3. Under an entry/exit model, sellers of gas would transport their gas to a given virtual hub and pay the entry charge. The buyers would then pay the exit charge after purchase, meaning that gas in the hub would be 'free' of transport costs, wherever it physically flows. Different entry and exit tariffs could then apply to different entry and exit points in the system.

4. Gazprom and the evolution of the European gas market

INTRODUCTION

Russia's gas connection with Europe stretches back five decades to the first export sales in 1968. Since then Russia has become the largest supplier of gas to the continent as consumption of gas has risen and indigenous production in Europe has plateaued and then gone into decline. The development and current state of relations between the Russia and her main export market is best analysed through a matrix of time periods and key issues which interact with each other at various points. The period from 1970 to 2005/08 saw consistent growth in exports during the Soviet and post-Soviet periods, despite the geopolitics of the Cold War and its aftermath but was followed by a period of stagnation between 2008 and 2014 due to economic recession in Europe and the rise of renewable energy. Subsequently, the period from 2015 to 2019 has seen a rebound in demand but a dramatic increase in security of supply concerns due to the continuing Ukraine crisis, although the irony is that while the EU has been keen to diversify away from Russian gas the commercial reality has been that Gazprom has increased its market share by offering very competitive prices.

Gazprom's recent success, which has seen it export record levels of gas in the 2016–18 period, highlights a number of the key issues that are impacting the European gas market. The first is the introduction of a single market for energy in Europe, which has forced all gas suppliers to adapt their marketing and supply strategies. Gazprom has been the most affected, due to the size of its sales and the geographical spread of its customer base, and its willingness to adapt to the EU's new rules has been variable. The EU has therefore been able to use its new regulations, captured mainly in the Third Energy Package, to exert some control over the impact which Gazprom can have in Europe, but it has also been forced to accept the commercial reality that Russian gas is cheap, plentiful and very competitive, and is therefore bound to thrive in a liberalized market. As a result, politics has become a key driver of action, due to both general concerns over security of supply and also to a more specific desire to support Ukraine in its continuing conflict with Russia.

A BRIEF REVIEW OF SOVIET AND RUSSIAN GAS IN THE EUROPEAN MARKET 1968–2005

Russia (and previously the USSR) has been supplying gas to Europe since the late 1960s, when first exports flowed to Austria in 1968. From this point gas flowed continuously for the rest of the Soviet period, with volumes increasing to over 100 bcma (billion cubic metres per annum) by 1990. Throughout this period of Cold War tension the Soviet authorities prioritized the security of export sales to the extent that the domestic population in western Russia and Ukraine frequently had to endure gas shortages in order to ensure sales to the West continued uninterrupted (Högselius, 2013: 89–103).

From this early beginning Soviet and Russian gas benefited from the growth in gas demand in Europe, which expanded consistently through the 1970s as far as the mid-2000s as customers across all sectors switched from oil (and in some instances coal) to gas. From a level of just over 100 bcm in 1970, demand in Europe (35 countries, including Turkey) exceeded 570 bcm in 2005 driven by the expansion of gas networks across the continent and in particular by increasing consumption in the power sector (IEA, 2019). Over this period Gazprom's exports to non-FSU (former Soviet Union) countries rose from an initial level of 3.5 bcm in 1970 to a peak of 162 bcm in 2005, with sales extending across 28 countries in the region.

An important consequence of the replacement of oil by gas in the energy mix was the creation of a netback market pricing mechanism within a long-term contract structure. This form of pricing and sales reflected the fact that consumers had a real choice between using oil or oil products and gas, and also the fact that suppliers such as Russia were making huge investments in upstream and transportation assets and needed to ensure a multi-year market for their product. The pricing relative to oil ensured that gas would remain competitive with its main energy rival, with a discount guaranteed under the formulae used in the contracts, while the long-term nature of the deals, which included take-or-pay clauses to ensure that the buyers would take a minimum annual quantity (usually 85 per cent) meant that the risk could be spread between supplier (taking the price risk) and buyer (taking the volume risk) (Stern, 2007, 2009b).

Over time oil was largely removed from the majority of stationary energy sectors in Europe, with oil product demand being focused on transportation, but despite this the methodology of oil-linked gas pricing remained in place due to its familiarity amongst buyers and sellers, the profits being made from it and the lack of obvious alternatives. Furthermore, the governance structure of the European energy market, which was dominated by monopsony buyers and monopoly sellers of gas, also created a sense

of inertia as the dominant utility companies in most European countries could essentially pass through the cost of their purchased gas to end-consumers. As a result, although the link between oil and gas prices was an increasingly irrelevant reflection of supply and demand in the gas market, often causing gas prices to be higher than they might naturally have been, this did not disturb the contractual relationship between suppliers such as Russia and their major utility customers in Europe.[1]

This story of market growth and utility domination finally peaked in the period 2005–08, when the 'golden age of gas' in Europe arguably came to an end (Stern, 2014). By then rates of growth for gas demand in the power sector had started to slow, with the result that overall consumption plateaued and imports of Russian gas stabilized in the range 150–60 bcma. However, with oil prices, and therefore gas prices, rising consistently throughout the period, both suppliers such as Gazprom and the utility company buyers continued to make significant profits from the European gas business.

THE ECONOMIC CRISIS OF 2008/09 CATALYSED SIGNIFICANT CHANGES

However, this era of stability was not to last, primarily because the economic crisis of 2008/09 brought energy demand growth in Europe to a halt, as recession in many countries initiated a period of economic stagnation that continued into 2015. As a consequence, gas demand, which reached 587 bcm in 2008, went into significant decline, reaching a low of 476 bcm in 2014 (Honoré, 2014; IEA, 2015), a situation that was further compounded by the fact that many European countries had over-contracted for gas supply at the same time (Melling, 2010: 48). The decline in gas demand was exacerbated by the impact of two other energy sector changes. Firstly, an increasing focus on renewable energy sources across Europe has seen gas and other hydrocarbons losing market share in the power sector as various countries across the EU have offered financial support mechanisms to increase the use of solar and wind power in order to meet environmental targets. Secondly, the specific role of gas in the power sector was further undermined by the impact of the shale gas revolution in the USA, where the prevalence of cheap gas frequently drove the Henry Hub price[2] down to levels where gas started to displace coal in the US power sector. This freed up a large amount of US coal for export, which then arrived in Europe at distressed prices and displaced gas under long-term contracts tied to the oil price, which was above $100/barrel until August 2014 (Crooks and Pfeifer, 2012).

In addition, a second impact of the US shale revolution, the redirection towards Europe of LNG notionally reserved for, but no longer needed by, the US market, led to a sharp decline in spot prices at the major gas hubs in the UK and continental Europe (Analysis, 2011). As a result, by mid-2010 a significant disparity had opened up between the hub-based 'market' price in Europe and the price for gas sold under long-term oil-linked contracts, with significant implications for European utility companies and for Gazprom. Primarily it meant that the utility companies came under pressure from their customers to reduce gas prices, as the difference between the price that the latter were being forced to pay and the price of gas at the hubs was becoming increasingly obvious. A consequence of this was that Gazprom was put under pressure from its buyers, who wanted not only to reduce volumes down to minimum take-or-pay levels, or even below in some cases, but were also looking to renegotiate price levels and volume flexibility (EU utilities, 2012).

The ability of European end-consumers of natural gas to put pressure on the utility buyers of Russian gas was enhanced by another dislocation in the European market, namely EU policy on market liberalization and increased competition in energy markets, encapsulated under the terms of the Third Energy Package (TEP) (Stern, 2014). With third-party access to gas pipelines being opened up and the ownership of assets in the gas sector being unbundled, gas buyers were given much greater access to a variety of suppliers, while at the same time the liquidity at gas hubs was improving and an increasing number of producers were starting to sell their gas on a market, rather than an oil-linked, basis (Heather, 2012). As a result, gas consumers could start to demand lower prices from utility companies, even if those utilities were set to make a loss on the purchase of gas under long-term contracts that remained linked to the oil price.

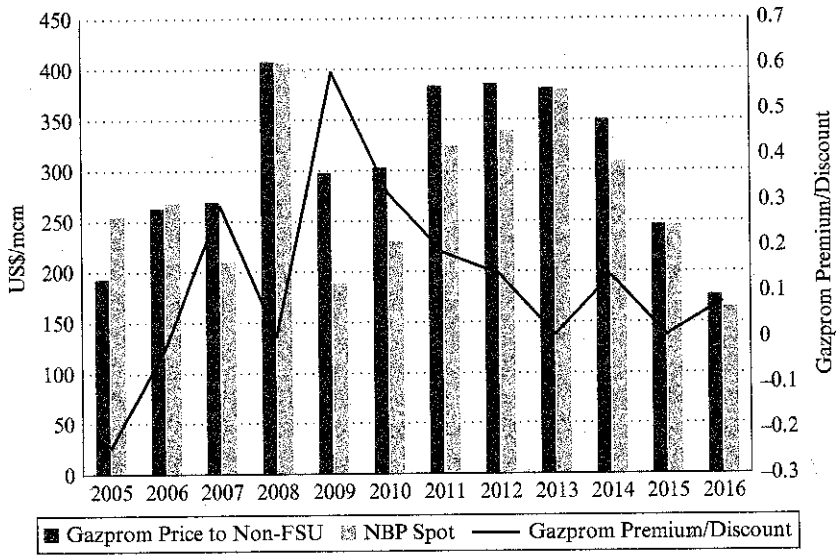
Gazprom Forced to Address Price Versus Volume Issue

For Gazprom, this led to a major change in priority in terms of its European export strategy. Until the mid-2000s the company's main objective had been to ensure that it could produce enough gas to satisfy its customer base across a broad geography stretching from West Siberia through the countries of the FSU and into the European continent, and indeed questions had started to be asked about its ability to fulfil its export obligations (Stern, 2009a: 2). Given the need to ensure supply to European customers, who were effectively contributing the revenues generated by a high gas price which could allow Gazprom to subsidize the low gas prices it was forced to offer domestic customers (see Chapter 2), the company embarked on the development of the huge gas resources on the Yamal

Peninsula, starting with the Bovanenkovskoye field. However, after 2008 the company was faced with a different dilemma since the anticipated growth in European demand had not materialized but in fact gone into reverse, leading to an oversupplied market. As a result, Gazprom had to decide whether to try and maximize price, by maintaining its oil-linked contract strategy, or volume, by offering new lower prices. In effect it chose to try and find a mid-ground between the two, ostensibly asserting the importance of oil-linked prices while adapting to the demands of its customers and market reality.

Primarily, Gazprom's position on oil-linked prices appeared to be driven by political will as much as commercial argument, as Russian President Vladimir Putin has endorsed the view that Russia, and other major suppliers, should 'continue to support gas pricing based on oil/oil products indexation to ensure fair prices and stable development of natural gas resources' (Moscow Declaration, 2013). From a more commercial perspective, Gazprom also argued that long-term oil-linked contracts provided suppliers with security of demand and supported the flexibility offered by the take-or-pay arrangements, while also suggesting that oil and gas prices were in any case inextricably linked and that this was merely reflected in the price formation mechanism used in their contracts (Stern and Rogers, 2014: 7).

However, despite this argument being made, in the first years after the 2008 economic crisis Gazprom's hand was forced in a series of renegotiations with major European buyers which ultimately led to international arbitration proceedings being launched, first by Italian company Edison in 2010 and then by a series of other utilities including E.ON, Erdgas Salzburg, PGNiG and RWE (Stern, 2014: 55–81). The process of negotiation and court proceedings led to a number of contracts being reset out of court, but others, such as the RWE case, resulted in a change in contract structure which led not only to reimbursement of some customers, but also to an easing of take-or-pay terms and the introduction of an element of hub-based pricing into many contracts. However, Gazprom made these adjustments to its contracts on the assumption that any changes would be short-lived and that the market would revert to its pre-crisis norms within three years (Stern, 2014: 63). Nevertheless, this led to a gradual closing of the gap between Gazprom's contract prices and the hub price in 2009–11, but the premium still remained on average above 20 per cent (Figure 4.1) and it gradually became clear that the impact of the economic crisis was going to be longer than expected. As a result, although Gazprom continued to claim that it was sticking to the principle of oil-linked pricing (Gazprom Export, 2013), it became increasingly obvious that it was adopting a different pricing strategy in the various gas consuming countries in Europe, according to the energy mix of each (Fairless and Steinhauser,



Source: Gazprom Management Discussion and Analysis reports, World Gas Intelligence

Figure 4.1 Gazprom's average gas sales price in Europe compared to NBP

2015). Overall then, despite its outward statements on the oil-linked methodology, Gazprom gradually started to adapt its pricing levels to take account of market factors.

Despite this overall change in strategy, though, it is important to note that Gazprom continued to price its gas according to individual market conditions,[3] creating apparent anomalies in prices across Europe as various countries were charged different prices irrespective of their distance from Russia.[4] This led to concern within the European Commission that Gazprom was exploiting its position as a 'discriminating monopolist' to extract the maximum value from each market, essentially pricing its gas relative to the alternative fuel in each case (and arguably in line with best business school practice). Indeed, Gazprom's overall export strategy in the period to 2014 can be summarized as the maximization of short-term revenue (Pravosudov, 2011), establishing a foundation of oil-linked long-term contracts and adapting it in an ad hoc fashion to suit individual markets in Europe according to their ability to access alternative sources of supply and alternative price benchmarks.

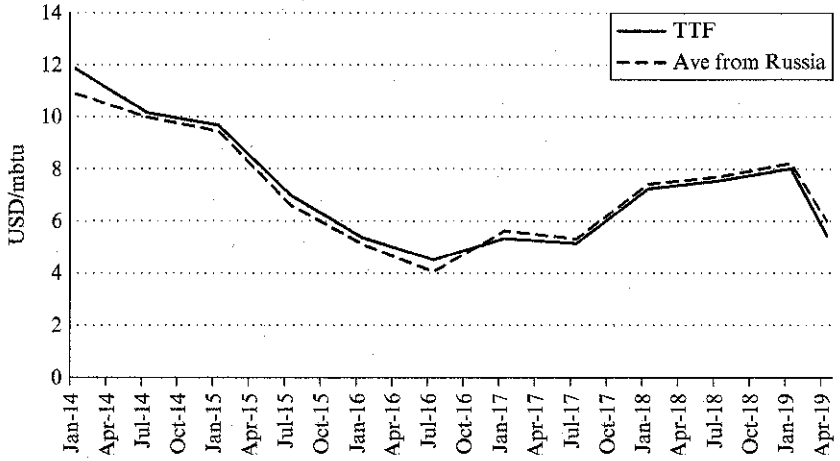
However, this differential pricing strategy ultimately caused significant problems within a European Union where the Third Energy Package had been specifically designed to stimulate greater competition and

create a single market and pricing structure. Following a complaint from Lithuania, in 2012 the Competition Authority of the EU (DG COMP) opened proceedings against Gazprom alleging malpractice in a number of countries in Central and Eastern Europe (Antitrust, 2012). In April 2015 DG COMP reached its initial conclusions on the case, asserting that in eight countries Gazprom hindered competition by preventing cross-border selling; in five it then used this situation to charge excessively high prices at oil-linked rates, while in two countries it used gas prices as leverage to secure favourable pipeline deals (EU statement, 2015).

Gazprom's response to these assertions has provided a good illustration of how the company's attitude towards the gas market is changing. Initially the Russian authorities took a very negative view of the DG COMP investigation, and in particular the raids on Gazprom offices in Europe which preceded it in 2011 (Barker et al., 2011), ordering the state gas company not to hand over any data without specific permission from the Kremlin. However, as discussions between the two sides continued from 2012, so the Gazprom position appeared to soften. One reason for this was likely because it had little defence against one of the charges, that it had hindered cross-border trading because it had failed to remove destination clauses from its contracts rapidly enough (Stern and Yafimava, 2017: 5–9). However, another reason for its more amenable line in the negotiations may have been because it realized that a move away from its old oil-linked trading strategy was inevitable and could also benefit the company's competitive nature as one of the lowest-cost suppliers to Europe.

As a result, the commitments proposed by Gazprom in response to the European Commission's concerns have effectively heralded an end to the use of destination clauses and the linking of gas price negotiations to questions of infrastructure, but more importantly appear to have confirmed that Gazprom has reconsidered its pricing strategy and is committed to reducing the share of oil-linked pricing in its contracts in order to reduce any 'unfair' differentiation between markets. While Gazprom has not offered to remove oil-price indexation entirely, it has offered to 'introduce competitive benchmarks, including Western European hub prices, into its price review clauses' and to make those price reviews more frequent for its customers in Estonia, Latvia, Lithuania, Poland, and Bulgaria (European Commission, 2017a). Indeed, these Gazprom concessions have been enough to convince the EU that its concerns over market abuse have been addressed, with the result that it has accepted Gazprom's proposals and agreed not to impose any fines for previous transgressions (EU ends antitrust, 2018).

This was clearly a positive outcome for Gazprom, but really only confirmed that it would adopt a pricing strategy across the whole of Europe which it had in fact been implementing in the most liquid markets for some



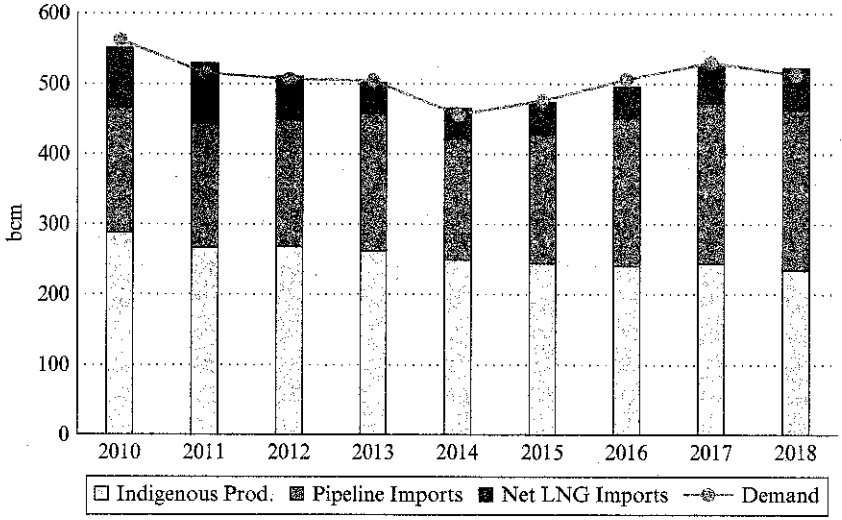
Source: Argus Media

Figure 4.2 Russian gas price to Europe versus TTF spot price 2014–19

time. As discussed above, Gazprom has also been adjusting its pricing strategy in response to demands from customers, as well as increasing pressure from the European Commission, with most of the arbitration resulting in a more market-based pricing structure (Stern and Rogers, 2014). Indeed, at its 2018 Investor Day in London, Gazprom revealed that only one third of its contracts are still oil-linked, while one third are now hub-price linked and another third are hybrid contracts which effectively offer the lower of oil or hub-linked prices (BRIEF, 2018). As a result, Gazprom has essentially accepted that, in order to thrive in Europe, it must offer its gas at a competitive price, and as can be seen from Figure 4.2, the Russian gas price to Germany and the European spot price (TTF) are now almost indistinguishable (TTF is the natural gas hub (full name: Title Transfer Facility) in the Netherlands, and the gas price there is generally regarded as a benchmark for Europe).

GAZPROM'S POSITION IN THE EUROPEAN GAS MARKET

This change in Gazprom's pricing strategy towards a more competitive market-based model has coincided with an important change in the outlook for gas in Europe. Following the decline in demand in the early 2010s, caused by economic recession, the rise of renewables, the rise of



Source: Data from Platts LNG Service, IEA

Figure 4.3 European gas balances 2010–18

US shale gas leading to a consequent increase in US coal exports and the impact of high oil and gas prices, the outlook for European gas demand by 2014/15 looked relatively bleak. However, since then a significant shift in a number of the key market drivers has occurred, most of which have enhanced Gazprom's position.

Figure 4.3 shows the changing shape of European gas demand between 2010 and 2018, with the main sources of gas supply. After a decline in demand of approximately 100 bcm between 2010 and 2014, a rebound occurred in 2015 and accelerated in 2016 and 2017, with year-on-year demand growth of 6 per cent and 7 per cent, respectively. This was driven by a number of factors, including economic recovery across Europe, cold winter temperatures, and increased coal-to-gas switching. This latter trend has been particularly pronounced in the UK, where the impact of the carbon floor price has, on occasion, removed coal from the power generation mix altogether (Clark, 2017). Furthermore, in a number of other European countries the rising influence of the Industrial Emissions Directive and the policy commitments of some governments have seen the closure of coal-fired power plants, which have been replaced, primarily, by renewables but which has also boosted gas demand. A slight reversal was apparent in 2018, due largely to warmer weather, but the overall trend continues to be one of gradual recovery from the mid-decade.