Changes in the European Gas Market and Price Review Arbitrations

By Ana Stanič and Graham Weale*

This article examines the significant structural changes that have occurred in the European gas market in the last decade, and the ability of the price review mechanism set out in gas supply agreements to take such changes into account when revising the price of gas and the uncertainties of resorting to arbitration to resolve price disputes. Ways to overcome the limitations and minimise the uncertainties of price review clauses as a mechanism for revising the price of gas are highlighted in the final section of the article.

Significant structural changes have occurred in the European gas market in the last decade. The world has seen a steep rise in demand for, and the price of, gas. At the same time, the liberalisation of the EU gas market and the growth in the trade of liquefied natural gas (LNG) across the Atlantic have changed, and continue to change, the basis on which most European gas companies conduct their business.

Owing to their long-term nature, European gas supply agreements (GSAs) typically contain a mechanism for reviewing the price of gas at regular intervals. This allows the price to be revised to reflect the changes in the gas market that occur during the term of a GSA. In the past, parties to GSAs most often resolved pricing disputes through negotiation.

However, there has been a significant increase in parties turning to arbitration to resolve such disputes. As this article will show, this is because

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the typical price review mechanism is not well equipped to address the above-mentioned structural changes in the European gas market. Given the nature of such changes differences have arisen between the parties concerning the scope and operation of price reviews, making agreements concerning price revisions more difficult to reach and the outcome of price reviews more uncertain and unpredictable. It is expected that the trend of resorting to arbitration to resolve price disputes will continue until such a time when the pricing and price review provisions are realigned to better reflect the new market realities.

Through the prism of recent price review arbitrations in which the authors were involved ('recent arbitrations'), this article discusses the scope and limitations of price review clauses and the uncertainties and complexities of resorting to arbitration to resolve disputes concerning the price of gas.

Structure of the article

The first section of the article discusses the scope and purpose of price review clauses in long-term GSAs in Europe while the second section looks at the changes that have occurred in the European gas market in the last decade and their impact on the price of gas. The scope and operation of a typical price review clause are analysed from the perspective of recent arbitrations in the third section. Finally, ways to overcome the limitations and minimise the uncertainties of price review clauses as a mechanism for revising the price of gas are discussed.

GSAs and price review clauses

Most of the gas sold in the European Union is sold pursuant to GSAs that are long term, ranging from 15 to 30 years in duration. Since investments in gas production projects typically exceed US$1 billion (and in some cases are several times this figure) and the cost of transporting LNG is high relative to its product value, the long-term nature of GSAs provides suppliers with a basis for recouping their investment. Specifically, under a GSA a buyer of gas undertakes to buy gas at a contractually agreed price, thus enabling the gas supplier to minimise the risks and exposure associated with the large capital investment. In return, the supplier commits to supply contractually agreed quantities of gas to the buyer enabling the buyer to plan its on-sale by entering into back-to-back agreements. In other words, the seller takes the price risk while the buyer takes the volume risk as it undertakes to take or pay the contractually agreed volume of gas.

Price formula

Rather than fixing the price of gas for the duration of a GSA, the parties typically agree a price formula pursuant to which the price of gas fluctuates in line with its market value.[1] This guarantees the buyer that the price of gas supplied under the GSA will remain competitive relative to other sources of energy during the term of the GSA. At the same time, it allows the seller to capture the value of the gas in the end-user market as it changes over time.

Under a typical price formula, the price of gas is calculated and invoiced monthly in respect of pipeline gas and for each cargo delivered in the case of LNG. A typical price formula is set out below:

'$P = P_0 \times [0.5 \times P_G/P_{G0} + 0.25 \times P_{LSF}/P_{LSF0} + 0.25 \times P_{HSF}/P_{HSF0}]$[2]

Where:

P = *the price of gas at the delivery point*

P_0 = *the price of gas as at the date the GSA was signed*

P_{G0} = *the average price of gas oil in a [specified] market during the six-month period preceding the date the GSA was signed*

P_G = *the average price of gas oil in a [specified] market during the six-month period preceding the Delivery Date (as defined in the GSA)*

P_{LSF0} = *the average price of low sulphur fuel oil in a [specified] market during the six-month period preceding the date the GSA was signed*

P_{LSF} = *the average price of low sulphur fuel oil in a [specified] market during the six- month period preceding the Delivery Date*

P_{HSF0} = *the average price of high sulphur fuel oil in a [specified] market during the six-month period preceding the date the GSA was signed*

P_{HSF} = *the average price of high sulphur fuel oil in a [specified] market during the six-month period preceding the Delivery Date*[3]'

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1 An important distinction is made between the terms 'price of gas' and 'value of gas'. The term 'price of gas' refers to the price of gas under the GSA as determined by reference to the price formula. The term 'value of gas' is a relative concept and reflects the fact that under the price formula the price of gas is determined by reference to, and is derived from, the price of other sources of energy, typically oil products.

2 The figures 0.5 and 0.25 represent the relative share of each oil product as an energy source in the gas market to which gas is being supplied under a GSA. These figures usually vary from one gas market to another. Therefore, the price of gas under a GSA is calculated as the weighted average of the prices of the oil products included in the price formula.

3 High sulphur fuel oil is included in the price formula as the majority of GSAs currently in force still make reference to it despite the fact that it no longer competes with gas since its use is prohibited.

The following are a few general observations regarding the price formula.

Price of gas is indexed to prices of oil products

First, under the above price formula the price of gas is indexed to the prices of oil products.[4] Most gas in Europe is sold under long-term GSAs. Only small quantities of gas are traded on the spot market. Although there is a relatively liquid spot market for gas (known as the 'NBP') in the United Kingdom there is presently no liquid market for the price of gas, like the Henry Hub price in the United States, in the European gas market. Consequently, the price of gas is usually still determined by reference to the prices of oil products with which gas competes as an energy source as their prices are publicly quoted. Which oil products are chosen as a proxy for the price of gas depends on the market in which gas is being sold as different oil products are used in different European energy markets.

Elements of price formula

Secondly, the price formula consists of two elements: the fixed element and the variable element. The fixed element, known as Po, represents the price of gas as at the time the GSA was signed in the market to which gas is to be sold over the course of the GSA. This provides an anchor for the price of gas under the GSA.

The variable element, expressed as a multiplicative factor, enables the price of gas to vary over the term of the GSA in line with the changes in the prices of oil products with which gas competes in the relevant market. In Europe, the two main competitors of gas are gas oil (used in the household sector and for premium industry applications) and low sulphur fuel oil (LSFO) (widely used in industry as boiler fuel). High sulphur fuel oil (HSFO) was until recently also a competitor of gas. Since its use was prohibited in EU countries only recently the majority of GSAs currently in force still make reference to it in the price formula. Accordingly, the variable element of the price formula typically has three elements, representing the weighted average price of gas oil (P_G), LSFO (P_{LSFO}) and HSFO (P_{HSFO}) over (typically) a six- or nine-month period preceding each delivery of the gas under the GSA. The price formula reflects the share each such oil product has in the market to which gas is to be supplied under the GSA. In the example above,

4 There are GSAs pursuant to which the price of gas is indexed to the prices of coal or electricity. However, the vast majority of GSAs presently in force index the price of gas to that of oil products.

the figures 0.5 and 0.25 express their weighted shares. In calculating the price of gas for a given delivery, the average prices of oil products over a six- or nine-month period preceding each delivery date are taken to minimise the impact of seasons on prices since in summer prices of oil products are lower than in winter.

Price formula is heavily negotiated

It is not surprising that the price formula is a heavily negotiated term:

(1) The base price, Po, must be set.
(2) The parties must agree which oil products compete with gas in the market to which the gas will be supplied.
(3) The relative share of each oil product in such market must be determined as at the date chosen as the reference date for Po.
(4) The parties must select the index of published oil product prices for the variable element.
(5) Finally, the time period used to calculate the weighted average price of the chosen oil products must be selected.

Price review clauses

What is clear from the above is that the price formula is a mathematical reflection of the parties' agreement regarding the relationship between the price of gas and prices of oil products at the time the GSA was negotiated. Since the interrelationship between the price of gas and the prices of oil products is likely to change over the duration of a GSA, the parties typically agree to review and revise the price formula if certain defined conditions occur. This enables the price of gas to be realigned with the prices of oil products with which it competes at the time of the review.

Typically, a price review clause is worded as follows:

> 'The parties agree that if events beyond the control of the parties occur from time to time during the term of the GSA which give rise to significant changes in the energy market of the buyer as compared to such energy market as at the date of reference of Po (or, in the case of all price reviews after the first one, as compared to such energy market as at the most recent date on which there has been a price review pursuant to this clause) which affect the value of gas obtained in the end-user market of the buyer by a prudent and efficient gas company, then either party may request a regular price review or a special price review as set out below. …
>
> If no written agreement is reached between the parties to revise the price formula within [X] days after the notice requesting the price

> review was given, then either party shall have the right, exercisable by notice given to the other party within [Y] days after the notice requesting the price review was given, to have the price reviewed by an arbitral tribunal …'

The following initial observations can be made about the price review process.

Two-stage process

The price review clause envisages a two-stage process. First, the party requesting a price review must show that the elements for triggering the price review have been satisfied. Only if the price review triggers have an effect on the value of gas in the end-user market will the second stage of the price review process be embarked on and the price revised. The mechanism for revising the price formula is not detailed in the clause; what is envisaged is that the price formula should be revised to reflect the effect significant changes have had on the value of gas obtained by a prudent and efficient gas company in the end-user market of the buyer of gas under the GSA.

Grounds for price review are objective

Secondly, both the triggers and the basis for revising the price are objective. First, reference is made to events that are beyond the control of the parties rather than events affecting the economic position of one of the parties (as is the case in hardship clauses). Secondly, reference is made to the effect such events have had on the value of gas obtained by a prudent and efficient operator in the end-user market of the buyer as a whole rather than that obtained by the buyer with respect to the gas supplied under the GSA. Accordingly, the fact that the price of the gas under the GSA makes the agreement economically more onerous on one of the parties is not *per se* a ground for a price review.

Triggering the price review

Thirdly, a price review may be requested by either party at regular intervals, usually every three years, by submitting a regular price review notice. In addition, the more recent GSAs enable a party to request a special price review a specified number of times during the term of the GSA, provided it can show that the grounds for triggering the price review have occurred. This allows the price to be adjusted more quickly to changes in the gas market and was presumably adopted as a practice in anticipation of what were expected to be significant changes in the gas market as a result of the liberalisation of the EU gas market by the European Commission (see discussion in 'Liberalisation of European gas market').

Obligation to negotiate and arbitrate

Fourthly, once a request is made by a party to review the price, the parties are required to commence discussions to ascertain whether the conditions for revising the price have been met and, if so, to revise the price. If no agreement is reached between the parties within an agreed time period (typically between 60 and 120 days from the date of the request), the typical price review clause provides that either party may request that the price formula be reviewed and, if necessary, revised by an arbitral tribunal.

Changes in the European gas market

Four major changes have occurred in the European gas market since 1998. First, the demand for gas has increased considerably. Secondly, the significant rise in the price of oil since 2004 has resulted in the price of gas also rising considerably. Thirdly, the process of liberalising the European gas market, with the aim of creating a single EU gas market, started in 1998 and has gained pace since then. Fourthly, a market for LNG has developed across the Atlantic fuelled by price arbitrage. Each of these changes is discussed in turn.

Increase in demand for gas

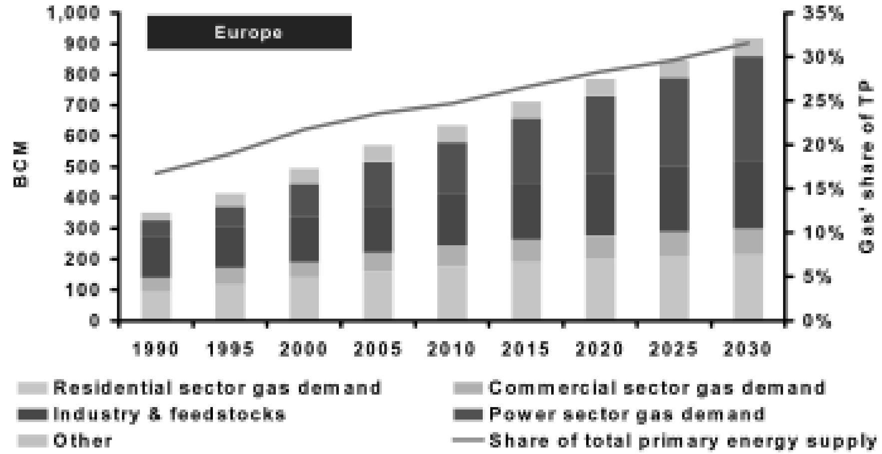
The demand for gas has grown relentlessly in Europe since the late 1960s. The 1990s saw a boom in demand for gas, propelled primarily by the use of gas in combined cycle gas tribunes (CCGTs) in the power sector. Figure 1 charts the rise in the demand for gas in Europe since 1990. The rise in the demand for gas in power generation is shown in the lowest segment within each column.

As discussed in the first section, in the residential, industrial and commercial sectors gas competes directly with oil products. However, in the power sector gas is used in high efficiency CCGT to produce electricity and competes against a wider range of energy sources including coal and nuclear power. Consequently, in the power sector prices of oil products are not a good proxy for the price of gas sold. Since CCGTs consume a significant proportion of gas consumed in Europe, the typical price formula discussed in the first section no longer accurately reflects the market value of gas in Europe and needs to be revised.

Increase in price of gas worldwide

As discussed above, the price of gas has been, and still is, predominantly linked to the price of oil products. After the oil price collapsed in 1986, the price of both oil and gas remained relatively stable for a number of years.

Figure 1: Growth of European gas demand (EU-25) by sector



Source: International Energy Agency, *Energy Balances of OECD Countries (1990-2004)*, www.iea.org/Textbase/stats, at 132-135 and Global Insight, *European Gas Supply Demand Report*, 2006.

However, global developments (principally driven by strong Chinese demand) have caused the price of oil and, consequently, the price of gas to rise dramatically in 2004. Since 2004, the price of oil has continued to rise and since the demand for oil is expected to continue to outstrip supply, the prices are expected to continue to rise.

Liberalisation of European gas market

Until the year 2000, gas was sold in most EU Member States by large state-owned monopolies. In many EU Member States, state monopolies were vertically integrated companies, which were responsible for everything from importing and transporting of gas to selling gas to the wholesale and retail market. Even in countries where the ownership of gas activities was more diversified there was little competition. Only limited quantities of gas were sold across state borders as cross-border pipeline infrastructure was lacking and state monopolies had little incentive to operate outside their national markets. As such, the European gas market was fragmented.

In order to create a single European gas market and enhance competition within and among EU Member States, the European Commission adopted the first Gas Directive[5] in June 1998. This was followed by the adoption of

5 Directive 98/30/EC of the European Parliament and of the Council of 22 June 1998 concerning common rules for the internal market in natural gas, ://ec.europa.eu/energy/gas/legislation/legislation_en.htm.

another, more ambitious, Gas Directive in 2003[6] pursuant to which the gas markets of EU Member States were to be completely open (with some minor exceptions in respect of the most recent joiners) by 2007. The essential elements of liberalisation were threefold: compulsory third-party access to transmission and distribution networks; unbundling of vertically integrated companies; and the removal of barriers to entry into national markets for gas suppliers.

These liberalisation measures have had two key effects on the EU gas market. First, gas now competes with gas in EU markets. This is because the removal of barriers to entry to national gas market combined with the rise in demand for gas (discussed above) have led to an increase in competition between gas providers as new entrants sought to attract buyers by offering lower prices than those charged by incumbent sellers of gas. The resulting gas-to-gas competition means that in EU gas markets the price of gas is, to a growing extent, dependent on the price of other gas supplied to such markets and thus is no longer entirely determined by the price of oil products.

Secondly, most buyers of gas are increasingly conducting their business on a pan-European and, in some instances, worldwide basis since, as a result of liberalisation, national incumbents are no longer required to supply the markets in which they are located. Therefore, they are now able to redirect their gas to other markets (whether elsewhere in Europe or further afield) to take advantage of higher prices.

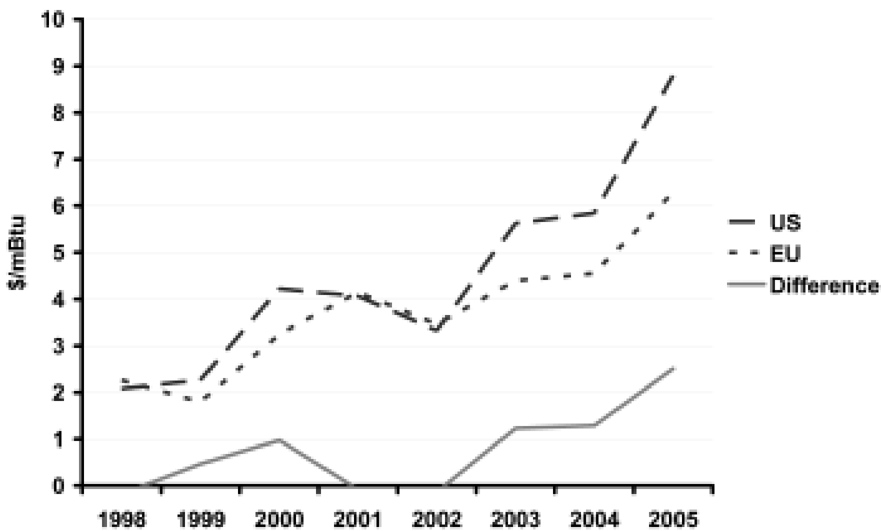
Recent rise in cross-Atlantic gas trading

Before the year 2000, trade in gas across the Atlantic was relatively small. Although producers from Algeria, Nigeria and Trinidad and Tobago sold gas in both the US and European markets, these markets were regarded as separate and each had its own pricing structure. Trading in gas was very much compartmentalised on a geographical and national basis. In addition, gas prices were relatively similar on both continents.

A significant differential in prices at which LNG was sold in the United States and Europe emerged in 2001 as a result of an unexpectedly dramatic decline in the production of indigenous gas in the United States causing the demand for gas in the United States to outstrip supply. From 2003

6 Directive 2003/55/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in natural gas and repealing Directive 98/30/C, ://ec.europa.eu/energy/gas/legislation/legislation_en.htm.

Figure 2: Gas prices in Europe and the United States



Source: BP, *BP Statistical Review of World Energy, June 2006,* www.bp.com/productlanding, at 16 and 31.

onwards, arbitrage opportunities became clear to most gas buyers and resulted in many cargoes of gas originally destined for Europe being rediverted into the United States. Figure 2 shows the difference in the price of gas between Europe and the United States in the period from 1998 to 2005.

The growth in the trade of LNG across the Atlantic has had the following effects on the European gas market. First, an increasing number of European gas buyers now sell gas to the United States and conduct their business on a worldwide basis seeking price arbitrage and other opportunities outside their traditional markets. As such, the gas market of any specific buyer is increasingly difficult to define in geographical terms. Secondly, since 2005, the price of gas in Europe has been in certain sectors of the gas market set by reference to Henry Hub prices, being the market price of gas in the United States. For example, the prices of gas at which some industrial gas buyers are purchasing gas in Europe are being indexed to Henry Hub prices rather than to oil products, while in countries such as Spain, where the government still sets the price of gas for households and other small consumers, the Henry Hub price is now an element in calculating the tariff price. This means that although the price of oil products is still used as a basis for calculating the price of gas, the price of gas in other markets and, in particular, in the US market, is becoming a factor in determining the price of gas in Europe.

Triggering a price review and recent price review arbitrations

As discussed in the first section, GSAs enable parties to review the price of gas at regular intervals and revise the price formula to take into account changes that have occurred in the market to which the gas is being supplied. The terms of a typical price review clause were set out in the first section.

This section examines the scope and operation of the price review process through the prism of recent arbitrations. The analysis highlights, subject to necessary confidentiality considerations, the reasons why the typical price review clause is ill-equipped to address the above-discussed structural changes in the European gas market and the uncertainties associated with resorting to arbitration to revise the price of gas.

Triggering a price review

To trigger a price review under a typical price review clause a party must show that:

(1) circumstances have occurred in the buyer's energy market,
(2) which are beyond the control of the parties,
(3) which have induced significant changes in the buyer's market, and
(4) which in turn have affected the value of gas in the buyer's end-user market.

Each trigger is examined in turn.

Circumstances have occurred in the energy market of the buyer

In order to trigger a price review, a party must point to circumstances that have occurred in the energy market of the buyer. As such, determining the scope of the term 'energy market of the buyer' is key to determining which circumstances can be invoked to trigger a price review. Typically, this term is not defined in a price review clause. As such, neither its geographical nor sectoral scopes are expressly delineated.

Geographical scope

As discussed in the second section, at the time the majority of GSAs currently in place were negotiated most buyers of gas were state-owned monopolies, which operated within the confines of their own states and GSAs frequently prescribed the national market into which the gas could be sold. After the European Commission proclaimed geographical destination clauses anti-competitive, reference to specific markets was removed from GSAs leaving the geographical scope of the term energy market of the buyer undefined.

While the ability to trade gas across European borders remained limited, the geographical scope of the term was in practice limited to a single national market.

However, the liberalisation of the European gas market and the rise in cross-Atlantic trade (two of the changes discussed in the second section) have resulted in gas buyers increasingly conducting their business on a European and, in some instances, worldwide basis. Consequently, a narrowly circumscribed definition of the buyer's energy market that is limited to a single national market no longer reflects the reality of the buyer's operation.

How one should define the geographical scope of the term has become an important issue in dispute in recent price reviews with parties disagreeing whether only the market in which the buyer predominantly operates or all the markets in which it operates should be taken into account. Despite disagreeing as to the scope of the term, in the recent arbitrations in the end the parties and the arbitrators simply ignored the fact that the buyer was selling in several national markets and limited the review to the market in which the buyer was predominantly selling gas purchased by it under the GSA. This approach seems to have been adopted for purely practical reasons since collating information concerning all the markets in which the buyer operated would have been too complex and time consuming a process.

However, as the proportion of gas sold by buyers outside their 'home' markets grows, it may well be that this of itself will be invoked as a price review trigger. The fact that the price review clause does not offer any guidance to the parties and arbitrators as to how to determine the scope of the term means that the entire process of price review is uncertain. The issue of how to define the scope of the term needs to be carefully considered when amending and revising price review clauses in the future as a balance will need to be struck between the need to capture the reality of a buyer's operations and the practicality of determining the significant changes and assessing the effects of such changes in all markets.

Sectoral delineation

The lack of a definition of the term energy market of the buyer in the typical price review clause has also led parties in recent arbitrations to disagree on the sectoral delineation of its scope; the issue being whether the term encompasses both the upstream market (where the buyer buys its gas) and the downstream gas market (where the gas is ultimately burned). It is in the buyer's interest for the 'energy market' to be defined as referring to the downstream gas market only. Since the seller operates in the upstream market and the buyer operates in the downstream market, changes in the downstream market will affect the buyer's business while they are unlikely to affect the business of the seller.

In the recent arbitrations, the fact that the typical price review clause refers to the energy market of the buyer when identifying the circumstances triggering the price review and the 'end-user market of the buyer' when referring to the effect on the value of the gas has been used to determine the sectoral scope of these terms. Recognising the intention of the parties to distinguish between these terms, the arbitrators have in recent arbitrations construed the term 'end-user market of the buyer' more narrowly to refer to the sector of the market downstream of the buyer and the term 'energy market of the buyer' more broadly as encompassing both the upstream and downstream market for energy resources. However, the failure to expressly define the term means that an issue that is crucial to the scope and outcome of a price review has been left largely to the discretion of the arbitrators.

Nature of circumstances triggering a price review

Having determined the scope of the energy market of the buyer, the next step in a price review is to determine the circumstances that may be invoked as price review triggers.

Before the changes discussed in the second section occurred, price reviews were typically triggered if:

(1) new legislation was introduced affecting the oil products referred to in the price formula or products with which gas was found to compete in the relevant market;
(2) the tax regime applicable to oil products changed as compared to that of gas;
(3) the cost of transporting gas relative to that of transporting oil products changed;
(4) the relative share of the oil products with which gas competed in the relevant market (as reflected in the price formula) changed; or
(5) the indices used to determine the weighted average prices for oil products used in the price formula changed or became inappropriate.

In other words, the triggering circumstances were circumstances that affected the underlying assumptions concerning the interrelationship between the prices of oil products and gas that the parties had incorporated in the price formula. So, for example, the introduction of legislation prohibiting the use of HSFO in the buyer's energy market was a triggering circumstance since the prohibition meant that HSFO no longer competed with gas as an energy source in the buyer's market and, consequently, a price formula that provided for the price of gas to be calculated by reference to HSFO was no longer a good proxy and needed to be revised.

However, the changes in the European gas market discussed above have resulted in parties triggering price reviews in the last few years on account of structurally different circumstances. A number of such circumstances will be discussed below in order to highlight the limitations of the typical price review clause as a mechanism for revising the price of gas in Europe at present.

Use of gas in power generation. As discussed above, the use of gas for power generation has been one of the main spurs to the growth in demand for gas in the last decade. For many in the industry, this new use for gas is a triggering change for two reasons: first, because in the power generation sector nuclear energy and coal rather than oil products compete with gas; and secondly, the high thermal efficiency of gas in producing electricity in CCGTs means that the value of gas is higher compared to that of other energy sources with which it competes in this sector. As such, the use of gas in power generation means that the assumptions on which the typical price formula is based, being the relationship between the prices of oil products and gas, no longer reflect the reality of the gas market and, in particular, the value of gas. Most price review clauses do not provide the parties or arbitrators with any guidance as to how the price should be adjusted to account for such changes.

There is more than one method for calculating the price of gas in the power generation sector and determining which method is preferable in the given circumstances is complex and requires in-depth understanding of the power generation market – matters that most arbitrators will have little knowledge of and have difficulty grappling with unless they are energy experts. The lack of guidance in the price review clause and the complexity of the matters involved mean that the outcome of a price review triggered by such changes is uncertain and unpredictable.

Liberalisation of EU gas market. As discussed in 'Changes in the European gas market' above, concrete steps were taken to liberalise the EU gas market from 1998 onwards. Most gas experts regard the liberalisation of the gas market as a circumstance capable of triggering a price review, especially where there is evidence of new gas companies entering a previously closed market and of supplier switching. In a recent arbitration, it was asserted that liberalisation *per se* could not be a triggering circumstance since (1) it was a foreseeable event and (2) in and of itself it had not changed the conditions in the market since no entrants entered the market and/or there was no discernible impact from the new entrants on the price of gas. Both assertions were rejected by the arbitrators and liberalisation was pronounced a triggering circumstance.

Liberalisation of the gas market has created, in varying degrees in the different EU Member States, gas-to-gas competition as the number of gas providers in these markets has increased, each competing with the other for customers on the basis of price. This has meant that, as a result of liberalisation, the assumption on which the price formula was devised no longer reflects the reality of the gas market. As noted in 'Increase in demand for gas' above, the price of gas is no longer solely based on the price of oil products. In the United Kingdom, contracts signed over the past decade have been indexed to the NBP price rather than the price of oil products. However, there is presently no liquid marker for the price of gas in other EU markets, so no easily identifiable alternative mechanism for determining the price of gas exists at present. Although the NBP price has been used to price gas in other EU markets, it is unlikely that it will become a European price marker.

It is likely that a completely new approach to calculating the price of gas will need to be developed in the coming years. Ultimately, the price of gas in Europe will be indexed to something like the Henry Hub price. However, the challenge facing arbitrators in Europe at present is how to revise the price formula during this transitional period before spot pricing becomes a universal practice. Unfortunately, neither the typical price formula nor the price review clause offers the parties and the arbitrators any guidance as to how to revise the price formula to reflect gas-to-gas competition. For this reason, arbitration is not the appropriate mechanism for revising the price of gas to reflect the present market conditions, and the whole process of price review as set out in the typical price review clause is unsatisfactory and uncertain.

Rise in trading in gas across the Atlantic. The rise in the trade in gas across the Atlantic and the resulting impact of US prices on the pricing of gas in European markets could potentially be asserted as price review triggers. As discussed in 'Recent rise in cross-Atlantic gas trading' above, the rise in transatlantic gas trade has changed the way in which buyers operate their gas business and has resulted in the price of gas in certain GSAs being indexed to the Henry Hub price for gas in the United States. However, any revision of the price formula so triggered will require a radical revision of the price formula for which no basis can be found in the terms of the GSA. This again highlights the limitations of the typical price review clause and the limitations of resorting to arbitration to revise gas prices to reflect the changes taking place in the European gas market.

Circumstances must be beyond the control of the parties

The second element for triggering a price review is self-explanatory – what is required is that the circumstances invoked must not be caused by, or be a result of the actions of, the parties. This is an obvious requirement for ensuring that a price review cannot be engineered by a party.

However, given the nature of the circumstances recently invoked by parties to trigger price reviews, it has been extremely difficult to distinguish between circumstances to which one of the parties had contributed and those that were beyond both parties' control. This has been especially difficult when measuring the effect significant changes induced by such circumstances have had on the value of gas. For example, in a recent arbitration it was asserted that liberalisation as a triggering circumstance led to an increase in competition as numerous gas companies entered the previously closed market and that this in turn caused the price of gas to fall. But as the experts for the other side illustrated, liberalisation does not necessarily result in a fall in prices. Since the price at which gas is sold depends on the level at which the equilibrium is struck between the demand and supply for gas, if the demand for gas exceeds supply an increase in competition on the supply side may not affect the price of gas. More importantly, as the experts also showed, an increase in competition may lead a gas buyer seeking to maintain its market share to enter into a price war with the new entrants and/or flood the market with cheap gas, thereby causing the price of gas to fall. In such circumstances, it is difficult to establish what precipitated the drop in the price of gas and determine what proportion of the change in the price was due to circumstances that were beyond the control of the parties and those that were not. As presently drafted, the price review clause offers limited guidance to parties and arbitrators on how to ensure that only circumstances beyond the control of the parties are taken into account when revising the price.

Circumstances have induced significant changes in the energy market of the buyer

Assuming that the first two elements are satisfied, to trigger a price review it must next be shown that the identified circumstances have induced significant changes in the energy market of the buyer as at the date the request for a price review was made as compared to the state of the market at some earlier date, typically being the date of the last price review. In order to determine whether this third element is satisfied, one must first establish the relevant period of comparison as between the conditions in the market and, secondly, determine whether a change is significant.

Period for comparison

Typically, the price review clause provides that a comparison must be made between the energy market as at the date the price review notice is served ('price review date') and the date on which the price had most recently been revised ('most recent review date') together with the price review date (the 'reference dates'). Since it is impossible to compare conditions in the energy market by reference to a single date, it is industry practice to take a period of between six and nine months prior to the reference dates as a basis for measuring the identified changes that have occurred over the relevant period.[7]

However, since price review clauses typically do not define the period for measuring the changes, this issue has in recent arbitrations often been a source of dispute as one of the parties denied the existence of the above-mentioned industry practice asserting instead a time period more favourable to its case. So, for example, in a recent arbitration, a party sought to argue that data concerning the energy market after the price review date should be used to determine the size and nature of the change in the market as at such date. Although there is no doubt that data concerning the state of the market as at the price review date may become available after such date, data relating to a period after the price review date cannot be used as a basis for determining the price of gas as at such date since factors and circumstances that occurred after such date and that are not part of the *ratione temporis* of the review may have caused the price to change. As most arbitrators are not aware of the above-mentioned industry practice, this is another instance where the lack of precision in the drafting of a typical price review clause has given rise to uncertainty in the conduct and outcome of price reviews now that parties are resorting to arbitration to revise the price.

Change must be significant

It is usual for a price review clause to require that the change induced be significant before it is taken into account in a price review. Typically, price review clauses do not define when a change is 'significant'. Extensive expert evidence has been submitted by parties in recent price review arbitrations on whether to be 'significant' a change must be quantitatively or qualitatively significant, or both, again highlighting the uncertainties associated with the wording of a typical price review clause.

7 We are not aware of any GSAs that expressly defined how the comparison between the reference dates should be carried out.

Effect of significant changes on the value of gas in the end-user market of the buyer

Finally, the party triggering a price review must show that the induced significant changes affect the value of gas obtained by a prudent and efficient gas company in the end-user market of the buyer. This requires a quantitative assessment of the effect the significant changes have had on the value of gas.

Normally, a price review clause is silent as to how such assessment is to be made. In one recent arbitration, two options for calculating the effect were put forward by the parties: first, for a determination simply to be made of the price of the gas obtained in the end-user market as at the price review date and, secondly, for the effect on the value of the gas to be calculated in respect of each significant change as at the price review date and for the Po to then be adjusted to reflect the net effect of all such changes.

To date it has been industry practice to adopt the second approach in price review negotiations. So, for example, if the invoked change was an increase in the tax for a certain oil product to which the price formula referred, Po was increased to reflect the effect the change in tax had on the relative value of gas *vis-à-vis* such oil product. The requirement in the price review clause that the 'value of gas' rather than the 'price of gas' must be determined reflects the parties' agreement that this is the correct approach. Since the effect of changes that are not significant and of circumstances that are induced by the parties should not be taken into account, it is clear that the effect of each significant change must be calculated separately as otherwise the effect of excludable changes and circumstances would be included. Accordingly, what the actual price of gas is in the end-user market of the buyer is not pertinent to this approach.

However, the recent arbitrations have revealed the complexity of such an approach and suggest that such an approach is only feasible where the changes in question concern the relationship between oil products and gas. As discussed above, when triggering changes relating to the liberalisation of the gas market, the use of gas in the power generation sector or rise in trade in gas, the price formula needs to be more radically revised. It is no longer a question of adjusting the price of a certain oil product, adjusting its relative weight or introducing a new index for the prices of oil products. A typical price review clause offers no guidance as to how the price formula should be revised to take into account gas-to-gas competition and gas to coal/nuclear competition. This has meant that in recent arbitrations, the arbitrators adopted the first approach and simply amended Po to reflect the price of gas as at the price review date even though this meant that the revised price included the effect of 'insignificant' changes and/or circumstances that had been induced by the parties, which is contrary to the express terms of the price review and the entire object of the price review clause. Moreover, the variable element of the price formula was not revised to take into account gas-to-gas competition thereby failing to capture the nature of the change that triggered the revision of the price.

However, this is not surprising. Arbitrators in most instances have seen their role as limited and have felt unable to revise the formula in a way that radically departs from that initially agreed by the parties. While this approach is understandable, it has meant that in a number of instances the prices set by the arbitrators were immediately following the arbitration revised by the parties as they were found by the parties not to reflect the value of gas. In the present circumstances all this points to the fact that arbitration is unlikely to provide the parties with a satisfactory method for revising the price of gas.

Overcoming limitations of typical price review clauses

The examination in the preceding section of the scope and operation of a typical price review clause from the perspective of the recent arbitrations reveals the uncertainties surrounding its wording and its limitations as an effective mechanism for revising the price of gas.

Crucially, a standard price review clause is ill-suited to the reality of the liberalised gas market. As discussed in the first section, the typical price formula is oil-indexed and price review clauses were drafted to provide a mechanism for revising the price formula in case of a change in the relationship between gas and oil products. The changes discussed in the second section have radically changed the way the gas market operates, breaking down the barriers between national markets and changing the way in which gas buyers operate. The price review clause details the triggers for a price review but does not spell out the mechanism that should be used to revise the price. As such, the wording of the price review clause does not provide the parties or, more importantly, arbitrators with any guidance on how the formula should be revised to reflect such radical changes. Accordingly, the entire price review process is fraught with uncertainty. Some suggestions of how such limitations may be overcome, or at least minimised, are set out below.

Since it is too early to decouple the price of gas from that of oil products in Europe (as there is still no liquid marker for pricing gas), the best way to minimise such uncertainty is for the parties to devise a more complex price formula, which takes into account the effect of gas-to-gas competition on the price of gas while recognising that the price of oil products is still the best proxy for the price of gas. A possible approach would be to include a certain proportion of spot gas in the formula, which has been adopted in some recent GSAs.

At a minimum, the wording of the price review clause ought to be tightened. First, the uncertainties surrounding the scope of the terms energy market of the buyer and the end-user market of the buyer should be removed, or at least minimised, by inserting definitions of these terms in the price review clause. As discussed in 'Circumstances have occurred in the energy market of the buyer' above, the delimitation of the scope of these terms is crucial for determining the ambit and operation of a price review both in terms of the relevant triggering circumstances and the effect of changes on the value of gas. Although it has historically been industry practice to regard such terms as geographically limited to a single country, the changes discussed in 'Changes in the European gas market' have meant that such an approach no longer reflects the reality of the market in which gas buyers operate. For this reason, and to avoid such matters being left to the discretion of the arbitrators, it would be advisable for parties to define these terms, thereby narrowing the scope of dispute between them and reducing the uncertainty surrounding the outcome of any arbitral decision.

Secondly, the reference period for comparing the changes in the energy market as at the reference dates should be defined. As discussed in 'Period for comparison' above, although it is industry practice for the assessment to be made by taking a six- or nine-month period prior to the reference dates, the typical price review clause is silent on this point. Since the basis for making the assessment is likely to impact crucially on the qualitative assessment of the effect a significant change has on the value of gas as at the price review date, it is important that the possibility of parties manipulating the results be reduced to a minimum. This can be achieved by inserting a paragraph into the price review clause defining the period of assessment.

Thirdly, to the extent parties wish to maintain the distinction between the concepts of the value of gas and the price of gas, the former term should be defined in the price review clause. Most arbitrators do not appreciate the distinction between these terms as they fail to grasp the context in which the price review clauses had been negotiated – being one where the price of gas was determined by reference to its relative value to the price of oil products. Since in a liberalised market the price of gas is partly determined by reference to the price of competing gas, it is difficult for arbitrators to appreciate that the purpose of the price review clause is to revise the price of gas to reflect the 'value of gas' relative to the prices of competing energy sources, including gas.

Conclusion

Resort by parties to arbitrations as a means for reviewing and revising prices under European GSAs has provided an opportunity for lawyers and gas experts to analyse the scope and effectiveness of typical price review clauses. The analysis conducted in 'Triggering a price review and recent price review arbitrations' above highlights some of the uncertainties concerning the scope and operation of such clauses and exposes their limitations as mechanisms for revising the price of gas given the current conditions in the European gas market. Until a liquid marker for gas similar to Henry Hub is developed for the European gas market as a whole, the price of gas will continue to be indexed to oil and consequently the need for price review clauses will also remain. However, the changes discussed in 'Changes in the European gas market' have radically changed the nature of the European gas market and price formulae and price review clauses ought to be amended to reflect this. Otherwise the process of price review will remain fraught with uncertainty.

Erratum

In the May issue of *JERL*, Vol 25 No 2, in the article 'Legal and Regulatory Environment of LNG Projects in Iran' by Abdolhossein Shiravi and Seyed Nasrollah Ebrahimi, there was a misspelling of Mr Shiravi's name. The IBA apologises for any inconvenience caused.