



# A comparison of various governance and tax models

**Jørgen Klev**  
**23 September, 2015**

**Presentation to INTOSAI Working Group on Audit of Extractive Industries**  
**2nd meeting**

**ECON**  
**OIL&GAS**

# Who am I?

## Jørgen Klev

Consultant,

*M.Sc. (Tech.) in Industrial Economics from Norwegian University of Technology and Science*



### Academic and working experience

- 5 years of experience with petroleum economics from Econ and Pöyry
- Master of Science, 2010, Norwegian University of Technology and Science

### Areas of expertise

- Petroleum economics and taxation
- Valuation, finance, financial modelling
- Quantitative assessments

### An extract of recent relevant experience

- **2011-2012: Assisting African Union High-Level Implementation Panel**  
Was the advisor on petroleum economics during the negotiations between the governments of Sudan and South Sudan after the secession in 2011.
- **2013-2015: Oil advisor to the South Sudanese Ministry of Finance**  
Economic modeling and government assistance to the South Sudanese Ministry of Finance on petroleum revenues related matters
- **Petroleum economic course and model to Ministry of Energy, São Tomé & Príncipe**
- **Financial / tax modelling of all petroleum tax systems in North Western Europe**

# Agenda

---

- 
- 1. Petroleum taxation – Some theory and challenges**
  - 2. Concessionary vs Contractual system – The two main families of petroleum tax systems**
  - 3. Resource tax administration and collection**
  - 4. Appendix**
-

# Agenda

---

## 1. Petroleum taxation – Some theory and challenges

## 2. Concessionary vs Contractual system – The two main families of petroleum tax systems

## 3. Resource tax administration and collection

## 4. Appendix

---



## Elements to consider when designing petroleum tax system

---

- **The potential for large profits**
  - Exploration and production of oil and gas can lead to large revenues
  - Given the scarcity of supply (although not the case today) the price of oil and gas does not necessarily reflect the cost of production and a normal profit
- **Huge upfront commitments and much uncertainty**
  - Upfront commitments are large
  - Factors will change over the project lifetime; price, political environment, taxes etc.
  - Most exploration wells are not commercial
- **Domestic ripple effects may be small**
  - The petroleum industry may only contribute to tax revenues, with little industry impact domestically
- **Impact of multinational companies**
  - Project specific economics may depend on a company's other operations
  - Interaction with other international tax system may affect the investment decision
- **Asymmetric information**
  - The government may be less informed about the prospectivity of a project

***How to design the tax system to cater for these elements, encouraging investments and maximising government's income?***

## Tax challenges from a government perspective

---

- Petroleum resources are owned by the state and the people
- Main objectives:
  - Maximizing the total income to the state, in NPV terms
  - Increase local jobs
  - Increase local investment
- Uncertain revenues to the government
  - Uncertain tax income means uncertain planning
  - Uncertain planning means budgeting issues
  - Budgeting issues means unforeseen issues of balancing budget
- Long time horizons
  - Long time horizons could lead to impatience
  - Impatience could lead to bad decisions
  - Bad decisions could lead to early, but low taxes
- Early, but too low taxes will hit back later (renegotiation?)

## Tax challenges from a company perspective

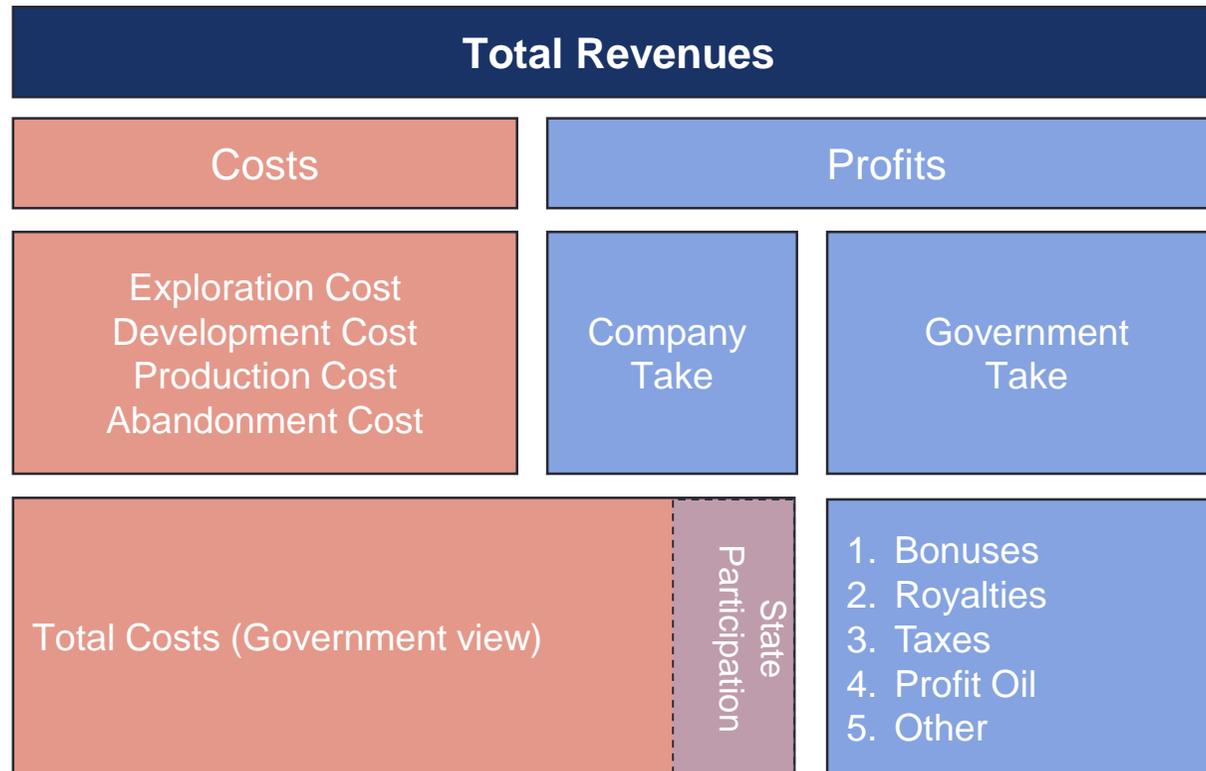
---

- The petroleum company would like to maximize their NPV and targets high IRR projects
- Desire to improve reserve replacement rate – want to book reserves
- How does a company think
  - Appreciate a rapid payback of their investments
  - Appreciate to retain profits in the early stage, and rather pay taxes later in the production stage – the time value of money and risks
  - Investment incentives
  - Stable environment
    - Measuring probability for changes, negative returns, NPV variances etc

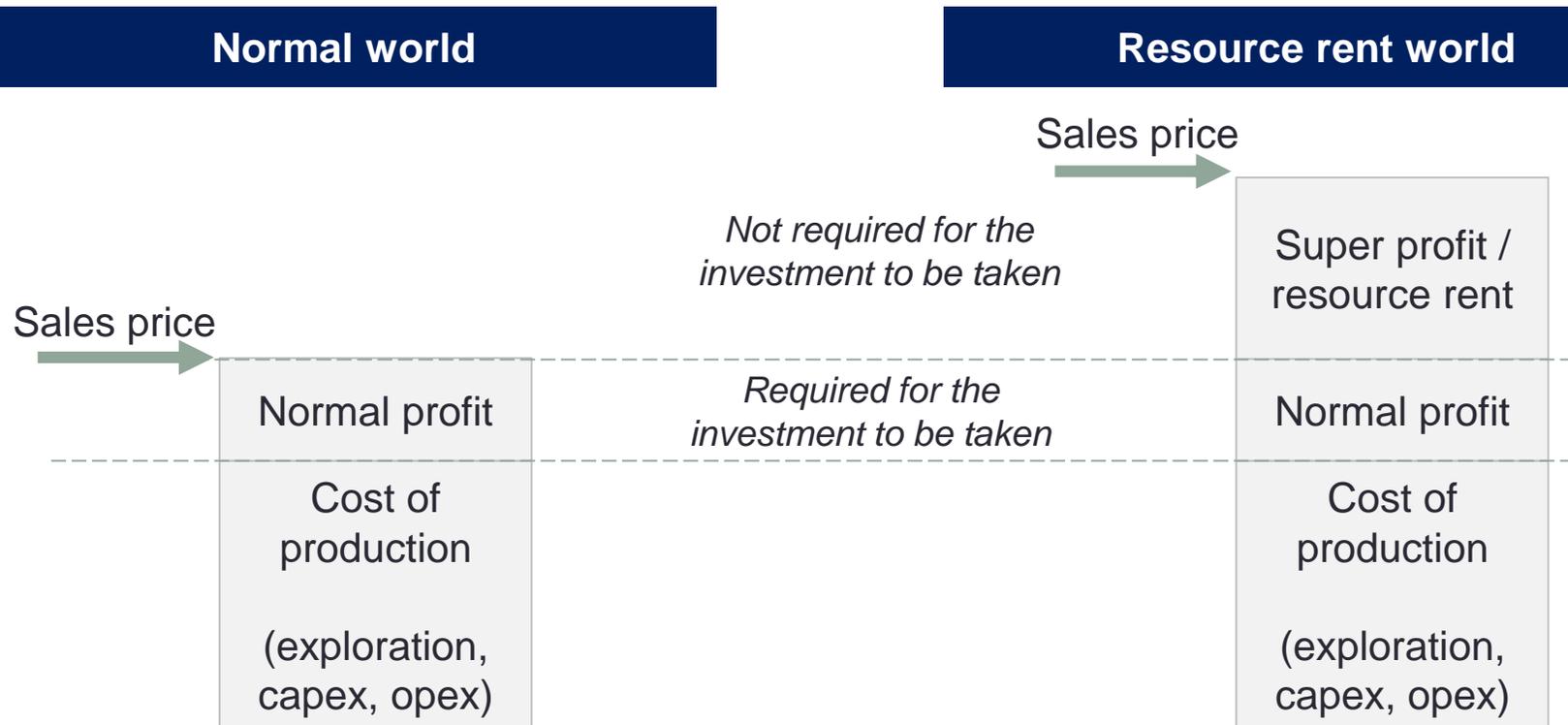
Is there anything that approaches a “Golden Rule” as far as commercial terms are concerned it is this, “Golden Rule” © Daniel Johnston:

***“Whoever puts up the capital should at least have a chance of recovering that capital and obtaining a share of the profits – if they make a discovery, and if the discovery is large enough to generate profits”***

# How are the oil and gas revenues shared?

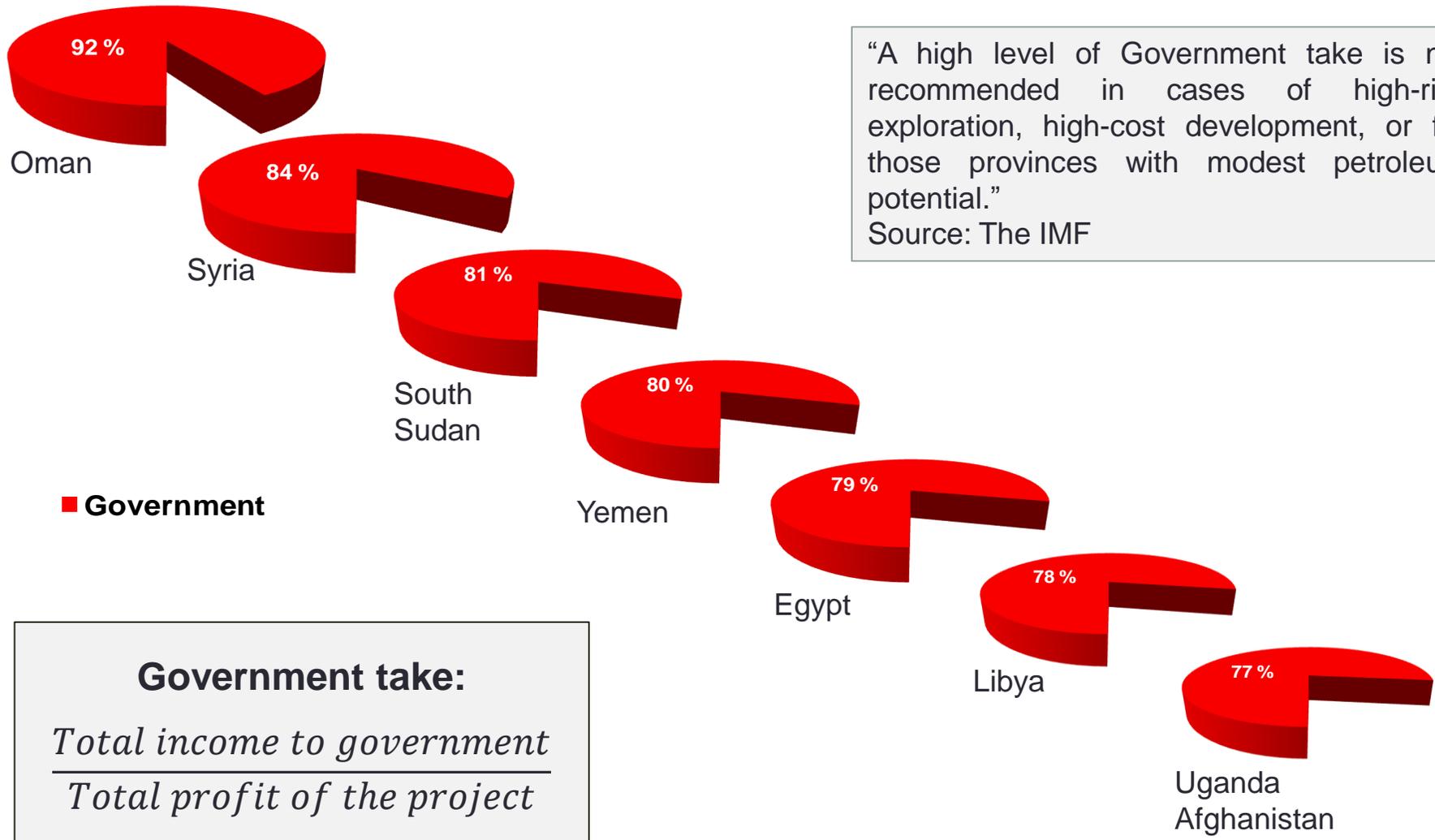


## Resource rent – creating profits above normal



***Identifying, measuring, and collecting resource rent is difficult. Rent depends on the availability of information, market conditions, technology, systems etc.***

# Benchmarking of government take using a generic field (Econ study from 2010)



“A high level of Government take is not recommended in cases of high-risk exploration, high-cost development, or for those provinces with modest petroleum potential.”  
Source: The IMF

**Government take:**

$$\frac{\text{Total income to government}}{\text{Total profit of the project}}$$

## Benchmarking

---

Benchmarking needs to take into account:

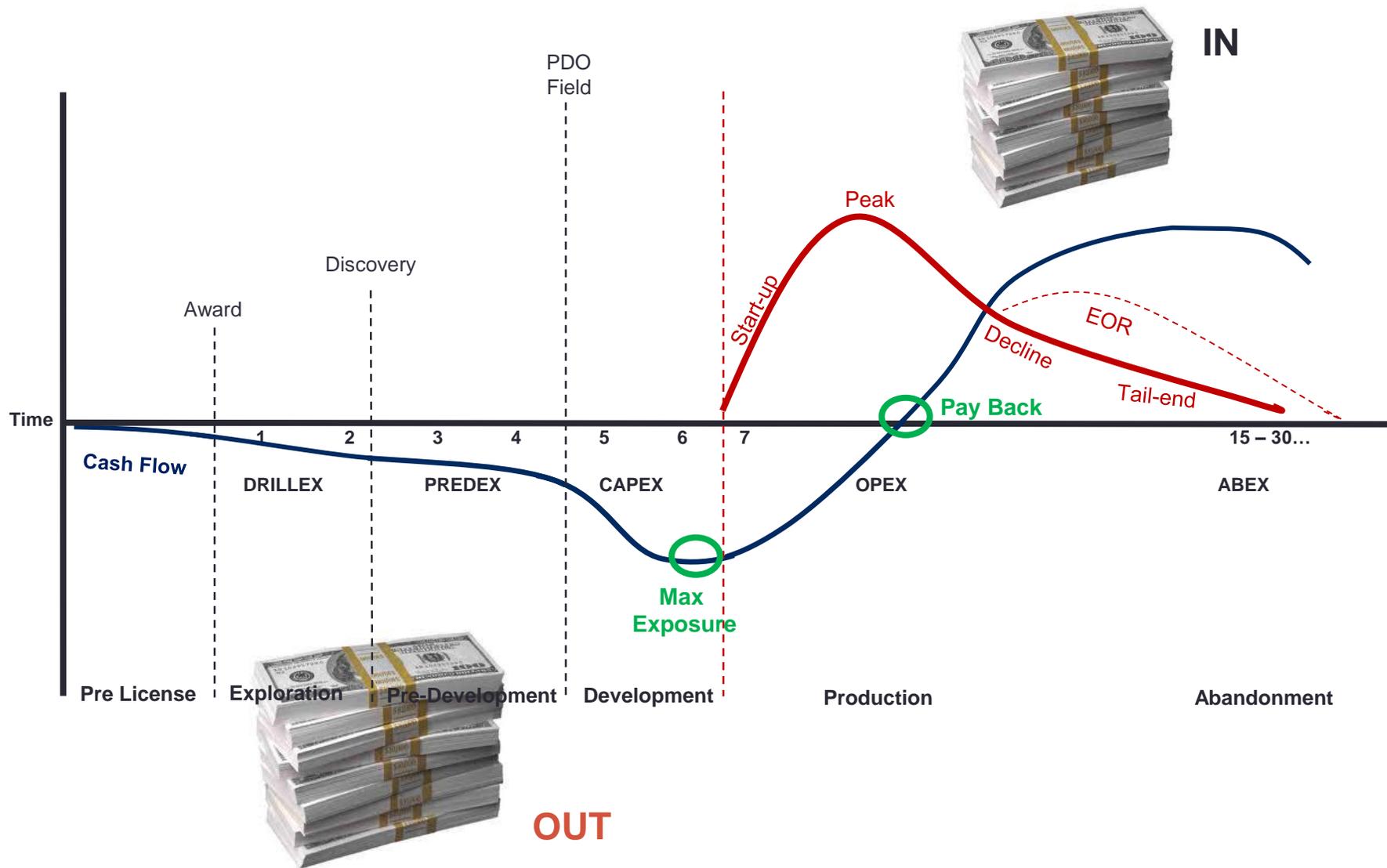
- Countries in the same phase (also back in time)
- Geological prospectivity (size and number of prospects)
- Same type of resources (oil versus gas)
- Offshore vs onshore
- Cost to invest and proximity to market
- Whether there is a withholding tax on dividends or not
- Country risk

Benchmarking is for

- information gathering
- government take comparisons

Benchmarking is NOT for finding the right fiscal mechanisms -> use the fiscal priorities (what does the country have to tackle)

# Cash flow cycle of an oil/gas project – when to tax profits?



# Agenda

---

## 1. Petroleum taxation – Some theory and challenges

## 2. Concessionary vs Contractual system – The two main families of petroleum tax systems

## 3. Resource tax administration and collection

## 4. Appendix

---



## The two main petroleum tax structures – in brief

---

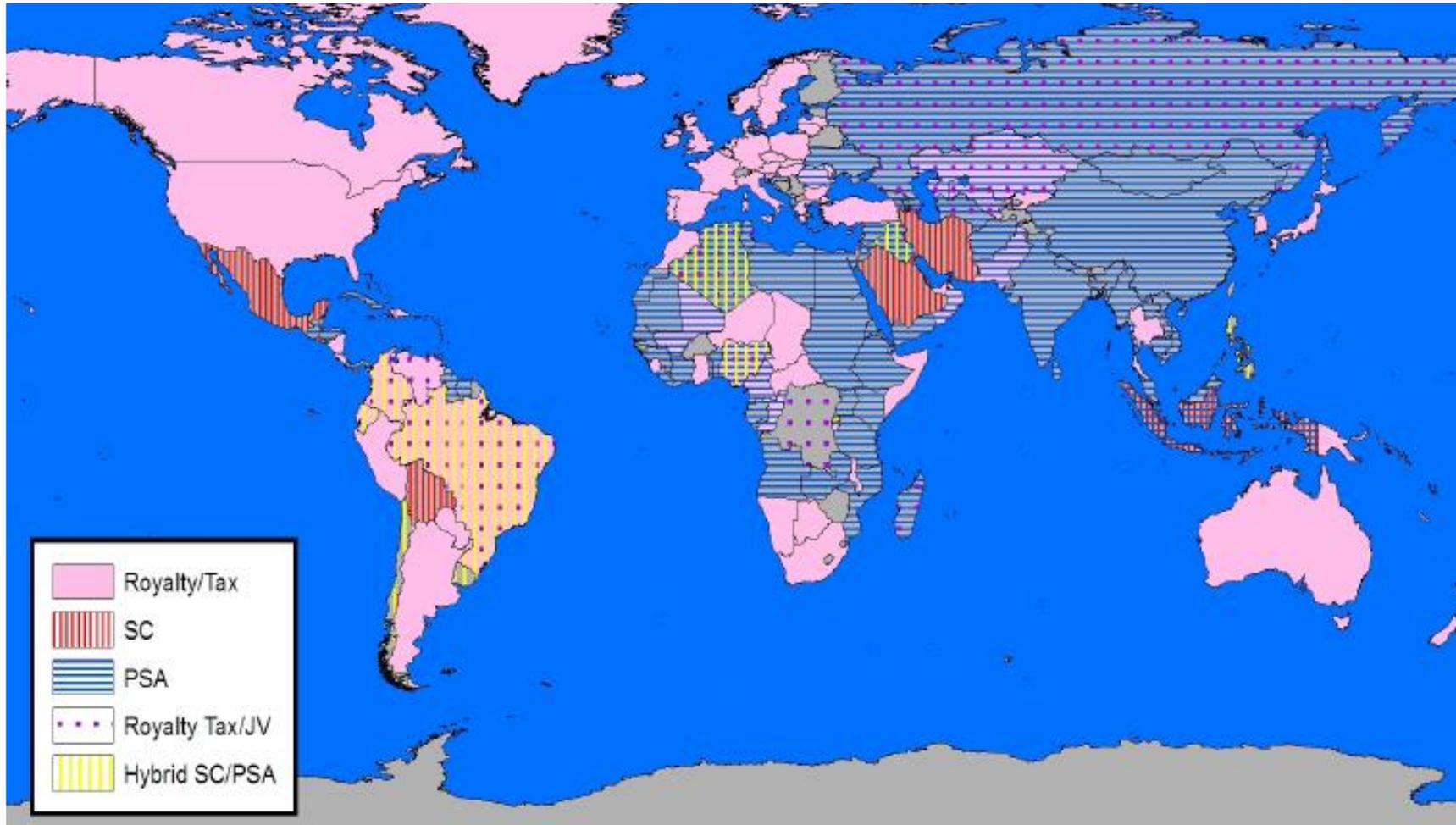
- **Concessionary system - “Tax / royalty”-system**
  - The government gives one (or a more oil companies) a license to operate a concession and the company is entitled to all of the production
  - Normally equal terms and conditions across the concessions
  - Tax system aimed at taxing the profit, usually through a combination of royalty, income tax and an additional special profit tax
  - Normal in the OECD countries
- **Contractual system - Production sharing system (PSA) or service contracts (SC)**
  - A project specific contract between the government and a contractor, where the government retains all (or a share) the ownership of the oil produced
  - Terms and conditions may vary from contract to contract
  - PSA: The company gets a portion of the production in order to cover costs and profits.
    - Normal in Africa and south east Asia
  - SC: The company gets a cash fee for the service of producing petroleum
    - Normal where there are restrictions on private participation in petroleum production
- These two system may also coexists in so called hybrid systems

## The two main petroleum tax structures – in brief (2)

Differences between a Concessionary system and a Contractual system

Royalty/Tax Concessionary system	PSA Contractual system
Income and costs not explicitly excluded is included in the tax base	Income and costs not explicitly included is excluded in the tax base
No cost recovery limit -> more back-end loaded taxes	Cost recovery limit -> more front before reaching profit
All costs deductible	Significant non-deductible costs
Risk sharing between gov. and contr.	Less risk sharing between gov. and contr.
Tax rates are public	Contract and tax rates often confidential
Tax parameters can change	Tax parameters are protected
Seldom ring fencing	Always ring fencing
Almost never signature bonuses	Common with signature bonuses

# Petroleum tax systems around the world



## Tax components in a concessionary system (“tax/royalty-system”)

---

### **Bonus and fees**

An amount contractually owed by a company once a milestone is reached (signature bonus, auction fees, discovery bonus, production bonus etc.)

### **Royalty**

An amount owed by a producing company on the gross revenues (value based) or production (volume based). A fixed percentage or a progressive sliding scale (“tier”) system (rate increases as revenues/production increases).

### **Income tax**

A fixed percentage tax owed by a company against profits. Can come in many variations depending on the deductible costs; accelerated depreciation, interest deduction, investment incentives for marginal projects etc.  
Normally taxing the company, not project specific.

### **Special profit tax**

An additional tax on top of income tax to tax the resource rent. Aimed at profits.  
Additional deductions may apply (uplift etc)  
Can be project-specific.

### **Rate of return taxation**

Taxes estimated based on cash flow from a project. Specifically designed to tax the rent by measuring present value / profit over the full lifetime of a project. Taxation triggers typically according to specified profitability indicators (IRR-levels, payback, RoR etc)

## Tax components in a concessionary system – Pro and cons

	Pros	Cons
<b>Bonus and fees</b>	<ul style="list-style-type: none"> <li>• Gov. secured a payment, often prior to production</li> <li>• Easy to administrate and verify</li> </ul>	<ul style="list-style-type: none"> <li>• Increases risk (costs) for the companies</li> <li>• Usually small amounts which may create higher barriers for entry than the benefits for the gov.</li> <li>• Not linked to rent collection</li> </ul>
<b>Royalty</b>	<ul style="list-style-type: none"> <li>• Gov. secured a payment from production start</li> <li>• Relatively easy to administrate and verify</li> <li>• (Should not be higher than 10%)</li> <li>• Easy to implement progressive taxation, but may increase complexity</li> </ul>	<ul style="list-style-type: none"> <li>• Does not tax the rent (i.e. use in combination)</li> <li>• Companies pay before full payback time</li> <li>• Royalty increases marginal cost =&gt; may hinder investment + risk of earlier shut down</li> </ul>
<b>Income tax</b>	<ul style="list-style-type: none"> <li>• Taxation based on profit</li> <li>• Can take advantage of the existing tax system as it is based on same principle</li> <li>• Usually effective taxation, 15-45%</li> <li>• Tax rate can be changed easily across</li> </ul>	<ul style="list-style-type: none"> <li>• Cost assessment increases the complexity</li> <li>• Investment incentives, ring-fencing and other structures make petroleum taxation different than normal income tax</li> <li>• Tax rate open for changes</li> </ul>
<b>Special profit tax</b>	<ul style="list-style-type: none"> <li>• Quite similar as for income tax</li> </ul>	<ul style="list-style-type: none"> <li>• Same as for income tax</li> <li>• May be more complex as more tax deductible elements usually are introduced</li> </ul>
<b>Rate of return taxation</b>	<ul style="list-style-type: none"> <li>• Aimed to tax the rent (super profit)</li> <li>• Attractive from a company perspective as taxes typically occur after the pay-back period</li> </ul>	<ul style="list-style-type: none"> <li>• Can be difficult to administrate</li> <li>• Multi-year cost and income variables differ from normal one-year tax treatment</li> <li>• Difficult to introduce for existing projects</li> </ul>

## Tax components in a contractual system

---

### Bonus

Same as in a concessionary systems

### Royalty

Same as in a concessionary systems

### Production sharing

The contractor is entitled to a share of the production for a specific area/project in order to recover costs through “Cost oil” and a required profit through “Profit oil”. Oil companies bear the exploration risk. May pay income tax (hybrid system).

- Cost Oil: To recover capex and opex. Typically a limit of the production, implying that not all cost will be recovered in capex periods, but large enough to cover opex.
- Profit Oil: The share not allocated to cost oil goes to profit oil. Distribute production between contractor and production according to a formula; fixed, production based, rate of return etc.

### Rate of return taxation

May be apart of the sharing. Taxes estimated based on cash flow from a project. Specifically designed to tax the rent by measuring present value / profit over the full lifetime of a project based on profitability indicators (IRR-levels, payback, RoR etc).

### Service contracts

A different model than production sharing. The contractor is paid a fee for conducting production from a specific area/project. Terms and condition specified in a contract between gov. and oil company. The government hires the services of the oil company. The oil company is not entitled to any of the petroleum produced, although indirectly paid by the revenues generated by the production.

## Tax components in a contractual system – Pros and cons

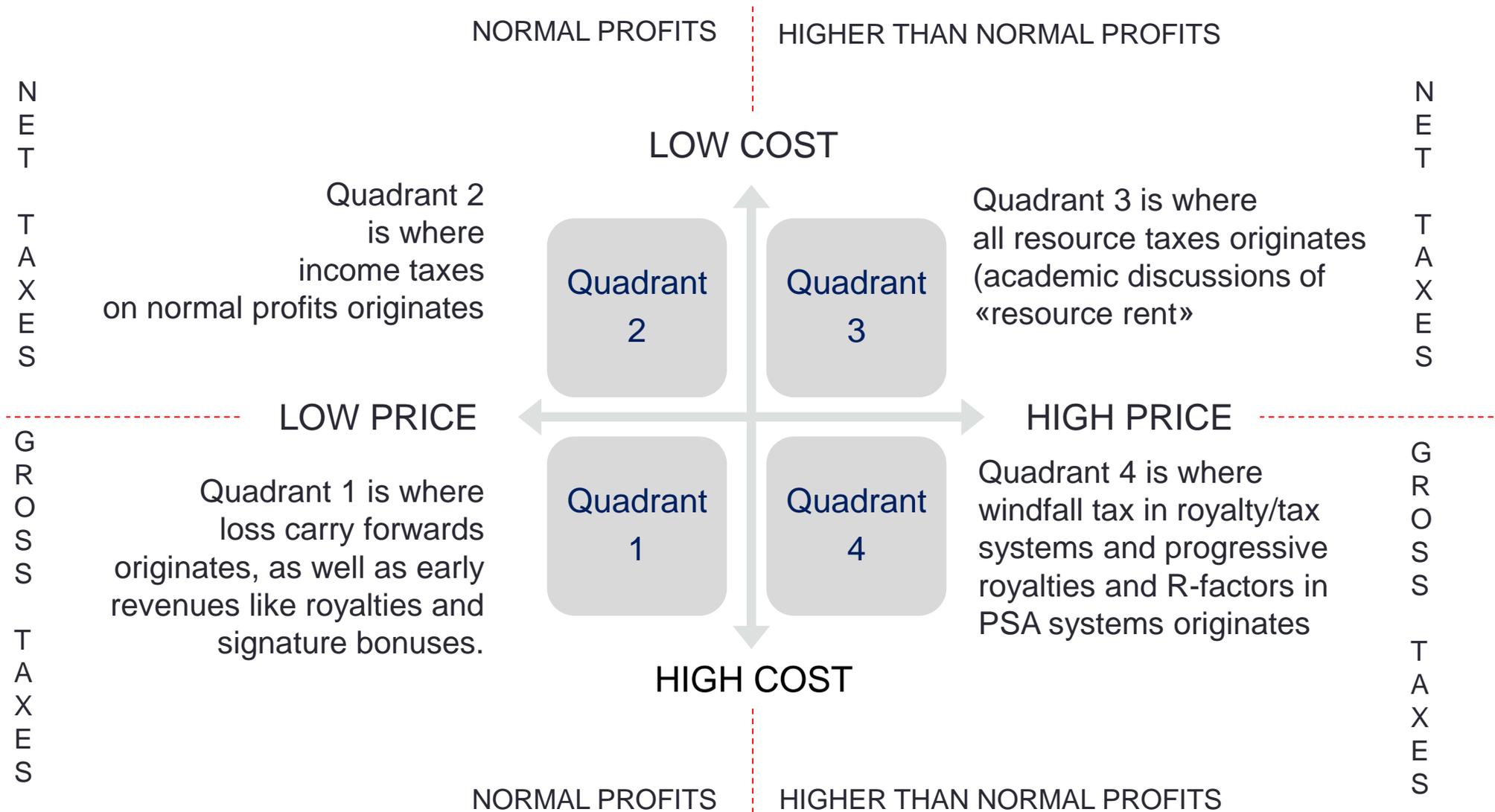
	Pros	Cons
<b>Bonus</b>	<ul style="list-style-type: none"> <li>• Same as “Royalty / Tax”-systems</li> </ul>	<ul style="list-style-type: none"> <li>• Same as “Royalty / Tax”-systems</li> </ul>
<b>Royalty</b>	<ul style="list-style-type: none"> <li>• Same as “Royalty / Tax”-systems</li> </ul>	<ul style="list-style-type: none"> <li>• Same as “Royalty / Tax”-systems</li> </ul>
<b>Production sharing</b>	<ul style="list-style-type: none"> <li>• Can be tailored to the specific project, hence PSA can accommodate varying resource potential</li> <li>• Typically stable tax clauses</li> <li>• Government usually get taxes at production start</li> </ul>	<ul style="list-style-type: none"> <li>• Usually lead to more administration as all PSAs usually are different from each other and has to be agreed upon upfront</li> <li>• May be too fixed and thus not able to capture rent</li> <li>• Companies usually have to pay taxes at production start</li> <li>• PSA/PSC systems notoriously lead to oil &amp; gas companies negotiating terms</li> </ul>
<b>Rate of return taxation</b>	<ul style="list-style-type: none"> <li>• Same as “Royalty / Tax”-systems</li> </ul>	<ul style="list-style-type: none"> <li>• Same as “Royalty / Tax”-systems</li> </ul>
<b>Service contracts</b>	<ul style="list-style-type: none"> <li>• Creates a stable tax environment for the government and the contractor</li> <li>• Government has large control</li> <li>• Little risk for the contractor</li> </ul>	<ul style="list-style-type: none"> <li>• Can be little upside potential for the contractor</li> <li>• Less incentives for the company</li> <li>• The gov. should have technical competence and financial capacity</li> </ul>

## Direct state participation – National oil companies (NOC)

- A state-owned company joins as an interest holding company to the block / license
- Gets a share of the contractor's profit
- Their involvement can come in many varieties
  - Full carried interest to normal equity interest (as the other contractors)
- NOC controls more than 90% of the world's proved reserves
- Pros: Direct involvement can improve cost and operational overview, countercyclical to stricter/looser taxes imposed by the gov.
- Cons: Has to be funded over the budget (competing with other budget priorities), inefficiency, may be forced to operate on non-commercial terms (sell subsidized petrol)
  - NOCs often less transparent than petroleum companies. In weak states it may be attractive to keep these companies less public as they can provide money to political priorities
- Important with clear roles between ministries, government agencies and NOC
- Will the industry be more efficient without any direct state participation and that all the profit was shared through taxation? UK and the US vs. Saudi Arabia and Mexico



# The Quadrant Cross as an interpretation of taxes



## Gross vs net tax mechanisms

---

- **GROSS tax mechanisms** are based on revenue only and needs to have a LOW tax level (royalty) OR a HIGH tax shield (progressive royalty, windfall taxes) before being applied
- **NET tax mechanisms** are based on revenue less costs and can have a tax level between 25% and 35% without any shield (corporate taxes). Net taxes that come on top of the corporate tax rate **MUST** have a tax shield before being applied
- See the difference between a 50% royalty rate and a 50% net profit tax, assuming revenues are USD 100 and costs are USD 50.

### 50% ROYALTY (GROSS)

Revenues	100
- Royalty 50%	<u>50</u>
- Costs	50
= Profit to comp.	0

### 50% CORPORATE TAX RATE (NET)

Revenues	100
- Cost	<u>50</u>
= Profit before tax	50
- CT 50%	<u>25</u>
= Profit to company	25

## Tax/Royalty calculation example – Norway

---

### Concessionary system

#### Logical buildup of tax base:

#### Operating income (norm price on oil)

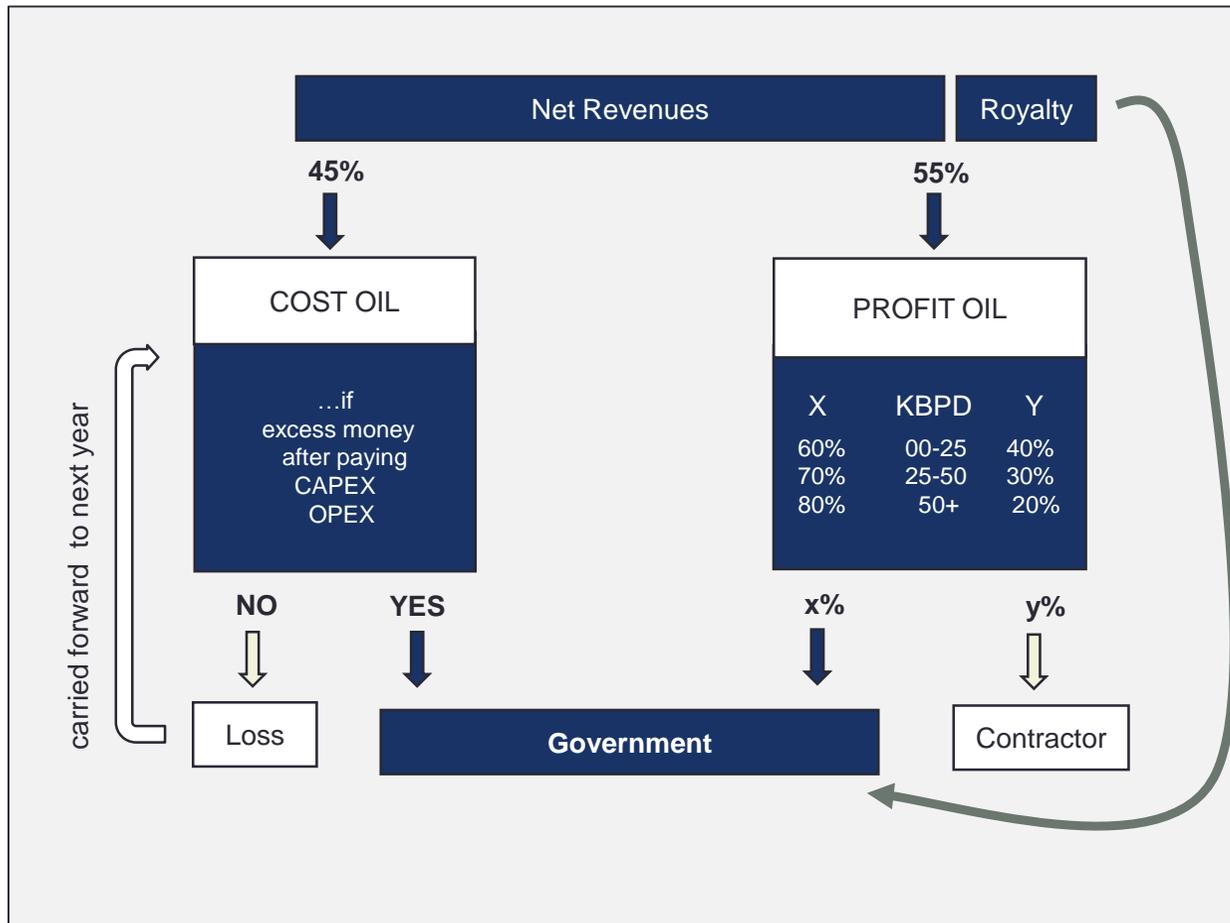
- Operating expenses
- Capital expense depreciation (linear over 6 years)
- Exploration costs, R&D, decommissioning
- CO2-tax, Area fee
- Net financial costs

= Ordinary corporate tax base (27% tax)

- Uplift (5,5% of investment for 4 years)

= Special tax base (51% tax)

# PSA concept – production based allocation



# Agenda

---

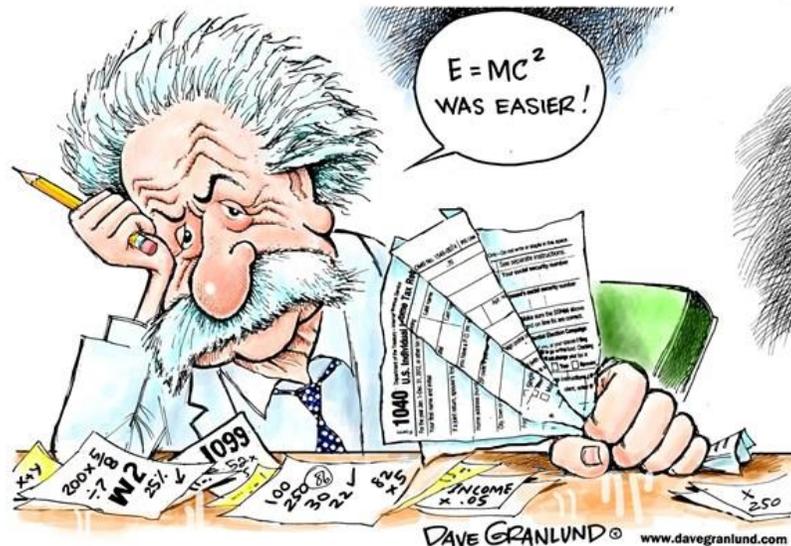
1. Petroleum taxation – Some theory and challenges

2. Concessionary vs Contractual system – The two main families of petroleum tax systems

3. Resource tax administration and collection

4. Appendix

---

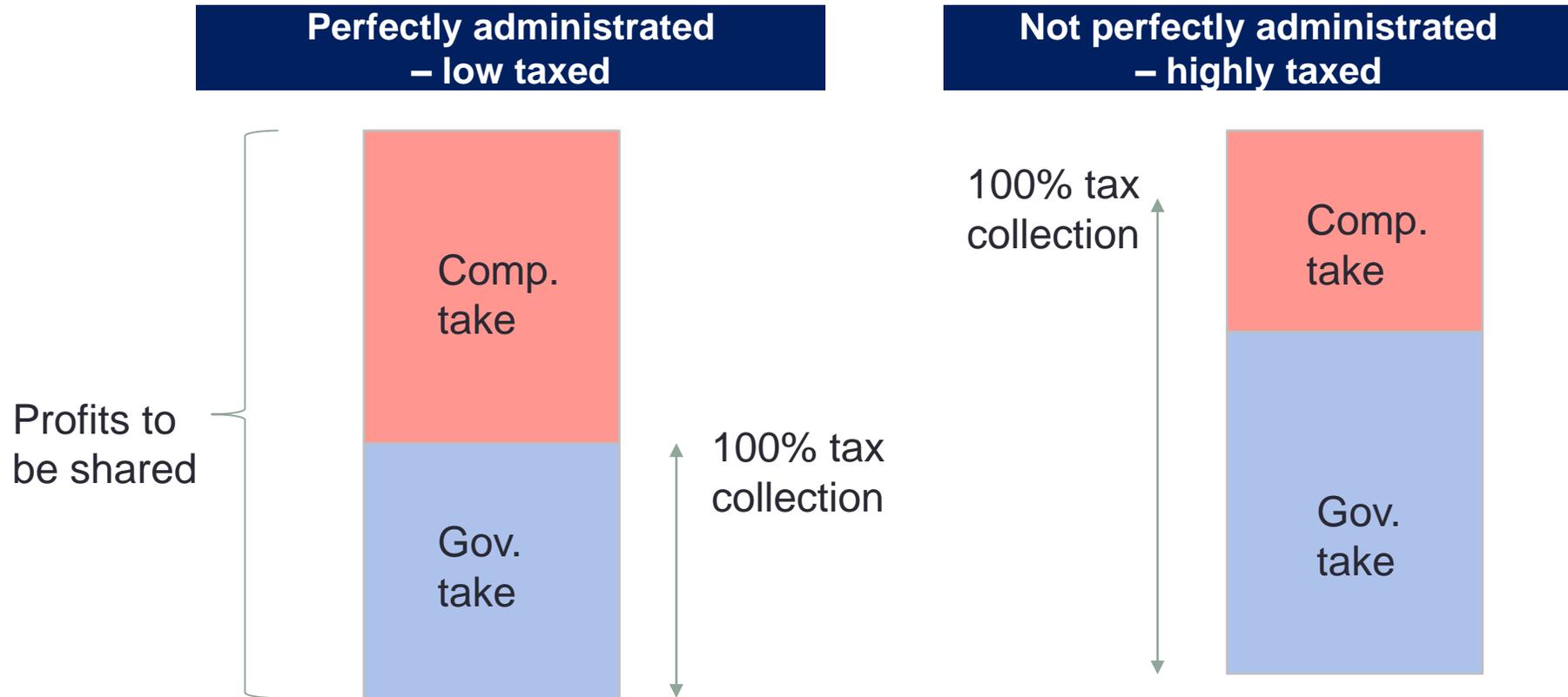


## The good process – the environment around the tax system

---

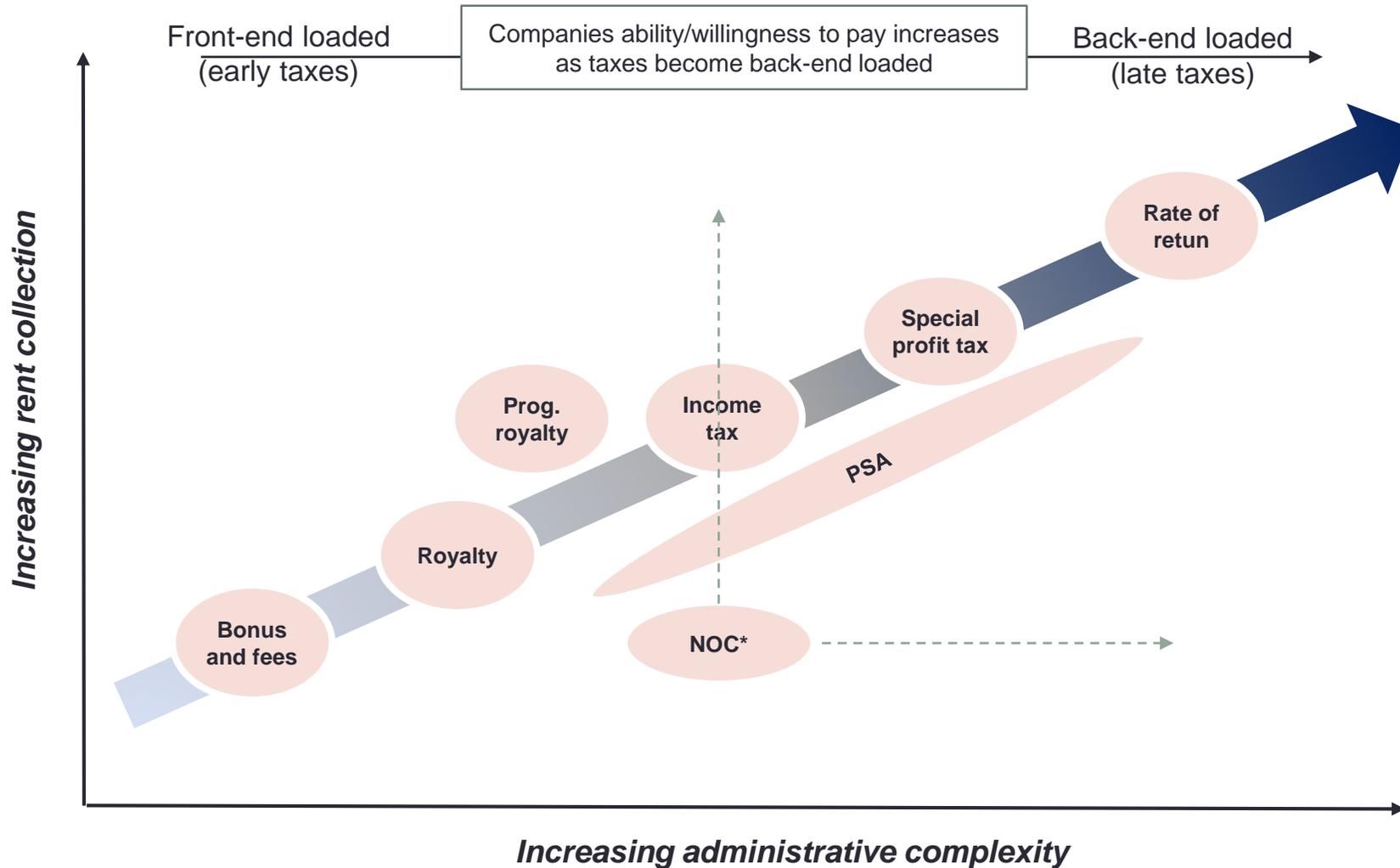
- The petroleum tax system does not operate in a vacuum
  - Clear roles & responsibilities between authorities (Ministry of Finance, tax authority, resource ministry, resource directorate etc)
  - Banking regulation
  - Insurance regulation
  - Production monitoring
  - Export/import control (efficient customs operation)
  - Corrupt practices (penalize both companies and individuals)
  - Accounting regulation (streamlining information)
  - Transparency regulation (disclosures)
  - Company acts
  - Etc
- Everything needs to function in a coherent system in order for the tax system to work as intended

## What is best?



- No use having a theoretically perfect designed tax system that is impossible to administer
- No use with a perfectly administrated system not able to collect the resource rent

# Administrative complexity vs rent collection



\*Highly dependent on equity share and terms

## Ease the administration by simplify the tax system

---

- One tax regime
  - It is easier to understand and control one system than two systems
  - Reduces transparency
- Standardise contracts
  - Standardise and limit the number of variable parameters across contracts
  - Use common building blocks
- Use familiar and internationally established industry concepts
  - Accounting rules, deductible costs
  - In general easier to audit
- Reduce the number of taxes
  - Resource rent collection, right incentives, risk sharing can be obtained through a few instruments
  - The introduction of many tax elements (which may be minor) increases complexity (educational tax, area fees, local society tax, production bonuses etc.).
- Possible to simplify any provisions?
  - Using a benchmark price instead obtained market price
  - Make transparent and simple structures that can be verified

## Challenging elements within resource taxation and administration

---

### Revenues

- The point and the method of valuation need to be clearly defined when applying royalty taxes (FOB, wellhead prices) and estimating revenues

### Transfer pricing

- Inter-company invoices have to be based on market based principle / arm's length basis

### Finance costs

- Has higher interest rates than market based principles, generating increased tax deductible costs. Interest rate should be based on credit ratings.

### Hedging

- Tax rules can be complex and open to avoidance. Tax authorities may lack the capacity to handle these issues, despite the help of anti-avoidance provisions

### Ring-fencing

- Ring-fencing adds potential administrative complexity and risk, and workable cost allocation rules are needed for the distribution of costs between blocks

### Investment incentives

- May skew costs towards either opex or capex (or other parameters depending on tax incentives)

### Sale/acq. of license

- Taxable gain / losses may be complex
  - Norway: All proceeds are after tax. Easy way of avoiding complexity.

## Challenging elements – Experience from South Sudan

<b>Revenues</b>	Clearly stated in the PSA and followed	
<b>Transfer pricing</b>	Covered in the PSA, but the government has little overview due to low capacity and lack organizational structures	
<b>Finance costs</b>	Finance cost not tax deductible	
<b>Hedging</b>	Gain and losses from financial activities not affecting taxes	
<b>Ring-fencing</b>	Clearly defined in the PSA, also covers overhead. However limited overview of the actuals	
<b>Investment incentives</b>	No incentives	
<b>Sale/acq. of license or equipment</b>	Clearly stated in the PSA (proceed from sale of recovered equipment to be given to the gov.)	

## Oil & gas companies do audit each other

---

- Oil & gas companies who are together in a joint venture (several companies owning and operating the same assets) will have the right to carry out audits on costs that are entering the joint venture → usually it is the partner companies that audits the operator
- Any costs that comes from the joint venture through a billing is thus usually quite reliable and it is possible to put a higher reliability on the joint venture costs entering a company's financial statements than their 100% costs.
- A tax administration should therefore have particular attention to the oil & gas company's own cost (not joint venture), non-transactional costs that they receive from the parent company (or other companies in the group) or R&D and overhead cost that is invoiced directly from the operator (does not go through the joint venture accounts).

## Main differences between the audits

---

- The FINANCIAL AUDIT is mainly concerned with items not being materially wrong in the financial statement. Main focus on revenues and costs. The financial audit is very systems oriented, but do not have in mind discovering tax.
- The JOINT VENTURE AUDIT is the other partners auditing the operators cost accounting prior to billing costs to partners. This audit is good at validating certain cost categories, particularly those in-country, but fail to consider procurement rebates and kickbacks.
- The TAX AUDIT is focused on tax evasion as tax avoidance is legal. Tax avoidance is hard to catch though, because of the burden of evidence that a transaction was done only for tax purposes and do not have any commercial purposes. Transfer mispricing and derivatives abuse fall into this category – two themes that are notoriously difficult to audit (the tax auditor needs help from the legislator).

## Audit experiences from South Sudan

---

- The government fears that the Joint Operating Companies' (JOCs) costs are unreasonably high for operating the producing fields. For example through having non-operating rigs (or other equipment) located on the fields where the daily rents are being paid to subsidiaries in their home country, while the operating costs can be deducted from the “cost oil”.
  - ⇒ Lower government revenues, and more income to the JOCs (or associated companies)
  - ⇒ Taken directly from the cost oil share
- GoRSS need a closer collaboration with the JOCs
- Lack of structure and capacity within the government makes it difficult to conduct audits
- One of the big goals for the government is to be able to do a full audit of the petroleum sector

# Agenda

---

1. Petroleum taxation – Some theory and challenges
  2. Concessionary vs Contractual system – The two main families of petroleum tax systems
  3. Resource tax administration and collection
  4. Appendix
-

## Other tax examples

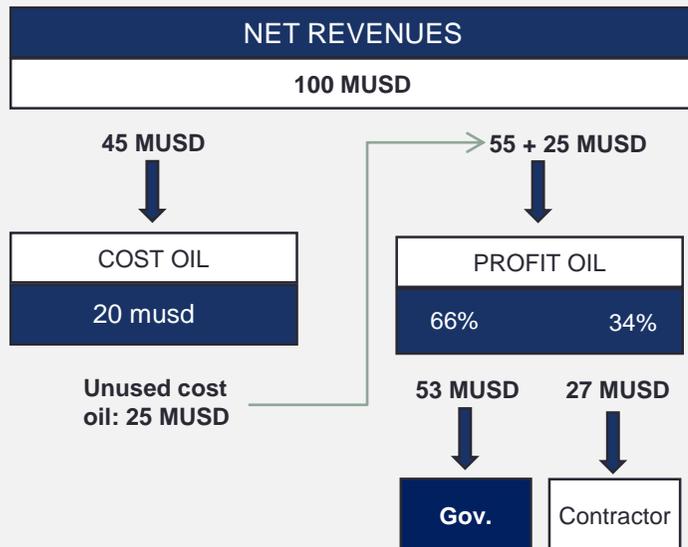
---

- Zambia, mining
  - Introduced windfall royalty tax that was not deductible and ended up with a marginal tax rate close to 100%
- Denmark, petroleum
  - Had uplift at 250% for investments, leading to very low effective tax rate relative to the marginal tax rate
  - Few years where companies had to pay the special tax
- Australia, mining
  - Introduced controversial resource rent tax in 2012
  - Repealed in 2014

# PSA Calculation Example

## Operational parameters

Production: 125 kbb/d  
 Cost of production: 20 MUSD



Gov. take in % of net revenues: 53%  
 Gov. take in % of net revenue – cost: 66%

## Tax parameters:

Cost oil limit: 45%  
 Unused cost oil: To profit oil  
 Profit oil distribution: Dependent on production

0-25 kbb/d	50% to government
25-50 kbb/d	60% to government
50-100 kbb/d	70% to government
>100 kbb/d	80% to government

## Profit Oil calculation

Tranche	Allocation		Government take		Contractor share		Total
	kbb/d	Dist	%	musd	musd	musd	
0-25	25	20.0 %	50 %	8.0	50 %	8.0	16.0
25-50	25	20.0 %	60 %	9.6	40 %	6.4	16.0
50-100	50	40.0 %	70 %	22.4	30 %	9.6	32.0
>100	25	20.0 %	80 %	12.8	20 %	3.2	16.0
<b>Total</b>	<b>125</b>	<b>100 %</b>	<b>66 %</b>	<b>52.8</b>	<b>34 %</b>	<b>27.2</b>	<b>80.0</b>

Gov. take for per tranche: distribution \* gov.take% \* profit oil pot

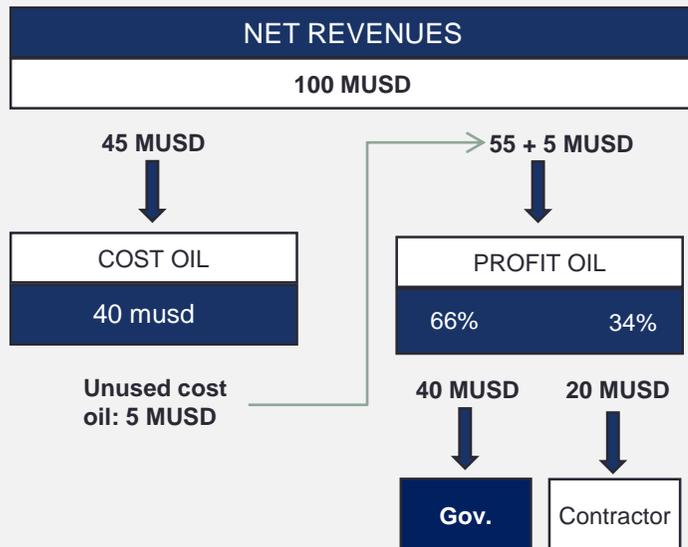
Gov. take for 0-25 kbb/d: 20% \* 50% \* 80musd

Gov. take for 25-50 kbb/d: 20% \* 60% \* 80musd

# PSA Calculation Example - Double cost

## Operational parameters

Production: 125 kbb/d  
 Cost of production: 40 MUSD



Gov. take in % of net revenues: 40%  
 Gov. take in % of net revenue – cost: 66%

## Tax parameters:

Cost oil limit: 45%  
 Unused cost oil: To profit oil  
 Profit oil distribution: Dependent on production

0-25 kbb/d	50% to government
25-50 kbb/d	60% to government
50-100 kbb/d	70% to government
>100 kbb/d	80% to government

## Profit Oil calculation

Tranche	Allocation		Government take		Contractor share		Total
	kbb/d	Dist	%	musd	musd	musd	
0-25	25	20.0 %	50 %	6.0	50 %	6.0	12.0
25-50	25	20.0 %	60 %	7.2	40 %	4.8	12.0
50-100	50	40.0 %	70 %	16.8	30 %	7.2	24.0
>100	25	20.0 %	80 %	9.6	20 %	2.4	12.0
<b>Total</b>	<b>125</b>	<b>100 %</b>	<b>66 %</b>	<b>39.6</b>	<b>34 %</b>	<b>20.4</b>	<b>60.0</b>

Gov. take for per tranche:  $\text{distribution} * \text{gov. take} \% * \text{profit oil pot}$

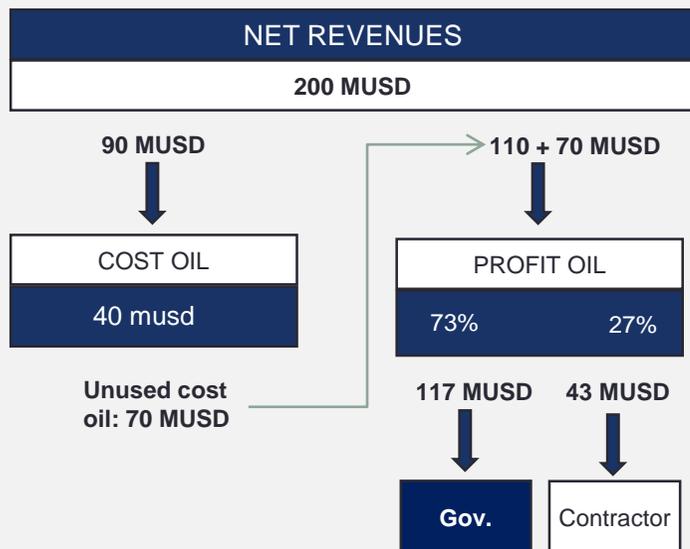
Gov. take for 0-25 kbb/d:  $20\% * 50\% * 60\text{musd}$

Gov. take for 25-50 kbb/d:  $20\% * 60\% * 60\text{musd}$

# PSA Calculation Example - Double production

## Operational parameters

Production: 250 kbb/d  
 Cost of production 40 MUSD



Gov. take in % of net revenues: 58%  
 Gov. take in % of net revenue – cost: 73%

## Tax parameters:

Cost oil limit: 45%  
 Unused cost oil: To profit oil  
 Profit oil distribution: Dependent on production  
 0-25 kbb/d: 50% to government  
 25-50 kbb/d: 60% to government  
 50-100 kbb/d: 70% to government  
 >100 kbb/d: 80% to government

## Profit Oil calculation

Tranche	Allocation		Government take		Contractor share		Total
	kbb/d	Dist	%	musd	musd	musd	
0-25	25	10.0 %	50 %	8.0	50 %	8.0	16.0
25-50	25	10.0 %	60 %	9.6	40 %	6.4	16.0
50-100	50	20.0 %	70 %	22.4	30 %	9.6	32.0
>100	150	60.0 %	80 %	76.8	20 %	19.2	96.0
<b>Total</b>	<b>250</b>	<b>100 %</b>	<b>73 %</b>	<b>116.8</b>	<b>27 %</b>	<b>43.2</b>	<b>160.0</b>

Gov. take for per tranche: distribution \* gov. take % \* profit oil pot

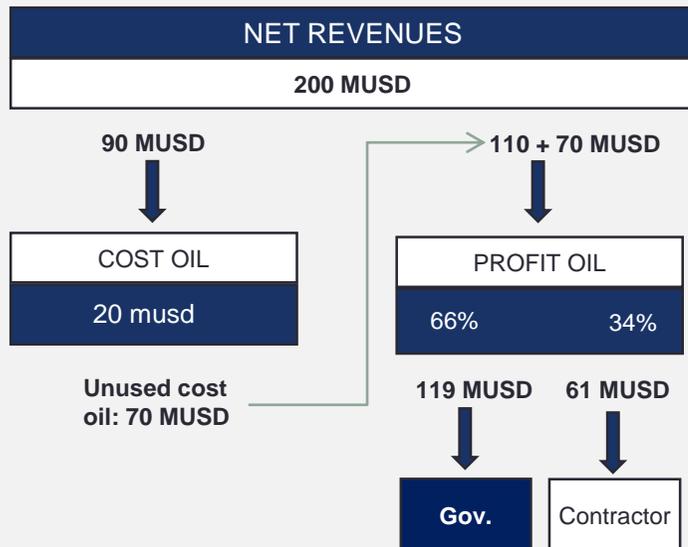
Gov. take for 0-25 kbb/d: 20% \* 50% \* 160 musd

Gov. take for 25-50 kbb/d: 20% \* 60% \* 160 musd

# PSA Calculation Example - Double oil price (no cost increase)

## Operational parameters

Production: 125 kbb/d  
 Cost of production: 20 MUSD



Gov. take in % of net revenues: 59%  
 Gov. take in % of net revenue – cost: 66%

## Tax parameters:

Cost oil limit: 45%  
 Unused cost oil: To profit oil  
 Profit oil distribution: Dependent on production

0-25 kbb/d	50% to government
25-50 kbb/d	60% to government
50-100 kbb/d	70% to government
>100 kbb/d	80% to government

## Profit Oil calculation

Tranche	Allocation		Government take		Contractor share		Total
	kbb/d	Dist	%	musd	musd	musd	
0-25	25	20.0 %	50 %	18.0	50 %	18.0	36.0
25-50	25	20.0 %	60 %	21.6	40 %	14.4	36.0
50-100	50	40.0 %	70 %	50.4	30 %	21.6	72.0
>100	25	20.0 %	80 %	28.8	20 %	7.2	36.0
<b>Total</b>	<b>125</b>	<b>100 %</b>	<b>66 %</b>	<b>118.8</b>	<b>34 %</b>	<b>61.2</b>	<b>180.0</b>

Gov. take for per tranche:  $\text{distribution} * \text{gov. take \%} * \text{profit oil pot}$

Gov. take for 0-25 kbb/d:  $20\% * 50\% * 180\text{musd}$

Gov. take for 25-50 kbb/d:  $20\% * 60\% * 180\text{musd}$

## PSA Calculation Example – Some learning points

---

- An increased cost base does not affect the government share in %, but since there are less profits to share among the contractors and the government, both parties eventually loose in monetary terms
- Increased production increases the government share (relatively more production in high-taxed tranche) in conjunction with increased the revenue. This creates a proportional higher profit relative to “base” case.
- Increased price seems to be the most attractive for both parties as costs are not affected => more profit to share.
- The challenge is to create a fiscal system that provides the contractor a reasonable IRR under many macro economic environments, and at the other hand generates sufficient taxes to the government.



**Thank you for listening**

**Name:** Jørgen Klev  
**Phone:** +48 04 39 28  
**Email:** [jorgen.klev@econoilandgas.com](mailto:jorgen.klev@econoilandgas.com)  
**Web:** [www.econoilandgas.com](http://www.econoilandgas.com)