerations would dictate that governments that own the natural resources must receive adequate payment to compensate them for the licences granted to companies exploiting oil fields, to name just a few (Nakhle, 2008:12).

4.1.1.4 Risk sharing

Prior to taking on a project, an investor generally considers the rate of return to determine what he expects to earn from the project. This rate of return includes a risk-free rate and a risk premium (Nakhle, 2010:115). The high-risk projects will have a high-risk premium and the higher the risk, the higher the rate of return. Although all phases of the oil life cycle are risky, exploration for oil is one of the costliest stages; therefore, the risks associated with this step during the life cycle of petroleum tax will be high (Nakhle, 2010:116). In addition, the volatility of the oil price is an important risk factor which would also need to be considered, as it affects each investor in a similar manner (Nakhle, 2010:114). Therefore, it is important that a government shares project risks with investors by levying the right level of taxes (Nakhle, 2010:117-118).

4.1.1.5 Stability

A tax system always ought to be stable, because a tax system that changes frequently can affect investor confidence (Nakhle, 2010:114). Therefore a government must at all times ensure the taxes it imposes are not changed frequently. Through a stable tax system, a government can predict the revenue they intend to collect, and such predictions may be relied on (Nakhle, 2010:114). As such, from a petroleum tax perspective, it is of the utmost importance that the petroleum fiscal regime is not based on volatile oil prices.

4.1.1.6 Clarity and simplicity

This criterion addresses the administrative burden placed on the tax authorities to administer the taxes as well as taxpayer compliance (Bird & Oldman, 1990:476). Optimal tax policies should preferably ensure the revenue collected should exceed of the cost of administration

and compliance (Bird & Oldman, 1990:476). In addition, taxes must not be unreasonably complex, but easy to comply with (Chris Evans, 2017:38). If the petroleum tax system is clear and simple, there will be more transparency. The effect of the above is that investors will be better informed and in a better position to adhere to the petroleum tax legislation, which will result in less manipulation of and less administrative discretion with regard to petroleum taxes (Nakhle 2008;14)

4.1.2 Benefits of an optimal tax system

It is important for a government to know the benefits of an optimal tax system, as this will allow it to plan efficiently when reforming or implementing tax policies within the petroleum industry. In summary, an optimal tax system will have the following benefits:

- It will result in the government allocating resources more efficiently, thus improving the living standards of individuals with fewer economic distortions (Boadway, 2014:87).

- An optimal tax system will motivate taxpayers to focus their efforts on more productive activities, which will ultimately result in more taxes being paid (Boadway, 2014:77).

- Economic benefits will be derived in the form of increased investment as a result of investor confidence in a country's fiscal regime (Nakhle, 2010:114).

- Under an optimal tax system, administration and management of taxes is done in an effective and efficient manner, resulting in the cost of collecting taxes being less than the actual tax collected (Alm, 1996:126).

- The way in which taxes are structured means that, generally speaking, it will be easier to collect some taxes than others. An optimal tax system ensures that there is a balance of high and low tax rates and of complex and not so complex taxes. The effect of having an optimal mix of taxes is that taxpayers are more likely to comply with taxes imposed upon them (Alm, 1996:123).

- Lastly, in a tax structure some taxes are easier to evade than others. Where there is an optimal mix of taxes, tax evasion is likely to be less (Alm, 1996:122).

4.2 ANALYSIS OF THE NORWEGIAN TAX SYSTEM AND THE EXTENT TO WHICH NORWAY APPLIES AN OPTIMAL TAX SYSTEM

The next question is whether the Norwegian tax system applies the optimal tax theory. In order to address this question, the Norwegian tax system will be analysed and compared with the characteristics of an optimal tax system as described in section 4.1. Below is an analysis of the Norwegian tax system and how it compares with the optimal tax system. In addition, the analysis will justify why the Norwegian tax system may be used as a benchmark. Of the 54 articles included in the research phase, 17 were found to discuss the Norwegian tax system. Of these 17 articles, seven were analysed further and found to address the general characteristics of an optimal tax system in the Norwegian context.

4.2.1 Neutrality

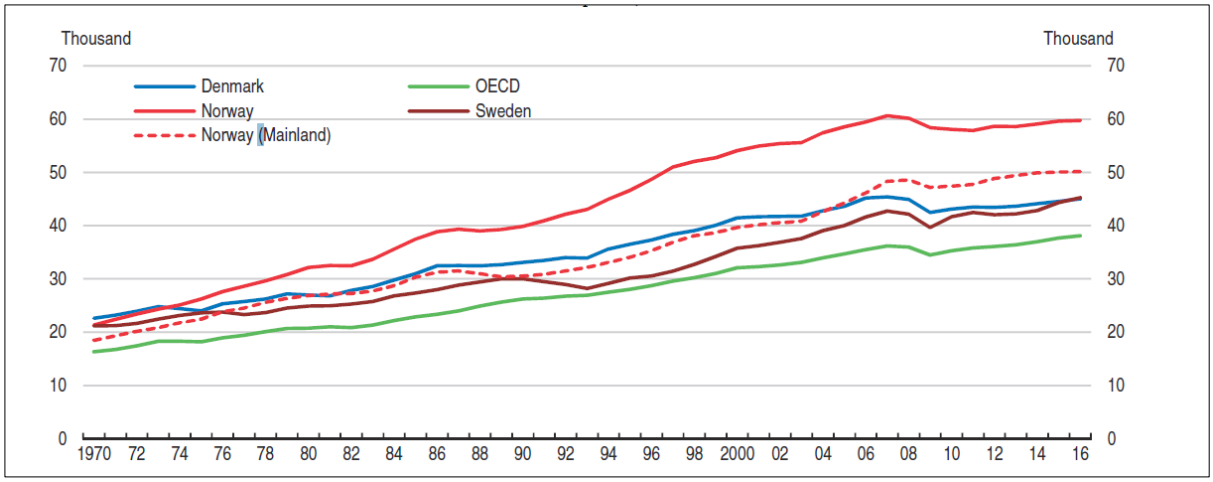
According to Sollund (2002:415), “a well-designed tax system in the petroleum sector should have two fundamental features: The tax system should be so designed that the creation of value in the sector is the highest possible. The highest creation of value is obtained when investments that are profitable for society are also profitable for the companies, and the other way around. As in other sectors, this may be obtained by maintaining a neutral tax system”. The principle of neutrality is of particular importance to the petroleum industry; an investment project that is profitable before tax should remain profitable after tax (Norwegian Petroleum Directorate, 2018c:5).

A major objective of the Norwegian tax system is to ensure that every form of investment or legal form of taxpayer is treated neutrally (Bakko, 2002:389) Neutrality is a principle that guides the Norwegian tax regime and special tax regimes within the Norwegian tax system (Sollund, 2002:415). The Expert Tax Commission was mandated to ensure equal and tax-neutral treatment of various forms of capital and trade when evaluating the main principles of income and capital taxation (Sollund, 2002:415). In effect, the neutrality principle is the core of the Norwegian tax system.

4.2.2 Efficiency

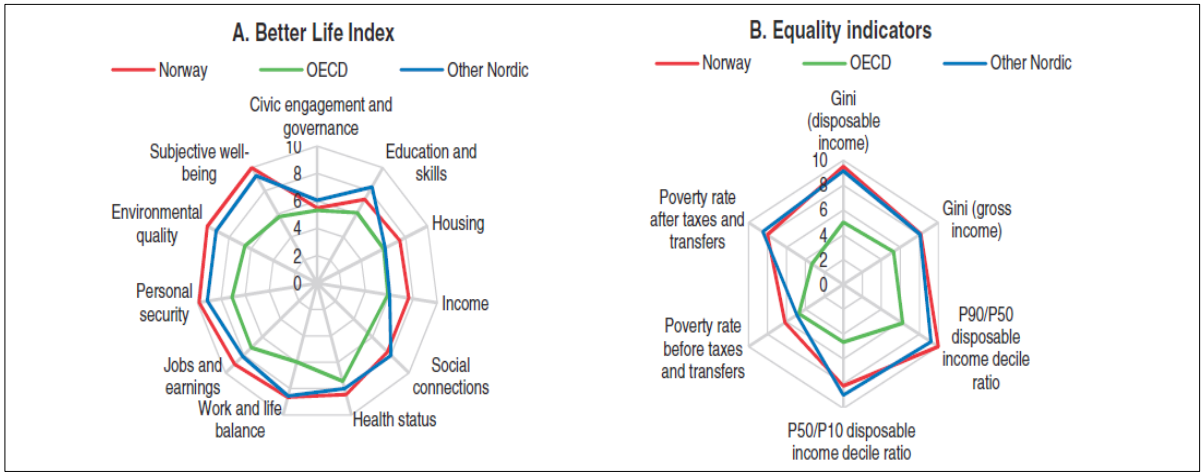
Another focus of the Norwegian tax system is income distribution and funding of a wide social safety net that will provide exceptional public services (Bakko, 2002:389). The Norwegian government has successfully reallocated public funds across regions by ensuring huge horizontal transfers of local tax revenues and various forms of differentiated tax treatments (Bakko, 2002:389; Organisation for Economic Co-operation and Development, 2018b:8). Under the current fiscal regime, the Norwegian government continuously ensures inclusive economic growth with no gender discrimination (Organisation for Economic Co-operation and Development, 2018b:8). The above has resulted in Norway achieving, amongst other things, one of the highest levels of GDP per capita (64800,06) in the world (illustrated in Figure 2). Comprehensive education, a good healthcare system and family care are some of the public services prioritised by the Norwegian government and have resulted in exceptional living standards for the Norwegian people (Figure 3). Figure 3 illustrates how the well-being of the Norwegian population exceeds the average of the OECD countries. The quality of health status, income earned and jobs held by the people of Norway are shown to exceed the OECD average. In addition, Figure 3 illustrates the country's level of equality.

Figure 2: Norway's GDP per capita remains impressive, above OECD average



Source: Adapted from OECD Economic survey Norway (2018:8)

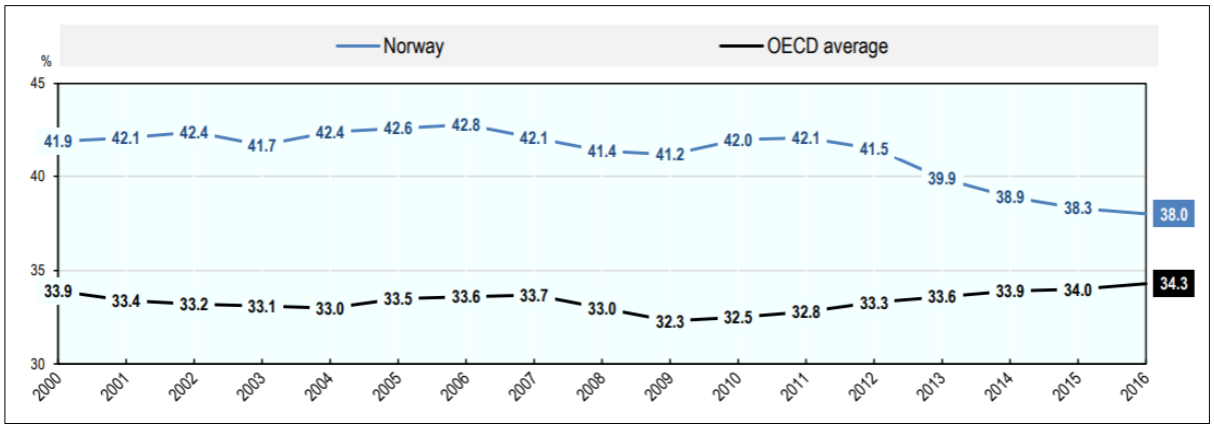
Figure 3: Outstanding public services prioritised and delivered by Norway



Source: Adapted from OECD Economic survey Norway (2018:9)

The efficiency of the Norwegian tax system is also illustrated by the tax-to-GDP ratio of 38% in 2016, which was higher than the average OECD member country's tax-to-GDP ratio (Figure 4).

Figure 4: Tax-to-GDP ratio of Norway in comparison wth the OECD average



Source: Adapted from OECD Revenue Statistics – 2017 Norway (2017:2)

In conclusion, the Norwegian government has gone beyond the call of duty by adequately allocating resources within the economy in an exceptional manner. The standard of living of the Norwegian population is above the average of many OECD countries, the revenue collected creates a better life for Norwegians and the public services provided by the government are exceptional. Lastly, the Norwegian government has achieved more equality and made better use of the taxes collected based on the high tax-to-GDP ratio. This has specifically been the case for the petroleum industry, where it is emphasised that petroleum

revenue collected by the state must benefit society as a whole (Norwegian Petroleum Directorate, 2018a:2). This illustrates that Norway has an efficient tax system.

4.2.3 Equity

The Norwegian government acknowledges that petroleum contributes significantly to the revenue it collects (Organisation for Economic Co-operation and Development, 2018b:4). Selective tax incentives are prohibited by European Economic Area (EEA) Agreement and World Trade Organization (WTO), of which Norway is a member (Bakko, 2002:387). Despite the prohibition of the EEA and the WTO, the Norwegian government has introduced tax incentives to attract business in certain areas of the country that seem less attractive in an attempt to diversify Norway's revenue portfolio (Organisation for Economic Co-operation and Development, 2018b:8). This indicates that the Norwegian government acknowledges that, from a tax perspective, it cannot treat companies not operating within the petroleum industry the same as those operating within the dominant petroleum industry. Consequently, those operating in other industries are given tax incentives and are taxed less than companies operating in the petroleum industry. This is a feature of an equitable tax system.

4.2.4 Stability

Norway has an open economy, which is characterised as an economy with one of the world's highest per capita foreign trade volume (Bakko, 2002:387). Due to the stability of the Norwegian fiscal regime, investor confidence continues to remain strong and has not decreased over the years, even when the economic growth outlook of the country seemed less favourable (Nakhle, 2010:113). Norway has continuously attracted foreign investors, especially in the natural resources industry (which dominates the country's economy) (Bakko, 2002:387). This indicates that the Norwegian fiscal regime is stable.

4.2.5 Risk sharing

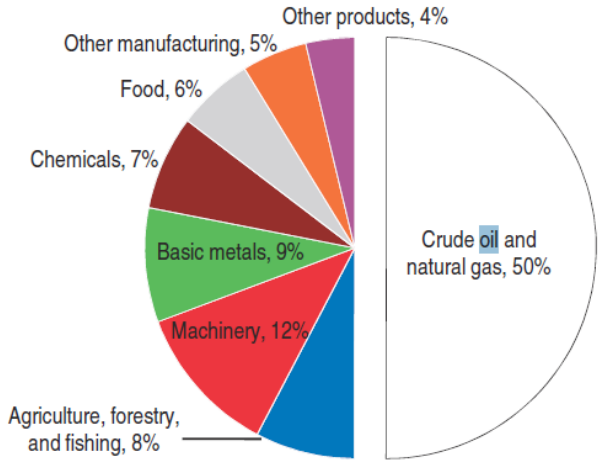
Generally, it is a government's intention to maximise production (higher investments) regardless of the impact on the investor, be it positive or negative (Nakhle, 2010:115). In certain instances governments may urge investors to underinvest or ultimately force an

investor to dispose of their investment to another third party. Alternatively, a government may impose a tax liability contingent on the outcome of a project to see the effect of that uncertainty on optimal tax design (Nakhle, 2010:115). Therefore, it is crucial for a government to maintain control, not only through a fiscal regime but also through a wider legal and regulatory framework (Nakhle, 2010:115-116). The Norwegian government shares the risk of investments with investors through its concessionary fiscal regime (Nakhle, 2010:93). Essentially, an investor will only pay tax on petroleum profits to the extent that the investor derives petroleum profits (Nakhle, 2010:105-108).

4.2.6 Clarity and simplicity

One of the driving forces behind the management of taxes collected by the Norwegian government is to ensure that an increase in revenue collected does not correspond to an increase in public spending (Holden, 2013:873). This is specifically the case for the country's petroleum sector, which contributes approximately 50 per cent to the total economy of Norway (Figure 5). Figure 5 illustrates the contribution that various industries make to the economy in general, with crude oil and natural gas contributing approximately 50 per cent.

Figure 5: Petroleum contribution to the Norwegian economy



Source: Adapted from OECD Economic survey Norway (2018:31)

Revenue collected by the Norwegian government is not merely spent on public services, but also invested in foreign assets (Holden, 2013:873). For the petroleum industry, the government set up the Government Pension Global Fund, ranked the largest investor in the

world and the second-largest sovereign wealth fund (Chambers, Dimson & Ilmanen, 2012:67). This fund houses all petroleum revenue earned by the state and ensures that petroleum revenue is managed with future generations in mind and from a sustainable and long-term perspective (Norwegian Petroleum Directorate, 2018b:1).

Taxpayers in Norway trust the public institutions and hold them in high regard, especially the tax authorities (Aberbach & Christensen, 2007:158). Tax administration in Norway strives to ensure strong relations with the business community and to take care of individual taxpayers (Aberbach & Christensen, 2007:166). Furthermore, through the use of technology the revenue authorities have developed good services and products to achieve the above (Aberbach & Christensen, 2007:166). The Norwegian tax authorities are known for, amongst other things, having a solid structure within the organisation, transparency and good governance which is rooted in ethics and integrity (Chambers *et al.*, 2012:67). Lastly, Norway has a dedicated system run by adequately skilled individuals who administer all taxes, including those relating to petroleum (Aberbach & Christensen, 2007:157; Sollund, 2002:417). That is what an optimal tax system strives to achieve.

4.2.7 Conclusion

Norway's tax regime has the characteristics of an optimal tax system as outlined in section 4.1 and may therefore be used as a benchmark when determining whether another country's tax mix is optimal. Consequently, Norway will be used to develop a framework to be used to measure other countries' tax systems.

4.3 FRAMEWORK OF AN IDEAL PETROLEUM TAX SYSTEM USING NORWAY AS A BENCHMARK

In section 4.1 the original characteristics of an optimal tax system were identified and discussed. These characteristics were then applied to the Norwegian tax system in section 4.2 to evaluate the extent to which Norway adheres to an optimal tax system in order to use it as a benchmark. Given that Norway shows all the characteristics identified, it is appropriate to use it as benchmark and formulate a framework for an "ideal" petroleum tax system. This section differs from section 4.1 in that it proposes the characteristics of an "ideal" petroleum

tax system that addresses a specific industry. Section 4.3 specifically analyses rent resource tax as an ideal tax that will form the basis of an "ideal" petroleum tax system. The characteristics in section 4.3 are analysed with specific reference to rent resource tax. In addition, the characteristics analysed herein are based on the original characteristics of an optimal tax system, but are not limited to those in section 4.1, nor are they exhaustive.

"Despite such divergence in interests, the majority (if not all) of the work undertaken in the area of optimal taxation in the petroleum and wider energy sector follows a common theme, that of economic rent" (Nakhle, 2008:16). Generally, what is considered to be an ideal tax in the petroleum industry is a tax based on economic rent (Nakhle, 2008:16). Economic rent is defined as the real value of a natural resource, being the amount by which the total revenue generated from petroleum exceeds the total costs of exploration, development and extraction costs of petroleum (Nakhle, 2008:16-17).

There are various tax instruments a government can use to capture oil activity through the use of economic rent. These instruments include gross royalty, brown tax, rent resource tax (RRT) and income tax (Nakhle, 2008:21-23). In Norway, companies operating in the petroleum sector are very profitable (Sollund, 2002:416). The intention of the Norwegian model is to tax only the profits that companies derive from petroleum. As such, the Norwegian model applies resource rent tax as a form of capturing oil activity through the use of economic rent (Sollund, 2002:416). Based on the above, a resource rent tax is the most appropriate tax to form the basis of the "ideal" petroleum tax system. The characteristics that the "ideal" petroleum tax system ought to have are discussed below.

4.3.1 Neutrality

A resource rent tax will be neutral if it does affect the decisions that an investor will make on a project. An investor will know that their project will remain profitable after the relevant tax has been imposed. In the context of a petroleum tax system, a neutral tax will not alter the order in which projects are undertaken (Daniel, Goldsworthy, Maliszewski, Puyo & Watson, 2010:190).

4.3.2 Efficiency

Resource rent taxes will be considered efficient if the taxes collected by the government are utilised effectively and efficiently for the good of the people of the country (Norwegian Petroleum Directorate, 2018a:2). The government must improve the living standards of individuals through the resource rent taxes collected. Furthermore, a government must ensure that this tax instrument minimises distortions and motivates taxpayers to make an effort in their work, thus improving productive capacity in an economy (Mirrlees, 1971:208-209).

4.3.3 Stability

The resource rent fiscal regime must be stable and must not be linked to oil prices, given the volatility of the latter (Nakhle, 2010:114). Long-term projects in the petroleum industry are the norm, and in most instances a company may only realise profits from its petroleum projects after ten years of production; sometimes this may stretch to up approximately 25 years (Nakhle, 2010:114). Therefore, constant change of the fiscal regime must be avoided to prevent any negative effects on the future development of projects which may translate into future income for a government. Lastly, through a stable fiscal regime, investor confidence in a government's policy will be maintained (Nakhle, 2010:114).

4.3.4 Risk sharing

Where there is fiscal instability, the fiscal risk will be absorbed by the investor. Therefore, in an optimal tax system, where a government cannot assure investors of fiscal stability, the government must compensate such an investor through a lower tax on resource rent (Boadway & Keen, 2010:51).

4.3.5 Equity

Taxes levied by the government must be equitable, meaning that taxpayers should be treated equally from a tax perspective. Those who earn more should pay more. Similarly, those companies that make greater profits should pay more tax.

4.3.6 Administrative efficiency

One of the characteristics that a government may overlook is how it administers the rent resource tax. Although it may only apply to a particular industry, it is important to have an effective and efficient system with adequate controls. The petroleum industry may be considered to be one with many complexities; therefore, as part of making sure that there are adequate systems in place, tax authorities must ensure that there are adequate professional skills to assist in the administering of rent resource taxes (Nakhle, 2008:6).

4.3.7 Revenue-raising potential

The petroleum industry is an industry with impressive profit prospects (Sollund, 2002:416). Therefore, the resource rent tax to be imposed must have high revenue-raising potential. If it does not raise adequate revenue for the government, it may need to be revised to ensure that it at least makes the desired contribution to public revenue. Where investor confidence is high, the revenue-raising potential of resource rent tax will increase. Furthermore, where resource rent tax is neutral, investors will be motivated to pursue petroleum projects in a country where they know profits derived from the project will not be affected by the imposition of a particular tax. Lastly, the extent to which the tax system is adaptable to each petroleum project may also determine the revenue-raising potential.

4.4 APPLICATION OF THE "IDEAL" PETROLEUM TAX SYSTEM AND EVALUATION OF THE EXTENT TO WHICH NIGERIA APPLIES THE OPTIMAL TAX MIX

The "ideal" petroleum tax system is based on the original characteristics of an optimal tax system as analysed in section 4.1. These characteristics were applied to Norway in section 4.2 to evaluate the extent to which its tax system is optimal in order to justify the use of Norway as a benchmark of an "ideal" petroleum tax system. The Nigerian tax system will be analysed below in the context of the "ideal" petroleum tax system, as identified and analysed in section 4.3, to determine the extent to which it adheres to the optimal tax mix. Of the 54 articles included in the research phase, 16 were found to discuss the Nigerian tax system

and petroleum taxes in broad terms, and of these nine were analysed further to evaluate the extent to which Nigeria has an optimal tax regime.

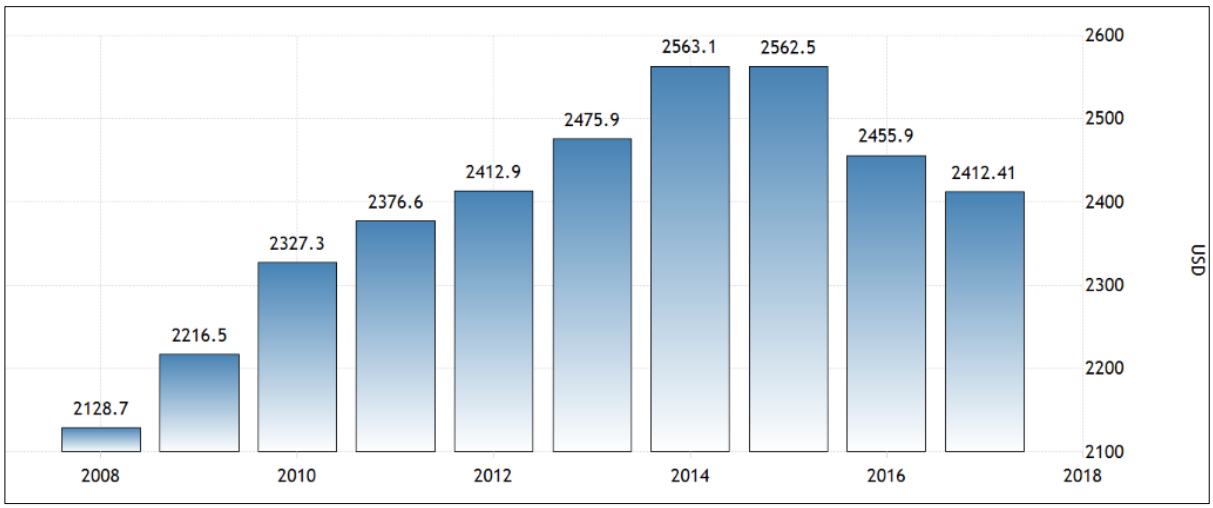
4.4.1 Neutrality

Taxes imposed by the Nigerian government may not be considered as neutral, as the choice of investments made are dependent on the taxes to be imposed when investing (Adepoju, 2016:37). The petroleum profit tax rate in Nigeria is based on royalties and is levied at a rate of 85% (Odusola, 2006:11). The existing petroleum tax rates are not very attractive and do not encourage lucrative investments in the industry (Odusola, 2006:12). Imposing high tax rates will not result in instant economic success in any country; the government should note that it is not possible to tax a nation into prosperity. High and inequitable tax rates will not only reduce investor confidence, but will ultimately affect the potential investments that flow into Nigeria and will increase tax evasion.

4.4.2 Efficiency

Nigeria has not succeeded in implementing efficient taxes, specifically in relation to the petroleum industry. The GDP per capita measures the living standards of country. The lower the GDP per capita, the lower the living standards. Figure 6 illustrates the GDP per capita of Nigeria. The living standards of the Nigerian society remain very low

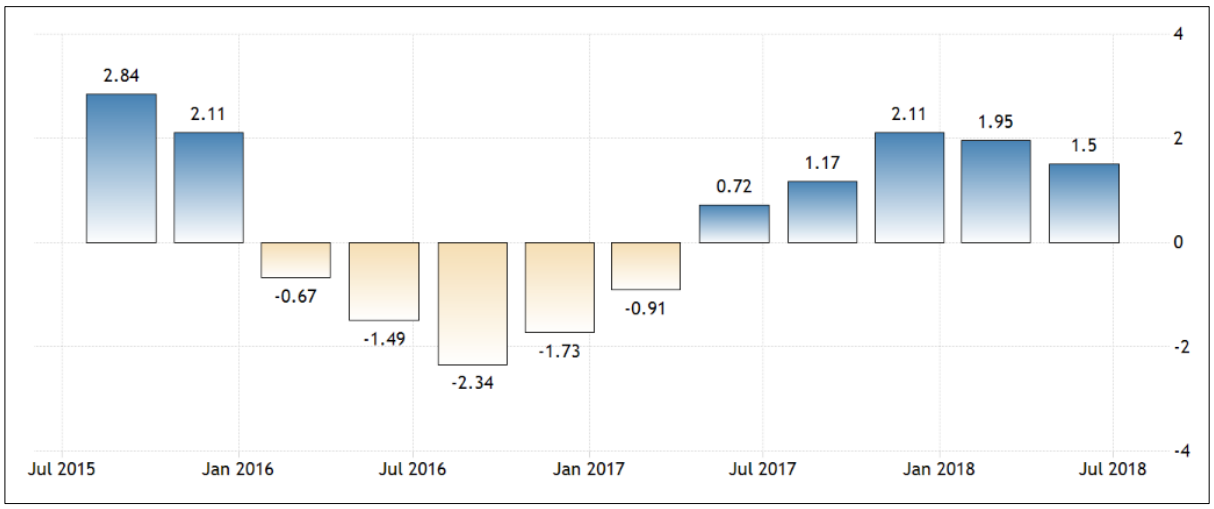
Figure 6: Nigeria's GDP per capita



Source: Adapted from World Bank economic indicators

Figure 7 illustrates the rate at which the Nigerian economy is growing. The structural economic problems result from the Nigerian government's failure to use oil revenue to develop the society and other sectors of the economy; this is illustrated by the low annual growth rate in Figure 7.

Figure 7: Nigeria's GDP annual growth rate



Source: Adapted from World Bank economic indicators

Figure 8 shows the various tax types collected by the Nigerian government. The figure details the annual and quarterly revenue targets as well as the revenue collected for the first quarter of 2018. Given that approximately forty per cent of Nigeria's tax revenue comes from petroleum profits tax (Figure 8), one would have expected such revenue to be used for the benefit of the people.

Figure 8: Tax revenue collection in Nigeria in 2018

	Tax Types	2018 Annual Target (N'b)	2018 Quarterly Target (N'b)	2018 Q1 Collection (N'b)
	Oil Tax			
	Petroleum Profits Tax	2,666.0183	666.5046	644.7751
a	**Sub-Total**	**2,666.0183**	**666.5046**	**644.7751**
	Non-Oil Tax			
	Company Income Tax	1,669.3235	417.3309	203.6832
	Gas Income	238.4606	59.6152	-
	Capital Gains Tax	17.8690	4.4673	0.3180
	Stamp Duty	44.6126	11.1532	4.2580
b	**Sub-total**	**1,970.2657**	**492.5664**	**208.2592**
	Total Federation Account (a+b)	**4,636.2840**	**1,159.0710**	**853.0343**
	Other non-oil Taxes			
	VAT POOL			
	NCS-Import VAT	1,157.9960	96.4997	49.9978
	Non-Import VAT	385.9987	289.4990	219.7960
c	**Sub-total**	**1,543.9947**	**385.9987**	**269.7938**
d	**EDT**	207.0721	51.7680	25.7974
e	**CONSOLIDATED ACCT.**	12.1475	3.0369	24.8254
f	**NITDEF**	42.5361	10.6340	0.1629
g	**Tax Amnesty**	305.0000	76.2500	-
h	**Sub-total (Non-Oil) (b+c+d+e+f+g)**	**4,081.0161**	**1,020.2540**	**528.8387**
i	**TOTAL (a+h)**	**6,747.0344**	**1,686.7586**	**1,173.6138**

Source: FIRS: Planning, Research and Statistics Department

Figure 9 illustrates the living standards of the Norwegian people in terms of Norway's GDP per capita in 2017, which was 64 800,06 while Nigeria's GDP per capita in Figure 6 was 2 412,41 in 2017.

Figure 9: Norway's GDP per capita

Source: Adapted from World Bank economic indicators

The graph indicates that there is a significant distortion in the allocation of resources in Nigeria. These have resulted in the country being plagued by civil wars in which members

of the community have fought over the petroleum resources of the country (Anugwom, 2004:28-29).

4.4.3 Equitability

The petroleum tax system Nigeria has failed to be equitable to all taxpayers. There is a limitation on capital allowances, which results in certain incentives being offered by the accelerated depreciation allowance being eliminated (Odusola, 2006:11). In addition, the petroleum profit tax is levied at a rate of 85 per cent in the form of royalties, and this rate may also be applicable to companies producing less than 50 000 barrels (Odusola, 2006:11). This puts companies that produce less than 50 000 barrels at a disadvantage and creates further distortions.

4.4.4 Stability

Between 1990 and 2000 there were approximately 4 changes to the petroleum profit tax (Odusola, 2006:34-36). Every tax system must be reformed from time to time, but frequent reforms may be an indication of uncertainty with regard to existing policies. The frequent changes in petroleum taxes indicate that the fiscal regime is unstable.

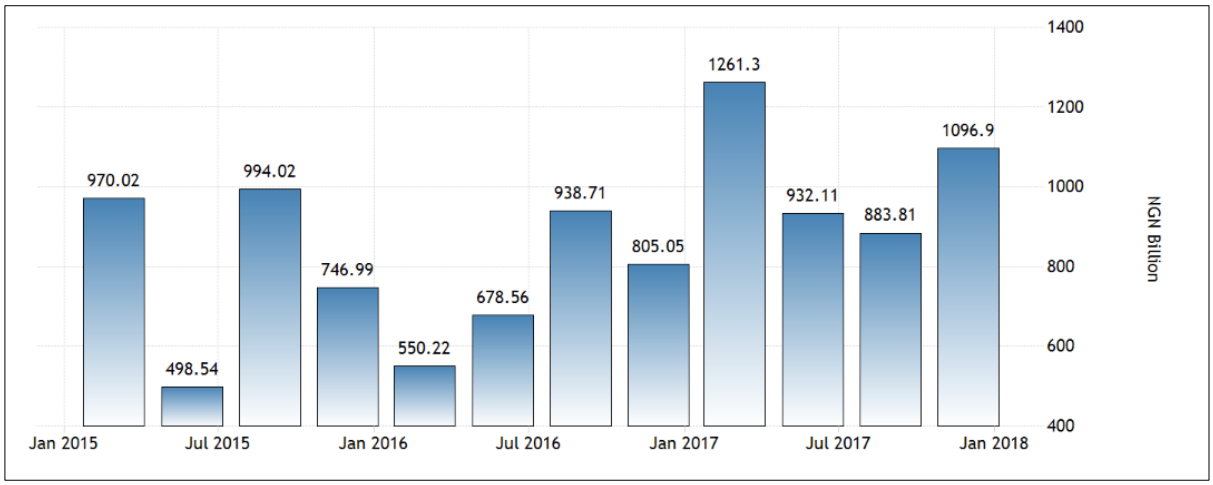
4.4.5 Risk sharing

Government shares the tax risk taken by investors through the various tax incentives that it grants to investors. One of the main tax incentives granted to companies is the pioneer income tax relief, which grants relief to taxpayers by giving them pioneer status, which means those individuals will be exempt from income tax (Akinyomi & Akinyomi, 2011:90-91). However, despite the advantageous incentives available to investors, there are significant regulatory challenges in the form political risk and exchange controls which have an impact on investor confidence (Micah *et al.*, 2012:11). In this regard, it is evident that Nigeria can do better by improving its laws and regulations in order to further share the investment risk with investors and improve the required investor confidence.

4.5.6 Administrative efficiency

The ability to manage and control revenue collected by a government is critical to an optimal tax system, as discussed above. Nigeria's tax system is very complex, to the extent that it is even problematic for the literate tax officials (Micah *et al.*, 2012:12). In addition, there is a skill shortage in the Nigerian revenue authorities and a need for new technology that will require less human intervention (Olaiya, 2011:330-331). Nigeria experiences high levels of tax evasion due to the high tax rates it levies, an undetected underground economy and corrupt tax practices (Olaiya, 2011:326). All the above have resulted in Nigeria collecting significantly less government revenue than Norway. Figures 10 and 11 show that Nigeria has collected less than five percent of the government revenue that Norway collected in January 2018. In January 2018, Nigeria collected between 1000 and 1200 Nigerian naira in government revenue, while Norway collected just over 340 000 Norwegian kroner. Bearing in mind that the Norwegian krone is a stronger currency than the Nigerian naira, Norway was able to collect significantly more revenue than Nigeria.

Figure 10: Revenue collected by the Nigerian government



Source: Adapted from World Bank economic indicators

Figure 11: Revenue collected by the Norwegian government

Source: Adapted from World Bank economic indicators

4.4.7 Revenue-raising potential

The dominant source of revenue in Nigeria is oil; therefore, the revenue-raising potential is high (Ocheni, 2010:136). Nigeria is generally known for levying very high taxes, but also for being generous with its tax incentives (Micah *et al.*, 2012:10-11). Incentives such as the pioneer income tax relief have been beneficial to companies and the Nigerian economy in general by attracting investments (Akinyomi & Akinyomi, 2011:85). Nigeria has been criticised for granting such incentives on the basis that the purpose of attracting investors is for these investors to set up companies that will pay tax to the government, which has not been the case (Adepoju, 2016:38). Therefore it can be argued that when considering all tax incentives granted by the Nigerian government, the revenue collected is eroded by all the incentives granted and the high levels of corruption in the country. Consequently, the revenue-raising potential of the Nigerian government, with specific reference to the petroleum industry, is reduced.

4.4.8 Conclusion

Based on the above analysis, Nigeria has not satisfied the characteristics of an “ideal” petroleum tax system such as Norway’s. As such, it is evident that Nigeria does not have

the optimal tax mix. As shown above, in order to achieve an optimal tax system, a government would have to ensure that it has the characteristics analysed and discussed in section 4.1 as this will ultimately lead to achieving an optimal tax mix for the various industries.

CHAPTER 5

CONCLUSION

5.1 INTRODUCTION

The main purpose of this study was to provide a comparative analysis of the Norwegian and Nigerian petroleum tax systems. Chapter 1 provided an introduction to the study and explained the rationale for the study. Chapter 1 also explained the research question, outlined the research objectives of the study and discussed the theory of research design and methodology. Chapter 2 presented a critical evaluation of the work of other researchers. Chapter 3 dealt with the research design and methodology adopted in the current study and the data analysis and results were discussed in Chapter 4. Chapter 5 is the final chapter and starts with a summary of how the research questions and research objectives were addressed and the conclusions were drawn, based on the research results. The limitations of the study are then discussed and recommendations are made regarding possible future research.

5.2 ADDRESSING THE RESEARCH QUESTION AND OBJECTIVES

The research question the study intended to address was the extent to which the Nigerian petroleum tax system emulates the Norwegian optimal tax system. The study commenced with a review of the relevant literature to establish a theoretical framework for the study. This was followed by a quantitative and qualitative research methodology that used secondary data to explore the theory of optimal taxation. Secondary quantitative and qualitative data was used in the research and was systematically reviewed and presented in the format of descriptive studies.

Chapter 2 provided a detailed and critical review of the literature on the optimal tax theory and how this theory links to tax policy, tax systems and economic growth. This was followed by a review of taxation in the petroleum industry with specific reference to Nigeria and Norway.

Chapter 3 explained the research design and methodology adopted by the study in order to determine the extent to which Nigeria applies the supposed optimal tax system. Based on the results obtained from the research conducted, one may conclude that the research methodology adopted for the current study was appropriate to address the main objective. In addition, the methodology adopted for the study laid the foundation for the data analysis in Chapter 4.

Chapter 4 addressed the objectives of the study. Firstly, the study sought to demonstrate how the Norwegian tax system applies the optimal tax theory. The characteristics of an optimal tax mix were identified in section 4.1.1 as efficiency, neutrality, equity, risk sharing, stability, clarity and simplicity. These characteristics were discussed from the perspective of the petroleum industry. It was found that where a country has a tax system that possesses such characteristics, there several benefits (see section 4.1.2), such as economic benefits for the country, improved tax morale and efficient allocation of resources.

The Norwegian tax system was analysed in section 4.2 with reference to the above characteristics, and it was found that it possesses all of the above characteristics, especially in the context of the Norwegian petroleum tax system. The Norwegian fiscal regime is stable, and the government efficiently allocates resources to the citizens based on the GDP per capita of the country. In addition, investors are not deterred by the taxes imposed or to be imposed by the Norwegian government, which indicates that the tax system is seen as neutral. The second objective was to develop an “ideal” petroleum tax system by using Norway as a benchmark. As the Norwegian petroleum tax system has all the desirable characteristics, it was appropriate to use Norway as a benchmark. Using Norway as a benchmark, the characteristics of the “ideal” petroleum tax system were identified and discussed in section 4.3 as neutrality, efficiency, stability, risk sharing, equity, administrative efficiency and revenue-raising potential.

The third and fourth objectives were to apply the “ideal” petroleum tax system to Nigeria and evaluate the extent to which the Nigerian petroleum tax system has the optimal tax mix. The research phase of the study found that it did not have the optimal tax mix (see section 4.4). The majority of the Nigerian population is living in poverty, which is evidence that the revenue collected from the petroleum industry is barely used for the benefit of the people of

Nigeria. In many instances, the decisions made by investors are based on the potential risk and taxes that may be imposed on their investment.

The Nigerian petroleum tax system is complex and not equitable, as the revenue authorities in Nigeria are unable to collect taxes from the self-employed. In addition, there are a high level of corruption and an undetected underground economy. Accordingly, there is an opportunity for the Nigerian government to better align its petroleum system with that of Norway in order to better achieve the optimal tax mix.

5.3 LIMITATIONS

One of the more important limitations of this study was that the research focused on two countries with oil-dependent economies, namely Nigeria and Norway. African countries that are not leading oil-dependent economies were specifically excluded, as were any OECD countries that are not large oil exporters. The data was also limited to the taxation of a specific industry, being the petroleum industry, and within this scope to the optimal tax mix.

5.4 RECOMMENDATIONS AND FUTURE RESEARCH

The study does not claim to provide a set structure for an optimal tax system with an optimal tax mix within the petroleum industry; it merely identified the characteristics an optimal tax system should have in order to achieve an optimal tax mix. The outcomes of the study may indicate the direction of future research into optimal taxation, specifically on the African continent, where this phenomenon is less well explored. For policymakers, the outcomes of the study may provide further guidance on how to improve current tax policies in Africa by better incorporating the optimal tax theory in their policies.

5.5 CONCLUDING REMARKS

To what extent can the Norwegian model be emulated by other countries? This may be a challenge for a developing country like Nigeria, which has a completely different political and economic landscape. One of the most important lessons is the link between the oil revenue collected by the government and the spending of such oil revenue. In most instances, where

the oil price is high, investment and petroleum activities increase, which should stimulate the economy because the government would spend more. Where the oil price is low, the inverse will apply.

In order to ensure stability, a fiscal regime should not be linked to the price of oil. Ideally, oil revenue should be managed by means of a dedicated entity, such as the Norwegian Pension Fund, which does not spend oil revenue based on the oil activity, but on the size of the pension fund. This may effectively reduce the risk of economic fluctuations induced by oil prices. Lastly, the management of such a fund will require a high degree of ethics and competent individuals to ensure efficient and effective administration of the oil revenues collected.

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