

# Analysis of Sri Lankan Petroleum Fiscal System – Petroleum Resources Agreement - 2007

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## Abstract

Economic structure of the World Oil and Gas Industry significantly differs from other industries due to the greater risk and uncertainties associated with the industry. Petroleum fiscal regime of a county defines the set of laws, regulations and agreements related to petroleum exploration and production. Since Sri Lankan basins are not much known to the petroleum world, attraction of technically and economically capable International Oil Companies for the investment is highly dependent on the Sri Lankan petroleum fiscal terms. The main objective of the study is to analyze the existing Sri Lankan petroleum fiscal systems. Fiscal model created with the MS Excel according to the terms defined in 2007 was used to calculate cash flow of government and contractor, contractor and government takes, IIR value and payback period in dynamic environment conditions. Behaviour of above parameters under three variable conditions (by varying price of oil, reservoir size and life span of the project) were used to decide the attractiveness of the fiscal system. Results show that contractor share is decreasing in un-favourable conditions with the terms defined in 2007 fiscal system.

**Keywords:** Contractor Take, Fiscal Regime, Government Take, Regressive

## 1 Introduction

Due to the greater risks and uncertainties associated with the petroleum industry, economic structure of the industry significantly differs from other industries in the world. The need of relatively high initial investment, investment for long term, negative cash flow during the first few years and last years of the project life and higher volatility of the oil price are the key risk factors associated with petroleum projects [1]. Generally, there are two main parties in a petroleum project; Host

Government and the Contactor (International Oil Companies). Even though the both parties' objectives are same, the profits will be shared among them according to the fiscal regime of the country.

A petroleum fiscal regime of a county defines the set of laws, regulations and agreements related to petroleum exploration and production projects. It is the main tool that determines how the returns from hydrocarbon projects are shared between the state and companies. The fiscal regime can be used to convert a government's policy

into economic signals to the market, and influence investment decisions, provided that the framework is clear. In order to devise and apply the appropriate policies, strategies and tactics, each must assess its position in the global marketplace and evaluate its particular situation, boundary conditions, concerns and objectives because the companies look for investment opportunities that suit their corporate strategies and risk-reward profiles. As there are differences between the fiscal regimes in different countries, it's important to evaluate the profitability of the project and provide a framework to design an effective fiscal regime [2].

There is a greater risk associated with petroleum projects and the risks associated with these projects can be either due to the nature of the exploration and production process and the volatility of petroleum prices. These risk factors are the major reason which makes economic data imprecise for project evaluation [3].

The fiscal systems available in the world can be categorized in to two main types, which are contractual systems and concessionary systems. In both systems, contractual and concession, the investor or the International Oil Company has to bear all costs and risks associated with the project. Two systems differ from each other by the way that they define the ownership of hydro carbon resources. In the concessionary system, ownership of the hydrocarbon transfer to the investor at the wellhead and in contractual systems either the contractor owns a part of the production or a service charge is being paid for the contractor [4]. Initially Sri Lankan petroleum industry commenced exploration activities in 1967. Since then, there have been some

oil and gas exploration wells drilled in Sri Lanka. During 1972 - 1975 Soviets drilled, Pesalai 1, 2 and 3 and then Palk Bay 01 and Delft 01 were drilled in 1976, and Pedro 01 and Pearl 01 were drilled in 1981, where no occurrence of petroleum reservoirs were found. The availability of hydrocarbons in Sri Lanka were confirmed in 2011 with the exploration work carried out by Cairns Lanka (Pvt) Ltd. Even though Cairns Lanka invested for the exploration works and made a discovery, they left the field without developing.

Sri Lanka has now been confirmed with availability of petroleum reserves with the explorations carried out. Being a developing country, Sri Lankan government doesn't equip with the financial and technical capabilities that require investing on hydrocarbon projects. Since Sri Lankan basins are not much known to the petroleum world, attraction of technically and economically capable International Oil Companies for the investment is little difficult. Therefore, Sri Lanka should have an effective and attractive petroleum fiscal system to develop their resources. The main objective of the study is to analyze the Sri Lankan petroleum fiscal system used in 2007.

## 2. Methodology

For this analysis, Petroleum Resource Agreement published in 2007 was studied and the Fiscal model was created with the MS Excel. Cash flow for the project according to the terms defined in 2007 can be presented as Figure 1.

## 2.1 Cash Flow Generation Model

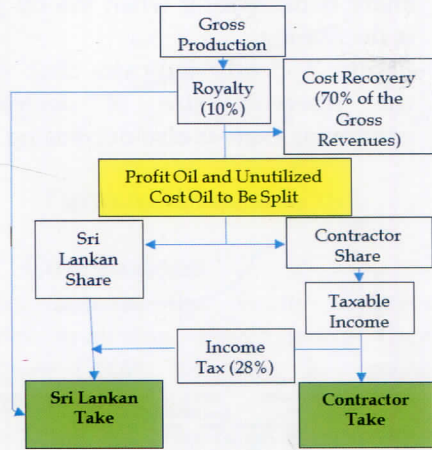


Figure 1: Cash Flow for the Project for 2007 Fiscal System.

## 2.2 Elements of the Agreement Regarding Government Position

Key features in the agreement are as follows:

- **Signature Bonus**  
US\$1,000,000
- **Production Bonus**  
US\$50,000,000
- **Environmental fund**  
An annual amount of US\$ 100,000.00 per Development Area during production phase.
- **Recovery of cost of petroleum**  
The maximum amount of Cost Petroleum to which the Contractor shall be entitled, shall be 70% of the total value of the Petroleum Produced and Saved from the Contract Area.  
The recovery shall be made of;
  - First royalty payments
  - Next Production Costs and Production Bonus
  - The Site Restoration and Decommissioning fund
  - Exploration Costs and Signature Bonus
  - Development Costs

## • Product Sharing of Petroleum

A party's share of Profit Petroleum in any Financial Year shall be calculated on the basis of the investment multiple actually achieved by the contract or at the end of the preceding financial year for the contract area.

Table 1: Government Share of Profit Petroleum According to the IM.

Investment Multiple of the Contractor (IM)	Government Share
IM < 1.5	0.15
1.5 ≤ IM < 2.0	0.18
2.0 ≤ IM < 2.5	0.20
2.5 ≤ IM < 3.0	0.40
3.0 ≤ IM < 3.5	0.60
3.5 ≤ IM	0.85

## 2.3 Analysis of Fiscal Regime

Once the cash flow for the project was generated, it was analysed to determine the attractiveness of the system. In order to attract investments, the fiscal regime must be progressive on the dynamic conditions. Generated cash flow model was analysed for three dynamic conditions: varying the price of oil, varying the annual production and varying the project lifetime.

- Varying the price of oil  
Price of the oil was varied from US \$30 to US \$ 75. It was assumed that the project life span is 20 years. Production profile used for the calculation is presented in Table 2.

Table 2: Production Profile.

Year	Production MBBL	Year	Production MBBL
1	0	11	37860
2	0	12	37790
3	0	13	37460
4	32190	14	36940
5	33990	15	36010
6	34120	16	34143
7	33510	17	31998
8	33690	18	29452
9	37680	19	26581
10	38090	20	23483

Figure 2 shows that the contractor share is decreasing when the oil price is decreasing.

Figure 3 clearly indicates that when the reservoir size is decreasing contractor share is also decreasing.

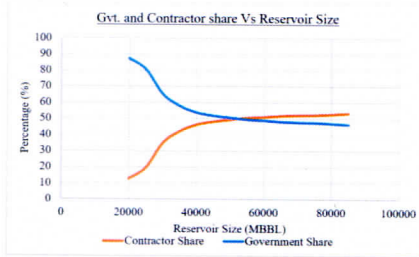


Figure 3: Reservoir Size vs. Contractor share & Government.

Figure 4 indicates that contractor share is decreasing till 10 years of life span and thereafter it started to increase with the rise of life span of the project.

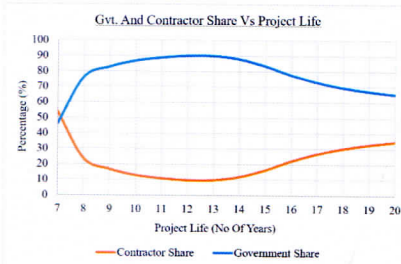


Figure 4: Project Life vs. Contractor Share & Government Share.

- Varying the annual production (Size of the reservoir)  
It was assumed that the price of the oil is USD \$ 50 per bbl. and oil field would operate for 20 years.
- Varying the production life time (annual production is kept constant)  
It was assumed that the price of oil is USD \$ 50 and yearly production is 30,000 Mbbbl

### 3 Results

#### 3.1 Analysis of the Existing Fiscal System 2007

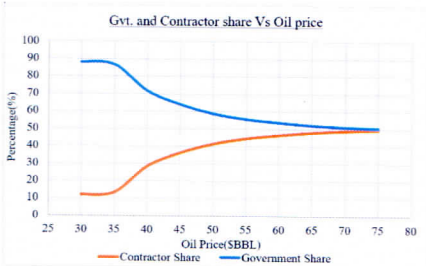


Figure 2: Oil Price Vs Contractor Share & Government Share.

As shown in Figure 5, IRR value tends to decrease with the reduction of the oil price. The trend is opposite for the payback period as illustrated in Figure 6.

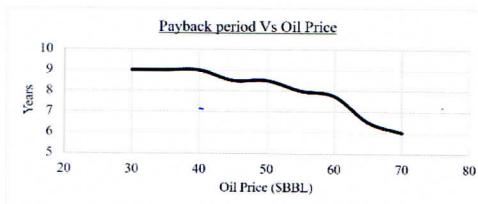


Figure 5: Payback Period vs. Oil Price.

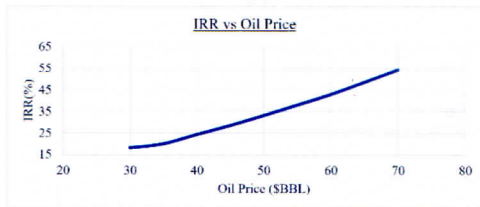


Figure 6: IRR vs. Oil Price.

#### 4 Conclusions

According to the results observed from analysing the existing fiscal regime (2007), following key points could be observed.

- When the price of oil is increasing, the contractors share increases and the government share decreases.
- When the price of oil is decreasing the contractors share decreases and the government share increases.
- With a reduction of reservoir size, the contractors share decreases and the government share increases.
- With the increment of reservoir size, the contractors share increases and the government share decreases.
- When the project lifetime is increasing, the contractors share decreases and the government share increases.

Above observations clearly indicates that the fiscal terms defined in 2007 are not in favour for the contactor in unfavourable economic or technical conditions.

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