LTICs and Hub Pricing
follow up on Sergey Komlevs
Presentation of 30 November 2015

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Market imperfections gas

- Supply:
  - capacity bound
  - resources subject to sovereignty (except US)

- Demand: atypical demand curve
  - demand: restricted by capacity
  - residential: essential good without short term alternative (no short term price elasticity)
  - industry / power: No price elasticity but switch to replacement fuel or merit order for power
Why LTCs?

- Protection of specific investment decisions against obsolescent bargaining (in non liquid markets)

- Long term contracts in general:
  - Characteristic: long term contractual relation, dispute resolution
  - Typically under art 2: for the term of this contract (duration usually 10 years +) the seller commits to deliver and the buyer commits to buy gas under the terms and conditions of this contract.
    - No specifics on price (e.g. oil price pegging)
    - No specifics on volumes (e.g. min pay)
    - Clause to adopt to changed circumstances useful

- LTCs under one jurisdiction:
  - Both sides subject to the same jurisdiction
  - Rent stays in the country concerned; distribution of rent defined by taxation regime under one jurisdiction
  - Dispute settlement under the respective jurisdiction
  - EU: one jurisdiction for infrastructure, but rent taking / taxation upstream (UK, NL some others) and downstream competence of MS
Why LTICs?

- Stabilizing in case of oligopoly / oligopsony by PHYSICAL delivery and take (or pay) obligation

- LTIC: special case of LTC involving two jurisdictions (plus eventually transit countries)
  - Rent taking subject to two different jurisdictions (upstream and downstream)
  - Transaction to be agreed between commercial partners, but rent taking involving commercial partners AND at least two different Governments
  - Regulatory acts of one jurisdictions may affect the other side
  - Commercial balance subject to interference by either government
  - Dispute settlement by a neutral institution outside jurisdiction of either side
## Design parameter of LTICs

<table>
<thead>
<tr>
<th>Contract type</th>
<th>Supply type contract portfolio or national (overall) resources</th>
<th>Depletion type contract Field specific</th>
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</thead>
<tbody>
<tr>
<td>Resource base</td>
<td>Border</td>
<td>Hub (physical or virtual)</td>
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<td>Delivery point</td>
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<tr>
<td>Pricing approach</td>
<td>Cost based</td>
<td>Value based</td>
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<td>Offtake obligation</td>
<td>Volume</td>
<td>Minimum Pay</td>
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<td>Dispute settlement</td>
<td>National jurisdiction [Court of law]</td>
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<tr>
<td>Price review</td>
<td>Variety of Price review provisions (if any) to adopt to changing circumstances</td>
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</table>
## World Price Formation: Total Imports 2014

<table>
<thead>
<tr>
<th>Region</th>
<th>OPE</th>
<th>GOG</th>
<th>BIM</th>
<th>TOT</th>
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<td><strong>Total</strong></td>
<td>464.7</td>
<td>388.2</td>
<td>67.8</td>
<td>921.1</td>
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</table>

OPE: Oil Price Escalation; GOG: Gas on Gas; BIM: Bilateral Monopoly
Source: IGU 2015
Different to oil

- Gas can always be replaced by other fuels (directly or indirectly, short term and long term with investment)
- Replacement fuels put a cap on gas prices (except for short term scarcity as long as replacement is not possible)
- Volume reaction depend mainly on relative pricing
- Scarcity of gas: allows for replacement pricing, optimizing resource rent
- No scarcity of gas => no scarcity (replacement) gas prices
- Surplus of gas => volume reduction by swing supplier or gas market clearing price: competition with coal
Adopting LTICs to Gvt. /regulatory action

- LTICs duration was approved by respective Governments
- No direct Government interference into LTICs
  - Otherwise road to central planning
  - Changing unilaterally the balance along the chain
- No conflict resolution between Gvt involved => to be solved within commercial relation
Challenges of hubs

- Hubs can work if enough supply competition; may attract cheap gas

- Resource rent under pressure and increasingly unpredictable

- Without LTIC exposure to oligopoly
Restructuring: marketing or contracts?

- To the extent contractually not bound:
  - Changing the aggregator role at import level
  - New role of exporters in the market

- Otherwise restructuring of LTICs:
  - Agreement outside contractual provisions
    - Changing volume / flexibility provisions
    - Extreme: dissolution of all firm obligations
  - By mechanism embedded in the contract
    - Bouleversement / government interference
    - Long lasting force majeure
    - Price review clause
Price review provisions may not fit any more

- (Standard) Price reviews: yardstick for change of price provisions (except for review clause)
  - Change over time vs. status at a point in time
  - Replacement / netback / market value
  - Landscape clause (look at comparable contracts)
  - In any case (the gas shall be marketable) clause

Dilemma:
- Unbundling => importer under LTIC becomes an agent, no investment left to protect by in any case clause
- Replacement market value approach void => application of
  - Landscape clause, if any
    - In any case clause (wording stems from earlier times)
- No physical delivery but delivery at a hub => not pricing of gas any more (also no security of supply left)
Lessons so far

- LTIC with hub pricing:
  - May work for importers with (to the extent) of own customer basis

- Hub pricing in multi-tier systems
  - May be problematic for producers in case of firm supply obligations
  - Exporter may take aggregator role
  - A multitude of approaches so far:
    - Partial pegging to hub prices
    - Retroactive cash settlement
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<td>Renegotiated contracts (by years)</td>
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<td>12</td>
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- Contract renegotiated according to Gazprom’s data
- Discount made (inc. discount that is made without amendment to contract) according to Gazprom officials statements or media

Source: ERI RAS using Gazprom Annual Reports 2009-2013, Quarterly report: 1 Quarter 2014
How could LTICs work in the future?

- Starting point freedom of contract: free contract pricing for single transaction or LTICs for any two parties
- What marketing structure? Demand aggregation by exporter or importer? Hindrances to demand aggregation?
- Indices for LTICs beyond the influence of the parties
- LTICs purely pegged to hub prices: economic sense?
- Making gas for power (de-carbonization) work under a different pricing?
Reserve slides
Oil pricing: supply and demand

- Cournot Nash Theorem:
  \[
  \frac{\text{Price} - \text{Marginal cost}}{\text{Price}} = \frac{\text{HHI}}{\varepsilon}, \quad \text{where:}
  \]
  \[
  \text{HHI} = \text{Hirschmann-Herfindahl index}
  \]
  \[
  \varepsilon = \text{demand price elasticity}
  \]

- Oil: oligopoly and inelastic demand \(\Rightarrow\) possibility of scarcity pricing, scarcity rent

- Scarcity: Oil price determined by value of marginal demand and capacity limit

- No scarcity of oil \(\Rightarrow\) no scarcity oil prices: oil price determined by supply / demand equilibrium: marginal production costs equal value of marginal demand
Elements of a Price Re-opener*

*see Energy Charter: Putting a price on energy, p.155

Trigger:
- Just by date, or index development, not by market
- If the circumstances beyond the control of the Parties change significantly compared to the underlying assumptions in the prevailing price provisions

Adjustment:
1. Just talk, or fair and equitable adjustment,
2. Level of resource rent
   - each Party is entitled to an adjustment of the price provisions reflecting such changes.
   - (in some contracts: landscape clause: comparison to other similar, large import contracts)
3. Protection of the buyer (marketability)
   - The price provisions shall in any case allow the gas to be economically marketed based on sound marketing.

Procedure / formalities
- Frequency
- Each Party to provide the information to substantiate its claim
- Peace period before starting arbitration
- Prevailing provisions apply until settlement
- Retroactive settlement incl. interest payment
- Arbitration clause, applicable law
Classic Review of a Typical Net Back Gas Price Formula

\[ P_m = P_o + 0.60 \times 0.80 \times 0.0078 \times (LFO_m - LFO_o) + 0.40 \times 0.90 \times 0.0076 \times (HFO_m - HFO_o) \]

Typical subjects of a price review:
- Shares of competing fuels / new competing fuels / gas to gas competition / switching possibilities
- Adjustment of \( P_o \) to reflect changed shares
- Adjustment of rent sharing / marketing incentive implicit in \( P_o \)
- Ceilings and bottoms
- More technical elements: Reference fuels, time lags
Possible: cash settlement of difference to marketable price
Gas demand scheme (high prices)

- **Burner tip competition**
  - res/com
  - max price: gas oil equivalent
  - less infrastructure

- **Bus bar competition**
  - industry
  - max price
  - HFO equivalent
  - less infrastructure

- **Price Levels**
  - 10 $/MMBTU
  - 4 $/MMBTU

- **US HH price level switching point between coal and gas in power / clearing price for surplus gas**

- **Volumes**
Gas demand scheme (low prices)