Fiscal Regime Changes for Maximizing Oil Recovery from offshore continental shelf oilfields

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Topics

• Aims of discussion
• Objective of Fiscal systems
• applicability to stages field Life cycle
• Sample offshore oilfield project
• Conclusions
Fiscal Regime Overview

• Aim – to recommend changes to royalty/tax fiscal regimes that would economically maximize oil recovery from sub-surface reservoirs
• Fiscal Regime is defined as the sum of all impositions on an investor by the state via legislation or otherwise
• Oil economies are based on the efficient sharing of shareable surplus derived from the winning of oil and gas by investing companies
• The scope of the paper is to discuss and demonstrate relevant changes that are necessary in order to extend producing lifetimes of mature assets and to promote the exploration for and production of smaller fields that are un-economic to develop due to fiscal burdens
• These recommendations are applicable to exploration and production licenses and may not apply to production sharing contracts and risk service contracts
• A reduction of Government take for marginal projects leading to eventual cumulative increase of GORTT revenue
Objective of Fiscal Systems

**Host Government:**

- Maximize the value of the revenues from oil and gas resources for Governments
- Increase / replace reserves and production
- Attract foreign investment
- Ensure transfer of technology
- Development of local infrastructure
- Create jobs

**Investors:**

- Return on capital is consistent with the risk associated with the project and with the strategic objectives of the corporation
- Increase/Replace Reserves

In designing fiscal systems, it is important to create an alignment between the contractors’ and host government’s interests as well as make adjustments as the field moves through its life cycle.
Projects should remain profitable after the imposition of taxes

**Government**
- Royalty – payment based on production and does not consider profits
- Production Taxes – SPT captures a large amount of revenue but does not consider profitability
- Bonuses – one time payments to government
- Profit Tax – based on taxable income where amortization of assets are considered
- Levies, subsidies etc – passes onto consumers benefits

**Investor Company**
- Companies require a royalty that reflects productivity and profitability
- Production Taxes impair revenue generation to enable payout of risk investments
- Preferably small values
- Profit Tax – rapid amortization of assets
- Should be small since it reduces the investment criteria
Elements of Fiscal System Design

- Fiscal systems are specifically designed by governments to capture the maximum amount of government revenue.

- Terms and conditions are set prior to discovery
  - Reservoir size and type unknown
  - Fluid Type unknown
  - Economic conditions usually change by the time production begins

- Characteristics to be considered in the design –
  - Offshore/ Onshore
  - Heavy / Light
  - Oil/Gas
  - Exploration / Development
  - Shallow / Deep
  - Conventional/ Unconventional

- One tax regime will be beneficial for some operators and harsh for others
Taxation in Trinidad and Tobago

Direct Taxes

- **Individuals**
  - Income Tax, 25%
  - Corporation Tax, 25%
  - LNG and Petrochemicals, 35%

- **Corporation Tax**
  - Petroleum Profits Tax, PPT 50%
  - Unemployment Levy, 5%
  - SupPLEMENTAL Petroleum Tax, SPT
  - Production Levy

- **Petroleum Tax**

- **Levies, Sur-Charges**
  - Business Levy
  - Green Fund Levy
  - Land & Building Taxes
  - Withholding Taxes

In-Direct Taxes

- Value-Added Taxes, VAT
- Customs Duties
- Stamp Duty
- Import Surcharge
- Financial Services Tax
- Motor Vehicle Tax
Fiscal changes are required to maximize the recovery of oil economically at each stage of the life cycle.
Major Periods during a Field Lifetime

Life Cycle of an Oilfield

• An oilfield has distinctive periods during which the correct set of parameters in a fiscal regime can be advantageous to countries. The main periods are:

  • **Prospecting period** require attractive terms for investors to begin exploration work. Terms and conditions of the contract and elements of the fiscal regime is also important. However, the fundamentals of a petroleum system for petroleum potential and prospectivity and political stability are mandatory.

  • **Exploration Phase** is a finite period of time for investments and discovery. Understanding the petroleum system

  • **Commerciality and development** – time to production for recovery of investments – start of government revenues. The period when production begins is when an investor will recover its prior exploration and development investments. The fiscal regime should allow recovery as much as possible but with a minimum amount going to the government. At the end of payout the government share of the gross revenue will increase dramatically.
Major Periods during a Field Lifetime

- **Production decline phase** is the golden phase of near constant government revenues during which time government take is at its highest. However, close monitoring of the asset by the government is required to determine the commencement of incremental investments to replace produced reserves. Marginal field prospectivity should be the interest of the government in order to replace reserves and maintain production levels. If this period is missed as an investment opportunity by governments then fields go into the mature phase with requirements for major investments to regain former levels of production.

- **Mature fields** have characteristic low production rates per well, high water cuts, water disposal activities and the need for the replacement of assets due to end of productive life of equipment. Upon reaching this stage the incremental investments for marginal fields are usually unprofitable since there is no cushion from the other declining but profitable fields.

- **Decommissioning and abandonment** is the end of the oilfield and represents the cash out period without recovery from cashflows since there is no production.

- **Each period or phase requires a special set of conditions to ensure economic development, production and final abandonment**
Adequate profits are needed for investments to occur.
How the barrel is shared

Government gets 87% of the shareable surplus

Government

Investor

Shareable Surplus

COSTS

Free Cash Flow
Unemployment Levy
PPT
PL
SPT
Royalty
Operating Cost
Development Cost

100 $/bbl
The Sharing Dilemma

How does a country maximize its oil and gas wealth? The question is really an examination of the fiscal terms most applicable during each period. Certain broad conclusions can be drawn at this stage:

- Fiscal changes are needed at each stage of depletion during the life cycle of the fields
- Investors should be allowed a reasonable time to recover their investments
- Government take and revenues should be the highest during the plateau period of production
- At mid production lifetime, new investments to add new reserves is warranted to maintain government cashflows
- Fiscal relief is mandatory at this point in order not to bring the industry into a state which would be nearly impossible to correct
- Assuming good prospectivity marginal fields can be brought on stream via incremental investments and the cycle repeated to extend the collection of government revenues.
Remaining Acreage for Development

• In Trinidad, all large fields within discovered basins have been already exploited.

• Remaining reserve sizes are Marginal, <30 mbbls.

• Exploration risks for all new projects are high making internal investment approvals challenging.

• In order for these marginal reserves to be economic, a reduction of GORTT take is necessary but overall GORTT revenue will increase.

• Our focus will be on what is required for offshore Marginal fields, < 30 mbbl license oilfield development, to become an economic project (since most systems are small) in <500ft water depth
Incremental Oil Field Development Situation

- In Trinidad and Tobago smaller resource field sizes located away from mature producing oilfields are liable for payment of 42% SPT which render them un-economic for exploitation since new Independent facilities have to be built.

➢ Fiscal review is therefore needed to make them commercial to be produced.

![Diagram showing the situation with mature and incremental oil fields, illustrating the 42% SPT for new fields and the 33.6% SPT for mature assets.](image-url)
Typical Offshore Oilfield

- Offshore oil field located in 200 feet water depth was modeled using the following data:
- 25 million barrels recoverable reserves
- Peak production 7900 bopd and declining over 16 years
- Light oil
- Development costs 10 $ per barrel
- Operating costs 14 $ per barrel
- Fiscal regime - royalty tax system consisting of 10% fixed royalty, 42% SPT and 55% tax rate.
- Overall probability of success 60%
Cashflow Results

- **Without Royalties and Taxes** –

**Economic Results:**
- The shareable surplus is a cumulative of $1,263 million to be shared between the government and the investor.
- The project has a payout time of 3.9 years
- Rate of return of 55%.
- Net present value is $534 million on a 10% discounted basis.

**Comments:**
This value is important to consider since these projects may never be brought onto production due to fiscal rigidity thereby disallowing government of useful future revenues. The conclusion here is that the oil prospect is economic and can derive benefits to the investor and the government. Further when considering the risk and using the expected monetary value concept the prospect can be easily approved for drilling since the EMV is +258 $ million which is extremely good.

**Cashflow Shares between Government and Investor**

<table>
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<th>Year</th>
<th>NCF $ million</th>
<th>Gov't Rev $ million</th>
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<tr>
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<tr>
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POT 3.9 years  
DCFROR 55 %  
NPV10 534 $ million  
EMV 258 $ million
Cashflow Results

With 10% Royalty rate and 55% Taxes – “NO SPT”

Economic Results:
– The shareable surplus has now been divided between the government and the investor as follows: government $785 million and investor $478 million.
– Payout time = 5.6 years
– Rate of return = 27%
– NPV10 = $163 million.

Comments:

Utilizing the risk criterion of EMV the result is positive + 36$ million which would allow the investor to approve drilling of the prospect.
Cashflow Results

With 10% Royalty rate, 55% Taxes and 42% SPT (Production Tax) –

Economic Results

– The shareable surplus has now been divided between the government and the investor as follows: government $1128 million and investor $135 million.
– The project never pays out
– Rate of return = 9%
– NPV10 = $- 5 million.

Comments:

Utilizing the risk criterion of EMV the result is -65$ million which would not allow the investor to approve drilling of the prospect. The net result is that this prospect will never be drilled under this fiscal regime since the investment criteria based on risk EMV is largely negative and the investment never pays out. Field sizes of 50 million barrels of recoverable reserves will remain un-developable because of the high government take that does not consider profitability.
Broad Recommendations by Periods

- Trinidad is faced with declining production and undiscovered resource base. All stakeholders must work together to address this issue
- Fiscal systems by design are inherently inflexible therefore modifications over time to mirror changes in the production life cycle must be made
- Resistance to change Fiscal systems is a restraint
- In the cost recovery period, allow the investor to recover its investments with enough government revenues e.g. royalty at 20% royalty and tax with allowances for investor to recover the investment
- Production phase – government revenue via royalty and taxes; special taxes for market effects (crude price increases)
- Mid- production phase – encourage new field development e.g. implement tax incentive schemes in order to find smaller field sizes
- Mature phase - Regeneration of old assets with new reliefs for replacement – marginal field developments – prolongation of field lifetimes and government revenues (e.g.EOR Projects)
Conclusions

• Fiscal adjustments are necessary for investors to develop incremental fields in order to maximize oil recovery economically.
• These adjustments are required over the distinctive periods during the life cycle of an oil-field.
• Due to fixed cost constraints of operation, percentages adversely affect the ability of investors to re-inject required capital to go after smaller incremental production in the late field life.
• In the mid production and late stages of a field, government take in percentage terms, is over 85% and overtaxes investors thereby curtailing surplus for investments and in turn curtailing new production and the possibilities to extend field life.
• There should be a mechanism to review fiscal systems regularly to adapt to changes in the environment or producing conditions and encourage further investments.
Conclusion

- For Example Field

<table>
<thead>
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<th>Royalty</th>
<th>Tax</th>
<th>SPT</th>
<th>Government Revenue $ million</th>
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<tr>
<td>10</td>
<td>55</td>
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<td>785</td>
</tr>
<tr>
<td>10</td>
<td>55</td>
<td>42</td>
<td>0</td>
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With the imposition of the SPT production tax, the government revenue will be zero since no investment will take place.