



The Contractual Implications of the Tanzania Upstream Petroleum Fiscal Regime

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Key messages

- Careful monitoring of field development costs by the government is vital. This is especially needed for smaller fields with low production levels and potentially higher costs mainly due to the absence of economies of scale in such fields compared to larger fields.
- The size of the field matters; each field development project has its own unique life cycle, different peak periods and depletion periods are affected by field size, among other factors.
- A sensitivity analysis shows that the contractor's return is highly dependent on gas price and development cost. Government return is highly dependent on the price of gas and levels of production.

Introduction

The petroleum sector is characterized by the substantial rents when discovered and developed. However, such rents are inherently volatile and finite. The effects of these returns to the economy especially for the emerging markets depend on how well such revenues are collected and managed. The purpose of this brief is to examine the effectiveness of the current fiscal regime and its contractual implications. The investor and the government may have different objectives in the development of gas fields. With the current fiscal regime, a prospective investor can satisfy the objective of obtaining substantial profits from gas exploitation with an internal rate of return above the market discount rate of 10%. With proper tax administration the government is able to maintain the current tax rates at the same time encourage exploration and development of fields which are commercially viable before and after tax. By analysing the 2013 Model Production Sharing Agreement the author shows that with varying gas prices and costs of investments the current rent collecting system is progressive. Amidst the declining oil prices in the world market a debate has emerged whether the Tanzanian fiscal regime is too tight or not and how it may affect Investments in the sector.

The analysis takes into account that before deciding to extract natural gas, a contractor and the government need to make financial analysis to determine if a project is viable. The widely used method in the industry is the Capital Budgeting Method to determine the size of economic rents on any project in the petroleum industry by using practical performance criteria and yardsticks at field development stage of which include the Net Present Value (NPV), rate of return (IRR) and investors weighted cost

of capital. This study uses capital budgeting decision tools (NPV and IRR) to analyze the financial applicability of the MPSA (2013) to project evaluation. The study utilized sample offshore fields with corresponding prices, costs and field size of 500bcf (small), 1000bcf (medium) and 2000bcf (large).

The Legislative environment in the petroleum sector

In the 1950s when Tanzania started exploring oil and gas onshore (or close to shore), a concessionary system was used. In the 1960s, a contractual system was adopted. To date the fiscal regime in Tanzania has been a hybrid of production sharing, income tax and royalty payments under the regime known as Production Sharing Agreements (PSAs).¹ The Government of Tanzania has been continuously reviewing and updating its fiscal regime to match the prevailing market conditions and the interests of the state.

The exploration and development activities in Tanzania had been governed by the Petroleum (Exploration and Production) Act of 1980, until 2015 when the new Act, the Petroleum Act 2015 was enacted. The Petroleum Act expressly permits the Government through Tanzania Petroleum Development Corporation (TPDC), to acquire 25% or above of participating interest in all PSAs.

The concept of PSA explains the ownership of resources, a contractual relationship between the landlord (government) and the tenant (oil and gas company/contractor). For the case of Tanzania, the contractor incurs the investment costs and bears risks which is then compensated out of production post royalty payments.

Recent development in the natural gas sub-sector in Tanzania has brought significant opportunities, but also some challenges. While commercial production from onshore gas fields is ongoing, significant attention is on the development of the deep-water blocks, which have massive reserves declared commercially viable to proceed with an LNG project. However, uncertainty still prevails with respect to gas price, recoverable reserves, and the impact of changing political and fiscal risk profiles.

This brief analysis shows how the current fiscal regime responds to economic situations (sensitiveness to varying oil prices, field sizes/reserves and costs), by examining the 2013 Model Production Sharing Agreement (MPSA 2013) which provides a framework within which the oil companies (as contractors) and government (as resource owners) negotiate contract terms for oil and gas exploration and development. It also examines how the interests of the government and the contractor are balanced and what are the risks of investing under the current model agreement relative to price and cost uncertainties. The study utilizes capital budgeting tools; tools widely used for oil and gas project evaluation to determine how the MPSA fares under conditions of price volatility, low reserves and high costs. Securing fair returns from exploration of natural gas is an essential part of the management of natural resources. Given the unique characteristics of the extractive sector such as substantial “rents,” exhaustibility of resource deposits, high upfront costs and significant market, geological, and political uncertainties among others; it is crucial to have a robust taxing system capable of optimizing returns to government and an investor. Over the years, mining sector has been characterized by overly generous fiscal incentives, the government has tried to close some of the loopholes in this which has raised a number of concerns and disputes, which is why as a country there is a need to try and get it right for the gas sub sector.

¹ <http://www.tpdz.com/legalservice.php>

Model production sharing agreement (MPSA 2013²)

The MPSA of 2013 is the framework that guides PSAs entered from 2013 onwards. It states that produced gas is to be shared between the government and the contractor in varying proportions depending on production tranches. As seen on table 1 below, a limit for costs that a contractor can recover from an exploration or development license is set at 50% on the revenues net of royalty to any calendar year. Profit gas is shared on a sliding scale where profit gas to government increases as daily production rates increases. Other Taxes which include corporate tax, additional profit tax as well as other payments such as bonuses form part of the petroleum fiscal regime of Tanzania.

Table 1: Summary of upstream Fiscal Terms from MPSA 2013

1. Profit Gas split			2. Additional profit tax based on the contractors pre-tax Real Rate of Return	
Daily production (MMSCF1)	Government	Contractor	RROR	APT rate
0 -149.999	60%	40%	≤ 20	0%
150 - 299.999	65%	35%	20≤R≤30	25%
300- 449.999	70%	30%	>30	35%
450 - 599.999	75%	25%		
600 - 749.999	80%	20%		
750 and above	85%	15%		
3. Production bonus of \$5 million			4. Income tax fixed at 30%	
5. Royalty rate of 7.5% for deep waters			6. Signature bonus of \$2.5million	
7. Cost recovery limit of 50%				

Financial Analysis

Box 1.0 outlines the assumptions used for financial analysis using capital budgeting tools mainly internal rate of return (IRR) and Net Present Value (NPV) at field development stage. The internal rate of return is done after defining the anticipated future cash flows to be received from the investment.

Box 1.0: Assumptions

- Field size of 500bcf (small), 1000bcf (medium) and 2000bcf (large).
- Price; \$8.36/Mmbtu for base year 2015 at wellhead.
- Inflation rate of 3% based on the US dollar currency used.
- Discount rate is assumed to be 10% as the prevailing rate in the industry.
- Perfect administration of the fiscal regime

A decision to take on an investment opportunity depends on whether the IRR is greater than the opportunity cost of capital. The NPV decision rule is to undertake an investment whose NPV is positive or to take the alternative project with the highest NPV. The valuation principle generally notes that an investment that adds more value is preferred compared to the later depending on how risk averse the investor is.

Cost monitoring and size of the field matter

The fact that high development costs reduce tax base, and is considered unsystematic risk, a risk that a contractor has control over compared to systematic risks such as gas market prices. It is important for the

² The MPSA 2013 can be downloaded from the TPDC website

government to monitor carefully all the costs incurred. This is especially needed for smaller fields with low production levels where chances of declaring losses from a project are high because of the high costs of operation and the absence of economies of scale in such fields compared to larger fields. This is evidenced by the findings obtained, by first calculating pre-tax and then post tax cash flows for both the government and the contractor, where profit gas and tax paid by each is obtained. The post-tax cash flow is obtained after the contractor has recovered all the development and exploration costs incurred. The importance of ring fencing by project especially for a small field becomes visible, as the field becomes costlier compared to the larger fields. By ring fencing, the costs and profits of a field is attributed to it instead of carrying the effect to another profitable field and hence create a chance for indefinite cost recovery which in the end delay the revenues streams to the government through taxes and profit gas.

In addition, each field development project has its own unique life cycle, different peak periods and depletion periods are affected by, among other factors, the size of the field. The smaller the fields the higher the depletion rate, also the quicker the returns from an investment.

From the assessment of the MPSA framework in the case project, the contractor's average IRR is 13.6 % which is higher than the discount rate (10%) used, making the fields assessed profitable. The government take for the whole period of operation on average is 63% (which includes royalty, profit gas and taxes).

At a base price of 8.46 dollars per mmbtu all fields are profitable pre and post-tax. However, a small field is observed to be more costly and hence lower returns compared to the rest. For example, post Tax a field of size 0.5 Trillion cubic feet (Tcf) would give a return of USD 129.49 million, while a field of size 2 Tcf would give a return of USD 789.20 million. The difference is attributable to the effect of high development costs associated with small fields when the investor is not fully exploiting economies of scale.

While the results reflect the assumptions outlined earlier, it is inherent for petroleum projects to be risky and such risks include price volatility, lower reserves than anticipated and high costs among others. The main objective of this study was to test for the responsiveness of the MPSA to such uncertainty, applying methods of sensitivity analysis³ and Monte Carlo simulation⁴ to assess the impact of project risks to obtain a range of possible outcomes and allowing for better decision making. A sensitivity analysis on gas price, production, development cost and operating costs overall show that the contractor's return is highly dependent on gas price and development cost. For the government, the return is highly dependent on the price that the gas will be traded on and the levels of production. This means that the change in these variables in either direction affect the final return of the contractor and the government take. However, this does not directly tell the probabilities of making profits or a loss from extracting natural gas for a given project at changing economic situations.

To complement the sensitivity analysis the Monte Carlo simulation method is then introduced for each separate field. Results show that prior to application of taxes, for both the contractor and the government there is 100% certainty of making profits regardless of the market conditions. The inclusion of taxes⁵ to a project however changes the level of certainty and this is what will affect the contractor's decision to invest. The level of certainty for each field drops. Results show that the probability of making a profit is different for different variables and different field size. For example for a field of 2 Tcf the chances of making profits are high at 95% at varying gas prices, if the situation gets worse the chances for making a loss is only by 5% compared to that of a field of size 0.5Tcf with chances of making profits at 79% which means if the prices drop further the contractor chance of making a loss is increased to 21% which is a gamble for an investor given the declining market prices. Therefore, the estimate of the probability of making profits decreases with the size of a field (the lower the production levels the higher the risks). For development cost similar to price large and medium field (2tcf and 1tcf) have a

³ An evaluation giving the idea of which parameter affects the investment most and which affects the least

⁴a computerized mathematical technique that produces simulations to describe the uncertainty of a project in terms of probabilities normally distributed ran for 1000 trials.

⁵ Implies to MPSA 2015 fiscal terms

high possibility of remitting profits to a contractor at 97% and 93% respectively while a small field of 0.5tcf has an 83% chance a 17% chance of loss and a difference of 14% to that of a larger field.

For post-tax, the results show that the return for the government stays certain at 100% with the assumption that taxes are well administered and collected. Government revenues are highly dependent on gas price and the level of production. At the same time, the contractor's return is highly dependent on gas price and on development cost whilst operating costs has negligible effect.

Conclusion and Policy recommendations

The results suggest that with the above assumptions from *box 1.0* the investor is able to satisfy the objective of obtaining substantial profits from gas exploitation with IRR above the market discount rate of 10%. The government is able to maintain the current tax rates at the same time encourage exploration and development of fields which are commercially viable before and after tax.

The importance of ring fencing by project especially for a small field which in this case is observed to be costlier compared to the rest. By ring fencing a project it allows for the costs and profits to be attributed to the specific well. Without ring-fencing by project, a less profitable field affects the profits of another profitable field under the same contract. Given the cost recovery system, costs will therefore take longer to be recovered which means less profits for the contractor hence delay in payment of taxes leading to postponing of revenues to be collected by the government through taxes.

A point to note is that every investment decision is unique in its own sense; the strategies of the country in ensuring optimum return from its resources are also unique with the current economic situation of the country and development policy that focus on structural transformation and accelerated socio-economic development. The current rent collecting system is progressive, however by the combination of royalty and cost gas limit they induce regressive characteristics to the system, which results to early revenues but poses a challenge for both the government and investor. Thus, the government cannot afford to be lax in collecting revenues from non-resource sectors, neither to create overly generous tax incentives, which can lead into substantial revenues when prices increase. Also, for a contractor it poses, a challenge given the royalty flat rate poses increased possibility of making losses when prices drop.

Despite the regressive nature of royalties if set at a reasonable rate as for the case of Tanzania at 7.5% for offshore production, the government is able to enjoy substantial early returns from projects and still maintain the investors' rate of return at above the market discount rate. On another hand Tanzania is a new country in terms of deep water natural gas production. Early revenues are considered important to spear head development through sectorial linkages; however, this goes hand in hand with ensuring well managed resource revenues to avoid resource curse, which includes proper regulations and implementation strategies.

For the government to capture substantial revenue and develop the sector, the following recommendations are made. First, strong administrative capacity to collect taxes should be put in place. With the hybrid nature of the fiscal regime multiple legislations such as Tax Acts are considered during negotiations. During the administration and collection of taxes and profit split other players other than TPDC come in such as TRA. It is by good administration and collection mechanism that the government can provide a stable legislative environment for an investor and be guaranteed of high government take from natural gas projects offshore.

Second, adequate mechanisms to ensure proper reporting of production values and negotiating a good price for sale of natural gas to the market will ensure the government receives substantial revenues.

Third, as more reliable data becomes available, further research should be undertaken to develop a model into a more robust one. The model should undertake further analysis on LNG processing and transportation to the final market, incorporate domestic supply obligation and specifically analyze how these terms are influencing the decision to invest in the Tanzania's natural gas given the current fluctuating oil prices and offer policy recommendations.



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