FISCAL MANAGEMENT OF MINING AND PETROLEUM IN WEST AFRICA

February 27 – March 1, 2018  
Kempinski Hotel | Accra, Ghana

Fiscal Regimes for Extractive Industries in West Africa: Principles and Practice

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Agenda

• Why special fiscal regimes for mining and petroleum?
• Types of fiscal regimes and instruments
• Brief survey of regimes in selected West Africa countries
• Fiscal regime evaluation: an illustration using a stylized petroleum field
WHY SPECIAL FISCAL REGIMES FOR MINING AND PETROLEUM?
How is the fiscal regime defined?

- A system combining tax and non-tax instruments to raise government revenue from resource extraction
- It includes conventional instruments such as royalty and CIT, as well as contractual schemes such as PSCs
- It can further include elements of state participation with a fiscal effect on the division of revenues, even when held by a commercially operating SOE
Mining and petroleum characteristics

• Key revenue source for (increasingly) many countries
• Large upfront capital investment, and long production periods
• Pervasive uncertainty (both on prices and costs)
• Potential for substantial (economic) rents
• Asymmetric information
• Extensive involvement of multinationals in some countries... and of State-Owned Enterprises in others
• Non-renewable resources (exhaustibility is unique)
Key source of revenue for many developing countries

Government Receipts from Natural Resources, averages 2000-2014
(Selected countries, in percent of total revenue excluding grants)
Large up-front capital investment and long production periods

Typical cash flow profile of a petroleum project
Pervasive uncertainty... in petroleum prices
... and upstream costs

Source: IHS Energy
Pervasive uncertainty... in mineral prices
... and mining costs

Producer Price Index: Total Mining Industries, 1984=100

Source: Federal Reserve Bank of St. Louis
... but potentially high economic rents

Economic Rent:
Return in excess of project costs including minimum required by investor
Back to our cash flow example
Extensive involvement of multinationals and state-owned companies...

• The sector is dominated by multinationals (whether publicly traded or state-owned)

• In 2011 six of the 10 largest companies, by market capitalization, where in the extraction business

• While this has changed over the past 6 years, in 2017 one EI company remained in the top 10

• On the other hand, between 2/3 and 3/4 of world oil production comes from NOCs...
So what should fiscal regimes aim at?

• **Attract investment** so resources can be developed
• **Maximize present value** of government revenues
• **Anticipate timing** of receipts
• **Manage riskiness** of receipts
  – Risk/reward allocation between governments & MNEs
• **Improve progressivity**
  – But more progressive means more risk
• **Provide ease of administration** (for authorities) and **compliance** (for taxpayers)
TYPES OF FISCAL REGIMES AND INSTRUMENTS
Three main fiscal schemes (sometimes blended)...

1. **Tax and royalty**, with licensing of areas

2. **Contractual**, including production sharing or service contracts

3. **State ownership or participation**
A wide range of possible instruments

• **Bonuses** (with bidding)
  – Common in mature petroleum jurisdictions

• **Royalties**
  – Distort extraction (and, hence, exploration) decisions
  – Can be used in principle to control extraction path
  – Revenue from day 1

• **Corporate income tax**
  – To ensure equity income not favorably treated
  – Sometimes included in production sharing scheme
A wide range of possible instruments (2)

• **Explicit rent taxes**
  – Non-distorting in principle
  – Many forms, with different timing of receipts

• **Production sharing**
  – Production shared between government and investor according to a predetermine formula

• **State participation**
  – Can help resolve asymmetric information
  – But potential governance issues
What instruments should an attractive fiscal regime include?

Country circumstances require tailored advice, but generally an appropriate framework should combine:

• **A modest royalty on gross revenue**

• **A tax (or production sharing mechanism) targeting rents** (project results is a good proxy)

• Together with **normal corporate income tax**

• **Bonus-bidding** may have a role in mature or promising environments
BRIEF SURVEY OF REGIMES IN SELECTED WEST AFRICA COUNTRIES
The region’s fiscal regimes are diverse

- Participating countries use a mix of PSC, Tax/Royalty and Hybrid regimes for petroleum, while Tax/Royalty systems are predominant in mining:

- Effective royalty rates also vary across countries and sectors:

![Tax Structure - Petroleum](chart1)

![Production Sharing Method](chart2)

<table>
<thead>
<tr>
<th>TAX STRUCTURES - MINING</th>
<th>Amount</th>
<th>Percentage of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tax/Royalty</td>
<td>10</td>
<td>100.0%</td>
</tr>
<tr>
<td>State participation</td>
<td>6</td>
<td>60.0%</td>
</tr>
<tr>
<td>Sliding scale royalty</td>
<td>3</td>
<td>30.0%</td>
</tr>
<tr>
<td>APT</td>
<td>3</td>
<td>30.0%</td>
</tr>
</tbody>
</table>

![Petroleum Average Effective Royalty Rates](chart3)

![Mineral Average Royalty Rates](chart4)

* 9 regimes

* 8 regimes
... however some fiscal instruments are prevalent across countries

• Petroleum:
  – Tax/Royalty systems with an additional profit tax (APT) are concentrated in the Gulf of Guinea: Guinea-Bissau, Ghana, Niger and Senegal
  – While production sharing fiscal regimes are common in the rest of countries

• Mining
  – All countries surveyed have Tax/Royalty regimes, and only one has an additional profit tax

• Under both mining and petroleum, state participation is predominant (free equity is common in mining, while carried state participation is more common in petroleum)
EVALUATING FISCAL REGIMES
Project-specific modeling approach

• The interaction of different fiscal instruments is complex and its effects varies from project to project
  – Limited insight from headline tax rates and fiscal parameters
  – For example, appropriate treatment of depreciation, loss carry forwards, and ring-fencing is important

• Thus, modeling should be project specific
Indicators commonly used in fiscal regime analysis

**Average Effective Tax Rate**
- Government revenues as a share of pre-tax net cash flow
- At various discount rates

**Marginal Effective Tax Rate**
- Proportion of pre-tax return taken in tax, for a project which just reaches the hurdle rate post-tax

**Share of Total Benefits**
- Government revenues as a share of revenue minus operating cost (quasi-rents)
- Cash flows available to meet investment, return on investment, and taxes

**Breakeven Price**
- Price required to achieve a minimum post-tax IRR required by the investor
Illustrative project economics

**Offshore large field**

<table>
<thead>
<tr>
<th>Component</th>
<th>Quantity/Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production oil</td>
<td>500 MMbbl</td>
</tr>
<tr>
<td>Years</td>
<td>18</td>
</tr>
<tr>
<td><strong>Constant 2017 dollars</strong></td>
<td></td>
</tr>
<tr>
<td>Exploration costs</td>
<td>$450 million, $0.9/Bbl</td>
</tr>
<tr>
<td>Development costs</td>
<td>$2,486 million, $5.0/Bbl</td>
</tr>
<tr>
<td>Development drilling</td>
<td>$2,227 million, $4.5/Bbl</td>
</tr>
<tr>
<td>Operating costs</td>
<td>$6,754 million, $13.5/Bbl</td>
</tr>
<tr>
<td>Decommissioning</td>
<td>$628 million, $1.3/Bbl</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$12,545 million, $25.1/Bbl</td>
</tr>
</tbody>
</table>
Government take (AETR)

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Size: 500 MMBbl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs: $25.1/Bbl (real)</td>
<td></td>
</tr>
<tr>
<td>Oil price: $60.0/Bbl</td>
<td></td>
</tr>
<tr>
<td>IRR pre tax: 27%</td>
<td></td>
</tr>
</tbody>
</table>

- Nigeria: PSC 2000 (>1000m)
- Guinea Bissau: PSC Bid Invitation 2007
- Cote d'Ivoire: PSC - CIT 25%
- Senegal: 2012 Offshore PSC
- Niger: PSC
- Togo: Block A > 200m
- Guinea: 2006 PSC (offshore)
- Liberia: LB 13 (offshore)
- Ghana: OCTP (2008, offshore)
- Mauritania: Block C13
- Sao Tome and Principe: Model PSC 2010
- Sierra Leone: PEPA 2011 (deepwater)
- Nigeria: PSC 1993 (>1000m)
Breakeven price and METR

METR and Hurdle Oil Price

Hurdle rate = 12.5%

- METR
- Oil price required for hurdle rate (right axis)
Progressivity

- Cote d'Ivoire: PSC - CIT 25%
- Ghana: OCTP (2008, offshore)
- Guinea: 2006 PSC (offshore)
- Niger: PSC
- Nigeria: PSC 1993 (>1000m)
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QUESTIONS?
To learn more...

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