Spot trade or long term contracting
a strategic perspective

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Based on Work with Christian von Hirschhausen
Do we need long-term contracts for gas producers?

- EU sector enquiry – are current LT contracts collusive?
  - No resell provisions

Source: Sector Inquiry of Commission
Do we need long-term contracts for gas producers?

- EU sector enquiry – are current LT contracts collusive?
  - No resell provisions
- Should we move to liquid spot trading?
  - UK forward prices failed to predict lower production
Forward prices failed to anticipate current price spike

- NBP
- Zeebrugge
- TTF

Transmission on continent

Oil price increase

Mar-03  Oct-03  Apr-04  Nov-04  May-05  Dec-05

p / therm

0  20  40  60  80  100  120
Do we need long-term contracts for gas producers?

• EU sector enquiry – are current LT contracts collusive?
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• Should we move to liquid spot trading?
  – UK forward prices failed to predict lower production
  – Russia – does Gasprom invest in production/T?
  – LNG terminals – but where are ships and gas?
…. and will we get all that LNG investment?

Liquefaction Capacities Worldwide

Source: Sophia Ruester
Do we need long-term contracts for gas producers?

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  – No resell provisions
• Should we move to liquid spot trading?
  – UK forward prices failed to predict lower production
  – Russia – does Gasprom invest in production/T?
  – LNG terminals – but where are ships and gas?
• Or should we move to transparent fixed price contracts?
  – Free resell, not restricting spot market liquidity
  – Producers don’t want to abandon successful cartel
  – Domestic retail competition constrains counter party
The benefits of spot trading

- Spot trading ensures efficient response to uncertainty
- But exposes all market participant to price volatility
combined with the benefits of long-term contracts

- Fixed price long-term contracts eliminate price volatility
- While retaining efficient re-allocation in spot market (assuming free resell etc.)
1. Benefit of LT contract: Hedging price risk

- Price risk difficult to hedge in financial markets
- Investors require higher rate of return on capital (limited risk appetite, regulatory risk)
- Increases production costs and expected gas price
- Consumers prefer stable energy bill if they do not sell output on markets linked to gas price
- Replicate LT by overlapping ST contracts?
LT contract priced relative to oil

- Historically 15-20 year take or pay contracts
- With increasing regulatory uncertainty contract length decreased
- Historic oil price link

Source: Sector Inquiry of Commission
Future of oil price link?

• Remove oil price link today?
  – In power sector main substitute coal
  – Reduces revenue volatility for exporting/importing economies

• Retain oil price link?
  – If collusion among producers, likely to resist renegotiations
  – First moving electricity generator increases risk with fixed gas prices if electricity prices remain linked to volatile gas price

• Shift towards fixed pricing via S-curve?
2. Benefit of LT contract: Securing investment

- Stable revenue streams facilitate financing

- Assume competitive market/spot sales:
  - downside risk is excess capacity and low prices
  - risk averse producers reduce investment

- Assume competitive market/LT sales
  - downside risk is failing to meet contract obligation
  - risk averse producers increase investment
Effect of uncertainty about future production

Assume:
- Fixed investment costs $c$ per unit of capacity
- Technology uncertainty can shift future output $\pm 15\%$
- Competitive market invests while profits are positive
- Risk averse investors weight losses $(1+r)$ times profits
Contracting changes investment choices

Assume:
- Producers sell 95% of output with long-term contracts
- Then decide on investment in production
- Producers can sell or buy on spot market
3. Benefit of LT contract: Revelation of information

- If most sales spot, producers signal excess supply
  - Prevents entry of competitors
  - Reduces investment
  - Increases future prices and revenues
- If most sales long term, producers signal short supply
  - Demand buys long-term contracts at high prices
- With long-term contracts
  - Demand/supply expectation revealed in contracting decision
- Without long-term contracts
  - Forward market reveals market expectations
  - But recent experience unsatisfactory
4. Benefit of LT contract: Reducing market power

- Strategic value for sellers
- Additional sales stage reduces MP
Long-term contracts commit producer to lower prices

- Long-term contracts reduce prices
- In traditional models long-term contracts reduce producer profit

Demand more elastic short-term than long-term

- Fuel choice at time of investment decisive

\[ R \text{ational Expectations, } P_l = P_S \]
Investment/output choice with rational expectations

ST demand no cont

ST demand contracting

LT demand
Producers‘ profits with(out) long-term contracts

\[ \gamma^* \sim 5, \text{ corresponding to elasticity estimates by Al Sahlawi (1989) for industrial gas demand and Estrada and Fugleberg (1989)} \]
When are producers better off with LT contracts?

Producers profit from long-term contracting

Ratio between long-term and short-term elasticity ($\gamma^*$)

Number of players
Conclusions: Impact of high long-term elasticity

- Long-term contracting commits producer to lower spot prices
- Consumers always benefit from this strategic effect
- Lower price levels also increase long-term demand
- This creates benefits for producers
- With high market concentrations and significantly higher long-term than short-term demand elasticity producers can even profit from long-term contracts
5. Benefit of LT contracts: Bilateral components

- Short term trading costs vs. LT contracting costs?
- Address hold up problem if assets are dedicated
Drawback of LT contract:

• Creates additional opportunity for collusive behaviour
• If all demand/production covered entry difficult
  – Hence initial objection during liberalisation
  – Adjustment relative to LT position creates trade
  – Balance with benefit for investment of entrant
... and what I still don’t understand

• Why not follow other sectors without LT contracting
  – refinery, aluminium, oil production, airlines
  – Would they be cheaper without LT contracting?
  – Is it more difficult to sign LT contracts?
  – Do they receive other government support?
• Is counter party risk too big with fixed price contracts?
Institutional constraints on LT contracts

- If retail company buys on long-term contract
  - At times of low spot prices customers switch away
  - Retail company not credible counter party

- Option 1: LT retail contracts for domestic customers
  - Does it further reduce competition?
  - Does it create additional transaction costs?
  - Do customers care/internalise strategic effect?

- Option 2: Franchise for domestic customers

- Option 3: Only industrial customers buy LT
  - Volume too small for strategic effects?
Summary

• Current debate on LT contracts
  – Concerns raised by sector enquiry
  – Does cosy cartel prevent shift from oil-price link?
• Benefits of long-term contracts
  – Hedge price risk
  – Give right investment incentives
  – Reveal information
  – Mitigate market power
• LT contracting inconsistent with retail competition?