



**Risk Assessment Comparison in Developing Offshore Markets: Brazil and
Angola**

*A Risk Assessment Framework for Companies exploring the Pre-salt Business
Opportunities*

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Abstract

This dissertation was written in the context of the pre-salt findings and the consequential business opportunities that these discoveries represented for the offshore industry. The authors, throughout their Master studies, were exposed to lectures and participated in discussions with professionals from the Offshore and Shipping industries and with academics from such areas.

The authors identified, during such interactions, the lack of literature focusing in the internationalization to emerging offshore markets. The opportunities of gains presented by pre-salt basins' countries are vast, however equally are the challenges, as business practices and conditions varied deeply from the investors' home countries. Therefore, this work aims at developing a risk assessment that could be used for companies and academics when evaluating internationalization to Brazil and Angola, where some of the biggest pre-salt discoveries were made in recent years.

The research methods focused on literature review and case studies approach, alongside interviews and participation in seminars and company presentations. The interviews were performed with professionals, from academic and corporate sectors, who had been in contact with the oil and gas industry in Angola or Brazil, or both.

The authors believe that the main contribution of this work is the development of a seminal risk assessment framework for companies aiming to internationalize to the offshore industry in emerging markets. The findings and the proposed assessment are presented after a detailed analysis of each country. The biggest research limitation was the lack of scientific literature and available financial data from companies, which rendered the research design of this work qualitative. The authors invite other academics and professionals to expand the proposed framework and continue the production of scientific papers that focus on the pre-salt opportunities.

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1. Introduction

1.1 General Overview

In recent years, one of the major oil discoveries made globally were the pre-salt basins in Brazil. Giant semi-public energy corporation Petrobras announced, in 2007, the discovery of oil fields that could potentially add an average of one million barrels a day to the country's production by 2017. (Energy Information Administration, 2013) The pre-salt oil field named Lula, and afterwards renamed as Tupi, was the first of a sequence of discoveries of pre-salt basins.

The pre-salt layer is a large deposit of oil located beneath the Brazilian seabed, with a volume of approximately 50 billion barrels, and comprises a range of 800 km between the states of Espírito Santo and Santa Catarina, away from 100-300 km from the coast. (Petrobras, 2014) The basins are located between 5 and 7 km below the sea floor, under an extensive layer of 2km of salt, as it is shown by the graph below, from Petrobras. In 2010, Petrobras also confirmed the commerciality of the pre-salt discoveries, waving away claims that the exploration of such fields would not be profitable. (Agência Nacional do Petróleo, 2014)

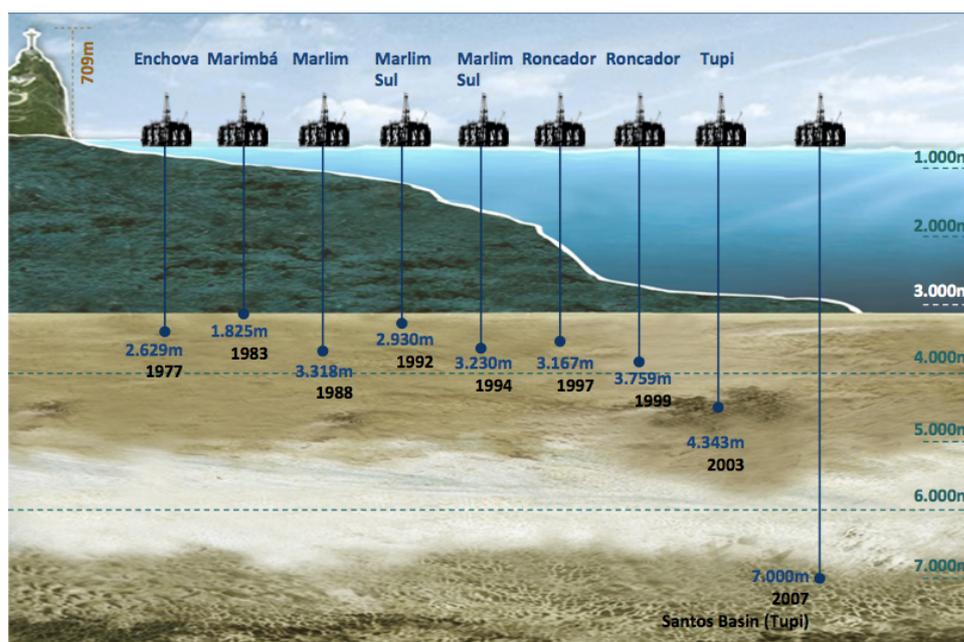


Image 1: Brazilian pre-salt Charts (Petrobras, 2014)

The drilling of the Tupi 1 well, in the deep waters of the Santos Basin, confirmed the existence of massive oil reserves underneath the salt layer. This event drew great attention to companies operating in the other side of the Atlantic Ocean, namely in the Angolan coast which is exactly juxtaposed to the coastal region of Brazil where the pre salt discoveries had been made.

Under the continental drift theory, it is understood that Angola and Brazil were joined, therefore having identical geological formations in their mutual coast. As the continents separated 130 million years ago, began the formation of a rift valley, which contained deposits of plants and animal materials. The salt layer served as a seal, keeping the deposits secure. (Koning, 2014)

Therefore, in the time of the pre salt discoveries in Brazil, the geological similarities between the continental margins of the countries aroused the interest of oil companies to explore oil fields in Angola, which could potentially be pre-salt fields. (Krill, 2009)

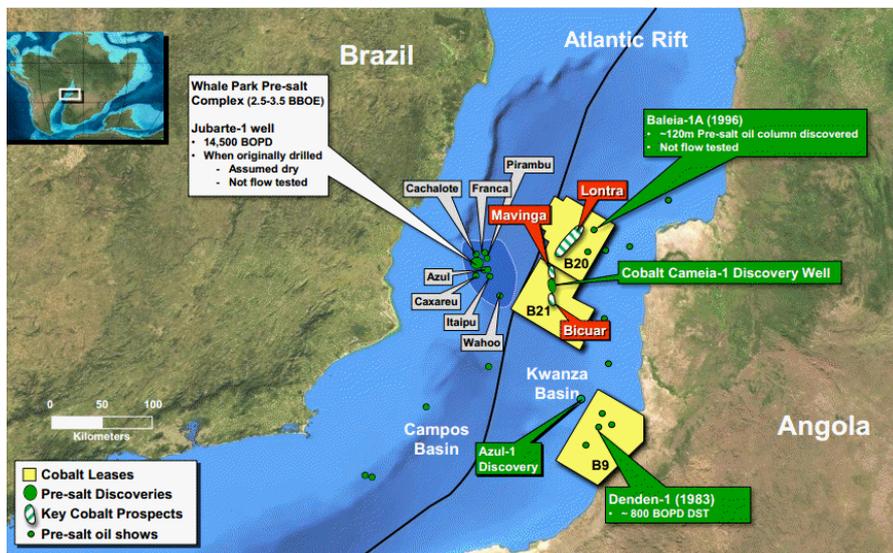


Image 2: Atlantic Rift and Pre-salt fields (Energy Information Administration, 2013)

In 2011, Sonangol - Angola's national oil company - awarded 11 pre-salt blocks in a limited bidding for international oil companies. In the same year, Danish

oil company Maersk Oil had already started operations in the Kwansa basin, exploring deep waters. In 2012, the company finally announced the flow of 3,000 bpd from pre-salt wells. To this, followed other announcements from companies such as Cobalt International, ensuring the success of exploration of deep waters in Angola. (Sonangol, 2014)

The exploration of the pre-salt layer, however, poses many challenges, as it is located in very deep waters. The vessels and equipment required for such operations have higher technological demands than usual. They must be resistant to high temperatures, corrosion and pressure, amongst other. For the moment, neither country seems to possess local sourced technology that would be able to fit such demands, resulting in a market even more attractive for foreign companies who intend to expand overseas.

The discovery of the new fields also presses for more vessels to service the exploration. DOF points that, until 2020, Brazil will need to double its fleet in order to fully service the expected explorations. This would represent a need of more than 200 vessels in the next ten years. (DOF, 2013)

1.2 Research Question

As stated before, the pre salt basins discovery has changed the trends of global oil markets, attracting a lot of attention to Brazil and Angola. Due to the magnitude of these discoveries, both markets have become very difficult to ignore for foreign companies. As the countries are two of the biggest deep-water regions, offshore and subsea service companies have identified in Brazil and Angola opportunities to grow their business. However, the challenges of entering such markets are also hard to ignore.

Internationalization of business, especially towards emerging markets, is very risky. Gains can be high, but so can be losses. As many companies expand, one of the questions they have to face is where to expand their business, what are the main requirements and which factors to take into account when considering growing their business overseas. Therefore, this work focuses in assessing such issues and

trying to create support for offshore companies who wish to undergo an international expansion to either Angola or Brazil and gain from the pre-salt opportunities.

The main difficulty faced during the research and development of this work was the lack of available data from companies who currently operate in both markets. Most companies do not publish their revenues per geographic location nor do they reveal the evolution of their earnings and expenditures in the early years of establishing business in Angola or Brazil. In order to surpass such challenge, the authors decided to face the matter from a qualitative approach, focusing on reports from professionals who have worked in the offshore industry in both countries or who have researched the topic. Interviews were also performed with such professionals, in order to obtain more detailed narrations and experiences. The authors also did extensive secondary research, analyzing each country's legislation and development plans, especially for the energetic sector. In order to assure credibility and correct information, most documents were assessed in their original language (Portuguese for both countries). The proposition of an assessment framework for such markets is innovative for this type of work, as there is a lack of data and scientific production in the subject. For this reason, the available data was limited.

As an end-result, the authors expect that the work will propose a methodology to be followed by companies who plan to take part in the pre salt business opportunities, focusing specially in the Brazilian and Angolan basins. The risk assessment presented will be a framework that research professionals in offshore companies can take into account when considering which market to tap into.

The main purpose of the framework is to present the key decision factors to take into consideration when setting up business in the Brazilian and Angolan offshore markets. The authors will categorize each decision factor, proposing a risk assessment methodology. The authors believed that the organization and presentation of such categorization would be relevant for offshore professionals who are analyzing an internationalization process.

Throughout the participation in seminars and offshore industry events, the authors noticed companies lacked bibliographic insights and strategies when

analyzing how to move to emerging markets. However, there is a growing trend of internationalization in the oil and gas field and an expansion of academic graduate and post-graduate studies that focus on the energy field in general. So, the present work is also a way to provide companies with an initial assessment tool to measure whether the risk of moving abroad is manageable or not, as they become familiar with the most important decision factors to take into consideration in the early stages of internationalization.

So, the authors believe that it is important to start the discussion and stimulate the production of academic literature, which may be relevant for practical application for businesses around the world and to academics that wish to pursue their studies in this field. There are many challenges in writing about a relatively new topic, the lack of available information and use cases being one of the most defying. Nonetheless, it is possible to overcome such difficulties and start a debate.

The authors believe that this work will be relevant for academics and students interested in better understanding the many challenges of internationalization in developing markets. Furthermore, this work will give professionals of the offshore industry an overview of some of the risks to be taken into account when considering an expansion abroad.

Finally, the authors also believe that the risk assessment methodology proposed will be an interesting international strategy framework for the oil and gas industries. As mentioned before, this field of academic research is still underdeveloped and therefore, the presentation of something original is an important step to stimulate further discussion and production of academic papers.

1.3 Organization of Chapters

The plan of this work is as follows. The following section, number 2, will present the methodological framework that will serve as a basis for the authors' final risk analysis. Sections 3 and 4 present an overall review on both countries, namely Brazil and Angola.

For each country a general macroeconomic and financial analysis will be presented. However, the main focus will be on their respective energy scenario – focused on the oil and gas sectors - and the participation of the oil and gas sector in the country's economy and international trade. Finally, an overview of each country's law and regulations, combined with a description of both countries' challenges on corruption and policies. It is important to bear in mind that all these information will be focused on the offshore and oil industry, which is the topic of this work. The main purpose of both chapters is to give an overall presentation of each country and the requirements and procedures companies will have to meet in order to enter the Brazilian and Angolan market. Again, such data will be re-assessed as we present our risk analysis.

Section 5 will focus on the risk assessment in itself, with a further development of the methodology presented in Section 2. The risk assessment will be used as a framework to evaluate the risks of moving to the Angolan or Brazilian offshore markets. The general criteria to be assessed will be presented throughout the work itself. In Section 6, case studies based on interviews and research performed will simulate a practical application of the risk assessment framework proposed by the authors.

Finally, in section 7 an overall conclusion and presentation of the findings will be done in order to present to companies how to best make use of the framework and give an overview of the findings.

2. Theoretical Methodology

2.1 Foreign Direct Investment

In today's globalization, the developing and transition economies have become the foremost to liberalize their foreign regimes and pursue policies to attract foreign investment. According to the OECD Benchmark definition of Foreign Direct Investment (1996) FDI indicates the objective of a direct investor, (noted as Foreign Company along the text) entity resident in one economy, in obtaining a long-term relationship with an entity resident in an economy other than that of the investor. Direct investment involves both the initial transaction between the two entities and all subsequent capital transactions between them and among affiliated enterprises; both incorporated and unincorporated (OECD Publications, 1996).

The decision making process for firms to go abroad involves as a first step the identification of an opportunity of investment in the host economy. In the present section, the authors present a useful framework for the analysis of firms' pursuing to establish their operations abroad. The motives for internationalization are many, such as a saturated home market, the presence in a certain country granting access to strategic resources or the existence cluster effects to be explored in a specific region.

In this chapter, the reader is introduced to the theories and terms related to foreign direct investments and the factors that shape the firm decision making to engage in FDI model. Starting from Dunning (1993) and his development on the eclectic paradigm for explaining foreign direct investment (FDI) choices of production companies. Originally the eclectic paradigm consisted of firm specific ownership, localization and internalization advantages, also known as the OLI-model (Dunning, 1988). In 1993 Dunning added the motives for FDI, distinguishing four kinds of FDI: market seeking, resource seeking, efficiency seeking and strategic resource seeking. These categories of motives constitute the base on which part of this investigation is built upon.

In general terms, before firms carry out the decision making process to carry out an international strategy, they must identify an opportunity which can be grasped outside the home country. Once this opportunity has been identified, a twofold decision is logically implied in the "cherry picking" strategy (Rentocchini, Marzetti, & Franco, 2008).

i). Choice among the relevant alternatives: these are all the available different means the firm can exploit in order to seize the opportunity and they strongly depend on the kind of opportunity at stake. As an example of this, if the firm is interested in gaining access to a foreign market, then FDI, exports and patent licenses are some of the alternatives the firm can decide upon building its entry strategy. Yet, if the firm's main interest is to take advantage from low cost foreign labor, it can select between FDI and international outsourcing. Certainly, the motives underlying the decision process not only affect the basket of entry alternatives but also the way factors such as exchange rate or infrastructure drive the decision among the alternatives. Those factors prompting firms to choose FDI are defined as *internalization determinants*.

ii). Location Choice: these are basically the factors affecting the choice of the country in which the firm invests. Choosing an accurate location is important when a company gains from its presence in a given market by benefiting from conditions such as: special tax regimes; lower production and transport costs; market size; access to protected markets, and lower risk (Dunning and Lundan, 2008). Market imperfections (e.g., the imbalance of international allocation of resources) can be reduced by internalizing operations, allowing a reduction in transaction costs associated with risks of copying technology, among others (Dunning, 2002). The choice of a particular location is therefore based on specific conditions that are in its favor (Ietto-Gilles, 2005).

Subsequently, the classification of FDI determinants just mentioned is useful only when it is based on the underpinning motives, as the latter can significantly affect levels and patterns of international trade, FDI contribution to economic development and the amount and direction of productivity spillovers. The most cited taxonomy of FDI motives is built upon the OLI paradigm described by Dunning (1993) and distinguished four kinds of FDI:

2.1.1 Resource Seeking

The resource-asset seeking firms are motivated to invest abroad to acquire specific resources at a lower cost than could be obtained in their home country. Dunning distinguishes three types of resource seekers: (a) Those seeking physical resources such as raw materials and agricultural products; (b) Those seeking cheap unskilled or semi-skilled labour; (c) Those seeking technological capacity, management or marketing expertise and organizational skills (Dunning, 1993, p. 37).

2.1.2 Market Seeking

The market-seeking FDI aims at penetrating the local markets of host countries and is usually connected with: market size and per capita income, market growth, access to regional and global markets, consumer preferences and structure of domestic market. In addition there are four main reasons for which market-seeking firms may undertake foreign investment: (a) A firm's main supplier or customer may expand overseas, and in order to retain its business, the firm needs to follow them; (b) A firm might need to adapt its product to the local taste and specific market requirements, which can only be achieved through market presence in the form of FDI; (c) Production and transaction cost of serving a local market from an adjacent facility might be lower than when supplying the market from a distance; (d) A firm may consider it necessary, as part of its global strategy, to have physical presence in the leading market served by its competitors (Dunning, 1993).

2.1.3 Efficiency Seekers

The motivation of efficiency seeking foreign direct investors is to rationalize their production, distribution and marketing activities through common governance and a synergy building among geographically dispersed operations. Such rationalization essentially stems from two sources: the advantages in the cost of endowments between countries, and the economies of scale and scope (Dunning, 1993, p. 59-60). This efficiency-seeking FDI creates new sources of competitiveness for firms and it goes where the costs of production are lower.

2.1.4 Strategic Resource Seeking

The strategic asset seekers are those firms that engage in FDI to promote their strategic objectives, usually those of sustaining or enhancing their international competitiveness. The firm's main aim is to capitalize of the advantages of common ownership of a network of activities and capabilities in diverse environments (Dunning, 1993, p. 59-60).

2.1.5 Development of Theories

The development of theories of the multinational enterprise dates back to 1971 with the theory of capital flows by Caves. His theory argues that headquarter activities should be placed by the enterprise in capital abundant countries with subsidiaries in capital-scarce countries, giving no motives for FDI to occur between identical countries.¹ In addition, the traditional theories of international trade reiterated that a country has a competitive advantage over other countries in the form of a good or service that is produced at a lower cost than by any other country. This competitive advantage aroused from inherent factors, such as natural resources or climate.

Subsequently, the "New trade theory" appeared, affirming that a comparative advantage is not just derived from natural differences in resources, but rather the economies of scale and network effects as substantial determinants of international trade patterns. Later on, the theory of the multinationals enterprise was split into two parts: Horizontal and Vertical FDI.

In essence, there are two main reasons for companies to become multinationals: To serve a foreign market and to get lower cost of inputs. This is the main characteristic to differentiate between the two types of FDI: horizontal and vertical. Firms introduce horizontal FDI by duplicating the manufacturing of its products and services in different countries. This FDI mechanism emerges, as it is too costly for the firm to serve the foreign market by exports due to trade barriers and transportation cost.

¹ See "Theories of the multinational firm" by Dunning (1977) and Caves (1996)

In contrast, vertical FDI refers to firms that fragment geographically the production process. The concept behind this type of FDI is that a production process requires several stages with different input requirements; hence if the prices for those inputs vary across borders, it becomes profitable for the firm to outsource some production stages abroad.

In order to understand better these two concepts, the following are the most prominent definitions for vertical and horizontal FDI used in the literature:

1. Motivation of investment: FDI is classified to be vertical or horizontal depending on the motive for affiliate operations. Thus, vertical FDI is conducted in order to benefit from factor price differences between countries (Hanson, Mataloni, & Slaughter, 2003).

2. Factor Proportion: this second way to differentiate the two types of FDI is proposed by Brainard (1993a), whom by utilizing the empirical estimations of international trade flows, explains the reasons for multinationals to carry out foreign investment.

3. The third definition is done by Lankes and Venables (1997) whom use the geographical distribution of sales as a cause for a multinational to establish a foreign affiliate.

4. The last definition is developed by Markusen (1995) who defines vertical FDI as a geographical separation of the production process by stages.

2.1.6 Motives determining FDI in Brazil and Angola

Before carrying out the decision making process to execute an international strategy, companies need to identify the opportunity presented outside the home country. As the authors presented above, in Brazil and Angola the recent pre-salt discoveries introduce the need of companies that can provide the necessary technology and services as part of the exploration activities. Hence, this thesis presents the location of choice to be made between Brazil and Angola.

As part of the choice among the relevant alternatives, firms interested in serving one of these two markets may select the method of entry as FDI, exports

and patent licenses. Yet, the analysis performed by the authors is meant for companies seeking to perform FDI in one of the countries. According to the theory described in chapter 2, the OLI paradigm by Dunning (1993) distinguishes four kinds of FDI. Nonetheless, the main reasons for firms to invest in Brazil and Angola rely on resource and market seeking motives. This is because firms motivated to invest in these countries seek for physical resources but also aim to penetrate the Brazilian and Angolan local and regional markets.

The following is a summarized graph of the market drivers for companies to evaluate FDI in Brazil and Angola:

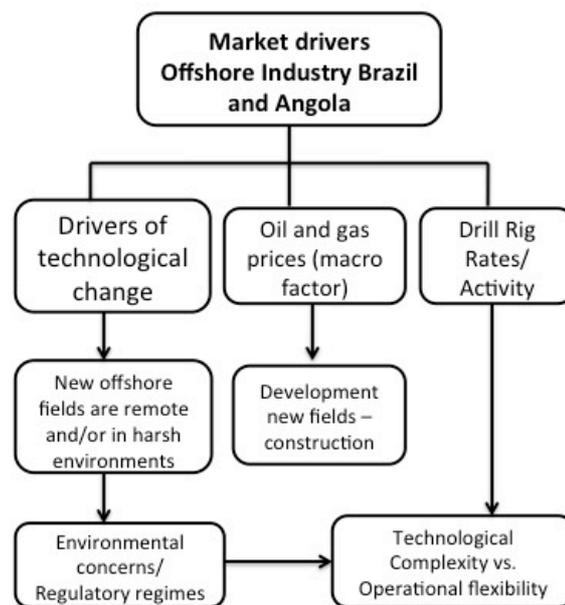


Image 3: Market Drivers (Developed by authors)

Nonetheless, theoretical and empirical studies on FDI have shown that the determinants influencing the location of choice of investment by multinational firms are also associated to the firm-level characteristics as well as the country-level characteristics (either home country characteristics or host country characteristics). Yeaple (2009) proposes theoretically that countries with a more favorable environment in terms of larger market size and smaller fixed cost attract a larger number of multinational companies. The authors believe that as part of the firm's

investment decision-making process, defining the country's risk profile is imperative for the level of business risk firms would face in the host economy.

Hence, the authors selected the Risk Management Framework presented by Terje Aven and Jan Erik Vinnem in their book "Risk Management - with Applications from the Offshore Petroleum Industry" to analyze the risk, uncertainties and possible consequences for firms evaluating to invest in Brazil in Angola offshore industry.

2.2 Risk Assessment Framework

Nowadays, various industries are implementing risk management in their organizations. This is due to the high expectations from the managerial perspective as developing a proper risk framework is key for obtaining high levels of performance.

In order to support the decision-making on designing operations, organizations conduct risk analysis, identifying hazards and threats and its proper risk description. The totality of the analyses and the evaluations are referred to as risk assessments (Aven and Vinnem, 2007). Once the risk assessment is performed, it is followed by the risk treatment, a process to develop and implement measures to modify the risk, either by designing ways to avoid, reduce, transfer or retain the risk.

Based on ISO 2005, the purpose of risk management is to manage and control an organization with regards to risk. This includes the definition of management policies, procedures and practices to establishing the existent context, assessing, treating, monitoring, reviewing and communicating risks, see figure 1.

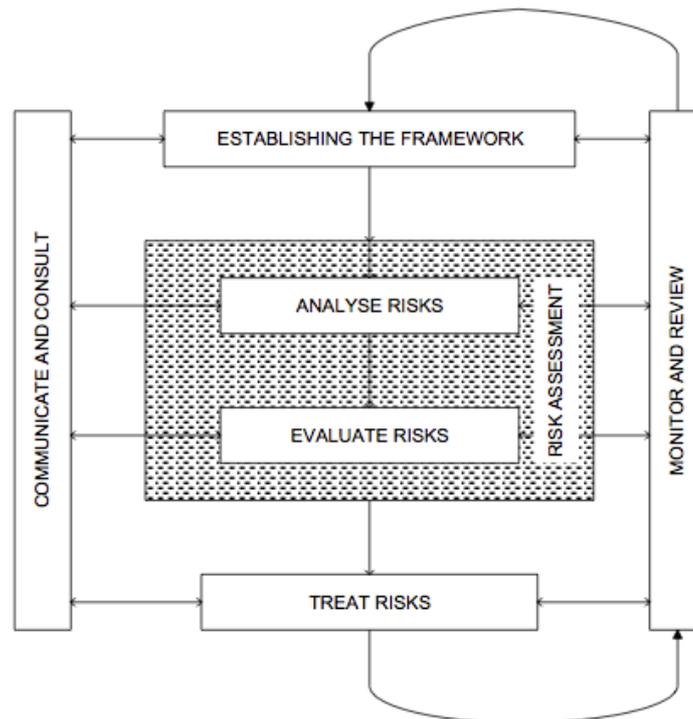


Image 4: Risk Framework (Aven & Vinnem, Risk Management with Applications from the Offshore Petroleum Industry, 2007)

Due to the nature of the research question, the authors have chosen to analyze their findings through the framework proposed by Aven and Vinnem, which aim to help organizations develop a framework for risk management and decision-making under uncertainty.

Aven and Vinnem defined risk as the combination of the two basic dimensions: a) possible consequences and b) associated uncertainties. The purpose of this framework is to give a detail overview on the assessment of uncertainties and the different views of how these uncertainties can be dealt with.

For MNEs moving to emerging markets, the choice of the country in which to invest requires the capacity of making decisions under uncertain conditions. Throughout this work, several aspects of the Brazilian and Angolan offshore and oil markets will be presented. However, the specific traits of each particular company wishing to expand their business overseas cannot be reported or fully taken into consideration, as they vary from company to company.

Therefore, we aim to propose the tools to firms to assess the risks and uncertainties of each market and consequently reach a decision towards starting operations in a particular country. It is important to keep in mind that “risk analysis does not give direct answers as to what is the correct solution and measure, but it only gives a risk description that will provide a basis for the choice of solutions or measures” (Aven, 2008). In other words, applying to the case of this thesis, the assessment through the proposed framework acts as basis to establish the next steps in the process of overseas expansions to Angola or Brazil, not being in itself a solution or strategy alone.

The framework allows the assessment of the risks inherent to such expansion and how to take into account the different aspects of decision-making in a risky scenario. As risk still remains tied to uncertainty, there is no absolute risk avoidance, or an absolute correct path. There is, however, the systematization and study of risks related to a specific process, in order to reach an overall conclusion to serve as basis for reaching a decision. (Aven, Risk Analysis, 2008)

First and foremost, it's necessary to identify the steps required to build a framework. According to Aven & Vinnem (2007), the main elements of creating a risk assessment framework may be identified as:

- The definition of the decision-making problems;
- The concerns that affect the analysis and the values attributed to such concerns;
- The managerial review of such problems;
- And finally the execution of the decision.

Therefore, the basic processes behind the framework building blocks are the following steps: identifying a risk/uncertainty, the possible consequences and how to manage such risks, if possible.

The analysis of a possible risk/uncertainty will provide decision support, by contrasting expected values and the real observations. For example, when considering the Brazilian supply chain, it is possible to observe that expected time frameworks are actually not respected, as processes take longer than usual. (Doing Business in Brazil, Subsea Focus) Therefore, it is important to have an understanding of the business scenario of the market in order to contrast the

expectation to actual observations from those present in the market.

So, in order to build a framework, first some concepts must be presented:

Risk or vulnerability: the risk of an activity is the combination of possible consequences and their associated uncertainties (Lillestøl, 2012)

$$\text{Risk} = (C, U)$$

Where: C= consequences of the activity, U = uncertainties regarding C. Given that C may be expressed as an interval defined of various possible values or variables or one possible value or variable in itself.

Note: a high uncertainty may not necessarily mean a high risk, as the risk is defined by the combination of the possible consequences of such uncertainty.

Decision problems: the specific problems and alternatives presented in a decision-making process. These decision problems may be evaluated, from standard to complex. (Aven & Vinnem, Risk Management with Applications from the Offshore Petroleum Industry, 2007)

Manageability of risk: this concept relates to the potential of reducing risk over time. For example, some high risks are also highly manageable, consequently being less problematic than low risks that have a very low degree of manageability.

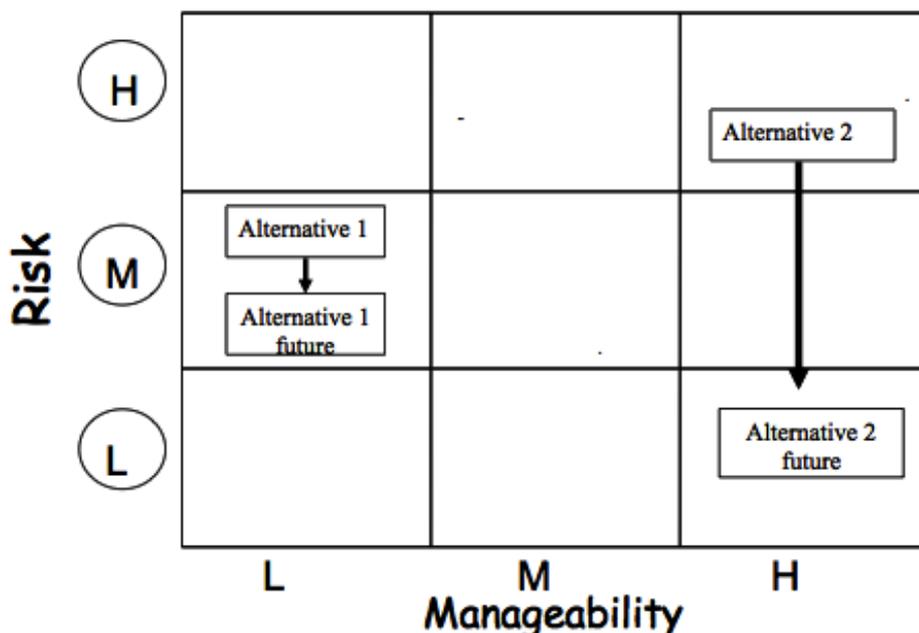


Image 5: Risk x Manageability (Aven & Vinnem, Risk Management with Applications from the Offshore Petroleum Industry, 2007)

The figure presented above is the framework developed by Aven and Vinnem to illustrate manageability of risk. In the figure, alternative 1 gives a medium risk level and low manageability, whereas alternative 2 gives a higher risk but also a higher manageability. Thus by selecting alternative 2 a higher risk is initially assigned, but it provides a large opportunity for reducing the risk and obtaining good safety performance (by adopting a good safety management).

Selection of Method for Risk-Informed Decision Assessment:

In order to evaluate the alternatives, a characterization method has been developed by Aven and Vinnem. This method allows defining the type of decision problem in question, as some decisions are critical and require detailed analysis whilst others are not so critical, hence a basic analysis may be sufficient.

The objective of this characterization process is to recognize the most efficient decision process for the relevant decision problem, using a structured and standardized progression that ensures the quality and the documentation of the decision process (Aven & Vinnem, Risk Management with Applications from the Offshore Petroleum Industry, 2007). The following are the three main categories of decision problem:

(1) Standard decision problem: this category is characterized by limited expected loss/gain and limited uncertainties. However no external assistance is needed.

(2) Advanced decision problem: this category is characterized by significant expected loss/gain and significant uncertainties. There is a need for detailed analysis and external expertise will be required.

(3) Complex decision problem: this category is characterized by large expected loss/gain and large uncertainties. Not only a detailed analysis is required but also experienced people engaged in the process.

Decision Problem	Expected Loss/Gain	External Assistance
Standard	Low	Not needed
Advanced	Significant	Needed
Complex	Large	Detailed Analysis required

Table 1: Decision Problem Categorization (Aven & Vinnem, Risk Management with Applications from the Offshore Petroleum Industry, 2007)

As a basis to carry out the categorization, a set of features linked to the expected consequences and uncertainties is defined. The ranking of each category is made according to the specific situation. The expected values (standard, advanced or complex) for each matter serve as a starting point for the company to assess the importance of both the decision problems and the uncertainties. In order to carry out a categorization, the authors will define the decision problems based on the country analyses to be performed under section 3 and 4. Finally, the following table will be used as a means of summarizing findings. Please see table 2.

Decision Problems	Ranking			Argument	Comment
	Standard	Advanced	Complex		
Feature 1					Comments are support for the ranking of decision problems
Feature 2					
Feature 3					

Table 2: Classification of Decision Problems Adapted (Aven, Risk Analysis, 2008)

The characterization presented above provides the company a base to determine the classification of the problem. If the dimension shows a high score, it

means that the problem is classified as complex, whereas with low scores implies is a standard decision problem.

The next step the framework follows is the evaluation of alternatives and how to analyze the different approaches for each decision problem. Yet, this is not a topic the authors will cover in this thesis, as the main concern is to define a proper risk assessment for the offshore industry for Brazil and Angola. The future alternative companies may bear is another question, which may be studied as a separate subject and the authors advise that each company studies it individually, taking into considering the particularities of their business, strategy and corporate culture.

3. Brazil

In this section, an overview of the key aspects of the Brazilian economic, financial, legal and political scenario will be presented. The focus will be centered on the oil and offshore industry, regarding legal particularities and participation of the sector in the Brazilian economy.

3.1 General Macroeconomic and Financial Scenario

Brazil is the world's seventh largest economy, with a gross domestic product of US\$ 2,245 trillion (World Bank, 2014), having briefly overtaken the United Kingdom as the world's sixth largest economy in 2012. The country represents, therefore, a global economic power and has managed to sustain growth at a moderate level even throughout the 2008 and 2009 international financial crisis. In an overall scenario, the country is benefiting from improvements in social welfare and income distribution; relatively low inflation and a stable economic growth. However, Brazil's GDP growth slowed significantly in the last years, driven by both internal and external factors.

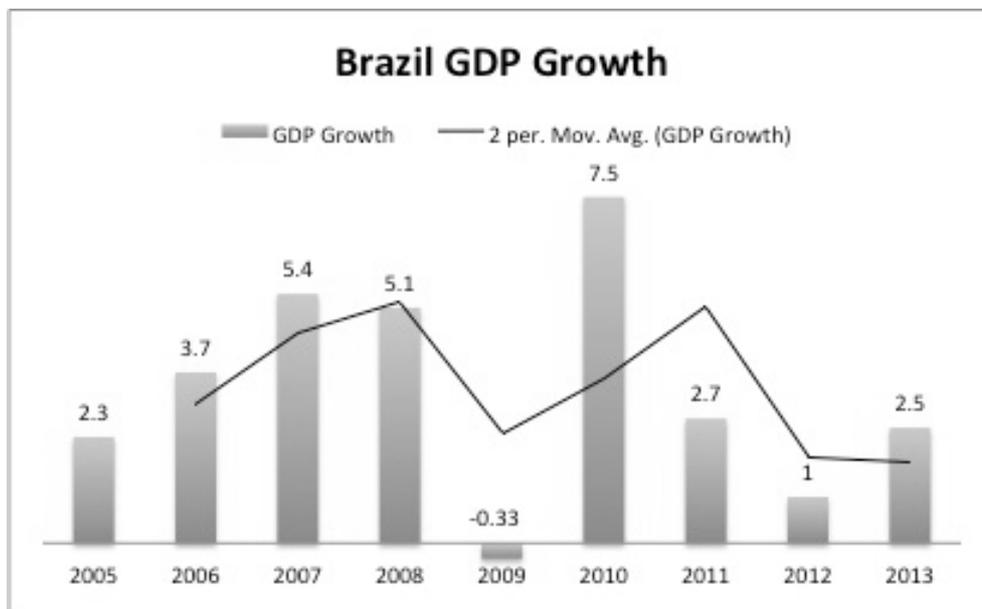


Image 6: Brazil GDP Fluctuation (CIA World Factbook, 2014)

Uncertainty marks Brazil's current macroeconomic scenario. Although it ranks amongst the BRICs, emerging economies that see rapid growth, Brazil has not had GDP growth rates as high as China and India, two countries it has been often compared to.

In 2014, the Instituto Brasileiro de Geografia e Estatística (IBGE), Brazilian Institute of Geography and Statistics, published that the country's GDP contracted 0.9% year-on-year in the second trimester; in a quarter-on quarter adjusted basis, the contraction was of 0.6%. This retraction follows a certain trend in the GDP growth of the country, characterized by a slow pace.

During the year of 2013, inflation surpassed the targets sets by Banco Central do Brasil (Bacen), Brazil's Central Bank. The set target of 4.5%, with a permitted band of fluctuation of plus or minus 2%, was surpassed throughout the year, even surpassing its upper limit of 6.5% at the month of March. To contain the issue, Bacen has increased interest rates and inflation has been considered under control by the government. However, popular discontent shows that, from the perspective of the market, there are still uncertainties towards the inflation's contingency. (Empresa de Pesquisa Energética, 2014)

Economic policy in 2013 was directed towards accelerating growth and keeping inflation in check, under conditions of high external volatility, especially given the expected changes in United States monetary policy. The first change in Brazil's macroeconomic variables occurred as the central bank raised the Special System of Clearance and Custody (SELIC) basic interest rate from April 2013 onwards. Accordingly, the rate climbed from 7.25% to 10.0% between September 2012 and December 2013. This measure was designed to contain annual inflation and bring it below the 6.5% ceiling of its target range, and to achieve convergence towards the center of the range at 4.5%. The cumulative inflation rate was 5.8% in the 12 months to October, and 4.38% in the first ten months of 2013. (Empresa de Pesquisa Energética, 2014)

Despite the macroeconomic scenario of slow growth, Brazil has been able to improve its social indicators. The unemployment rate in October 2013 was at 5.2% (Economic Commission for Latin America and the Caribbean (ECLAC), 2013). Also,

according to IBGE (2011), the gap between the country's richest and poorest has decreased in all 27 administrative units with an average of 11.5% in the country. Such increase of purchasing power and ascension to the middle class has been very important in Brazil, a country known for its social inequalities. However, the changes are still seen as incipient by most of the population.

The country has a diversified trade portfolio, the top export commodities being: ores (13.7%), oil & mineral fuels (10.91%), oil seeds (7.2%), industrial machinery (5.72%), meat (5.65%), motor vehicles & parts (5.18%) and iron & steel (4.42%). (Massachusetts Institute of Technology, 2014) The variety in the country's export portfolio makes it less vulnerable to external risks and price shocks. So, the country has not become dependent on the petroleum sector in its balance of trade. As Brazil also has an active industrial sector and a population with a strong power of purchase, the country consumes big part of the oil it produces.

Although there are any many bottlenecks in infrastructure, especially in ports, there is also a strong growth in investment in the civil construction sector. Currently, the country has large housing development programs led by the government and also governmental infrastructure programs, focused in distribution and generation of electricity, increase of railways and highways and the modernization and construction of airports and ports. In Rio de Janeiro, a subsea cluster has become part of the agenda, as the offshore industry grows and faces several bottlenecks in ports. In Espirito Santo, also part of the pre-salt basin, major ports are under developing, one of them, led by Singaporean company Jurong already in the construction phases. The licensing process, however, is long, which retards the progress. The Port of Rotterdam Authority has, since 2012, been heading the development of what should be Latin's America greatest privately owned port, designed to supply oil and iron ore demands. The negotiations are still stopped, as environmental license bureaucracy is delaying the start of construction.

The Brazilian financial sector is well developed. Since the 1960s, several reforms were made in the country in order to perfect the financial institutions, triggered by the Reform of 1964, which created Brazil's Central Bank, responsible for issuing the currency. Throughout its evolution, the financial system has suffered many changes and the country has also undergone several currency changes. The

Real was adopted in 1994, as part of a thorough monetary reform to combat hyperinflation.

Although exposed to the volatility of international commodities and capital markets, the Brazilian financial sector is still characterized by sound balance sheets, ample liquid assets and high balance and profitability (IMF). Capital markets in Brazil still have room for further development and it is largely constrained by the low duration and high interest rate of the environment (IMF)

The national financial sector is also quite supervised, being under the surveillance of three national policy boards and four supervisor entities. These institutions set policies, perform executive functions; regulate the currency, amongst other responsibilities. The country's banking system is also highly developed, counting with public and private institutions, ample access to services and credit by the population and enterprises. The national development bank, BNDES aims to provide long-term financing to projects that will play a part in the country's progress, especially in less-developed areas. (Banco Nacional do Desenvolvimento, 2014) The bank's operations may aim at solving socio-economic challenges, supporting exports, environmental projects and technologic innovation. BNDES is one of many Brazilian government agencies that focus on social developments.

Historically, Brazil has had many fiscal challenges. This, added to steady but low growth rates and short-term investment constraints, places the country. The country has never achieved. Recently, due to the retraction and pessimist growth forecast of Brazilian's GDP, Moody's has downgraded the country's credit rating to Baa2, the second lowest investment grade of the agency. One of the main concerns of the agency is that growth is unlikely to resume soon, as the country increases public debt and interest rates.. In the late years, a rising inflation and a poor public management of the GDP growth point towards a feeble economic period in the future. According to analyst Mauro Leos, the weak growth rates could erode Brazil's fiscal position and undermine its credit profile.

3.2 The Oil Industry and its Participation in Brazil's Economy.

3.2 The Oil Industry and its Participation in Brazil's Economy

According to the EIA, Brazil is the 8th largest consumer and 10th largest producer of energy in the world. When analyzing the oil scenario, it means that even though the country boasts a very large production but also an internal consumption that results in less exports.

As mentioned before, since 2008 Brazil has been the home to some of the biggest oil fields' discoveries globally. This has drawn much attention to the country in the energy scenario.

In 2014, Petrobras announced that the pre-salt basins' exploration from the Santos and Campos was yielding 500,000 barrels per day. (Trefis Team, 2014) This news marked a milestone for the company, as the pre-salt discoveries in 2006 were greeted with optimism and doubt, due to the difficulty of exploring in deep waters. In approximately eight years, the Brazilian oil giant managed to overcome challenges in rapid timing.

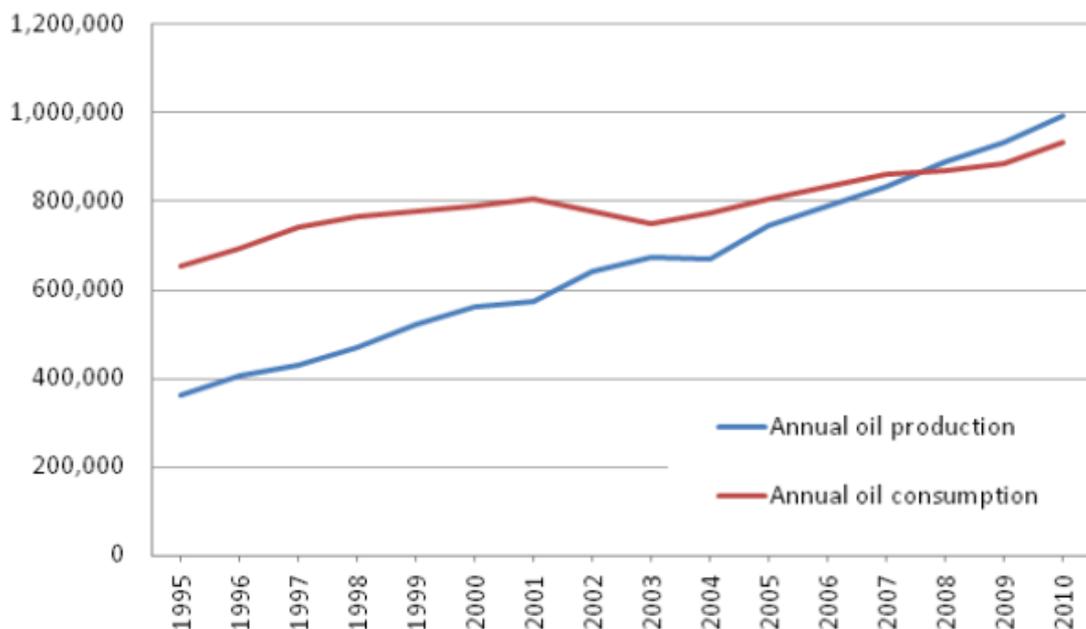


Image 7: Brazil's Oil Production and Consumption (Energy Information Administration, 2013)

Furthermore, the exploration of these newly discovered oil fields has proven to be very expensive. In 2013, the deep-water field drilling was below expected by the offshore services industry. According to oil giant Petrobras, pre-salt has proven commerciality. If taken into account the accumulated production throughout the years, the pre-salt province now exceeds 360 million barrels of oil. From 2010 to 2014, the average daily production from reservoirs has grown tenfold, going from an average of 42 thousand barrels per day in 2010 to 411 000 barrels per day in 2014 (in May). This amount only represents about 20% of Brazilian total oil production, but Petrobras expects that, by 2018, the contribution of the exploration of pre-salt fields will amount to more than 50% of total oil extraction in Brazil (Petrobras, 2014)

Industry growth is expected to increase in the following years, led by the natural resources and extraction sectors. This growth should be mostly propelled by the pre-salt discoveries. According to Petrobras, oil and gas production should double until the year 2020. (Planos de Negócios e Gestão 2013-2017) The gas distribution sector is expected to undergo significant growth, perhaps overcoming other energetic sectors. Infrastructure investments in gas ducts pipelines for gas transportation and distribution are scheduled, especially in the pre-salt areas. (Empresa de Pesquisa Energética, 2014)

The biggest risks related to such projects are the inability to source enough capital to finance the higher levels of production and an inefficient project management. The Brazilian supply chain is known to be slow and there is a shortage of highly capacitated professionals in a management level. These are only some of the challenges currently experienced by foreign offshore companies doing business in the country.

3.3 Government Role and Policies (Law and Regulations)

3.3.1 Brazilian Legal System Overview

The Brazilian legal system is based on Portuguese Civil Law tradition. The Federal Constitution, in force since 5 October 1988, organizes the country as a Federative Republic, formed by the union of the states and municipalities and of the Federal District (CESA, Centro de Estudos das Sociedades de Advogados, 2012).

Each state has their own court of appeal (every jury has their own way of judging); hence decisions vary from state to state. Decisions in the south part of the country may drastically vary to those in the Northern of Brazil. This is because most of the offshore industry is located in the south.

3.3.2 Taxation

The Brazilian Tax System is very complex and it is not consolidated into a single tax code, thereby making it difficult for foreign companies to navigate between the many different rule sets. Depending on the specific import product, the import transaction can be subjected to several different taxes. According to the report "Doing Business in Brazil" by the Scottish Enterprise, the Brazilian taxation system comprises more than 3,200 rules relating to more than 57 different taxes, hence the type of taxes described in the following pages are only the most crucial for foreign companies to consider but to not represent a list of the totality of existent taxes.

Federal Taxes:

Import duty (*Imposto de Importação - II*): The Import Tax is levied on imports of goods into the Brazilian territory. Its rates vary according to the nature of the goods and their classification under the Mercosur Common Nomenclature (NMC), but it usually ranges from 0% to 35% (CESA, Centro de Estudos das Sociedades de Advogados, 2012). The Import Tax is not a recoverable tax; therefore it is a cost for the foreign company.

Federal VAT (*Imposto sobre Produtos Industrializados or IPI*): is levied through the first sale of imported goods on first sale of goods and on transactions involving manufactured goods. The Federal VAT rate varies depending on the traded product and ranges from 0% to 365%. IPI generally becomes a tax credit to offset IPI charged on subsequent transactions. The IPI is calculated on the CIF value and the added Import Duty (Scottish Enterprise, SDI and Subsea UK, 2012).

State Tax

ICMS (*Imposto sobre Circulação de Mercadoria e Serviços ICMS*): This value added tax is the main state-level tax and it is levied on operations involving circulation of goods. According to the legal guide for foreign investors in Brazil (2012), the goods include manufacturing, marketing, and imports and on interstate and inter-municipal transportation and communications services. It is non-cumulative, and thus taxes due may be offset by credits arising from the purchase of raw materials, intermediary products, and packaging materials. The ICMS is not levied on exports ².

Municipal Taxes:

The Municipal tax on services (*Imposto sobre serviços de qualquer natureza - ISS*) is charged on certain services included in a Federal list of taxable services. Rates vary from 2% to 5%. Imported services are also subject to ISS taxation (Scottish Enterprise, SDI and Subsea UK, 2012).

Contributions:

PIS-Import and COFINS: Import are levied on the importation of goods and services. Generally they are charged at a combined rate of 9.25%. The tax basis for PIS-Import and COFINS-Import on imported products is the customs value plus ICMS and PIS and COFINS itself, which leads to an effective tax rate of around 13.45% (Scottish Enterprise, SDI and Subsea UK, 2012).

AFRMM: levied on all imports transported via maritime freight. The Supplemental Freight Charge for Renewal of the Merchant Marine (“AFRMM”) is levied on the freight charged by Brazilian and foreign navigation companies operating in Brazilian ports (Deloitte, 2010). This type of tax is calculated on freight price, using the application of the following rates:

- 25%, regarding deep-sea navigation;

² Imports are generally subject to a 17% or 18% rate, while local transactions are subject to rates varying from 7% to 18%. The ICMS is charged on the CIF value of the goods.

- 10% on cabotage freight;
- 40%, concerning lake and river navigation (only in the case of bulk cargo transported in the North and Northeast regions).

For corporate and shareholder taxation please refer to APPENDIX A.

3.3.3 Repetro

Tax Incentives for the Oil and Gas Sector (Regime Aduaneiro Especial de Exportação e Importação de Bens Destinados às Atividades de Pesquisa e de Lavra das Jazidas de Petróleo e de Gás Natural) - is a Brazilian special customs regime applicable to the importation and exportation of goods. This special regime is designed to prompt growth of the oil and gas industry in Brazil. The REPETRO is applicable to a determined set of products used in the production and extraction of oil and gas. In some cases ICMS may be charged at 3% of the CIF value on REPETRO goods but the importer can achieve the full suspension (0% ICMS) for specific equipment used for research and exploration of petroleum and natural gas (Offshore Center Denmark, 2009).

According to the law, REPETRO only applies to goods listed in Normative Instruction N°. 844/08, May 9, 2008. REPETRO may also be applied to machinery and equipment parts, tools, appliances and other parts, as long as its use is directly related to the research and production of oil and natural gas (Regime REPETRO). In order to meet the conditions listed in the Normative Instruction, REPETRO regime allows the use of the following customs mechanisms:

Temporary Admission: REPETRO grants import duty, PIS, COFINS and IPI suspension of taxes on imports of machines, equipment and materials that are qualified for the REPETRO regime, owned by a foreign company and rented/leased/chartered to a Brazilian Company to be used in O&G, exploration or production activities. The taxes are suspended according to the term of the rental/leasing/charter agreement.

Deemed exportation without the necessity for the equipment to leave the country: If equipment is manufactured in Brazil to be used in O&G activities, it may be sold to a foreign company, formally exported (without leaving the country),

rented/leased to a Brazilian Company and reimported through temporary admission. Once the steps in the legislation are fulfilled, only ICMS will be levied on the transaction upon the temporary admission. In other words, REPETRO allows exporting of goods without the physical exit of Brazilian territory followed by a subsequent importation into Brazil through the temporary admission regime, which results in a decrease of the tax burden in comparison to an ordinary importation

Drawback Suspension: This mechanism is a special custom regime, which allows the importation of raw material that will be used in the industrialization process without levying import duty, PIS, COFINS and IPI through the use of the "drawback suspension".

At the end of the manufacturing process, the equipment must be sold to a foreign company, formally exported (without leaving the country), rented/leased to a Brazilian Company and reimported through temporary admission, otherwise, suspended taxes will be assessed (Amorin, 2014). In addition, it is important to acknowledge that REPETRO is not applicable to the importation of goods originated from abroad under a leasing agreement with a foreign entity.

Who Can Use REPETRO

1. The holder of a license or authorization pursuant in accordance to Law No. 9478 of August 6, 1997, to exercise in the country, within the activities referred to in Article 1.
2. A company hired by the legal entity referred to in paragraph I for the provision of the services required to implement the activities that are the object of the concession or authorization, as well as their subcontractors.
3. A locally-based company formally appointed by the legal entity that is item I, to promote the importation of goods that are subject to charter, lease, operating lease or loan, since it related to execution of contract for services concluded between them (Regime REPETRO). See APPENDIX B for the list of good subject to REPETRO law.

3.3.4 Local Content

As a member of the WTO, Brazil is prohibited from creating protectionist laws to protect the local market and forbidding the commercialization of imported products. Hence, Brazil has adopted indirect mechanisms to request for a minimum amount of local content from foreign companies, described as the following:

- Subsidized financing through BNDES (Brazil Development Bank)
- Tax breaks for companies that reach a certain level of local content
- Quotas for preferential purchases of locally-manufactured goods in government tenders (Sperling, 2013)

In 1997, the Petroleum Law (Act 9478/97) regulated the participation of foreign companies in the exploration and production of oil. The Act established the regulatory regime for the industry, this new structure stated that even though the rights remained in the property of the Union (Petrobras), it also concedes concession agreements to oil firms participating in the license rounds to explore geographic zones.

Since then ANP is the agency responsible for undertaking the oil exploration and extraction license rounds and supervising the execution on the concession agreements. A determinant factor for the participant company to win the concession is the level of commitment towards the local acquisition of goods and services, i.e. Local content offer.

Even though from round 1 to 4 (1999/2002) the local content offer was free, in round 5 the minimum levels of local content were established. In 2008 ANP stipulated the minimum and maximum levels of local content offers by foreign firms as well as a local content certification³. In addition, ANP issued the local content regulation known as "Local Content Primer" which basically contains formulas to

³ The Local Content Primer also requires oil transferee companies in the oil and gas production to submit certificates from their local providers. In order for companies to obtain this certification, they must hire "certifying companies which are qualified and accredited by the ANP and whose criteria are previously defined by the Agency and aim to examine the compliance of sales to the required standard" (Source: www.anp.gov.br). This certification adds a significant cost to the company's operation.

measure the local content of goods, packages of good and services. If the firm does not comply with the standards of local content, they are most likely to face heavy fines.

Moreover, ANP has developed a formula for calculating local content index (índice de nacionalização). The formula is essentially the following:

Value-based index (Iv):

$$Iv = (1 - X/Y) * 100$$

X = Value of imported components, including raw materials, including:

1. CIF amount + customs duties of components incorporated to the equipment that were imported directly by manufacturer or by purchaser.
2. Value of imported components acquired in the domestic market by the manufacturer, excluding IPI and ICMS.

Y = Purchase price of the equipment, excluding IPI and ICMS.

Weight-based index (I_p):

$$I_p = (1 - X_p/Y_p) * 100$$

X_p = Weight of imported components.

Y_p = Weight of complete equipment

4. Angola

In this section, an overview of the key aspects of the Angolan economic, financial, legal and political scenario will be presented. The focus will be centered on the oil and offshore industry, regarding legal particularities and participation of the sector in the Angolan economy.

4.1 General Macroeconomic and Financial Scenario

Angola is a nation with a peculiar macroeconomic and political context in the African continent. After 27 years of conflict, the country has been politically stable and in peace since 2002.

From 2003 to 2008, Angola experienced an average of 17% of economic growth (African Development Bank, 2011), assuring that, by 2008, the country had lowered inflation from 70% to 13%, contained external debt, stabilized the currency, Kwanza (AOA) and built-up reserves (African Development Bank, 2011). Oil taxes have ensured governmental revenues and fiscal surplus throughout the decade, as will be discussed further on.

In 2013, the country's Gross Domestic Product was US\$ 121.7 billion (World Bank) in which the extractive industries, notably oil and mining, participate more significantly. The GDP of the country is divided within the following sectors: service (28.8%), agriculture (9.7%) and industry (61.5%). (KPMG, NKC, 2013)

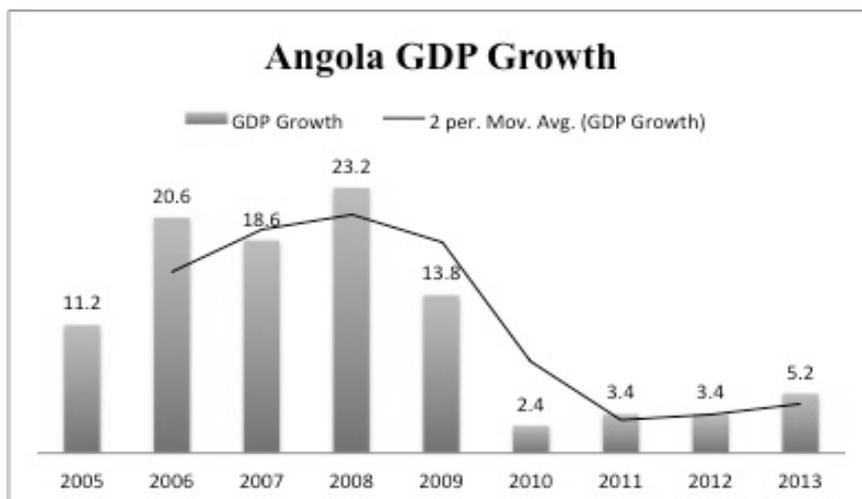


Image 8: Angola's GDP Growth (Ministério das Finanças Angola, 2014)

During the last decade, Angola's GDP growth has outperformed those of Africa and Austral Africa. After the steady two-digit growth the country experienced in the early 2000s, Angola has grown less, much due to the consequences economic crisis, but still maintaining positive outlooks. In 2013, the country's GDP grew 5.1%, below the 7.1% expected for the country (Banco de Desenvolvimento de Angola, 2014). The under expected growth of the GDP was mostly due to the poor performance of the oil sector in 2013. It was mainly the performance of the energy, agriculture, fishing, manufacturing and construction industries that boosted the country's growth in 2013.

On the counter side, the country faces many challenges. State apparatus is still inept, with high levels of bureaucracy and corruption and an inefficient administration, as we will further discuss on the text. Similarly social indicators do not reflect the economic growth: 36% of Angolan citizens are below the poverty line and unemployment ranks 26%. (Muzima & Mazivila, 2014) The oil industry, despite being the largest of the country, only employs 1% of Angolan workers while the agriculture sector is responsible for nearly 70% of total employment (Muzima & Mazivila, 2014)⁴. Therefore, one can conclude that the political and macroeconomic

⁴ The World Bank points to a lack of available data regarding specific percentages of labor force distribution. The institution claims that "more than two-thirds of Angola's labor force is employed in agriculture". Authors Muzima and Mazivila specify the percentage at 70%.

stability allowed a speedy economic boom, fueled primarily by the growth of the oil industry, but did not create equality and welfare distribution.

The same applies for infrastructural developmental. Even though much work is completed, infrastructure handicaps represent challenges to economic development. Infrastructure needed for basic social services, such as health and education, is yet lacking, making it even more difficult to overcome poverty challenges and social inequality.

Important structural projects such as ports and the Benguela railway, which would connect the country's coastal regions to Zambia, are currently under development. The National Development Plan of Angola for the period of 2013-2017 presents several projects, especially in the "priorities clusters" of Transports and Logistics, Housing and Energy and Water. Such ventures are a part of the "Angola 2025" strategic plan for development, which structures the country in different "development areas". The main goal is to organize the country territorially, bringing basic services to remote areas but also providing the heavily industrial areas with better transport infrastructure, airports, ports, highways, cargo terminals, etc. (Ministério do Planeamento e do Desenvolvimento Territorial, 2012) The outlook is, thus, optimistic.

The monetary policies of the country are a peculiar matter. Angola suffers from "Dutch disease", commonly known as the "oil curse". Due to the high level of natural resources exports (petroleum and diamonds), the Kwanza's exchange rate has appreciated over the years. In the same scenario, most foreign investment allocation is made in the extractive sectors instead of non-natural resources commodities, also contributing to currency appreciation and lack of investment in non-natural resource related sectors. This leads to a decline in the cost of imported goods, atrophy of the growth of other industries in the country and consequential reduction in the competitiveness of domestic products and further dependence on imported consumer and strategic goods.

While the oil industry imports most of its strategic goods, hindering local production from growing, the biggest disadvantage of a strong local currency is to local producers of the agricultural sector. A decline in the cost of imported food has

made domestic production less competitive and made the country too vulnerable to international price fluctuations. According to Africa Review, 90% of total food consumed in Angola is imported; and total imports in the first 9 months of 2013 in food and drinks represented \$3.6 billion. (Maussion, 2014)

Angola is also a country of extreme inequality, causing the Dutch disease to become an even bigger threat. Although Luanda is one of the most expensive cities of the world, two thirds of Angola's population still lives on less than two dollars a day. Therefore, the poorest of Angola could suffer deeply from an international food price shock. Since March 2014 the Angolan government has set new import duties and levies in basic consumer goods, as means to stimulate local food production and protect the economy from price shocks and rising inflation, which has been steadily under control.

The most relevant macroeconomic tendency for Angola is a governmental investment in strengthening its non-oil private economic sectors, making sure they will be more competitive, create more jobs, improve infrastructure and have an significant production output. (Plano Nacional de Desenvolvimento)

The financial sector of Angola was developed virtually from scratch in the last decade. In 2003, the total assets of the financial industry in Angola were US\$ 3 Billion. Eight years, in 2011, total assets amounted to US\$ 57 billion, meanwhile the number of banks increased from 9 to 23 in the same period (World Bank, 2013). However, the high level of concentration of activities marks the growth of the financial sector. The five largest banks of the country represent 77% of the total actives (Muzima & Mazivila, 2014).

The financial industry is also very inefficient. Information on credit, for example, is nearly inexistent, posing a great challenge to those doing business in the country. Furthermore, bank coverage is still quite poor in the country, and only 22% of adults have access to bank services. (Muzima & Mazivila, 2014)

“The system-wide lack of reliable financial information is due in part to the relative newness of the sector as a competitive, private-sector-led industry and exacerbated by weaknesses in its key supportive institutions, both public and private.” (World Bank, 2013)

This lack of information on credit and access to banking services creates an asymmetry in the country. Lenders give preference to firms that are bigger, older or foreign. Firms in Luanda are also given preference when compared to those outside of the capital. (World Bank, 2013) Therefore, this creates a very challenging scenario to business development, especially for locals. Again, this inefficiency creates a bottleneck in credit access for Angolan entrepreneurs and hinders local industrial growth. As a result, larger international firms dominate the market and there is a lack of medium businesses. Very small businesses do exist but cannot develop and are not competitive face to industry giants.

However, the financials sector seems to be under key reforms. The country seeks to consolidate a stock exchange and capital market until 2016. (KPMG, NKC, 2013)

Sovereign risk rating agencies had consistently ranked Angola's economy with positive outlooks, due to high growth rates and inflow of foreign direct investment in the extractive sectors. However, recently most agencies have revised their outlooks.

Credit rating agency Fitch has recently revised the Angolan outlook from "positive" to "stable". The main reason is the declining oil production, as targets were delayed mostly due to technical setbacks. (Reuters, 2014) Moody's, on the other hand, upgraded Angola's bond rating from Ba3, their lower score, to Ba2, based on "the strong medium-term economic outlook"; the agency's "expectation that government credit metrics will continue to improve" and "demonstrated progress in implementing some structural reforms", mostly by the government. (Moody's, 2014)

4.2 The Oil Industry and its Participation in Angola's Economy

Angola is Africa's second largest oil producer (after Nigeria), and its economical and structural development is intertwined with the oil industry as a whole. Angola's first oil findings occurred in

The oil production has increased since post-wars years and peaked with pre-salt drilling in 2012. The country's production is expected to continue to rise and Angola may become Africa's largest oil producer by 2018. The oil industry accounts for 60% of Angola's fiscal revenues. The country's main export is crude petroleum, representing a percentage of 98.1 of total exports in 2012 (Massachusetts Institute of Technology, 2014). This dependency highlights the country's weakness to trade shocks. As seen in 2009, Angola is highly vulnerable to oil demand and price fluctuation.

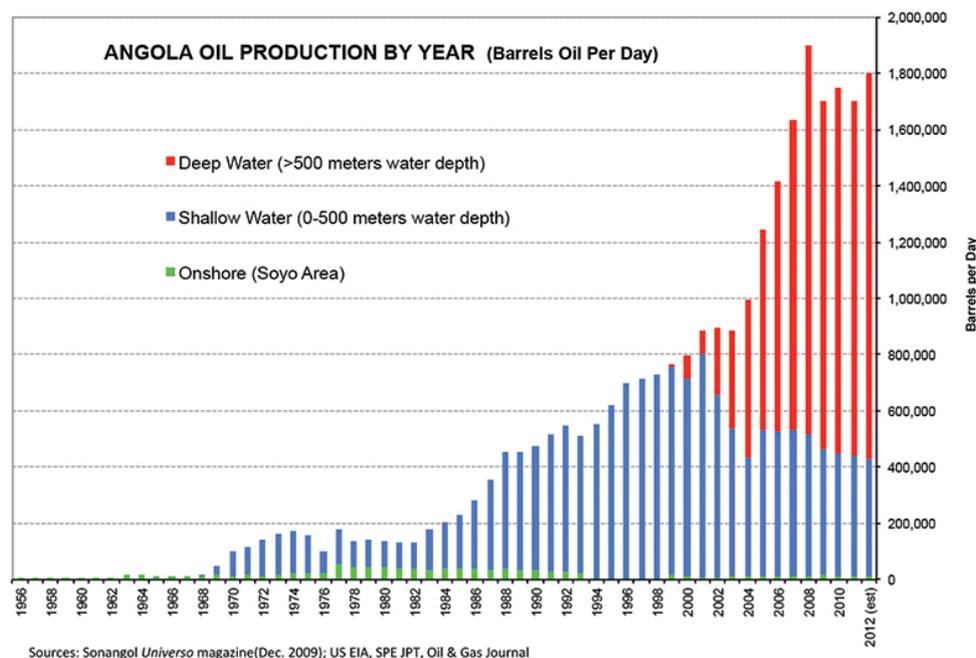


Image 9: Angola's Oil Production by year (BP, 2014)

From a fiscal perspective, governmental dependency on oil taxes is also alarmingly high. Efforts have been made since 2010 to lower such dependency, through an agenda that proposes non-oil sector growth. (African Development Bank) The strategy was put in action due to the 2009 world financial crisis, which resulted in an acute drop of oil demand that consequently resulted in a plunge on oil revenues and consequential fiscal crisis in the country. In the occasion, the International Monetary Fund signed a stand-by agreement with the government, in order to provide immediate liquidity. In 2010, a presidential decree structured the "Projecto Executivo da Reforma Tributária" – a Tax Reform Project. The main goals were to create economic diversification, by encouraging investors of varied sectors with tax incentives and simplified legislation. The government also proposed policies

to increase transparency and accountability of public financial management. (Fjelstad, Kirk Jensen, & Paulo, 2014)

As mentioned before, the growth of non-oil related industries in Angola played an important part in assuring GDP growth, especially in 2013, when the petroleum sector underperformed. However, oil related taxes were still representing 81% of governmental revenues in 2012. (Muzima & Mazivila, 2014) Therefore, it is fair to state that, even though the reform has had some impact in diversification, it hasn't completely been successful.

The lack of a developing industry becomes clear when analyzing Angola's oil production versus consumption. Historically, Angola's petroleum consumption has always been very low. The country's biggest source of energy is solid biomass, accounting for 59% of Angola's energy consumption in 2011 (Energy Information Administration, 2013). Therefore, most of the country's petroleum production is destined to exports, as stated before.

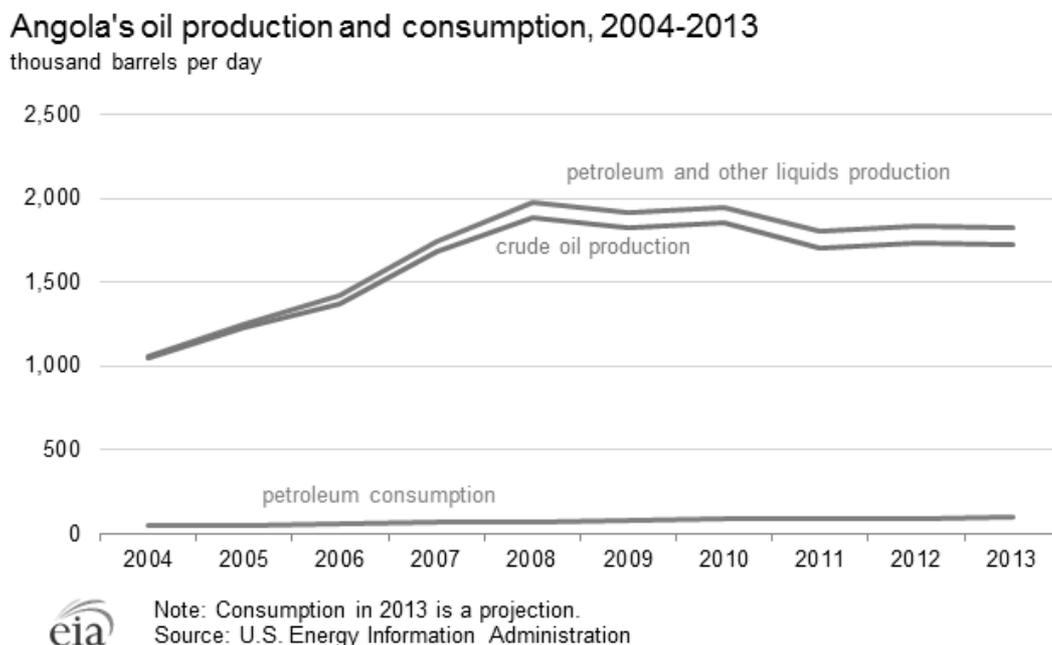


Image 10: Angola's Oil Production and Consumption (Energy Information Administration, 2013)

Another characteristic of the Angolan economy, which may be part of the reasoning behind the little industrial diversification, is the lack of investment, in both

public and private spheres. The total investment rate, according to the World Bank (2012) is 13% of the GDP, contrasting with an average of 24% to the Sub-Saharan Africa region. It is difficult to pinpoint the exact representation of private investment, as data is quite limited, however, the World Bank (2012) suggests an equivalent of 3% of the GDP. Therefore, 10% of the GDP sources back to public investment. From a fiscal perspective, it would be possible to increase such investment without harming public budget, mostly thanks to oil tax revenues. So, the Angolan government has been steadily increasing its participation in investment programs, focusing on priority objectives, such infrastructure projects. In order to increase private investments, tax and policies have been proposed by the government as to have a more investor-friendly legal environment. However, major law proposals and tax reforms are still pending approval by governmental institutions, such as the National Assembly.

4.3 Government Role and Policies (Law and Regulations)

4.3.1 Angolan Legal System Overview

The Angola legal system is based in the civil law. The country is divided in 163 municipalities and 532 communes. The general legislation governing private investment in Angola was enacted by the Private Investment Act “Lei do Investimento Privado”, Act 20/11 of May 20⁵. (Leitão, Teles, Soares da Silva & Associados, & Angola Legal Circle Advogados (ALC), 2012)

The Private Investment Act (LIP), part of the Private Investment Agency’s (Agência Nacional para o Investimento Privado/ANIP) foresees the existence of special legislation as regards investments to be made in certain areas, such as oil extraction⁶.

⁵ This law repealed the Tax and Customs Incentives for Private Investment Act (“Lei sobre os Incentivos Fiscais e Aduaneiros ao Investimento Privado”, Act 17/03 of July 25.2003) and part of the Private Investment Framework Law (“Lei de Bases do Investimento Privado”, Act 17/03 of July 25.2003)

⁶ Petroleum Act/“Lei das Actividades Petrolíferas”, approved by Act 10/04 of November 12.2004.

Since the end of the civil war in 2002, the country has experienced a huge increase in foreign investment, due to the combination of political and economical stability as well as Angola's potential in natural resources. The following chapter covers the issues related to the legal system for foreign investment and the special legislation applicable in the oil and gas industry in Angola.

4.3.2 Investment Process

To start with, the Angolan Private Investment Agency (ANIP) works to promote private investment by Angolan and foreign nationals in targeted industry sectors and development zones. Hence companies seeking to invest in Angola must contact ANIP as a first step.

According to the legislation, the minimum amount for foreign investments is USD 1,000,000 in order to benefit from taxation incentives and repatriation of profits. For projects with investment values exceeding USD 10 million, the process for obtaining approval requires the commitment of an investment contract with the Angolan government, which is must be authorized by the Angolan Council of Ministers and ultimately approved by the President. Simultaneously, the firm must submit all the required documentation and follow the procedures which may require the intervention of several number of government agencies (Leitão, Teles, Soares da Silva & Associados, & Angola Legal Circle Advogados (ALC), 2012)

The rights for the oil fields in Angola are assigned to the National Concessionaire, Sociedade Nacional de Combustível de Angola, Empresa Pública, Sonangol, EP. In order to be granted access to petroleum operations, that is exploration, appraisal, development and production of crude oil and natural gas activities are regulated by Act 10/04 of November 12.2004⁷. According to these laws, firms undertaking oil operations in Angola can only be performed under a license or oil concession issued by the Ministry of Petroleum. Please refer to APPENDIX C.

⁷ Petroleum Act "Lei das Actividades Petrolíferas" and Decree 1/09 of January 27.2009 Petroleum Operations Regulation "Regulamento das Operações Petrolíferas".

4.3.3 Special foreign-exchange legislation applicable to the oil industry

Act 2/2012, of January 13 (Foreign Exchange Act Applicable to Oil Industry/“Lei sobre o Regime Cambial Aplicável ao Sector Petrolífero”) establishes a special foreign-exchange regime for oil operations. In order to comply with this law, National Concessionaire and its associates (domestic or foreign corporate persons that are associated with the National Concessionaire through a commercial company, a consortium agreement or a production-sharing contract) are required to open a foreign currency account with banking institutions domiciled in Angola for payment of taxes and other fiscal obligations to the State, as well as for payment of goods and services provided by foreign residents and non-residents, and an account in national currency for payment of goods and services provided by resident entities.

However, this act also stipulates that once firms cover its fiscal obligations to the state, the firm will then be allowed to place the surplus by the foreign associates on the domestic or foreign market. In addition, the money that corresponds to the company's dividends, profits, depreciation of the investment and other capital remuneration, the firms are entitled to deposit them in foreign financial institutions

4.3.4 Taxation

The economical fiscal system of Angola involves important regulatory aspects of oil industry tax enacted by specific legislation (Act 13/04 of December 24, or Taxation of Petroleum Activities Act/“Lei sobre a Tributação das Actividades Petrolíferas”) and establishes certain economic factors for the concessions, though these are usually set out in the agreements signed for the execution of petroleum operations.

The special taxation mechanism applies to all entities resident or non-resident, provided they are engaged in research, development, production, storage, sale, export, processing and transportation of crude oil and natural gas. This regime also exempts from any kind of taxation the share of capital of companies engaged in petroleum activities.

The special taxation of petroleum activities mechanism includes the following five taxes:

(1) Petroleum Production Tax

(2) Petroleum Income Tax;

(3) Petroleum Transaction Tax

(4) Surface Charge;

(5) Training Levy

A general principle applicable for the first three taxes, stipulates that the calculation of the taxable income is done independently and separately for each concession or development area, hence the tax unit used is the concession or development area. Therefore, all domestic and foreign firms that are engaged in petroleum operations in Angola are subject to this special tax mechanism, and the calculation of the taxable income is separated for each oil concession.

Petroleum Income Tax

The Petroleum Income Tax is levied on net income resulting from sales made at the end of each month, earned in the pursuit of exploration, development, production, storage, sale, export, processing and transportation of oil, in the pursuit of wholesale trade of products resulting from these activities and also in activities incidental or ancillary to those activities. The applicable tax rate may vary between 50% and 65.75%, depending on whether the income is obtained through a production-sharing agreement or not (Ministério dos Petróleos Angola).

Petroleum Production Tax

The Petroleum Production Tax is levied on the amount of crude oil and natural gas measured at the wellhead, excluding the quantities that are consumed during the petroleum operations (Previously agreed and assent by the National Concessionaire). This type of tax is not applied to entities associated to production-sharing agreements. (Leitão, Teles, Soares da Silva & Associados, & Angola Legal

Circle Advogados (ALC), 2012)

The tax rate is 20% though it may be reduced to 10% in the following situations:

1. Oil operations in marginal fields
2. Oil operations in maritime areas with water depths greater than 750 meters
3. Oil exploration in hard-to-access onshore areas previously defined by the Government

Petroleum Transaction Tax

The Petroleum Transaction Tax is levied on taxable income determined in the same way as the Petroleum Income Tax. However, as the previous form of tax, this it is not applied to entities associated to production-sharing agreements. The tax rate is 70%. (Leitão, Teles, Soares da Silva & Associados, & Angola Legal Circle Advogados (ALC), 2012)

4.3.5 Surface Charge

This tax is levied on the area of the concession or on the development areas. This fee is charged at a fixed rate of USD 300 per square kilometer licensed for oil activity. (Leitão, Teles, Soares da Silva & Associados, & Angola Legal Circle Advogados (ALC), 2012)

4.3.6 Contribution to Angolan Staff Training (Training Levy)

Foreign or domestic firms associated to the National Concessionaire are required to pay a contribution to the Angolan Staff Training. The contribution fee may be paid as a yearly installment of USD 200,000 or USD 0.15 per barrel or 0.5% of annual gross income, depending on whether the firm is performing exploration and production activities or whether is a subcontractor. (Leitão, Teles, Soares da Silva & Associados, & Angola Legal Circle Advogados (ALC), 2012)

4.3.7 Local content

In accordance to the Petroleum act, foreign firms who are under a concession or prospecting license, as well as firms that work in any part of the value chain in the oil business, must acquire Angolan materials and equipment if the inputs required are identically found to those available in the international market. The law only applies if their prices do not exceed more than 10% to the prices in the international market. This percentage includes customs and taxes, shipping and insurance cost.

In addition, firms are required to guarantee sufficient capital to fulfill the obligations assumed. Thus, in the case of firms holding a prospective license, the amount of the guarantee must be 50% of the value of the job agreed. For those firms associated to the National Concessionaire, the value of the guarantee is the value agreed to perform the mandatory work schedule complied in the oil concession contract. In some cases, Sonangol may also require that the firm declare a parent company as a guarantee.

4.3.8 Special legislation on hiring foreigners for the oil industry

The so-called "Angolanisation" is a policy introduced by the Angolan government with the main objective to foster the hiring of Angola nationals and balance the asymmetry resulted from expatriate workers in Angola territory. The decree 5/95 of April 7 determines the need for 70% of the workers of Angolan companies to be Angolan nationals.

The executive decree 45/10 of May 10 established specific regulations regarding the hiring of staff, including a new system of recruitment, training and development of Angolan personnel and the hiring of foreign personnel to conduct petroleum operations in the country.

Additionally, the decree-Law 17/09 of June 26 enacts that hiring of expatriates by companies operating in the oil industry shall have due regard for and preference of hiring Angolans, regardless of the professional category or nature the post to be occupied, and (ii) give equal treatment to foreign workers and Angolans who have the same job and perform the same duties, particularly with regard to

remuneration and benefits, thereby prohibiting any kind of discrimination. (REPÚBLICA DE ANGOLA: MINISTÉRIO DO INTERIOR: Serviço de Migração e Estrangeiros, 2009)

Therefore, companies aiming at hiring expatriates for their operations in Angola must first obtain confirmation that there are no Angolan personnel qualified to perform the work. Moreover, in order to obtain permission of the Ministry of Petroleum, firms are required to demonstrate that the labor market has no Angolan citizens available for the job requested.

5. Risk Assessment Analysis

5.1 Introduction

The following section presents the risk assessment analysis for the most important aspects firms need to consider when establishing a subsidiary in Brazil and Angola. As previously stated, the framework will assess several decision problems, ranking them according to the table previously presented.

Decision Problem	Expected Loss/Gain	External Assistance
Standard	Low	Not needed
Advanced	Significant	Needed
Complex	Large	Detailed Analysis required

Table 3: Decision Problem Categorization (Aven & Vinnem, Risk Management with Applications from the Offshore Petroleum Industry, 2007)

In this methodology, the decision problems to be taken into account are specific for the offshore industry and the developing markets of Brazil and Angola. Such decision problems are the key aspects to assess when planning to internationalize to one of these markets. The authors have analyzed each decision problem and will present the assessment, together with a brief overlook of the reasoning behind such categorization.

Finally, the methodology will also include an assessment of the risk related to each decision problem and how manageable is such risk. A high risk is a risk that is associated to very large losses or gains for a company; a medium risk would be attached to the possibility of significant losses or gains for a company. Finally, a low risk would incur in low losses and low gains.

The manageability of the risk is related to how risks could be handled. In other words, to which degree companies or professionals would be able to act upon the

risk, taking strategic decisions in order to ensure that there will be no major losses. By managing a risk correctly, a company will be able to see higher returns. (Aven & Vinnem, Risk Management with Applications from the Offshore Petroleum Industry, 2007) However, some scenarios inherently have low manageability of risk, as the mitigation of risk will not be linked to actions that company can take. For example, in a country where there is no strong government or a government unwilling to cooperate and little transparency, a company cannot manage a risk of political instability and losses due to this matter, as there are no actions to be taken with the appropriate stakeholders, even if assistance is hired. A similar case was seen in Bolivia, for example, when Evo Morales rendered oil and gas exploration state-owned, forcing companies out of the country. A high risk with low manageability should be generally avoided, as it could result in great losses. A high risk with high manageability, on the other hand, if well managed, can result in great gains.

Decision Problem	Risk	Manageability
	High	High
	Medium	Medium
	Low	Low

Table 4: Risk and Manageability. Adapted from (Aven & Vinnem, Risk Management with Applications from the Offshore Petroleum Industry, 2007)

It is important to note that in some decisions problems, the factor “need of external assistance” is not taken into account, as hiring a detailed analysis or outside consultancy will not affect the outcomes. Such decision problems are, namely: political stability, piracy, currency exchange and oil production.

The choice of each decision problems and their categorization is a result of the extensive research performed by the authors and the interviews the authors carried out to the representative of Maersk Drilling and Sigbjørn Stangeland, project manager for DOF Subsea as well as the interviews conducted by external organizations to Niels Husted, founder and CEO of Rocktec, Knud Bach, CEO of Aalborg Industries South America and the representatives of Hydrasun, Nautronix, Viper Subsea and Paulo Jorge Veiga and Rui Paulo Ferreira - General Manager

Business Relations Manager from the Offshore Center Angola.

In addition the authors used, as a basis to compose the list, the information provided during the seminar held on February 13.2014 "Opportunities and challenges on the Brazilian shipping and offshore industry" performed by Oddbjørn Slinning - representative of Wikborg Rein, Bernardo Mendes Vianna -Head of the Maritime and Shipping Vieira Rezende, Joyce Jacobsen - Senior Associate, Shipping and Offshore Group Viera Rezende/Wikborg Rein and Dag Schjerven - President and CEO Wilhelmsen Maritime Services.

The authors also had access to company presentations from several Maritime and Offshore Businesses, such as DOF and Subsea 7 throughout the years of 2013 and 2014, as a part of extracurricular activities during the Master program at the Norwegian School of Economics. Furthermore, the authors interviewed Academic experts in the fields of Angola and Brazil, highlighting the contribution of professor Jonuel Gonçalves, a Brazilian Economist who has published several books about Angola.

The extensive literature review, paired with the insights from corporate and academic experts gave the authors the base for developing the framework and properly identifying the decisions problems and their characterization.

The decision problems are as follows:

- Project Schedule (Project Management Value Chain)
- Investment: FDI entry modes
- Corruption and Transparency
- Bureaucracy
- Legal System Challenges
- Tax Complexities
- Financial Sector (Banking System)
- Credit Ratings
- Infrastructure
- Local Content and Labor
- Trade
- Political Stability

-
- Piracy
 - Currency exchange
 - Oil Production

The next sub-section will present each decision problem individually and assess them while taking into account the uncertainty, risk and manageability criteria.

5.2 Decision Problems

Project Schedule (Project Management Value Chain)

The project management when moving into an emerging market should take into account possible timeline delays.

Based on most interviews and reports from foreign professionals who have done business in Brazil, project management is one of the cultural challenges foreign companies face. Timelines are set but usually not carried out, as the pace of business in Brazil is much slower than expected and delays are quite frequently. For example, the taxes and bureaucracy related to importing goods usually make the timeframe for any project much longer. A professional from Nautronix stated:

“In reality everything takes much, much longer than you anticipate. You need to take a long-term approach and be prepared to invest significant time and resources in your efforts.”

To the previous statement he added: “(...) timescales given were optimistic”. Therefore, it is important to take into account, when moving to Brazil, that most actions will move slower than expected, probably delaying the project management timeframes organized previously. Another feedback from a Hydrasun professional pointed to an also slow supply chain, delayed by legislations and a still unfamiliar local scenario with the demands of more developed markets.

“(...) is the supply chain in Brazil. It is slow, much more reactive rather than pro-active and cumbersome. The complex export import legislation in

Brazil does not help this but neither does the more seemingly short-term and unplanned approach by those in the supply chain. For example, we have had to work hard with our suppliers to increase their stock as they are not used to large orders, preferring or more accustomed to pre-ordering smaller quantities rather than thinking ahead and planning bigger orders.”

As a general conclusion, it is easy to state that the timeframes planned when establishing new businesses in Brazil should take into account delays, either due to bureaucratically, tax related or supply chain setbacks. Project management may even face infrastructure setbacks as Brazilian ports currently face bottlenecks. Realistically, the scenario will not change in the upcoming years and the most straightforward way to prepare is to have enough extra assets to be able to circle through any eventual setbacks and prepare timelines with enough extra time to assure that projects will still be met.

Even though there are possible losses from the low speed supply chain and project management in Brazil, these issues are easily surmounted by forehead planning and realistic time frames, including spare time to follow the slower pace of Brazilian business culture.

On the other hand, Angola has a much speedier project management timeline. The Angolan oil business sector is very adapted to foreign companies and the oil and gas is the country’s main industry. According to interviews from the professional from Maersk Drilling, the focus should be to meet governmental requirements and support a case that the company is interested in investing in the growth of Angola when entering the country.

For the classification of the project schedule decision problems, the authors scored Brazil under the “Complex” category. The main reasoning behind such classification is the existence of possible large losses when not taking into account the local characteristics of project management. In order to fully prepare for possible setbacks, cultural shocks and other unpredicted situations, it is important to count with local external consultancy. Angola falls into the “Advanced” category, as it would still require external consultancy. However, the country’s focus in the oil industry speeds up the project management for the offshore sector.

Overall, the risk posed by poor management of the project schedule may be very high, but it is also highly manageable if the company takes into account the characteristics of each country's supply and value chains and prepare accordingly. For Brazil, the risk of project management is higher than that of Angola, which scores a medium risk. However, in both countries the manageability of the risk is high, as it possible for companies to adapt to local value chains.

Investment: FDI entry modes

In order for the firm to determine a foreign location, they first must learn what entry models are allowed in a specific industry or region or for specific ownership sharing and if there is any specific local requirement. FDI entry modes involve the ownership of property, assets, projects and businesses invested in the host country. Hence, the following modes require a higher commitment than the one required by international trade or transfer related modes but also involve a higher risk and long-term goals. FDI main entry modes include branch office, joint venture, and wholly owned subsidiary.⁸

In the case of Brazil suppliers must be legally established or represented to qualify as government contracts, thus foreign firms without operations in Brazil may only participate in international tenders calls. A firm may also be represented through a joint venture with a Brazilian firm, however at least 51% must be Brazilian capital participation and the operational control must be done by Brazilian nationals (Swiss Business Hub Brazil, 2010). As stated by Petrobras, 'Brazilian companies' means companies that have manufacturing processes and after-sales services in

⁸ Definitions of entry modes by Menipaz et al, 2011: i) Branch Office is a foreign entity in a host country in which is not incorporated but exist as an extension of the parent company and it is legally registered as a branch. ii) Join venture is a collaborative whereby profits and other responsibilities are assigned to each party according to the contract. Each party cooperates as a separate legal entity and bears its own liabilities. iii). A wholly own subsidiary is an entry mode in which the investing firm owns 100 percent of the new entity in the host country. (Menipaz & al, 2011)

Brazil, thus creating jobs and collecting taxes in the country.

In the case of Angola, the Petroleum Act establishes that firms undertaking oil operations in Angola can only be performed under a license or oil concession issued by the Ministry of Petroleum. However the legislation does not obligate firms to have a previous set up branch or joint venture with an Angolan company. Nevertheless, firms must have a minimum amount of USD 1,000,000 as a prerequisite of investment.

In addition, while Petrobras has a "closed" procurement system, whereby it can choose and invite three companies to participate in tender (Note: It is mandatory for firms interested in becoming suppliers to register in the Cadastro Corporativo. This registry certifies that the company has been approved by Petrobras' legal, technical, financial and tax qualification requirements) while for Sonangol, firms interested in the oil concession may associate to the National Concessionaire either through consortium agreements or incorporation of the firm to Sonangol.

Therefore the authors observe that due to higher complexity of setting up a branch or joint venture involve higher risk, Brazil comprises a larger risk than Angola with regards to the entry mode established by the countries legislation, yet both countries rank as "Advance" due to the procedures firms have to go through in order to establish a subsidiary in either of the two countries. This risk is also characterized by high manageability, since both nations provide different tools and mechanism to undertake FDI to prospective firms.

Corruption and Transparency

The CPI scores and ranks countries/territories based on how corrupt a country's public sector is perceived to be. It is a composite index, a combination of surveys and assessments of corruption, collected by a variety of reputable institutions. The CPI is the most widely used indicator of corruption worldwide.

The following table indicates Brazil and Angola's perceived level of public sector corruption on a scale of 0-100, where 0 means that a country is perceived as highly corrupt and a 100 means that a country is perceived as very clean. A

country's rank indicates its position relative worldwide⁹ (Source: <http://cpi.transparency.org/cpi2013/>)

Country Risk	Regional Risk	Country	CPI 2013 Score
153	38 out of 48	Angola	23
72	13 out of 32	Brazil	42

Table 5: Corruption Index Brazil and Angola (Corruption Perception Index, 2013)

As illustrated in the table, Brazil is perceived to be less corrupted than Angola, and ranks higher in the CPI 2013 with a difference of 19 points to the African nation. Yet, both countries are taking measures to reduce the degree of corruption faced by the nations. On the Brazilian side, the country is a co-founder of the Open Government Partnership. The country's leadership and participation illustrates that the government has strong aims to improve transparency and prevent corruption in the sector. In addition since 2010, the electronic platform Transparency Portal (Portal da Transparencia) enables Brazilians to track how public money is being used in all federal government programs.

On the other hand, the financial relationship between the government and Sonangol is complex and secretive, as are the sub-contracting procedures used to assign sector work to outside companies (BUSINESS ANTI-CORRUPTION PORTAL). Even though there are indications that some revenues continue to be used by the elite to enrich themselves and/or secure their hold on power (Marques de Moraes, R, 2010), Sonangol has made progress in terms of organizational disclosure, in areas such as the publication of company accounts and external audits. In addition, according to the EITI (Extractive Industries Transparency Initiative) the country has made significant progress in bringing the country in line with EITI revenue transparency standards and now publishes monthly petroleum receipts on the Ministry of Finance's website.

⁹ The results are based in the Corruption Perception Index which included in its study 177 countries.

For these reasons, in terms of corruption the authors assigned an "advance" risk to Angola in comparison to the "standard" risk companies could experience in Brazil. Yet, this risk is to some extent manageable by firms, as they usually deal with high degrees of scrutiny by its home country/other nations where they operate. Hence, this risk it to a great extent highly manageable by firms for both of the countries.

Bureaucracy

Companies operating in Brazil are face to deal with a large number of regulatory agencies, and in some cases this heavy bureaucracy may lead to increase the probabilities to demand for bribes by public officials. According to the enterprise survey 2009, 68.8 percent of Brazilian business owners and top managers identified corruption as a major constraint in the sector.

The federal system of Brazil provides its politicians considerable unrestricted power in regards to the use of public funds. The lack of a larger control over public funds makes local governments prone to corruption, as explained before, the laws, procedures and its enforcement capacity may vary among states.

In addition, customs procedures for imports, environmental licenses and allocation of contracts are expensive and time consuming, resulting in delays for companies to set up their business in the country. According to the World Bank Enterprise Survey 2009, 48.4 percent of firms identified business licensing and permits as a major constraint, while for Latin America the rate is 18.4% and for the world 12.9%.

In the case of Angola, the situation is not much different as the World Economic Forum Global Competitiveness Report 2010-2011 confirms that corruption and inefficient government bureaucracy are among the greatest constraints for business operations in the country. According the World Bank Enterprise Survey 2010, 75.6 percent of firms identified corruption as a major constraint while 48.9 percent of the companies surveyed expected to make informal payment to "get things done", while for Sub-Saharan Africa this number reduces to 27.8 percent.

According to the interviewee representing Viper Subsea in Brazil *"The bureaucracy involved in securing permits and permissions is excruciatingly complicated and it is best to get the right advice from the outset on the process and be patient"* . Thus Brazil is categorized as "complex" risk with medium manageability, as despite the possibility of hiring an expert, companies must follow the numerous procedures and paper work required by the country.

As per Angola, the authors have also assigned a "complex" risk, as even though in recent years the country has improved the overall regulatory environment the business environment remains difficult. It is plagued by pervasive corruption, complex bureaucratic procedures and an underdeveloped financial system (US Department of State, 2010). Additionally, the risk is ranked with medium manageability for the same reasons described for Brazil.

Legal System Challenges

According to Bernardo Mendes Vianna - Head of the Maritime and Shipping - casualty and emergency response at Vieira Rezende- dealing with the Brazilian legal system is not an easy task as the country's slowness in its legislation causes complex or controversial subjects to take years to be regulated.

Moreover, the multiplicity of laws leads to a single subject may be regulated in several statuses, or there might be inconsistency as laws and regulations from different levels may have a conflict in its content.

Another major constraint for companies is the overburden of courts as each state has their own court of appeal (Every jury has their own way of judging); hence decisions vary from state to state. I.e.: Decisions in the south part of the country are very different to those in the Northern of Brazil. The reason is that most of the offshore industry is located in the south of Brazil. Furthermore, as the legislation divides the country between Federal Union, States and Municipalities, it forces companies to deal with authorities from the three levels of the government, thus proceedings may take a long time until a final conclusion is reached.

Another important limitation is the confusing tender protocols for Petrobras in certain subjects, as there is no specific deadline for Petrobras to start administrative

processes and its contract structure presents vague language and unclear conditions. For this reason, due to all the constraints of the composition of the legal system in Brazil, the risk is ranked as "complex" with a medium manageability, as despite the fact that companies may use legal advice to overcome this burden, the legislation needs to be followed by the firm.

The legal system in Angola is weak and fragmented and based on the Portuguese and Customary Law system. In 2011 the private investment law was updated mandating that all payments made from the petroleum sector must go through Angola if the recipient is considered to be a resident entity. However the implementation of these new laws have created some degree of uncertainty the Angolan banking sector and for foreign investors. This new Private Investment Law is more restrictive than the previous law as forces foreign companies to only use Angolan banks and to pay subcontractors through those bank accounts irrespective of where the subcontractors are based (New Investment Frontiers: Angola and Mozambique, 2013).

The authors have ranked this decision problem as "standard" risk with medium manageability, as despite that Angola's legal system is somewhat "primitive", the laws and procedures to invest in the country can be interpreted without any legal assistance. Yet, the banking sector still needs to go through an overhaul in order to satisfy the laws imposed by the country while providing an accurate service to foreign firms, a topic described later in the document.

Tax Complexities

According to the report "Doing Business in Brazil 2012" Foreign companies face many difficulties while navigating among the 3200 rules and more than 57 different taxes as the Brazilian tax system is very complex and is not stipulated into a single tax code. It is critical for companies looking to establish operations in Brazil to invest in tax and legal advisory since when submitting a bid or commercial proposal, federal, state and municipal taxes need to be considered (Scottish Enterprise, SDI and Subsea UK, 2012).

Additionally, some of the existent tax issues in Brazil include incorrect calculation and payment of taxes inducing to less profit or even losses, tax

assessments by the government may result in fines up to 150 percent plus interest and mistakes in the classification of goods. According to the World Development Indicators for tax policies for 2013, the number of hours spent to prepare, file and pay taxes is 2600, the highest number worldwide. These facts ratify the authors' verdict to rank tax procedures in Brazil as "Complex", having high risk with medium manageability; the last one due to all the time and expertise required to fulfill the taxation laws.

On the contrary, in the case of Angola, in 2010, 26.4 percent of firms identifying tax rates as a major constraint in comparison to 34.4 percent average for the Sub-Saharan region (World Bank Enterprise Survey, 2010). Yet, PwC's Paying Taxes 2013 report, Angola ranks 154th out of 185 countries. According to the study, companies spend in average 282 hours on tax matters with 31 as the total number of tax payments 31, reflecting a lack of electronic filing and payment across each of the major taxes.

However, the government published in 2012 a number of measures aimed at diversifying the economy while increasing the tax revenues. These measures¹⁰ intend to make the Angolan tax framework more simple and fair for foreign companies. Thus, Angola scores high risk and the manageability as high.

Legal content and Labor

The government of Brazil started imposing local content requirements on foreign companies since 1999 in order to stimulate oil companies to purchase goods and services domestically. However since the discoveries of pre-salt offshore oil in 2007, the government increased the percentage of local content and the pressure on the local oil service industry (from 57% in 2003 to nearly 70% in 2010).

A major constraint companies have reported in regards with the local content obligations is that, under the concession system, the percentages of local content are used as judgment criteria at the bid rounds promoted by ANP for the award of onshore and offshore blocks (Valois and Pedrete, 2014).

¹⁰ Included under the section of taxation for the Angola Legal Framework

For Angola the situation is not that different, as the Angolan government requires that foreign companies prioritize local labor at a rate of 30% foreign employees and 70% Angolan employees, this is named by the government as the Angolanisation plan. Due to the challenging competency levels of local citizens and the huge deficit of skilled technical and professional personnel, companies are faced with extra cost in training programs. In addition, retaining staff in Angola is also quite a challenge as the market is extremely competitive for reliable skilled labor, however those companies paying higher salaries and offering better working conditions are more likely to succeed.

Coupled with the new requirement for foreign investors to increase the level of training and involvement in local infrastructure development, many companies who are forced to recruit expatriate staff with skills to match their needs, face troubles for visa applications. Furthermore, in the legislation on employment of expatriates, foreign workers are not protected under the labor law, holding only national employment protection policies.

In any case, one of the biggest challenges for both countries is the lack of human resources. This qualifies both countries risk as "complex" as the majority of companies are forced to invest in the training of local staffing and relying in expatriate labor is not viable in the long term. Yet, the manageability is medium for both countries, as in spite of the tight market for skilled labor, companies such as Maersk Drilling have overcome this challenge by developing an "Angolanisation 3-year plan" focused on training, educating and employing local talent; an example other companies may follow, creating not only skilled labor, but also long-term relations within the communities they operate.

Political Stability

The Bertelsmann Stiftung's Transformation Index (BTI) analyzes and evaluates the quality of democracy, a market economy and political management in 129 developing and transition countries. It measures successes and setbacks on the path toward a democracy based on the rule of law and a socially responsible market economy.

Country	Ranking Status Index (Among 129 countries)	Status Index	Democracy Status	Political Participation	Stability of Democratic Institutions	Political and Social Integration
Angola	97	4,44	4,55	4,0	3,0	5,0
Brazil	17	8,02	8,15	9,0	8,5	7,3

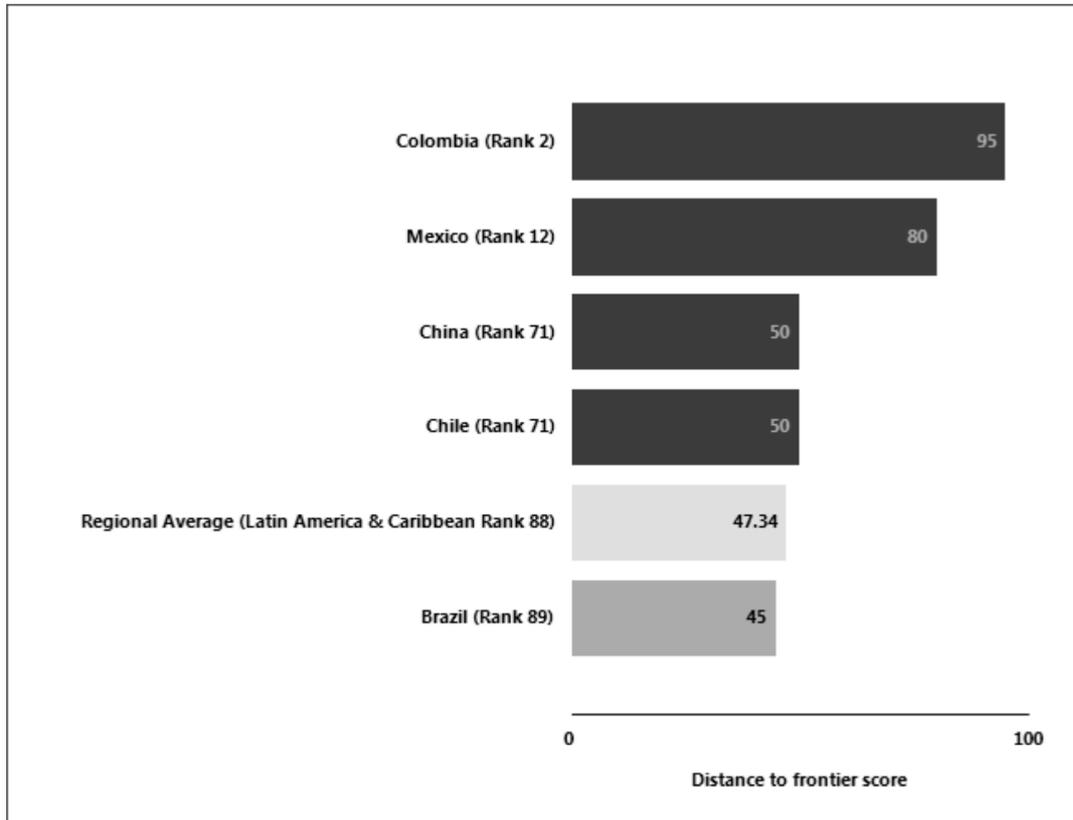
Table 6: Bertelsmann Stiftung's Transformation Indexes (BTI) - one (the lowest value) to 10 (highest value) (Transformation Index BTI , 2014)

The table above shows the different aspects that comprise the political situation for Angola and Brazil. As observed in the graph, Brazil ranks pretty high in comparison to the African nation. According to these numbers, Brazil holds a better quality of democracy, hence the risk of foreign companies operating in this market are lower to those faced in Angola, giving a score of an "Standard" risk to Brazil, with low risk.

On the contrary, one of the main reasons for Angola to rank with a poor quality of democracy is due to the nation's recent civil war ending in 2002 as even though the country has managed to maintain political stability since then and adopted a new constitution in 2010, the African nation still faces major challenges in creating a greater political participation and transparency in its democratic institutions. Consequently, the authors have assigned a high risk, ranking as an "Advanced" decision problem.

In terms of manageability, political stability is an exogenous factor that is unlikely to be controlled by the foreign firms operating in the country. For this reason, the manageability is low for both nations.

Financial Sector

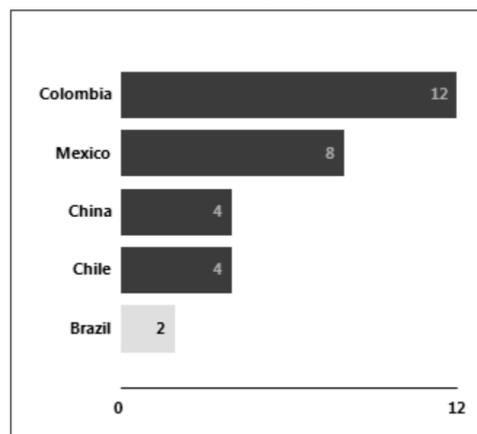


Source: Doing Business database.

Image 11: Brazil's ease of getting credit ranking when compared to other countries in the same region (World Bank, 2014)

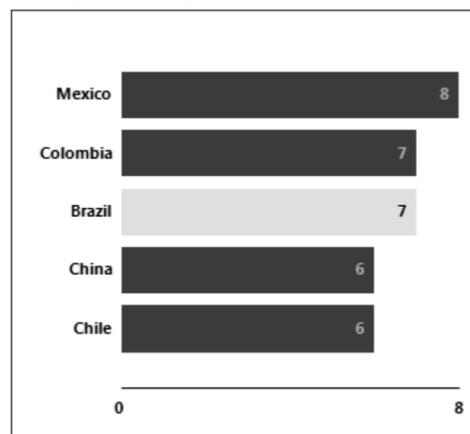
The Brazilian financial sector is highly developed, as presented before in this work. One important factor to take under account are high interest rates in the banking system and an underdeveloped spot market for offshore and subsea. According to the World Bank (2014), Brazil isn't an interesting scenario for lenders and borrowers when compared to its neighbors. The country lacks strength in legal rights enforcements when assuring rights for credit transactions. However, the transparency and accessibility of information regarding credit is widely available and the country scores next to the maximum in the Doing Business 2015 index, as shown below.

Economy scores on strength of legal rights index



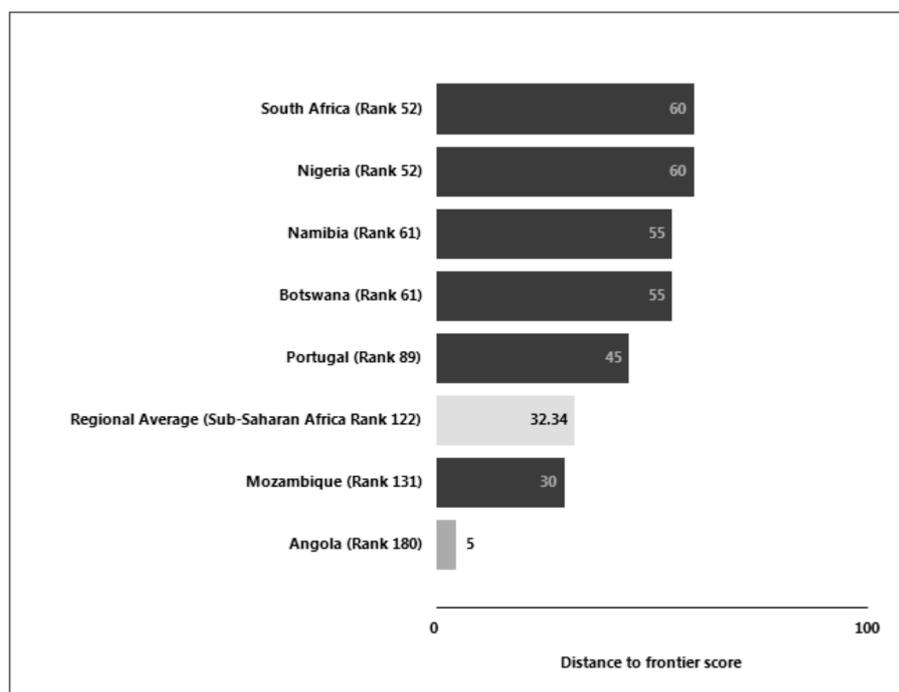
Note: Higher scores indicate that collateral and bankruptcy laws are better designed to facilitate access to credit.
Source: Doing Business database.

Economy scores on depth of credit information index



Note: Higher scores indicate the availability of more credit information, from either a credit registry or a credit bureau, to facilitate lending decisions. If the credit bureau or registry is not operational or covers less than 5% of the adult population, the total score on the depth of credit information index is 0.
Source: Doing Business database.

Image 12: Brazil's scores on credit policies and access to information (World Bank, 2014)



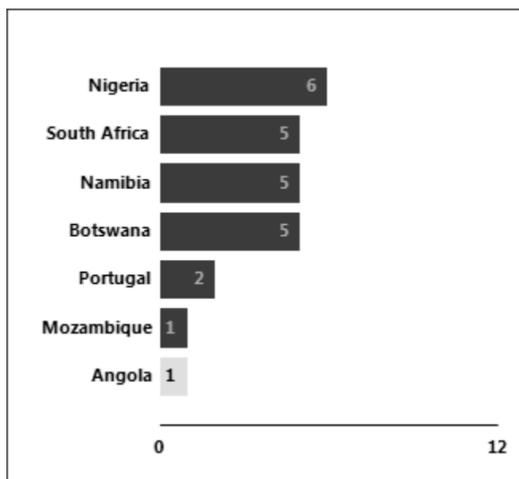
Source: Doing Business database.

Image 13: Angola's Getting Credit Ranking. (World Bank, 2014)

The Angolan financial sector, on the other hand, is very under developed and getting access to credit may be quite complicated. The country still lacks a formal

support and unified legal framework for secured transactions. There is no existing modern collateral registry in an electronic database or guaranteed reimbursement for creditors when a business is liquidated. However, the Angolan law does stipulate that part of the transactions from offshore companies have to go through Angolan banks, increasing the risk for foreign businesses.

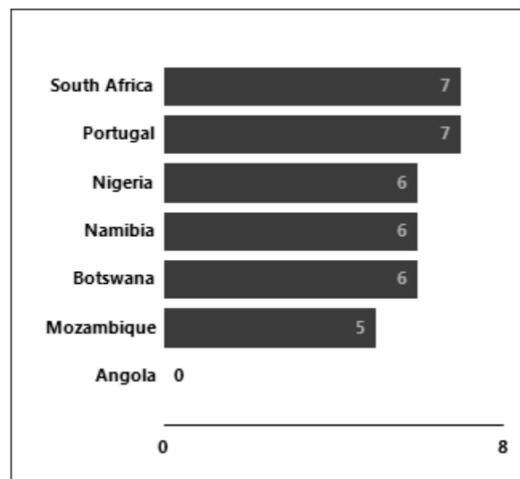
Economy scores on strength of legal rights index



Note: Higher scores indicate that collateral and bankruptcy laws are better designed to facilitate access to credit.

Source: Doing Business database.

Economy scores on depth of credit information index



Note: Higher scores indicate the availability of more credit information, from either a credit registry or a credit bureau, to facilitate lending decisions. If the credit bureau or registry is not operational or covers less than 5% of the adult population, the total score on the depth of credit information index is 0.

Source: Doing Business database.

*Image 14: Angola's scores on credit policies and access to information
(World Bank, 2014)*

To sum up, the Angolan financial scenario is still considered very incipient. The risk, therefore, becomes quite high when depending on local systems for transactions. Due to the country's civil war, the financial system is yet to develop and become competitive, even when compared to those of other emerging markets.

For the financial sector decision problem, the authors ranked Angola as "Advanced". The lack of a developed infrastructure incurs in a need of external assistance in order to better position in the Angolan financial sector and banking system. Not seeking for consultancy could potentially result in major losses. Brazil, however, would be qualified as "Standard", as the country has a developed banking and financial sector. Furthermore, information is easily available and transparent, so

there would be no need to hire external consultancy, provided there are company employees who master the Portuguese language.

In Brazil, as the country already has a well-established financial sector, the risk is low and highly manageable. However, in Angola, the lack of transparency and the unease of access to financial and banking system increase the risk to medium and the manageability to low.

Credit ratings

The credit ratings of both countries for the current year can be found in APPENDIX D. The reason the authors chose to include such information when taking risk assessment evaluations is for companies to be aware of the perspective in each country's financial scenario. Agencies' ratings fluctuate and may indicate downturns for upcoming years. Therefore, considering abrupt downgrading, it may be wise to expect a possible macroeconomic downturn in the country and make it harder to obtain investments.

For the purposes of the risk assessment, credit ratings are "Standard" for both countries, as there is no external help needed to analyze such information and it is a highly manageable risk, posing little or no loss if correctly interpreted and the interpretation of such ratings is widely available.

Both countries also score low in the credit ratings risk, as this criterion represents more a guideline than an actual risk. Finally, the manageability is also high, as companies can control their finances, preparing for pessimistic scenario and also can avoid internationalization in period of high financial instability. In such periods, the credit rating could act as interesting guidelines for benchmarking between the countries, as stated before.

Infrastructure

Brazil is a country of multi-faceted trade portfolio and diversified industry. Therefore, the oil industry in itself, although highly important, does share its status with other sectors. The Brazilian ports are usually busy and face many bottlenecks. As mentioned before, the slow project timelines and high levels of bureaucracy

slows construction and infrastructure developments. Therefore, the infrastructure in Brazil is generally not as optimal as it could be and the timeframes of seeing structural projects “get out of the paper” and become reality is very long.

Angola, although a country that lacks infrastructure in general for its population and rural areas, has great infrastructure for catering the oil industry. According to a professional from Maersk Drilling, the country focused in infrastructure projects in the last five years, in order to support the oil and gas sectors properly. Therefore, although the rest of the country still lacks basic infrastructure, the offshore industry in itself does not lack appropriate setup.

Due to the problems faced by Brazil, the authors ranked the country as “Advanced”. The port bottlenecks, the lack of infrastructure and the challenges to find local suppliers and constraints in shipyards are some of the issues faced. The external assistance in this case would be mostly related in participating in new ventures such as the building of the Rio de Janeiro subsea cluster. In the coast of Espirito Santo new shipyards are also being developed, but the bureaucratic, environmental and legal setbacks delay the projects, according to law professionals working directly with the projects.¹¹

Angola, in the other hand, would rank as “Standard”, due to the speedier supply chain and infrastructure directed to the catering of the oil industry. Those are also the reasons why the risk related to Angola’s infrastructure is fairly low and the manageability quite high, as many of the infrastructure projects target the offshore sector. For Brazil, however, the risk becomes medium and the manageability low, as the infrastructure projects usually undergo slow timelines and there are significant losses that could be generated due to lack of infrastructure or port bottlenecks.

Trade

International trade may be an interesting factor to take into consideration when moving abroad if an offshore company is also involved in maritime transport business.

¹¹ Sources asked to remain anonymous.

The decision factor would therefore favor Angola. Even though Brazil boasts a higher oil production, the country also has a high level of energy consumption and, therefore, imports large amounts of refined oils. The trade portfolio of Brazil is also largely more diversified than that of Angola. While crude petroleum only represents 8.4% of Brazil's total exports, it represents nearly 98% of the Angolan trade portfolio. (Massachusetts Institute of Technology, 2014) The relative comparative advantage of oil exports of Angola in such scenario is much higher, in conclusion.

However, the fact that Angolan exports are heavily oil-dependent, but there is very little internal consumption may also pose a risk. An increase in oil prices, followed by a decrease of global oil imports could be a scenario where oil extraction in Angola would see a slow down. This would not be the case of Brazil, as the country itself is a consumer and would focus more on its internal oil production instead of its imported oil.

Therefore, a high in oil prices could possibly pose great losses for Angola. The trade-dependency, therefore, places Angola in a "Complex" categorization, especially due to the fact that this risk is not manageable, so the losses would be very large. However, as of the nature of risk, the gains could also be very high, when oil trade is at its peak. Brazil, however, places at a "Standard", since its internal consumption serves as a counter-balance for oil price fluctuations, diminishing risk of gains or losses. The risk in Brazil is, therefore, rather low, and the manageability quite high, as both exports and internal production act in favor of the country. Angola, on the other hand, has high risk and low manageability.

Piracy

Maritime piracy is a violent, organized crime and it is appointed as a transnational issue as ships affected by these illegal activities are considered the sovereign territory of the nation whose flag the ship is under. The term "piracy" according to the United Nations on Drugs and Crime " encompasses two distinct sorts of offences: the first is robbery or hijacking, where the target of the attack is to steal a maritime vessel or its cargo; the second is kidnapping, where the vessel and crew are threatened until a ransom is paid" (United Nations on Drugs and Crime, 2009).

Although until recent years this was a phenomenon in decline, the huge increase of piracy in the coast of Somalia has raised new concerns about the maritime security.

Location of Actual and Attempted Piracy Attacks January - December: 2006 - 2010					
Country	2006	2007	2008	2009	2010
Brazil	7	4	1	5	9
Angola	4	1	2	0	0
Total Global Attacks	239	263	293	410	445

Table 7: Location of Actual and Attempted Piracy Attacks (ICC International Maritime Bureau, 2010)

As illustrated in the table above, the number of piracy attacks in Brazil and Angola are not significant and do not provoke an important concern for companies. For this reason the authors have categorized this risk as "standard" for both countries. In terms of manageability, despite the low probabilities of piracy attacks, companies may follow several courses of actions to reduce their vulnerability to piracy such as avoid the pirate areas -in case any of the two nations would become more prone to this type of crime, or enhance vessel security. Thus, the manageability is high for the two nations.

Currency exchange

As stated by DOF's project manager Sigbjørn Stangeland, in one of the interviews gathered for this work¹², in order to avoid risk many companies opt to negotiate part of their contracts in the local currency of the countries they do business in. Therefore, the authors decided that it is important to include currency exchange fluctuations in the risk assessment.

¹² Please refer to the DOF case in section 6.1

The main aspect a company should take into account when entering a different market is the strength of the currency. In all fairness, in the offshore segment most of the contracts will still be negotiated in dollars, but it is important to see through that the country is not facing heavy inflation or other issues that may lead to abrupt changes in currency. Brazil faced a similar problem in the late 80s and early 90s passing through several currency changes, eventually culminating to a complete change of currency, instating the real. The main risk in such a process is to lose the control of the currency held during an abrupt change, losing capital.

Currency fluctuation is interpreted by the authors as an uncertainty in itself, due to the external nature of such problem and poses a low and highly manageable risk for both countries analyzed in this paper. Due to the fact that currency exchange risk can be easily containable, as mentioned before by settling part of the contract in local currencies, both countries score as “Standard” in the categorization. The losses would be slow when the risk is properly managed. So, to sum up, the risk in both countries is rather low and highly manageable.

Below there are graphic tendencies of the Angolan and Brazilian currencies.

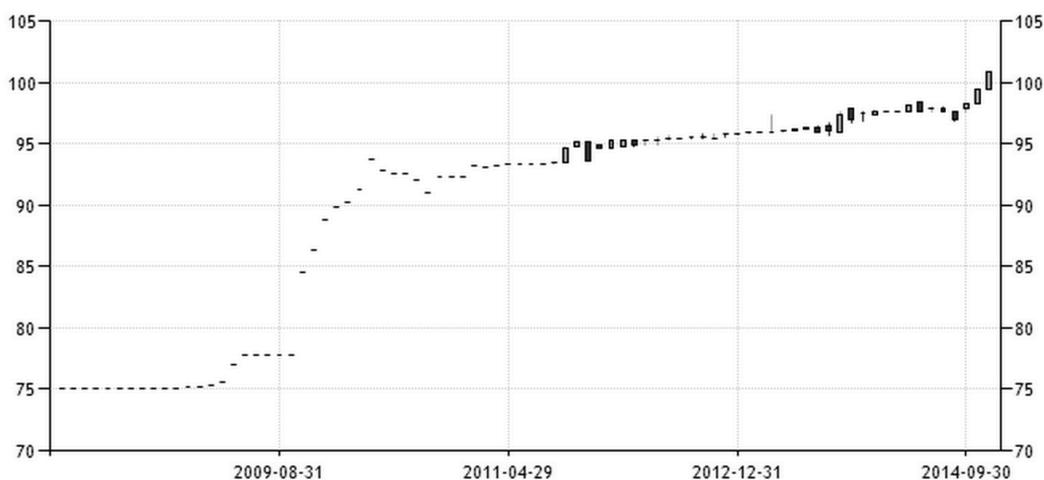


Image 15: Kwanza fluctuation (Transformation Index BTI , 2014)



Image 16: Real fluctuation (Trading Economics, 2014)

Oil Production

As mentioned throughout this work, Brazil and Angola both hold high expectations in production growth for the following years. The pre-salt discoveries are yet to be finished and recently, in May 2014, Brazil discovered a fourth well in the Santos basin, pointing towards even more optimistic perspectives in a short and medium-term future. Petrobras also recently reached the mark of 2,8 million boed. (Investidor Petrobras, 2014) This volume represents an increase from the previous year's production. It is important to take into consideration that this volume is done with low percent of exploration of the pre-salt basins. Therefore, the expectations for the country's production increase are very high and boosted by Petrobras' optimism.

The same can be stated for Angola. Boasting currently a production of 1,6 million bpd, the nation expects to reach 2 million bpd by 2015. (Sonangol, 2014) China, Angola's oil largest importer, has also heavily provided credit to the country.

Pre-salt reserves' exploration has already been started and, even though that are many challenges in the driven, the commerciality of such oil source has already been established. So, in conclusion, although oil production must be seen as an uncertainty, the risk of a decrease in production is highly unlikely. The manageability of such risk however, would be very complicated, as it would incur in major business losses.

This decision problem is rated for both countries as “Standard”. The projections of the pre-salt basins explorations are very optimistic and, considering the timeframe of the extractions, a decline in oil production is unlikely and therefore, poses little threat of losses. The risks of a decline are, therefore, low for both countries. However, such risk is hard to manage and would require companies to plan strategically over time in case of production decline, scoring as “Medium”.

5.3 Summary of Framework

Below one will find a summary of the categorization of the decision problems presented throughout this section. In order to fully assess the framework, the following section will present use cases for both countries, supporting the authors’ analysis and findings.

ANGOLA			
	Ranking		
	Standard	Advanced	Complex
Decision Problems			
Project Schedule (Value chain)		x	
Investment: FDI entry modes		x	
Corruption and Transparency		x	
Bureaucracy			x
Legal System Challenges	x		
Tax Complexities		x	
Financial Sector (Banking system)		x	
Credit ratings	x		
Infrastructure	x		
Legal content and Labor			x
Trade			x
Political stability		x	
Piracy	x		
Currency exchange	x		
Oil production	x		

Table 8: Classification of Decision Problems for Angola (Developed by the authors)

BRAZIL			
	Ranking		
	Standard	Advanced	Complex
Decision Problems			
Project Schedule (Value chain)			x
Investment: FDI entry modes		x	
Corruption and Transparency	x		
Bureaucracy			x
Legal System Challenges			x
Tax Complexities			x
Financial Sector (Banking system)	x		
Credit ratings	x		
Infrastructure		x	
Local content and Labor			x
Trade	x		
Political stability	x		
Piracy	x		
Currency exchange	x		
Oil production	x		

Table 9: Classification of Decision Problems for Brazil (Developed by the authors)

6. Application of the Risk Assessment Framework

6.1 Introduction

In this section, two cases, one focusing on Brazil and another focused on Angola will be presented. Both cases were written by the authors, taking into account literature review on DOF Subsea and Maersk Drilling and interviews performed in 2013 and 2014 with one professional from each company.

Both professionals have had first-hand experience in their respective markets and were able to share their experience on-site. The interviews were carried out focusing on the risk assessment framework criteria, as means to both verify whether the decision problems analyzes were indeed relevant and how such problems affected the move overseas for the companies.

Finally, after describing each case, a presentation of the risk assessment will be executed, in order to show how it could be applied in a practical scenario. Due to the nature of some information, not all decision problems will be taken into account, as sensitive data about each company was not shared during interviews.

Nonetheless, the authors believe that the cases and their respective examples may serve as complete use cases in order to obtain a general idea of how to apply the previously proposed framework.

6.2 DOF Subsea Case

DOF ASA took its first step towards doing business in Brazil in 2001, however it only had its first Brazilian vessel to carry out AH operations in 2005. In 2006, the company established its local subsidiary, DOF Subsea Brasil and completed the building of their first CSV in the country in 2009. Currently the fleet is composed by 5 PSV, 9 CSV and 13 AHTS. The company had more than 1,400 personnel in Brazil and has managed to secure several contracts with Petrobras in the recent years. The financial information of the company is presented as part of the entire group; the company's operating income in 2013 was NOK 9,754 million with an operating profit EBITDA of NOK 3,111 million. The total market value of their fleet, at Q4 2013 was NOK 34,5 billion. (DOF, 2014)

The company has pointed out several challenges faced in Brazil, as shown in one of their corporate presentation. Amongst them, they highlight: the lack of offshore competence in the industry, high turnover, complex tax regime and regulations, complex and expensive importation regime, lack of infrastructure, high local content requirements, Portuguese language, restrict environmental legislation, suppliers and shipyards constraints, visa complexity and union restrictions.

In order to obtain further information on DOF's entrance in the Brazilian market, the authors performed an interview with Sigbjørn Stangeland, project manager for DOF Subsea and one of the professionals working in DOF's moving and operations in Brazil. Stangeland mentioned most of the problems quoted by DOF during the interview and developed on his experience while in the country.

According to Sigbjørn Stangeland the main challenges when establishing an office in the country were the complicated laws, governmental regulations and supply chain bottlenecks. Stangeland also mentioned that, due to Repetro, there was a need to produce vessels in Brazil, to insure local content requirements. The certificate that permitted new construction also took a long time to be acquired, reinforcing the issues that company face in Brazil with project management time lines. He mentioned that the rules were quite different from what was faced in Norway and many cultural challenges.

The language proved to be a barrier as well, as English proficiency in the country is very low and most of the laws, regulations and contracts were in Portuguese. Petrobras also issues most of its documents, such as memorandums and statements, in Portuguese, making it difficult for international professionals to understand immediate impacts.

Stangeland also pointed to the existence of agencies that regulated certain professions, such as Engineers (namely CREA). The consequence was that many professionals from other countries could not exercise their professions in Brazil without obtaining permission from a Brazilian education institution. This required time, effort and, in some cases, a knowledge of Portuguese, as many of the required courses were not taught in foreign languages.

Other cultural business differences faced were the salaries and availability of qualified labor. Technical skilled employees were lacking in the country, and the necessity to fulfill the local content requirements in hiring forced DOF and other companies to perform trainings to meet governmental standards and have the necessary labor force.

Furthermore, the big salary gap was very different from what their experience in Nordic markets. Lower qualified employees had much lower salaries than in Norway, for example. However, highly qualified positions or higher positions that had few applicants demanded very high salaries, much above the Norwegian salaries for the same position. Stangeland said that these issues, alongside the existence of many regulations and demand from labor unions, were a big cultural shock for DOF managers.

Another issue they faced was currency effects. As the real faced a lot of fluctuation, restricting business to dollars eventually resulted in losses. In order to avoid such losses, Stangeland affirms that part of the contract is negotiated in Brazilian reais, as a risk mitigation strategy.

During the first years of their operations, according to Stangeland, the company was careful about sending more vessels to Brazil. As he stated, the return of investments were not as high as expected. He would not mention when the business in Brazil became profitable, but did affirm that DOF operated in Brazil at a loss for some years.

Stangeland affirmed that he believes Brazil will have to become more competitive in terms of regulations and local content requirements. He compared the current situation in Brazil to that of Norway's local content regulations in the 1970s. The foundation and empowering of the Norwegian Ship-owners Association eventually out conquered the "sleeping pillow" situation¹³, affirmed Stangeland. In his opinion, some player in Brazil will have to assume such responsibility in order to stimulate growth and make the market easier to succeed in.

¹³ In Norwegian a "sleeping pillow" is an expression used to refer to situations where many professionals say they will do something to solve a certain problem, without really doing nothing about the matter.

The project manager also mentioned that shipping licenses, from ANTAQ, cost a “fortune” in Brazil and the need for local specialized consulting services “kills the incentives to enter Brazil for smaller companies”. Stangeland estimated a need of a fleet of 5-6 vessels minimum to justify the cost of using such services. He added that all the difficulties with language and the need to use third party professional services gives a feeling of lack of control of what they are doing occasionally.

Amongst other challenges, the project manager also mentioned that the second hand vessel market in Brazil is “rough” and that handling big projects in Brazil occasionally led to a drop in shares prices.

Finally, when asked to do a comparison with the African markets, especially Angola, Stangeland stated that the existence of “international bases” in such countries has helped making it easier to do business for foreign companies.

To sum up, Stangeland’s overview of Brazil focused mostly in the challenges faced and overcome by DOF, as well as some difficulties many companies still face in Brazil. The DOF story reflects that of many other foreign offshore companies: Brazil is a very difficult market, but it is also one of “the” markets to be operating in at the present. Therefore, most offshore companies choose to move to Brazil, despite all challenges.

Based on the interview with Stangeland, the framework will be applied taking into account the interviewees’ comments about each decision problem. The idea is to analyze how the framework could have mitigated risk and whether the authors’ categorization of each decision problem is accurate according to what DOF experienced in the country. Please refer to the end of this section to have access to the final table with the findings.

Overall, the application of the framework showed that indeed the decision problems’ categorization performed by the authors was valid for Brazil and highlighted the key issues DOF Subsea faced in their experience in the country. Therefore, the validity of the framework is proven in a use case. Furthermore, the classification showed that DOF had indeed to seek for external guidance in many of the cases suggested by the authors throughout Section 5.

The main difference between the framework suggested and DOF's experience lays in the "Corruption" category. More than one DOF professional interviewed ¹⁴ confirmed having been exposed to corruption in Brazil and that, in some cases, there was a need of external assistance for advice on how to deal with such situations.

As mentioned by the interviewee, the problems were overcome by DOF, but many were unexpected and the company had to take a proactive initiative towards facing them. The advices given for companies are to not underestimate the challenges narrated by experienced professionals and have a "significant" size of business before entering Brazil, in order to endure the difficulties of the low supply chain while establishing.

¹⁴ The authors also had access to DOF professional during a company presentation that took place in the Norwegian School of Economics in November 2013.

BRAZIL – DOF Subsea Use Case

Decision Problems	Ranking			Argument	Comment
	Standard	Advanced	Complex		
Project Schedule (Value chain)			x	DOF was a very large group before entering Brazil and hired specialized external help.	From Interviewee Companies have to be “big enough” before considering the Brazilian market. The supply chain was slower than predicted.
Investment: FDI entry modes		x		DOF established the DOF Brasil Group five years after starting to do business in Brazil.	The creation of the Brazilian subsidiary was key in the process of establishing a business foundation in the country.
Corruption and Transparency		x		Brazil’s corruption level was different from that experienced in Norway and did pose challenges for DOF in certain cases.	Only faced corruption at a personal level when stopped by police at traffic. Also narrated that other colleagues mentioned seeing
Bureaucracy			x	DOF has a law office specialized in Maritime Law that represents the DOF Brasil Group in its Brazilian Activities	External law counseling was extremely needed.
Legal System Challenges			x		
Tax Complexities			x		
Financial Sector (Banking system)	x			This was not a key factor for DOF.	-
Credit ratings	x			This was not a key factor for DOF.	-
Infrastructure		x		DOF faced big challenges with lack of infrastructure and difficulty in finding suppliers.	Interviewee mentioned poor condition and mentioned that foreign companies join ventures to build subsea clusters in order to overcome setbacks from lack of

					structure.
Local content and Labor			x	Along with other foreign companies, DOF started a program to train low-income teenagers for an offshore career. To understand and meet the local content requirements, there was also need for specialized consultancies	The salary differences and the lack of qualified trained personnel for technical levels was the biggest challenge. Language was also an unexpected challenge, as Portuguese is a need. The interviewee learned the language while in Brazil.
Trade	x			DOF was not influenced by trade patterns	-
Piracy	x			DOF was not affected by piracy in Brazil.	-
Political stability	x			DOF was not affected by political instabilities.	The interviewee briefly commented on protests taking place in Brazil.
Currency exchange	x			There was no need for external assistance.	Part of contracts was dealt in local currency.
Oil production	x			DOF entered Brazil previous to pre-salt findings but experienced deep growth by winning pre-salt related contracts.	The growth of DOF's fleet in Brazil was mainly due to the discovery of pre-salt.

Table 10: Classification of Decision Problems adapted to DOF Subsea case

6.3 Maersk Drilling

Maersk drilling is one of the five core business areas of A.P. Moller - Maersk Group - a worldwide organization with roughly 110,000 employees and present in 130 countries. Maersk drilling is a drilling rig operator headquartered in Copenhagen, Denmark. The drilling company owns and operates 26 offshore drilling units, including 6 ultra harsh environment jack-ups, 4 harsh environment jack-ups, 2 premium jack-ups, 3 ultra deep-water semi-submersibles, 1 mid-water semi-submersible and 10 drilling barges (Maersk Drilling Facts and Figures, 2014). According to the company's annual report 2013, their revenue in 2013 was USD 1,972 millions with an operating profit EBITDA of USD 863 millions.

Maersk Drilling has been operating offshore in Angola since 2012, however A.P. Moller - Maersk Group entered the country in 2005 with their subsidiary Maersk Oil, providing insights about the market situation to Maersk drilling. In order to gain a better understanding of the company's operation in Angola, the authors performed an interview to a team member in Maersk drilling, however the employee requested to stay anonymous during the development of the case. Hence the authors will denote this person through out the case study as Ismael.

The authors initiated the interview by asking how did Maersk Drilling approach the market and their entry strategy? According to Ismael, the company evaluated the market entry options within joint venture, offering services from the HQ or establishing a branch in the country. We decided that due to the value of the brand, a joint venture was not of a great interest, mainly because Maersk is already a known brand and we wanted to have full control of operations in the area. In addition, the market forecast showed a great potential for the future, so we saw it as a long-term investment for the company.

The interviewer continued by pointing out that compared to the situation of Angola is much different to how it was five years ago, as the level of infrastructure has improved dramatically, therefore companies do not need to make high investments in this matter. According to Ismael, Maersk drilling currently has operations in 14 countries, which 9 of them are in developing countries. Many of

these nations have inserted local content requirements into the governmental and regulatory frameworks. Angola is no exception to this rule, as the country's local content requirement specifies 70% local staffing.

One of the biggest challenge for Maersk drilling, was the labor force status, as quoted by Ismael *"Angola has been in a civil war for many years, hence the labor force in the country is very tiny, and most of them do not stay in a job for a long time. Part of the deals companies make with the government is to bring incentives to the Angolan labor force and you have to be ready to train people, as even though at the beginning you can bring expats, the number of those expats will be limited after a couple of years"*.

Despite the difficulties to recruit enough skilled employees, Maersk drilling has developed an "Angolanisation" 3-year plan focused on training, educating and employing local talent. The target is to reach 3,000 new employees by 2018 says Ismael¹⁵.

In terms of wages, Ismael points out that Luanda is a very expensive city for foreigners, hence there is a great difference of wages between wages for expats and local employees, as the first ones receive a higher salary. Yet, the visa application poses a troublesome challenge, as obtaining work permit for non-locals employees is a difficult and lengthy process.

Contrary to Angola's neighboring countries, the language is not a significant barrier, as Ismael explains *"Due to the civil war a lot of Angolans moved to other Botswana, Namibia and South Africa where the language was English or French, so for companies is pretty comfortable as they can run their businesses in English"*.

Another issue the authors inquired is how the company manages corruption, as according to the findings, corruption is among the greatest constraints for business operations in the country. Ismael affirms that Maersk Drilling has a rigorous anti corruption policy, and despite the existence of corruption in Angola, it is

¹⁵ 3000 new employees represent the growth of employees for Maersk Drilling global. According to the sustainability report Maersk Drilling 2013, the total number of employees is 4029, out of which 3% hold Angolan nationality.

perfectly possible to have contracts accepted by the government without improper payments or unethical behavior. Yet, governmental bureaucracy has been a constraint for the business operations, mainly due to all the processes required to start operating in the country.

Furthermore, in terms of sustainability, engaging with the local stakeholders and create programs for community development has been an important approach for Maersk Drilling. Ismael states that in partnership with UNICEF, they have provided training to 50 Angolan community health workers. Due to this work, they received acknowledgement from the authorities for their constructive approach to local content and investing in community development. "Constant dialogue with the government is a huge asset for us" says Ismael.

Finally, the authors asked if he could give any advices to future companies considering entering the Oil business in Angola: what would be your advice? In order to have a smoothly entry to the country, for the governmental procedures, it is very important for companies to submit all their information in Portuguese and to have expert people in the language to ensure no delays or rejections in the paper work. You also need to submit a detailed plan with the activities the company will perform in the country and how you will deal the local content requirements. In other words, you need to show the government your commitment of investing in the country.

Maersk Drilling is expanding its business into new markets in emerging economies. In the case of Angola, it is expected that the country may become the largest oil producer in the African continent during the next few years. As Ismael presented through out the interview, the country poses key challenges such as recruiting local people, security concerns, and bureaucratic business environment. Ismael finished by adding that "the team in Maersk Drilling in Angola is putting a lot of effort into actions that generate shared value and we our plans are to stay in the country for years into the future".

Following the same method applied for the DOF case, based on the interview with Ismael, the framework developed in the previous section with be applied to the Maersk Drilling case. The intention of this analysis is to observe whether the

framework could have mitigated the risk and if the categorization performed by the authors, reflects the experience of Maersk Drilling in Angola. Please refer to the end of this section to have access to the final table with the findings.

The main differences between the framework proposed and the experience of Maersk Drilling relates to the categories of "Investment: FDI entry mode", "Trade" and "Political stability". The first one, is certainly company-specific, as the already establish subsidiary "Maersk Oil" provided assistance to "Maersk Drilling", allowing the firm a smooth entry to Angola. As per the last two categories, in spite the authors assigned a higher risk to both decision problems, the interviewee pointed out that Maersk Drilling has not been affected by political situations and regardless the fear of the oil prices falling, until now this has not represented an important concern for the company.

In general, applying the framework to the experience of Maersk Drilling in Angola showed remarkable similarities to the categorization of decision problems performed by the authors, proving the main risk companies could endure in the Angolan offshore industry.

ANGOLA – Maersk Drilling Use Case

Decision Problems	Ranking			Argument	Comment
	Standard	Advanced	Complex		From Interviewee
Project Schedule (Value chain)		x		As one of the core businesses of A.P. Moller - Maersk Group, the company already had already some insights about the Angolan market, as Maersk Oil" has been present in the country since 2005.	Already having some knowledge about the country through the subsidiary "Maersk Oil" it was "a matter of preparing all the paper work and detail plan to the respective institutions".
Investment: FDI entry modes	x			Maersk Drilling established a subsidiary in Angola and started operations in 2012.	The company decided that due to the value of the brand, a joint venture was not of a great interest, as Maersk Drilling is already a known brand and they wanted to have full control of operations in the area.
Corruption and Transparency		x		The high-level of corruption in Angola is still a great challenge for companies operating in Angola, thus firms must follow strict policies in order to avoid illegal practices.	Interviewee affirms the rigorous anti corruption policy of Maersk Drilling, and despite the existence of corruption in Angola, it is perfectly possible to have contracts accepted by the government without improper payments or unethical behavior.
Bureaucracy			x	As the interviewee pointed out, bureaucracy continues to be a major constraint for the company's operations	Governmental bureaucracy has been a constraint for the business operations, mainly due to all the processes required to start operating in the country.

Legal System Challenges	x			The new foreign-exchange legislation are difficult to comply, as the level of Angola's Banking system is underdeveloped	-
Tax Complexities		x		Professional expertise is needed in order to avoid wrong interpretation/calculations.	The interviewee mentioned that for personal income tax, taxes paid to the country by foreigners are almost inexistent.
Financial Sector (Banking system)		x		Underdeveloped, posing a risk for companies as the law stipulates that transactions from offshore companies must go through Angolan banks.	-
Credit ratings	x			This was not a key factor for Maersk Drilling.	-
Infrastructure	x			Despite the lack of infrastructure in Angola, the situation has greatly improved after the civil war, and since Maersk Drilling did not enter the country until 2012, it did not posed a major challenge for the company.	Interviewee mentioned that compared to the situation of Angola to how it was five years ago, as the level of infrastructure has improved dramatically, therefore companies to not need to make high investments in this matter.
Local content and Labor			x	The biggest challenge for Maersk drilling was the labor force status, specially because the country's local content requirement specifies 70% local staffing.	Angola has been in a civil war for many years, hence the labor force in the country is very tiny, and most of them do not stay in a job for a long time. Part of the deals companies make with the government is to bring incentives to the Angolan labor force and you have to be ready to train people, as even though at the beginning you can bring expats, the number of

					those expats will be limited after a couple of years.
Trade		x		Maersk Drilling was not influenced by trade patterns	The interviewee commented that there is an unofficial fear in the industry that the oil prices continue decreasing, as the oil extraction could slow down, however he mentions that this could just be a momentary situation and that the company so far has not faced any issues regarding this topic.
Piracy	x			Maersk Drilling was not affected by piracy in Brazil.	-
Political stability	x			Maersk Drilling was not affected by political instabilities.	-
Currency exchange	x			Transactions must be made in Kwanzas - Angola national currency.	-
Oil production	x			The government of Angola has recently put on auction 10 national oil fields. The country plans to increase production from 1.7mn bpd to 2.2mn bpd in 2018.	The market forecast showed a great potential for the future as Angola may become the largest oil producer in Africa, so we saw it as a long-term investment for the company.

Table 11: Classification of Decision Problems adapted to Maersk Drilling case

7. Conclusion

As mentioned previously, the authors believe that the main takeaway of this work is to propose a framework for risk assessment upon entering developing markets, specifically Brazil and Angola. The choice of the two countries was due to the massive opportunities with the pre-salt discoveries. The pre-salt basins attract many foreign investments and are definitely one of the most relevant oil discoveries in recent years.

The outlining of a series of decision problems provides individuals from both corporate and academic backgrounds with a list of factors that should be taken into consideration in order to prepare the company for the internationalization process in developing markets. The main purpose of doing such assessment is to mitigate risk, thus preventing losses.

It is important to highlight that each company will have a different risk assessment, according to its own characteristics, culture and strategic planning. The scenario businesses will face in each country will be location-specific and will be the same for all companies.

However, the actions taken in order to interact within such scenarios will vary within different institutions. For example, one specific scenario of high risk can be a strategic choice for one company, as they are prepared to tackle such risk and have high gains. But the same scenario will not necessarily be optimal for another company, even if both firms are in the same sector. Therefore, the framework presented is a means of giving companies an overall idea of the challenges one will encounter in the Brazilian and Angolan markets, how low or high is the risk businesses face, understand the experience of other companies and scholars and, finally, how to manage such risk, mitigate it and be successful in their market of choice.

Furthermore, taking risk should not be seen as negative. Low risks that are not manageable are more problematic than high risks that also have a high level of manageability. One of the best examples presented in this work is the approach to project management in Brazil. There is very high uncertainty in this scenario, as deadlines are not met and major losses can occur. However, if prepared for such

scenario, a company can sustain itself while following the Brazilian pace of business. Also, a company should be prepared to hire external qualified assistance that will ensure that all legal conditions are met and the process is under control. Taking high risk is one of the steps to obtain high returns; therefore, the most important factor to take under consideration is whether a specific company would be able to manage the risk, regardless of its scale.

As the authors presented in the introduction, this work intended to start a discussion on a fairly new topic. The limitations on the literature available, especially in English, pose enormous challenges for many academics that wish to discuss the offshore internationalization in emerging markets.

It is central to remind that this thesis was qualitative, and quantitative data was unavailable to the authors. In general, this poses an issue as decision problems had to focus on qualitative and strategic challenges of offshore companies moving overseas. The authors invite scholars and professionals with access to data to apply the framework, taking into account other decision problems such as the time frame to break even in an emerging market, the cash flow difficulties and the net present values of an internationalization project. In the future, both authors also expect to be able to improve the proposed framework and develop it towards a quantitative approach.

The authors also would like to highlight the importance of this work in the field of international strategy and cross-cultural management. One of the common challenges many companies face is the lack of understanding of cultural differences while doing business in different countries. Many theorists such as Michael Porter have proposed frameworks in order to assess the internationalization process. The authors believe that, even though this is mainly proposed as a risk assessment framework, it could also be used from a corporate strategic perspective. In other words, this could be an industry-specific international strategy framework, focused on risk assessment.

Overall, the authors believe that this framework will be a great contribution to offshore companies seeking to participate in the pre-salt business. It will also be a contribution to academics researching developing markets and stimulate further production on the topic. The main findings and contributions are the two frameworks and categorizations of the decision problems, but the authors believe that there is still

many other aspects that can be analyzed and hope that this will become a seminal piece as many works on offshore developing markets will follow.

In order to conclude this assessment, the authors will present a comparison between the two countries analyzed throughout this work. Such comparison will focus on each country's particular scenario for the decision problems mentioned in Section 5, taking into account the risk related to each key issue and the manageability of such issue.

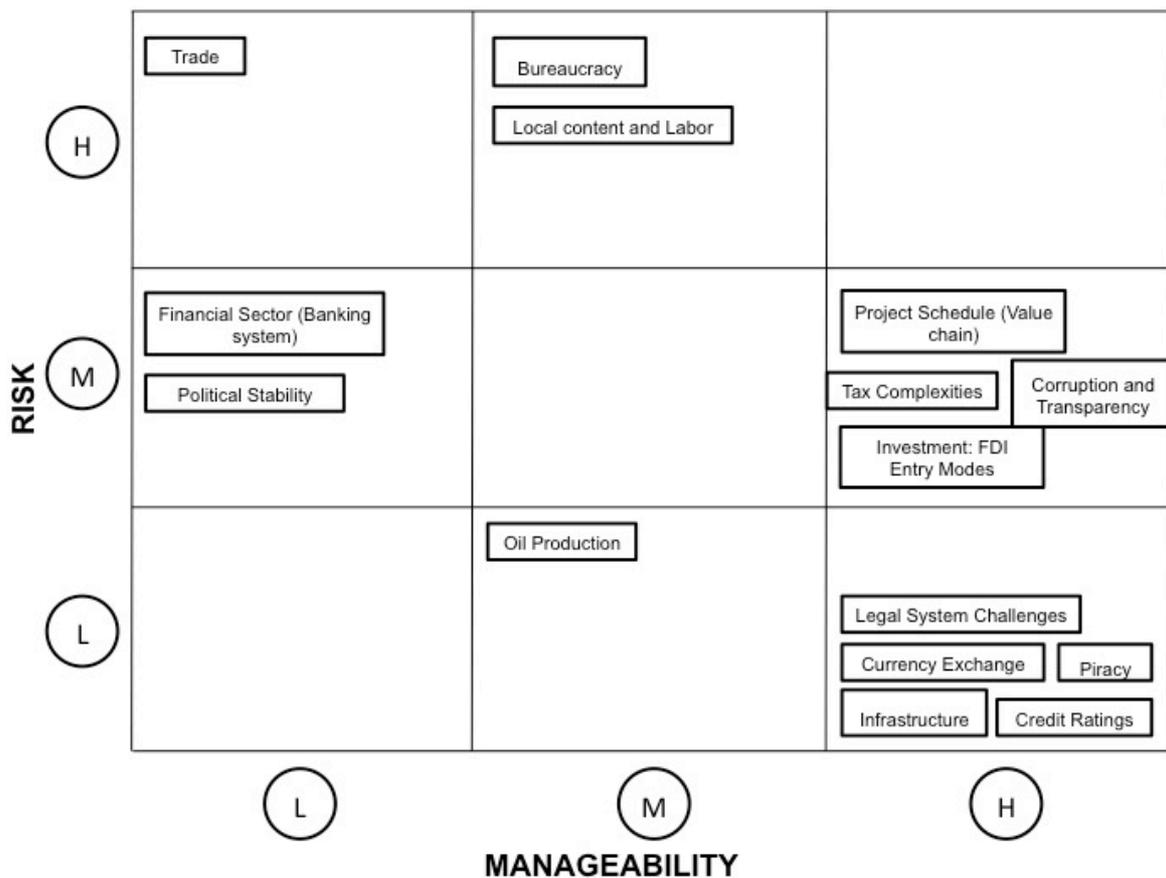


Image 17: Angola Risk x Manageability (Developed by authors)

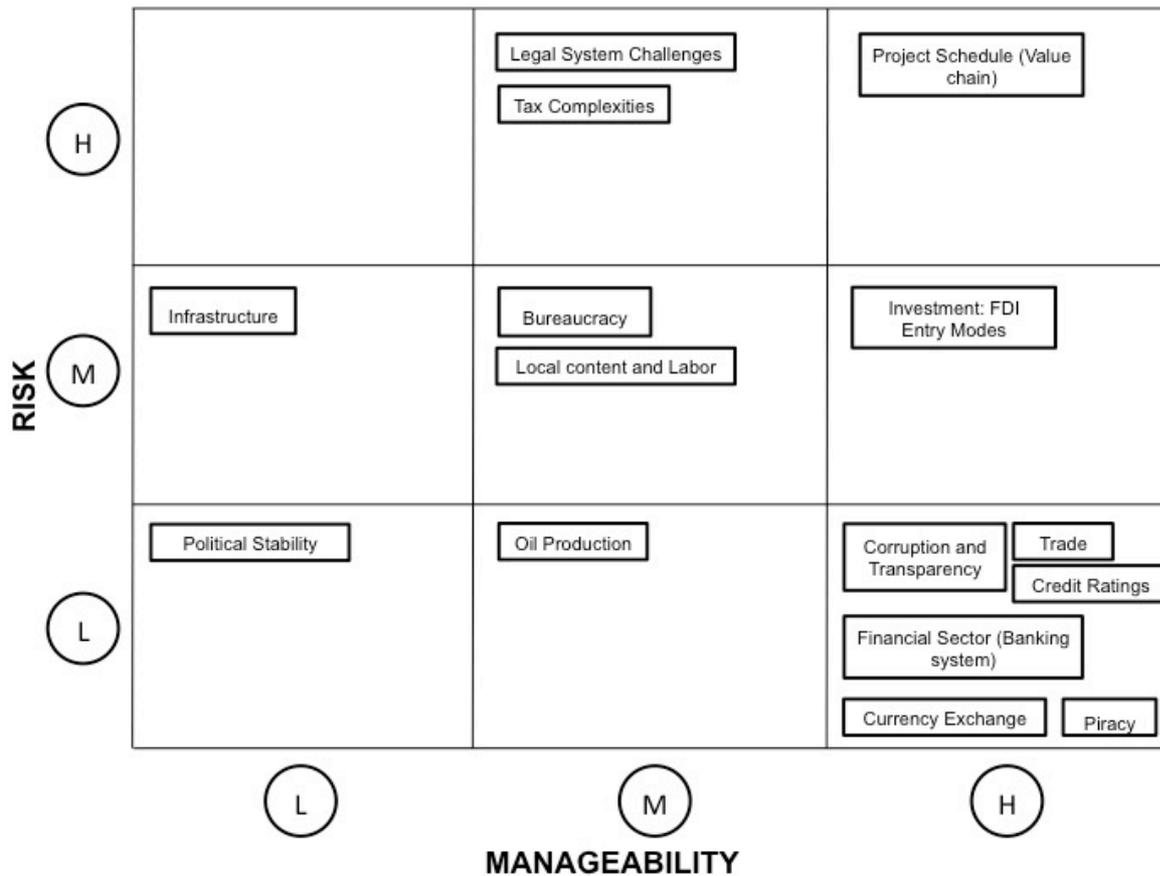


Image 18: Brazil Risk x Manageability (Developed by authors)

As one may notice in the graph, both countries have differences and similarities within their particular risks. The manageability of the risk also differs according to each market and the explanation for such reasoning was found throughout Section 5. The main intention behind the graphic representation of this comparison is to summarize the authors' findings and provide to the reader a quick assessment of the countries' differences in each criteria.

The comparison between the two countries shows that the final choice of where to move centers on the company assessing its own strengths and weaknesses. As mentioned before, knowing the company's own particularities is the main key to applying a risk assessment framework efficiently.

Finally, the authors believe that both countries definitely pose challenges upon entering but also are amazing opportunities for offshore companies. The risk of internationalization both carry trials and gains; and the authors hope that this work will contribute to companies to engage risk in their strategy and use it wisely in their favor when expanding overseas.

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APPENDIX A

Institutions in Brazilian Oil & Gas sector

ANP (National regulatory agency): The ANP (Agência Nacional de Petróleo, Gás e Biocombustíveis) is the National Regulatory Agency of Oil, Gas and Biofuels. The agency was founded following the law nº 2.455 of January 14th of 1998. ANP promotes the bidding rounds and administrative contracts representing the union of concessionaries in E&P activities.

IBP (Brazilian Petroleum Institute): IBP (Instituto Brasileiro de petróleo, Gás e Biocombustíveis) is a private organization with an estimated of 230 associated companies. The objective of IBP is to develop the national sector of oil and gas by increasing competitiveness, sustainability, ethics and social responsibility. (Scottish Enterprise, SDI and Subsea UK, 2012)

ONIP (National Organisation of the Petroleum Industry): ONIP (Organização Nacional da Indústria do Petróleo) is a national organization that act as an between companies, suppliers and government institutions within the oil sector with the main purpose to enhance competitiveness within the sector.

ABPIP (National Association of Independent Producers of Oil and Gas): ABPIP (Associação Brasileira de Produtores Independentes de Petróleo e Gás) the main objective of this agency is to promote, defend and stimulate the development of E&P activity of oil and gas in Brazilian basins. ABPIP as an association represents and defends the consolidation of the independent producer segment by working to eliminate obstacles as well as incentivising policies for smaller and medium sized companies. (Scottish Enterprise, SDI and Subsea UK, 2012)

MME (Ministry of Energy & Mining): MME (Ministério das Minas e Energia) as a ministry regulates the oil and gas market in Brazil.

CADFOR (Suppliers Registration System): CADFOR (Cadastro de Fornecedores) is a system created by ONIP in collaboration and with the major oil companies operating in Brazil (Scottish Enterprise, SDI and Subsea UK, 2012). The goal of CADFOR is to obtain qualified information about suppliers of goods and services operating in the oil industry. Before becoming a member CADFOR supplier's list the firm must first be qualified by the ONIP oil and gas requirements

APPENDIX B

Corporate and Shareholders' Taxation

Profits, income and capital gains earned worldwide by Brazilian tax residents are subject to Brazilian corporate income taxes:

Brazilian corporate income tax (IRPJ - Imposto de Renda sobre Pessoa Jurídica): is a corporate revenue tax that applies to the net profits of any legal entity in Brazil. IRPJ is a federal tax paid by public or private legal entities residing in Brazil, regardless on their purposes or nationality. This taxes 25% on the net taxable income (it is applied at a basic rate of 15%, plus a surtax of 10% on the annual income that exceeds R\$ 240,000.00 per year or R\$ 20,000.00 per month) (Mello, 2012).

Social contribution on net profits (CSLL - Contribuição Social sobre o Lucro Líquido): this tax is a contribution destined to finance the Brazilian social security system and its payment is required from every legal person resident in Brazil. Any corporation that is incorporated in the country must contribute. The CSLL is levied on net profit at a rate of 12% for financial institutions and 9% for other institutions (Mello, 2012).

Dividend distributions from Brazilian companies are currently tax exempted. Capital gains earned by non-residents on the sale of investments in Brazil are subject to withholding income tax at a general 15% rate (25% rate if the gain is registered by a company located in a tax heaven jurisdiction).

Remittance of interests and royalties to non-residents, as a general rule is also subject to withholding income tax at a general 15% rate (25% rate if the beneficiary is a company located in a tax heaven jurisdiction).

Goods Accepted Under the REPETRO Law:

As of today, there is a huge controversy between the government and the companies about which goods are subject to the system of temporary admission under the REPETRO law. However the SRF Normative instruction no. 87/00 has disclosed a list of goods that are subject to acceptance by REPETRO. The following are the main goods accepted under REPETRO:

1. " Vessels designed for research and production activities in oil or natural gas deposits and designed for support and storage in said activities;
2. Machines, devices, instruments, tools and equipment designed for research and production activities in oil and natural gas deposits;
3. Rigs for the drilling and production of oil or natural gas, as well as those designed to provide support for said activities;
4. Automotive vehicles assembled as machines, devices, instruments, tools and equipment designed for research and production activities in oil and natural gas deposits;
5. Structures designed for supporting rigs" (LDC Comex 360°: Solução integrada para gestão de regimes aduaneiros)

APPENDIX C

How to obtain a license in Angola and the Oil concession:

Prospecting license

Companies seeking to initiate operations in Angola may apply to the Minister of Petroleum for them to issue a prospecting license, which is to determine the oil potential of a given area. The prospective license is given for a maximum term of three years. The right of this license is not exclusive to the firm whom the license was granted. According to the law, the data produced by the firm carried out under the prospecting license are state property and may be used by the National Concessionaire Sonangol.

Petroleum concession

Furthermore, firms interested in applying for an oil concession in Angola territory (excluding the application for a prospecting license described above) must join with the National Concessionaire Sonangol. Prior to the association, the government analyzes the firms' competences, technical and financial capacities and may lead to one of the three following types of association:

1. The incorporation of the firm to the National Concessionaire
2. A consortium agreement
3. A production sharing agreement

The terms of the concession, periods and phases of the oil extraction are defined in the concession decree. Decree 48/06, of September 1, 2009, establishes the rules and procedures of public tenders to undertake petroleum operations in Angola. According to this decree, the principle of public tender also applies to the contracts of service and procurements required to perform oil operations.

On the other side, when the interested party to associate with a foreign company is the National Concessionaire, the Ministry of Petroleum in Angola issues a public call for tenders to select the companies most suitable to associate with Sonangol for the oil exploration and production in a specific area. Direct negotiation with the National Concessionaire may only occur if there is a lack of tenders, or the

companies applying do not cover all the necessary requirements (The International Energy Agency (IEA), 2006)

The concession can be terminated by different manners, either due to an agreement between the government and the National Concessionaire, termination of the contract, or due to lack of technical or economic feasibility of oil production in the area of concession.¹⁶

¹⁶ According to the Decree 1/09 of January 27, the extermination of the concession may also occur due to the following reasons: i) Abandonment of the oil field by the foreign firm without previous authorization of the Minister of Petroleum. ii) Extraction of any mineral not covered by the concession contract

APPENDIX D

Brazil

Standard & Poor's			
	Local Currency Rating/Outlook	Foreign Currency Rating	T&C Assessment
Brazil	BBB-/Stable	BBB-	BBB+
<i>Source: Standard & Poor's</i>			
Fitch			
	Long-term and Local Currency Rating/Outlook	Short-term Foreign Currency	Country Ceiling
Brazil	BBB/Stable	BBB	BBB
<i>Source: Reuters</i>			
Moody's			
	Local Currency Rating/Outlook		
Brazil	Baa2/Negative		
<i>Source: Moody's</i>			

Angola

Standard & Poor's			
	Local Currency Rating/Outlook	Foreign Currency Rating	T&C Assessment
Angola	BB-/Stable	BB-	BB-
<i>Source: Standard & Poor's</i>			
Fitch			
	Long-term and Local Currency Rating/Outlook	Short-term Foreign Currency	Country Ceiling
Angola	BB-/Stable	B	BB-
<i>Source: Reuters</i>			
Moody's			
	Local Currency Rating/Outlook		
Angola	Ba2/Stable		
<i>Source: Moody's</i>			