Fiscal Regimes, Petroleum Contracts, and Natural Gas

Asia-Pacific Natural Resource Taxation Conference

Jakarta, August 11-13, 2015
Types of Fiscal Regime

- Petroleum – Tax & Royalty and PSC systems most common
- Mining - Tax & Royalty; PSC uncommon
- Mechanics different, but economics can be equivalent
- Most countries have an “hybrid” system

Government usually owns minerals in the ground in both types.
Each involves sharing of proceeds, but by different methods.

- Licence
  - Tax and Royalty
- Contractual
  - Service Contracts
  - Production Sharing Contracts
    - Pure Service
    - Risk Service

Government usually owns minerals in the ground in both types.
Each involves sharing of proceeds, but by different methods.
Tax & Royalty

- Investor meets all costs
- Takes and sells 100% of production
- Pays royalty ($ or physical)
- Pays income tax on profit
- Maybe indirect taxes - Import Duties, VAT
- Maybe additional rent-capture mechanisms:
  - Resource Rent Tax
  - Government equity
- Investor “books” all of reserves even though paying taxes
Stylized Government Revenue Profile – Tax & Royalty

During depreciation of development cost

RRT only once Rate of return threshold reached

Government revenues

Income tax

Resource Rent tax

Royalty

Import Duties

Explore

Develop

Produce

Cleanup
Production Sharing Contract

• “Contractor” meets all costs
• Petroleum shared when produced
  1. Royalty or minimum share via profit oil
  2. Cost recovery (usually limited % of revenues)
  3. Profit petroleum – usually progressive
• Contractor pays income tax on profit
  – PSC system and Tax & Royalty share many features
• May include indirect taxes and government participation
• Contractor “books” only part of reserves
Profit Petroleum Sharing

• Wide range of mechanisms for sharing profit oil
• Usually sliding scale with proxy for profitability:
  – Daily rate of production (sometimes of profit production)
  – Cumulative production
  – R-Factor (cumulative revenues / cumulative costs)
  – Contractor Rate of Return
• Profit Oil split may be pre-tax sharing (contractor paying CIT) or post-tax sharing (Govt paying tax on behalf of the contractor)
Stylized Government Revenue Profile – PSC
With cost recovery limit

While contractor is recovering costs and uplift:

Once exploration and development costs are recovered, profit petroleum increases.

End of depreciation of development costs:

Income tax:

Profit oil:

Profit oil:

Profit oil:

Government revenues:

Explore  Develop  Produce  Cleanup

Bonus

Import Duties
PSC + Tax Framework

**Production Sharing**
- **Total Production**
- **Royalty** (If applied)
- **Cost recovery limit** (% of total production)
- **Cost recovery**
- **Profit Petroleum**
  - Shared on sliding scale

**Government Revenues**
- Royalty
- Profit Petroleum

**Cost recovery**
- Contractor

**Contractor**
- Contractor

**NOC**

**Income Tax**
- **Revenue**
  - Cost Recovery
  - Profit Petroleum
- **Less: deductible costs** (including depreciation of capital costs)
- **= Taxable income**
  - **= Profit after tax**
    - **x 10% DWT**

**Government Revenues**
- Income Tax
- Dividend Withholding Tax (DWT)
- Interest withholding tax
- Import duties
## Regional Distribution For Petroleum

### Tax-Royalty Systems

<table>
<thead>
<tr>
<th>Region</th>
<th>Tax-Royalty Systems</th>
<th>Production Sharing Systems</th>
<th>Service Agreements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>Algeria, Angola, Cameroon, Chad, Congo (Z), Gabon, Gambia</td>
<td>Guinea-Bissau, Ghana, Libya, Mali, Morocco, Namibia, Niger</td>
<td>Angola, Benin, Cameroon, Congo (Br.), Cote D'Ivoire, Egypt, Eq. Guinea, Ethiopia, Eq. Guinea, Ghana, Senegal, Senegal, Somalia, Tunisia</td>
</tr>
<tr>
<td>Europe</td>
<td>Austria, Bulgaria, Czech Republic, Denmark, Faroe Islands, France</td>
<td>Greece, Hungary, Ireland, Italy, Netherlands, Norway</td>
<td>Poland, Portugal, Romania, Spain, Turkey, UK</td>
</tr>
<tr>
<td>Asia-Pacific</td>
<td>Australia, Brunei, Japan, New Zealand, Pakistan, S. Korea, Thailand</td>
<td>Bangladesh, Brunei, Cambodia, China, India</td>
<td>Indonesia, Laos, Malaysia, Mongolia, MTJDA</td>
</tr>
<tr>
<td>FSU</td>
<td>Latvia, Kazakhstan, Kyrgyzstan</td>
<td>Russia</td>
<td>Azerbaijan, Georgia, Kyrgyzstan, Kazakhstan, Turkmenistan</td>
</tr>
<tr>
<td>Latin America</td>
<td>Argentina, Bolivia, Brazil, Colombia, Costa Rica, Falkland Is., Peru, Trinidad/Tobago</td>
<td>Aruba, Belize, Cuba, Guatemala, Guyana, Honduras, Panama, Suriname</td>
<td>Suriname, Trinidad/Tobago, Uruguay</td>
</tr>
<tr>
<td>Middle East</td>
<td>Israel, Neutral Zone, Pakistan, Qatar, Saudi Arabia, UAE</td>
<td>Bahrain, Iraq, Jordan</td>
<td>Pakistan, Oman, Qatar</td>
</tr>
<tr>
<td>North America</td>
<td>Canada, Greenland, United States</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total**: 147

<table>
<thead>
<tr>
<th>Region</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>49</td>
</tr>
<tr>
<td>Europe</td>
<td>21</td>
</tr>
<tr>
<td>Asia-Pacific</td>
<td>25</td>
</tr>
<tr>
<td>FSU</td>
<td>11</td>
</tr>
<tr>
<td>Latin America</td>
<td>20</td>
</tr>
<tr>
<td>Middle East</td>
<td>12</td>
</tr>
<tr>
<td>North America</td>
<td>3</td>
</tr>
</tbody>
</table>

### Source
ExxonMobil
Natural gas major trade movements 2014
Trade flows worldwide (billion cubic metres)


BP Statistical Review of World Energy 2015
© 2015 BP p.l.c.
Natural Gas Projects
Natural Gas Value Chain

Source: Wood Mackenzie
Natural Gas Projects

Natural Gas Value Chain

• Separation of gas and oil cost and revenue streams (in combined production) less necessary if fiscal regime profit-related
• The chain can be ‘segmented’ – different ownership of each link – or ‘integrated’ – the same companies own the entire chain
• Most integrated projects are either LNG exports or domestic power generation (IPP)
• Major distinction between domestic and export sales: prices
  – domestic energy prices in many countries have been regulated and kept as low as possible – now almost universally increasing
  – export prices have been significantly higher and agreed under long term sales contracts, often with some linkage to oil prices
• Another distinction: costs
  – export of gas normally incurs significant additional processing and transportation costs
• In a segmented chain, agreements set the price and level of economic rent achieved in each link – may or may not be at arm’s length
• Government may own one or more links of the chain and take economic rent
• Where there is common ownership but different tax systems for each link, there are no ‘arm’s length’ prices and proxy transfer prices need to be established
• The alternative is to treat the entire project as the taxable entity
Natural Gas Projects

Defining the taxable entity

- Elements of the fiscal regime may only apply to specific links in the chain
- Mid/downstream elements tend to be treated as general industrial projects and are subject only to standard corporate income tax
  - major projects, such as greenfield LNG plants, sometimes receive fiscal incentives; FAD would usually advise against
- Upstream production tends to be subject to more complex fiscal terms
  - bonuses, royalty, production sharing, additional profits taxes
  - corporate income tax usually payable or replaced with a special petroleum profit tax
  - oil and gas production treated separately or together for tax purposes
  - individual licenses or fields may be ring-fenced for elements of the fiscal regime
- The fiscal ‘take’ tends to be much higher from upstream than mid/downstream
- Only projects which have a fiscal ‘ring fence’ around the entire project are truly ‘integrated’ - if different tax systems apply to upstream and mid/downstream then, even with common ownership, the project is ‘segmented’
Segmented project (1)

Fully Segmented

- **Upstream**
  - Gas production
  - Upstream fiscal regime

- **Pipeline**

- **LNG**
  - Liquefaction
  - General corporate tax regime applied separately to PL and LNG.
Segmented project (2)

1. Upstream sells feed gas to LNG; LNG plant sells LNG
2. Or, Upstream sells LNG, pays processing fee to LNG
Natural Gas Projects

Segmented taxation example: Malaysian LNG

Source: Wood Mackenzie
Aggregated project

Fully aggregated

Upstream
Gas production

Pipeline

LNG
Liquefaction

Single fiscal regime applied to aggregated project
Natural Gas Projects

Integrated taxation example: Yemen LNG

Source: Wood Mackenzie
A key reason to segment

Single LNG plant could operate as “tolling” facility for multiple upstream fields with different owners.
Domestic gas pricing and fiscal policies must be developed simultaneously
- Regulated consumer prices can render projects uneconomic (unless subsidized)
- Fiscal terms need to be adjusted to take this into account
- Regressive fiscal terms (revenue rather than profit-based) can be particularly harmful in a low price environment

In extreme cases, government may have to subsidise producers as well
- Nigerian domestic prices have been so low that only oil producers who receive 85% tax relief on capital costs (but pay 30% tax on gas profits) can supply gas economically

Government to decide between subsidising consumers and collecting fiscal revenue
Natural Gas Pricing & Taxation

Upstream natural gas prices

- Government owns gas and only reimburses costs: Algeria, Oman, UAE
- Government establishes prices for royalty/taxation purposes: Alberta’s “select prices”
- Spot markets: currently USA, Canada and UK, and beginning to develop in Europe
- Gas price formulae are established in upstream contract: Egypt PSC, Timor-Leste
- Consumer contracts
  - normally 20-30 years with volume and price commitments – this is the most common form of pricing for direct sales to consumers in developing countries
  - consumer contracts for export sales are normally agreed with the plant owners and the upstream “share” of the price (netback) needs to be established
- Consumer price netbacks
  - upstream receives final sales price less regulated tariffs/tolls payable to mid/downstream operations (Indonesia, Trinidad (Atlantic LNG 2/3/4))
  - upstream receives a fixed % of FOB sales price (Nigeria LNG)
  - upstream and downstream agree sharing of final sales price (e.g. Trinidad (Atlantic LNG 1))
  - Upstream price agreed by “competing fuels” formula: Mozambique to South Africa project
- If upstream and mid/downstream owners are the same but tax rules are different, a proxy transfer price is required
Petroleum valuation

• Value for profits tax, royalty, production sharing should be identical or easily reconciled
• Taxing point = delivery point
• All liquids (except LNG) treated as oil
• Government right of approval over gas contracts and pricing terms
• Recognize arm’s length prices/terms where available
• Rules for determining pricing where no contract
  – Advance Pricing Arrangement
  – Comparable Uncontrolled Price
  – Index to competing fuels
Differentiating Fiscal Terms

Gas vs Oil - 1

• Upstream gas project economics are normally much less robust than oil
  – lower prices per b.o.e. (either domestic regulations or export netbacks)
  – higher transportation costs
  – longer, flatter production profiles (which reduces the present value of future production)

• To compensate, many governments offer fiscal incentives to gas
  – lower royalty rates (Nigeria, Tunisia, Vietnam)
  – higher cost recovery ceilings and/or profit shares (Egypt, Indonesia, Malaysia)
  – lower tax rates (Nigeria, Tunisia, Papua New Guinea)
  – exemption from certain oil taxes (Trinidad & Tobago (SPT))
  – Deductions for gas infrastructure against oil revenue streams (Trinidad and Tobago, Nigeria)

• Alternative approach is to levy additional taxes on export sales to reduce incentive to export
  – Argentina, Russia

• Where local gas prices are not regulated, fewer (if any) incentives offered
  – USA, Canada, Norway, UK
**Differentiating Fiscal Terms**

**Oil vs Gas Prices**

- **FOB Oil Price**: US$100 /bbl
- **FOB LNG Price (Oil Eq)**: US$17 /mmbtu
- **FOB LNG Price (Actual)**: US$12 /mmbtu
- **U/S Transfer Price**: US$6 /mmbtu
- **Domestic Market Price**: US$3.5 /mmbtu

**Source**: Wood Mackenzie
Differentiating Fiscal Terms

Gas vs Oil - 2

- Increasing trend toward linking fiscal take to project profitability permits the same fiscal terms to apply to oil and gas
  - automatically provides lower take from less valuable projects and vice versa
- Major issue in differentiated fiscal regimes is the treatment of liquids associated with gas production (condensate) – treat as oil or gas revenues?
  - high liquids content reduces breakeven gas prices and can often “make or break” gas projects
  - very high taxation (oil rates) on condensate can nullify this – (North West Shelf gas project in Australia, now superseded by PRRT)
  - particularly important issue when gas is associated with oil production
Conventional gas pricing mechanisms

**Cost-plus principle** (additive methodology)

\[ \text{Sales price} = \text{production cost} + \text{transportation services} + \text{overheads} + \text{profit margin} \]

**“Market-value” or netback value principle** (subtractive methodology)

- Introduced in 1962 by Dutch Minister of Economic Affairs as the basis for natural gas marketing (previously the cost-plus principle was used)

\[ \text{“Netback value” at the point of sale} = \text{“market value” of natural gas in inter-fuel competition (in each market sector) - costs of transport services - overheads and profit margin} \]

Long-term oil-indexed contracts

- Remain the dominant form of GSAs in northwestern Europe

### Europe Model

\[ P_n = P_0 \times (W_1 \times F_1(F_1(t=0)) + W_2 + F_2/F_2(t=0)) \]

- **Po**: Original negotiated price at time 0
- **W**: Weighting factors/percentage of alternate fuels
- **F1, F2**: Alternate Fuels’ prices published by third parties, low/high sulfur fuel oil, and coal are common alternative
- **Inflation Component**: May be added.

### Japanese Model

\[ P_n = C_0 + B_1 \times \text{Brent} \]

- **C0**: Base Price
- **B1**: Coefficient of adjustment
- **F1, F2**: A basket of fuels’ prices published by third parties
- **Inflation Component**: May be added.
LNG pricing

• In Asia, a formula relative to oil
  – LNG $MMBtu = Oil price $Bl * A + B
    • A = “slope”; 0.14 – 0.15 in some deals
      – $100 Bl * 0.14 = $14.00 MMBtu LNG
        = around 80% “parity” with oil
      – Perfect “parity” would be slope 0.172 /1
    • B = constant (negotiated, maybe zero)

• In India; formula relative to competing fuels

• Distance to customer matters: shipping costs

1/ = 1 / 5.8 MMBtu per Barrel oil
"S" curve: protects seller from low oil prices; buyer from high prices. Now less common.

x/y = 0.14 “slope”
Residual Pricing Mechanism - Australia

LNG price

- Capital annuity on downstream capital (including risk premium)
- Downstream operating costs
- Upstream operating cost
- Capital annuity on upstream capital (including risk premium)

Netback
GTP
Cost Plus
Conclusions and implications for tax policy

- Domestic gas pricing and fiscal policies must be developed simultaneously.
- If upstream and downstream fiscal regimes are different – which is normal – there is a strong rationale for upstream and mid/downstream operations to be segmented.
- Where ownership of upstream and mid/downstream operations is the same, a proxy transfer price needs to be established.
- Alternative approach is to have a separate tax regime for integrated gas projects and treat the entire project as the taxable entity.
- Role of national oil company normally very important as it may have different equity interests in upstream and mid/downstream.
- In integrated export projects, government needs to closely monitor and benchmark agreed market prices and costs in each link of the chain to ensure taxable income is fairly calculated.
- Government and producers should aim to share in realised market prices which are greater than expected – needs to be addressed in gas sales agreements.
- Gas projects may require more attractive fiscal terms than oil projects - although fiscal terms linked to project profitability could apply to both.
- Where liquids are taxed at a higher rate than gas, it is important to consider how condensate is treated – if liquids, then higher tax revenue, but also a higher price will be required for gas.