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# OPTIMAL DURATION OF LONG-TERM CONTRACTS IN THE GAS INDUSTRY

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## Overview

The gaz industry in Europe had been previously organized around very long-term contract (20 years, 30 years,…) between gaz producers and European gaz retailers that were often public and/or monopolistic players on their national market. This monopolistic situation has allowed players to benefit of a business environnement with reduced uncertainties. It gave them the ability to engage in such long-term contracts that were also favoured by producers that were seeking for guarantees when investing in gas pipelines that could not be redirected from a market to another and avoid the danger of hold-up carried by ‘relationship-specific’ investments (Williamson, 1979).

Since the European directive 1998/30, the downstream gaz market has been progessively opened for competition; in turn, gas retailers have now to cope with more uncertain future market conditions and need to hedge the increased risks. For retailers, entering very long-term supply contracts may become less attractive than it used to be.

This article build on contract theory to offer a model for the optimal duration of a gas contract between a producer and a retailer, depending on the competitive situation on the downstream market (monopolistic or oligopolistic market).

## Methods

The model proposed is structured as follows:
Consider a producer that owns a gas field available for development with known characteristics (volume, extraction costs). For any sale price per unit of gaz, an optimal extraction rate and the resulting profit can be determined.
The producer offers to the retailer a menu of contracts as a three parameters set: price, annual quantity, and duration of contract. The value of the parameters are linked by the optimal extraction profile function determined in stage 1.
The retailer faces uncertain future demand on the downstream market. She selects the contract that maximise her expected profit. Additional gas supply can be obtained at a fixed, exogenous price, however higher than the one offered by the producer. Two cases are considered: monopolistic retailer or oligopolistic competition in the retail market.

## Results

The results suggests that competitive pressure on the downstream market tilt the preference of retailers for shorter-term contracts. In conclusion we discuss whether this can in turn give additional incentive to the producer to integrate downstream.

## References

The litterature on gas contracts has been mainly focused on ‘flexibility provisions’ in contract and in particular on the so called ‘take or pay’ provision as an efficient measure for sharing the risk between the producer and the supplier:
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