



# Gas and LNG Price Arbitrations

A Practical Handbook  
Second Edition

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and **Mark Levy QC**



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# Natural gas price review arbitrations: issues in adopting hub indexation

Luis Agosti  
Boaz Moselle  
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## 1. Introduction

In this chapter we discuss some issues that are typically ‘live’ in price reviews arising from longterm natural gas supply contracts where the markets supplied are liberalised and downstream pricing is determined by the prices set through the trading of natural gas as a commodity (‘hub trading’). In practice this means a predominant (though not exclusive) focus on Northwest Europe. Other parts of Europe may follow, and in the future potentially Asian markets, though that remains a more distant prospect. In our experience moreover, the issues we discuss have to date usually been more germane to contracts for the delivery of piped gas than of LNG (in part because most of the markets in question receive relatively little LNG, but also because LNG pricing can also be influenced by the global LNG market). Below we will for the most part refer to gas, which can be understood as a reference to piped gas, though much of what we say will also be potentially applicable to LNG.

As a preliminary caveat, we note that this is a general discussion, not an expert report. In the interests of space and readability, we therefore eschew excessive detail. Any application to an individual contract or price review will of course depend on the specific legal, factual and economic matrix, which may create circumstances that would modify the general conclusions presented here.

In the first decade of this century (and before) price reviews were generally related to the adjustment of oil-indexed price formulas in a market context of little or no competition.<sup>1</sup> Oil-indexed formulas were adjusted, typically, by simply raising or lowering the price level while retaining the structure of the oil-indexed price formula. To give a simplified example, one might have had a contract with a formula along the following lines:

$$P_{\text{gas},t} = P_0 + B \times (P_{\text{oil},t} - P_{\text{oil},0}) \quad (1)$$

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<sup>1</sup> In this chapter we use ‘oil’ as shorthand for what is sometimes crude oil but often a basket of fuels such as refined oil products (gasoil, fuel oil) and possibly also coal.

where  $P_{gas,t}$  is the price at time  $t$  of the natural gas supplied under the contract,  $P_{oil,t}$  is some measure of the price of oil at time  $t$ , and  $P_{oil,0}$  is the value of that measure at some starting point labelled time 0.<sup>2</sup> A price review of the kind we are describing might then have changed this constant term, but left the ‘slope’ in the formula unaltered.

However, many European gas markets have changed significantly since 2000, with the development of ‘gas-to-gas competition’, as we explain briefly below. In particular, this meant that market participants at the wholesale level in many countries increasingly bought and sold gas at ‘trading hubs’, creating reliable, publicly available market prices of gas traded over various time frames (‘hub prices’).<sup>3</sup>

These developments have in turn led to a more profound adjustment of pricing arrangements in many long-term supply agreements, with the price development no longer driven by oil prices but by indexation to hub prices. Continuing the example above, the formula shown in (1) might be replaced by the following:

$$P_{gas,t} = P_0 + (P_{hub,t} - P_{hub,0}) \quad (2)$$

where  $P_{hub,t}$  is some measure of the price of gas sold at a European hub, and  $P_{hub,0}$  is the value of that measure at time 0. Since  $P_{gas}$ ,  $P_{hub,t}$  and  $P_{hub,0}$  all refer to the price of gas, there are generally no pass-through factors (ie, the ‘B’ factor in the formula shown in (1)) in a formula with indexation to hub prices.

Gas markets in many European countries now provide liquid and transparent price signals through gas hubs that reflect supply/demand fundamentals. As a result, a large share of long-term gas supply agreements in Europe is now partially or fully indexed to European hub prices. The International Gas Union (IGU) reported that in 2017 gas-to-gas competition determined the price for 70% of wholesale volumes on average in Europe, 92% if the focus is on Northwest Europe.<sup>4</sup> Markets in Central Europe, that in some

2 To further elaborate,  $P_0$  is the price at the starting point time 0, sometimes called the ‘base price’; the expression in brackets ( $P_{oil,t} - P_{oil,0}$ ) is the change in oil price between the starting point and time  $t$  (which may be positive or negative); and the formula sets the price at time  $t$  equal to the price at time 0 plus some multiple  $B$  applied to the change in oil prices since the starting point.  $B$  is often called the ‘slope’ term of the formula and indicates to what extent changes in the price of oil are reflected in the price of gas. If the gas and oil prices are in the same units then  $B$  is referred to as the ‘pass-through factor’ (and will often be less than 1).

3 Several sources provide detailed descriptions of this transition, including: P Heather, *The evolution of European traded gas hubs* (The Oxford Institute for Energy Studies (‘OIES’), December 2015); J Stern and H Rogers, *The Dynamics of a Liberalised European Gas Market – Key determinants of hub prices, and roles and risks of major players* (OIES, December 2014). Note that as with any document cited in this article, citation does not imply unqualified endorsement of content.

4 See IGU Wholesale Survey (IGU, 2018) pp13–14. Northwest Europe refers to Belgium, Denmark, France, Germany, Ireland, Luxembourg, Netherlands and UK. For imports, the IGU defines wholesale prices as the price at the “first point of sale”, eg, if gas is first sold at the border of a country under an oil-indexed contract and it is then re-traded at the hub (and therefore at hub prices), the IGU considers these volumes as oil-indexed volumes.

5 IGU Wholesale Gas Price Survey (IGU, 2018) p14. IGU’s definition of Central Europe comprises Austria, Czech Republic, Hungary, Poland, Slovakia, and Switzerland.

cases have less intense gas-to-gas competition, also exhibit a high degree of hub indexation, at 73%.<sup>5</sup> Only in relatively few countries (eg, Spain, Portugal and Turkey) does oil indexation prevail as the dominant pricing mechanism.

### 1.1 Implications for price reviews

Most long-term gas contracts were agreed at a time when there was no wholesale market for gas, and consequently no visible, reliable wholesale gas price to which the contract price could be indexed.<sup>6</sup> Gas in long-term contracts was often priced against the price of alternative competing fuels such as oil or coal (or those prices were used to index the gas price, even without explicit considerations of inter-fuel competition). However, that pricing mechanism had certain imperfections. For example, the development of competing fuel prices did not always reflect changes in the gas market, in average border prices, in the 'value of natural gas' or in other applicable criteria in the way that the parties might have originally wished or expected. Price reviews were thus introduced in long-term contracts as a mechanism to reset contract prices pursuant to parties' agreed criteria.<sup>7</sup>

In theory, the development of liquid hubs and the subsequent indexation of prices in long-term supply agreements means a much more limited role for price reviews. Since hub indexation eliminates (or at least greatly reduces) the risk of mismatches between prices in long-term import contracts and market prices of natural gas (which are now reflected in hub prices), the need for price review provisions would be reduced. Indeed, it is well known that at least one major producer, Equinor in Norway,<sup>8</sup> has agreed with many of its customers to replace long-term oil-indexed contracts with new contracts that are hub-indexed and that no longer contain the type of price review provisions described above.

The reality, however, is far more complex. We continue to see price review disputes in arbitration, even in gas supply contracts that are already indexed to hub prices or where the adoption of hub-indexation is no longer part of the discussion. The issues are of course different from the issues that arise in contracts with oil-indexed formulas and mainly have to do with two factors. The first is price level. Buyers and sellers have different views on the appropriate discount or premium relative to hub prices that long-term contract prices

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6 Import prices derived from customs declarations, and in particular import prices reported by the German Federal Office for Economic Affairs and Export Control (BAFA), have often been used in negotiations as a benchmark for prices in long-term import contracts. However, these prices have not been widely used as a price index in the price formulas of long-term import contracts, among other reasons because they are only available some months after delivery.

7 Anthony J Melling, *Natural gas pricing and its future: Europe as the battleground* (Carnegie Endowment for International Peace, 2010) p19. Of course, each price review clause is a specific contractual provision, individually negotiated between the parties and to be understood in the context of the contract as a whole and taking into account a range of potentially relevant matters (applicable law, history of contract negotiation, history of performance, etc). In our experience there is no 'industry standard' type of provision in these matters.

8 L Franza, *Long-term gas import contracts in Europe* (Clingendael International Energy Program, 2014).

should reflect.<sup>9</sup> Secondly, buyers and sellers have different views on the right indexation structure, including, the type of contracts ('hub products') that drive the changes in the contract price level over time.

In this chapter we address these 'open' issues. In section 2 we describe what hub prices are and how hub indexation works. In section 3 we look at the interaction between resetting the price level as of an effective date and the adoption of hub indexation. In section 4 we discuss the appropriate hub indexation structure. We also address other issues that are relevant from an implementation perspective but are generally less likely to be contentious. Elsewhere in this book, Valentina Bonetti, Dan Harris and Carlos Lapuerta also focus on certain potential sources of dispute between parties to long-term contracts after they have adopted hub price indexation, namely transportation costs, market risk, margins and the risk of market manipulation. In this chapter we too discuss issues related to margins and market risk, although with a somewhat different focus from those authors.

As a final remark, we note that this article is about hub indexation in the context of long-term contracts and price reviews. We do not discuss hub indexation in new supply contracts, or in renegotiations that take place outside of the context of price reviews, where changes in pricing arrangements are not bound by the same limitations and conditions that parties to long-term contracts (and arbitral tribunals resolving price review disputes) face in price reviews.

## **2. Hub contracts, hub indexation and differences with long-term contracts**

A hub can be thought of as a central pricing point for natural gas, where gas is traded via a set of standardised contracts and the price of the gas is set through the interaction of supply (sellers) and demand (buyers). A hub can be either a virtual location (eg, a market area that corresponds to the borders of a region or country, such as the National Balancing Point ('NBP') hub in the Great Britain) or a physical point on a gas network (eg, an interconnection point where gas pipelines meet, such as the Henry Hub in Louisiana, US). Other hubs in Europe include the Title Transfer Facility ('TTF') in the Netherlands, the Zeebrugge ('ZEE') and Zeebrugge Trading Point ('ZTP') hubs in Belgium, the NetConnect Germany ('NCG') and GASPOOL ('GPL') hubs in Germany, and the Gas Exchange Point ('PEG') in France.

Trading at gas hubs can be undertaken through:

- over-the-counter ('OTC') trading, in which two parties trade bilaterally, usually using a broker or dealer to facilitate trades, under standard terms; or

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<sup>9</sup> When the price in a long-term contract is indexed to a hub price, the contract price moves in parallel with the hub price. However, it may be set above (premium) or below (discount) the hub price. Hub indexation therefore does not mean, necessarily, hub price levels.



- trading on a commodity exchange, that allows for anonymised trading under standardised terms.

A standard hub contract is a contract for the delivery of a fixed volume of natural gas, at a constant rate, over a defined period in the future, at a virtual or physical geographical location within a gas system. For example, a standard TTF month-ahead contract traded on 15 March is a contract for the constant delivery of 1 MWh per hour of natural gas over the following month of April at the TTF hub in the Netherlands.<sup>10</sup> Different contracts may allow for settlement to take place ‘physically’ (ie, by the delivery of the specified gas in line with the applicable contractual provisions), and/or ‘financially’ (ie, by one party making a payment to the other that represents the difference between the price agreed in the contract and the applicable price of gas at the time of delivery).

Depending on the level of maturity of the hub,<sup>11</sup> different products may be available. Less mature hubs may offer products for spot or prompt delivery within the day, day-ahead or month-ahead.<sup>12</sup> More developed and liquid hubs would also offer forward products, that is, contracts for delivery in the more distant future, for example, quarter-ahead, season-ahead (summer/winter) and multi-year-ahead of the trading date. In this sense, there are substantial differences between the level of liquidity and traded volumes in different hubs and for different hub products. The TTF is now the largest hub in terms of traded volumes and is also the most liquid, ahead of the NBP in the UK. In terms of products, trading contracts for spot and prompt delivery is generally more liquid than trading for forward products.<sup>13</sup> We discuss the relevance of the different hub products in section 4.

In the context of long-term gas supply agreements, hub indexation simply means that the contract price follows changes in the price of hub product(s) (rather than changes in the price of oil or other commodities or indices). There are however important differences in terms of how oil-indexed prices and hub-indexed prices allocate price risk.

To explain these differences, we first refer the reader back to the two price formulas shown earlier. In purely mechanical terms, the two formulas work in

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10 The standard agreement by the European Federation of Energy Traders (‘EFET’) is for ‘Flat Transactions’ where the contract quantity is the same for each hour (unless otherwise agreed by the parties). See *General Agreement Concerning The Delivery And Acceptance of Natural Gas*, EFET, May 2007, and the corresponding annexes for each hub.

11 A number of publications discuss the state of development of different European hubs, including for example *European Gas Hub Development Study*, EFET, 12 August 2014, and *Results of Monitoring the Internal Electricity and Natural Gas Markets in 2017, Gas Wholesale Markets Volume*, ACER, October 2018.

12 ‘Spot’ and ‘prompt’ generally refer to contracts for delivery in the short-term, eg, within the day, day-ahead, week-ahead, etc. up to month-ahead delivery. We note however that there is not a unique classification of prompt and forward contracts. Month-ahead contracts may be considered as forward contracts by some authorities.

13 *Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2017, Gas Wholesale Markets Volume*, ACER, October 2018.

a similar manner. They both establish an initial price level, (that may, for example, correspond to the price at the date on which the buyer and the seller in a price review negotiation agree that the revised contract price will first apply). The price in the following periods is then equal to  $P_0$  plus a change determined by the change in the price of the commodity used for indexation purposes: the price of oil in the case of the oil-indexed formulas and the hub product price in the case of hub-indexed formulas. A difference is that in the case of the oil-indexed formula, only a fraction of the change in the price of oil translates to the change in the contract price because of the pass-through factor  $B$ ; while for hub-indexed contracts it is usual to pass-through all of the change.

This subtle difference has important implications for the sharing of price risk between the buyer and the seller. Price risk can be described as the impact on a party's cash flows and profits arising from variations in the contract price of gas supplied under the contract. Under a long-term contract, a seller faces price risk, as there is little or no link between its upstream costs of production and the price it achieves from selling the gas (whether that is indexed to oil products or to hub prices). A buyer faces price risk to the extent that the contract price it pays for gas differs from the price it can achieve in its downstream sales.

In the past, when the price of oil went up, the buyer would be able to resell its gas for a higher price (in the short run, because it resold gas at oil-indexed prices; and in the long run, because gas was often sold in competition with oil products). However, it would also have to pay a higher price. The net effect on its profitability depended on the difference between: (a) the increase in sales price it could achieve; and (b) the increase in cost due to a higher purchase price under its long-term supply contracts.

The introduction of pass-through factors with values most often in the 80% to 90% range<sup>14</sup> meant that the latter factor was smaller than it would have been with a 100% or higher pass-through factor. The buyer would therefore obtain a higher margin than if 100% of change in the price of alternative fuels was translated to the contract price. Similarly, if the price of alternative fuels decreased, the contract price would decrease by a lesser amount, decreasing the margin the buyer obtained when selling the gas downstream.

Pass-through factors less than one therefore passed a greater part of the price risk to the buyer, by giving it bigger swings in profitability in response to changes in oil prices than would have been the case with no pass-through factors (equivalently, with pass-through factors equal to 1).

On the contrary, in competitive and liquid gas markets the hub price is already a wholesale market price, which generally also determines gas prices in

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14 See *Putting a price on energy: international pricing mechanisms for oil and gas*, Energy Charter Secretariat (2007) 154.

the end user market. If the hub price increases by €1/MWh then in general the resale price will increase by €1/MWh, and the price in the supply contract, if it is hub-indexed along the lines of formula (2) above, increases by €1/MWh.<sup>15</sup> The buyer's margin on resale is therefore unaffected: the buyer is no longer subject to the risk of the contract price decoupling from the prices it can obtain when reselling the gas it buys under the long-term contract.

The fact that the buyer is no longer subject to price risk does not mean that it is always going to make a margin. If  $P_0$  is lower than the hub price at that time  $P_{\text{hub}0}$ , the buyer will obtain a positive margin equal to at least the difference between the initial contract price and the hub price and higher if it can sell downstream to end users at prices above hub. If  $P_0$  is higher than  $P_{\text{hub}0}$ , then margins will be lower, though not necessarily negative. We explain below that long-term contracts provide buyers with valuable flexibility. This flexibility may allow buyers to obtain resale prices above hub levels and can thus justify having contract prices at a premium to hub prices.

Therefore, a key question in the determination of a hub-indexed contract price is the existence and magnitude of a premium/discount relative to the hub price itself.

*This is an extract from the chapter 'Natural gas price review arbitrations: issues in adopting hub indexation' by Luis Agosti and Boaz Moselle in Gas and LNG Price Arbitrations, Second Edition, published by Globe Law and Business.*

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15 Here we abstract away from issues of timing (e.g. if the buyer has agreed resale at a hub price fixed at a certain point in time), and also of hedging (which the buyer would typically use in those circumstances). Our point remains valid in principle, but the details become more complex, when one takes those issues into account.

# Gas and LNG Price Arbitrations

A Practical Handbook, Second Edition

## **Gas and LNG Price Arbitrations: A Practical Handbook, Second Edition**

Price review disputes have become an increasingly prominent feature in gas and LNG markets over the past decade. While the first wave of disputes was driven by the ‘triple whammy’ of recession, US shale gas and the liberalisation of the gas markets in Europe, further waves have followed with the development of increasingly liquid trading hubs across Europe, ongoing volatility in commodity prices and the continuing influx of liquefied natural gas (LNG) into Europe. Furthermore, the trends previously seen in Europe are starting to be replicated in Asian markets.

This practical second edition contains contributions from leading international arbitration practitioners and arbitrators in the field, in-house counsel and industry experts. It covers the various stages of a gas pricing dispute, from drafting the clause to triggering a review, all the way through the different stages of the arbitral process. It also builds on the first edition by containing insights into topics such as hub indexation, the impact on pricing of non-price terms like destination flexibility, and the differences between gas and LNG price reviews.

Despite the large number of high-value disputes in this area, this is one of the very few publications to draw together the various strands of gas pricing disputes into one book. It is therefore an invaluable guide for practitioners, in-house counsel and anyone else with an interest in this area.

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