Economic Evaluation of Trinidad and Tobago’s Fiscal Regime for the Development of Marginal Gas Fields

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Motivation
Natural gas production in T&T has been declining since 2010 due to diminishing gas reserves and supply disruptions by upstream suppliers for major maintenance works.

Located offshore T&T are 30 undeveloped marginal gas fields.

Working Definition for a Marginal Gas field in T&T is one with a reservoir size between 60 and 500 Bcf

Production from marginal gas fields would help to alleviate the current decline in production.

Research Questions
1. Do Trinidad and Tobago’s PSCs incentivise the development of marginal gas fields under the current environment?
2. Are the current PSC economic terms regressive, progressive or proportional?
3. How can the terms of the PSC be changed to incentivise marginal gas field development?

Methodology
3 Model Gas Fields: Small 100 Bcf, Medium 250 Bcf, Large 500 Bcf

DCF Analysis
- To calculate NPV, IRR, GT%

Sensitivity Analysis

Probabilistic Analysis (Monte Carlo Simulations)

Modifications to PSC Terms

Scenario 1: Increase cost recovery limit to 80%
Scenario 2: Reduce Government’s share of Profit Gas (40%-50%)
Scenario 3: Combination of Scenarios 1 & 2

Results

DCF Analysis

<table>
<thead>
<tr>
<th>Financial Criteria</th>
<th>Small (100 Bcf)</th>
<th>Medium (250 Bcf)</th>
<th>Large (500 Bcf)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Pre-tax</td>
<td>Post-tax</td>
<td>Pre-tax</td>
</tr>
<tr>
<td>Real NPV @ 10% (%)</td>
<td>39</td>
<td>-47</td>
<td>154</td>
</tr>
<tr>
<td>Real IRR (%)</td>
<td>18%</td>
<td>-2%</td>
<td>22%</td>
</tr>
<tr>
<td>Real NPV/I @ 10%</td>
<td>0.20</td>
<td>-0.24</td>
<td>0.39</td>
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</tbody>
</table>

- Pre-tax, all fields are profitable.
- Post-tax, only the large field is profitable based on positive NPV and IRR>10%, but has low NPV/I.
- Huge difference between pre-tax and post-tax returns; major shift of the burden of the project risks towards the investor.

Sensitivity Analysis

- Development costs and Gas price have the most influence on pre-tax and post-tax NPV.
- Rank changes on a post-tax basis due to the impact of the PSC terms, particularly the 50% cost recovery limit.

Impact of Gas Price on GT%, Real Terms

-scenario 3 generated the most profitable investments.
- Increased cost recovery ceiling and reduced GT provides the contractor with a greater share of PSC revenues and hence, faster cost recovery.

Conclusion
- T&T’s PSCs discourage the development of marginal gas fields under the current environment; they are economically inefficient and not directly targeted on economic rents.
- Fiscal terms are very regressive; 50% cost recovery prevents the contractor from achieving payback from the investment.
- A change to the fiscal system is necessary to encourage investors and increase production from marginal fields.
- Higher cost recovery ceiling and reduced GT are highly recommended.