



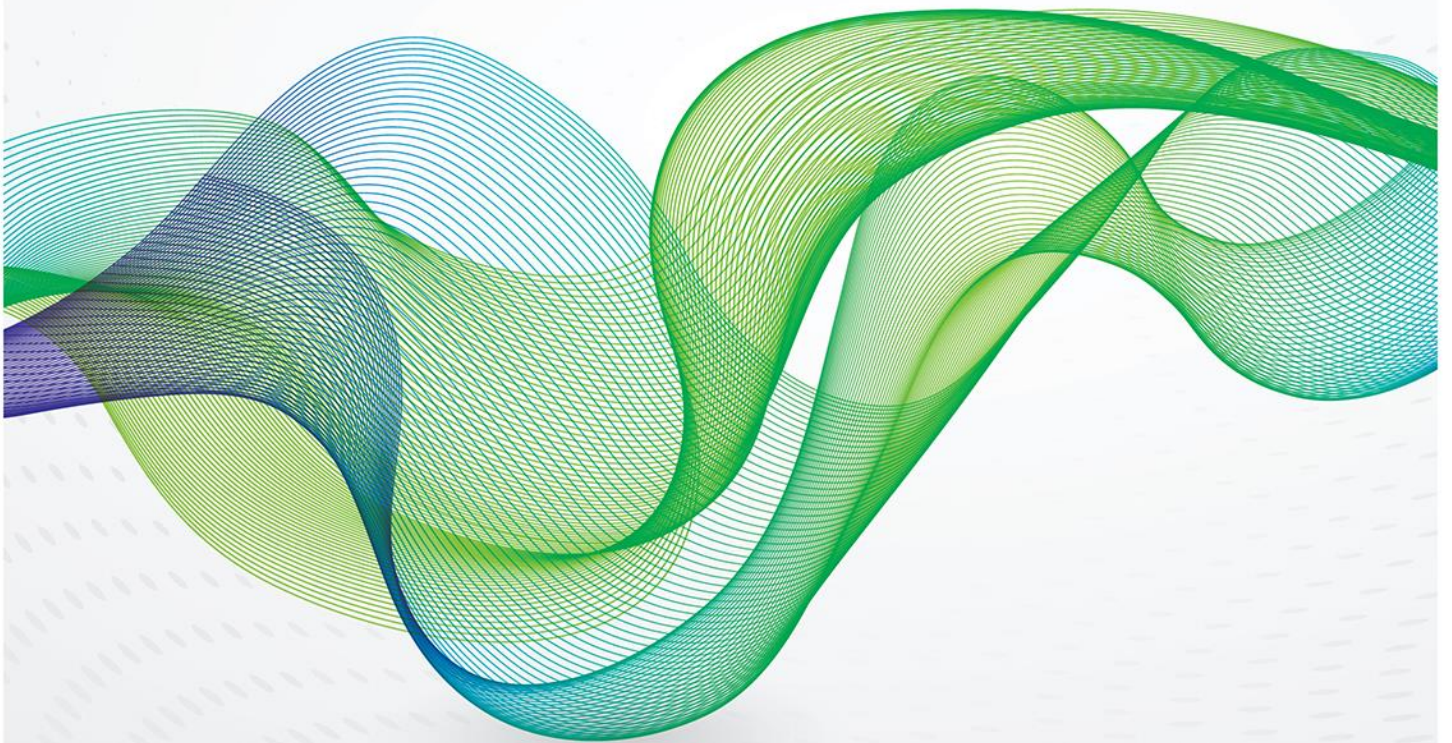
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The SPIMEX Gas Exchange: Russian Gas Trading Possibilities



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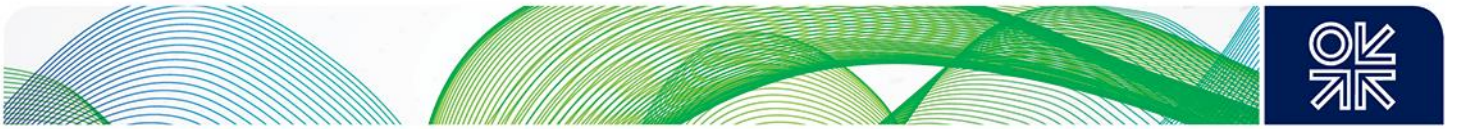
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Abbreviations and Units of Measurement

bbls	Barrels
bcm	Billion cubic metres
bcma	Billion cubic metres per annum
bn bbls	Billion barrels
boepd	Barrels of oil equivalent per day
bpd	Barrels per day
FSU	Former Soviet Union
IOC	International Oil Company
kboepd	Thousands of barrels of oil equivalent per day
kbpd	Thousands of barrels per day
km	Kilometres
mm bbls	Million barrels
mcm	Thousands of cubic metres
mmboepd	Millions of barrels of oil equivalent per day
mmbpd	Millions of barrels per day
mmbtu	Million British thermal units
mmcm	Millions of cubic metres
mt	Millions of tonnes
mtpa	Millions of tonnes per annum
Mm tonnes	Millions of tonnes
P&P	Proved and Probable
tcm	Trillion cubic metres

Conversion Factors

<i>Equals</i>			
1	tonne oil	7.3	barrels of oil equivalent
1	tonne condensate	8.0	barrels of oil equivalent
1	bcm gas	6.6	mm barrels of oil equivalent
1	bcm gas	35.3	billion cubic feet of gas
1	bcm gas	0.9	mm tonnes of oil equivalent

Source: BP Statistical Review



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Introduction

The sale and purchase of Russian gas in the post-Soviet era has been dominated by the need for Gazprom, the dominant player, to sell to consumers at a regulated price. Since 1998 other producers, known in Russian legal terminology as the independents, have been able to sell gas at market prices, but these prices have always been heavily influenced by the regulated price because of the dominance of Gazprom's volumes. Initially independent producers sold gas at a premium to Gazprom, due to the fact that the regulated price was set at a low level to provide a boost to industry and a subsidy to residential consumers, with the result that their sales volumes were limited and only went to customers with a need for extra gas to cover surplus demand, even at premium prices. However, during the past two decades regulated prices have risen significantly (see figure 2 below), largely due to pressure from Gazprom which asserted its need for higher revenues to underpin investments in new fields. The consequence has been that by 2012 independent producers were able to compete with Gazprom on price and win customers who historically had wanted to only pay low, regulated prices. Indeed, since 2012 independents have won significant market share from Gazprom and now account for around half of all gas sold on the domestic Russian market.

This increasing price competition has underlined that the regulated gas price has effectively reached an equilibrium, at least partially reflecting the balance of supply and demand in Russia. However, the search for a market mechanism to reflect this situation has continued, with almost all transactions to date being bilateral deals between buyer and seller, largely on the basis of long-term contracts. Various means to relate gas prices in Russia to market reality have been tried since 2000, with varying degrees of success, but in 2014 the launch of a gas exchange in St Petersburg by SPIMEX, the St Petersburg International Mercantile Exchange, has offered the latest, and most serious, opportunity for a true market price to be established. This can have important consequences in Russia, where the SPIMEX price could eventually provide a benchmark for the domestic wholesale gas price and could also provide a foundation for further liberalisation of the gas market. Given the location of the exchange at one end of the Nord Stream pipeline, it could also impact the trading of gas exports to Europe. This latter opportunity remains some way from realisation, but nevertheless the development of more active gas trading in St Petersburg is a growing reality and deserves the attention of the wider gas community given its potential to connect two major gas markets and the possibility that it could play a role in easing relations between Russia and its gas customers to the west.

Russia – a classic debate between the economic efficiency and distribution arguments

In considering the development of the gas pricing system in Russia over the past quarter of a century and the potential development of an exchange-based methodology, it is perhaps first worth outlining the general theory behind the pricing of commodities, and in particular the perceived peculiarities of gas. It is noteworthy, for example, that gas tends to encourage more state intervention of pricing and market regulation than either oil or coal, and also that the distribution of the benefits of gas production tends to extend beyond the traditional sharing of rents with the state via taxation. The more local and regional nature of gas markets, that is largely the result of the greater difficulty and higher cost of transporting what is a less energy-dense fuel than other hydrocarbons, has led to greater concern over domestic impacts from an economic and social perspective, while the most common form of transportation, pipelines, has led to concerns over security of supply and the strategic nature of gas infrastructure.



Before exploring these differences and their impact in more detail, though, it is worth asking the more basic question: “What should gas prices reflect?”¹ The most common economic answer is that they should result from some form of balance between the forces of supply and demand, while also reflecting the opportunity cost to society as a whole of the additional use of gas (including any relevant externalities such as the cost of pollution). In this sense, the theory is one of economic optimisation and can apply equally to a system of regulated prices established by a government bureaucracy and to a market-based pricing system. Indeed, the basic theory of welfare economics states that a decentralised competitive market system, under conditions of perfect competition and internalisation of all externalities, will produce the same price for a commodity as would be established by a “perfect planner.”²

Of course, in reality there is no such thing as perfect market conditions or a perfect planner, and so the key to finding an optimal system is to establish what the inefficiencies in each option are and by how much they render any outcome sub-optimal, enabling a choice to be made between the alternatives or a compromise solution to be found. The standard criticism of central planning is that it is unable to allocate society’s resources (in this case gas) efficiently, mainly because of the inadequacy of the knowledge of the decision-makers. As Hayek described it, the regulation of prices “betrays an unwarranted trust in human reason” because the decision-makers lack the fundamental information concerning individual market choices that is provided by a price system.³ On the other hand, it must also be acknowledged that a free market for gas has its own potential distortions, such as those that can arise from monopoly behaviour, lack of liquidity or un-priced externalities (such as environmental costs). As a result, it is clear that market-related pricing can have its own inefficiencies, and the key is to establish where the trade-offs may lie. Indeed, regulators often argue that the compromise lies in their role of correcting for market failures while retaining the incentives and benefits of market-pricing.

However, many economists would argue that in general free markets are good at discovering prices because they have the ability to adapt to change and uncertainty, and are also less prone to manipulation and bureaucratic distortion.⁴ In a sense they can be described as more efficient, and should ultimately reflect the marginal opportunity cost. In a domestic context, this implies that price should equate to the long-run marginal cost of extracting and supplying additional gas, while for those countries that export gas it will ultimately mean the price that can be obtained for selling an additional molecule overseas. Clearly the balance of opportunity cost will depend upon the export strategy adopted, and will also reflect the domestic policy adopted by the host government that owns the resources.

This domestic policy tends to be focussed not only on the efficiency of the development of the resource base but also on distribution issues, in other words the optimal way to share the rent among the society that ultimately owns it. In an ideal theoretical world this would be done via the tax system and a well-functioning social security system, but clearly politicians come under pressure to use other methodologies to ensure a sharing of the benefits of gas production. Low prices to certain users, lower taxes on some forms of consumption or a more general regulation of prices at below the opportunity cost are clear examples of such methods, but these naturally lead to distortions of one kind or another. Again, the key is to find a balance between the natural, and justified desire to allow a society to benefit from its natural resources and the optimal outcome of producing these resources in an economically efficient manner so that the benefit to all can be optimised. Clearly the complexities of this debate are

¹ For a detailed description of the economic theory of domestic and international gas prices, see Allsopp C. & Stern J. *The Future of Gas: What are the analytical issues relating to pricing?* Ch. 1 in Stern J. (ed.) *The Pricing of Internationally Traded Gas* (2012), Oxford University Press

² Stiglitz, J.E. (1994) *Whither Socialism?* MIT Press

³ Machan, T.R. (1988) *Beyond Hayek: A critique of central planning* Foundation for Economic Education

⁴ Helm, D. (1989) *The Economic Borders of the State* in ed. Helm, D., *The Economic Borders of the State* Oxford University Press, Oxford, pp.9-45



magnified when the country involved is a large exporter, and the government clearly wishes to maximise overseas earnings while providing the greatest benefit for its citizens. One simple example of this dilemma would be the issue of low domestic prices which encourage higher demand which then reduces the availability of competitive hydrocarbons for the export market – a dilemma being faced by oil exporters in the Middle East⁵ as well as by gas exporters in North Africa.⁶

One interesting compromise that can be found in the interaction between domestic and export markets concerns the state use of export or import taxes, which generate revenue for the domestic budget at the expense of “foreigners” who must pay an extra levy. Essentially this can work because an exporting government can, in certain instances, use its bargaining power over importers to impose an extra fee that must be charged by all its exporting companies, thus creating extra revenue without disturbing the competition between its own domestic players. However, this system can function because there is a natural affinity between the exporting companies and the exporting government, and they often work together. As long as the export tax is not excessive, and does not make the exported gas uncompetitive in the export market, then the companies and the government can both benefit. Meanwhile domestic consumers are guaranteed to pay a lower price than any foreign buyers of their country’s gas.

However, this does not apply in a domestic market, where companies and the state will generally have different objectives, with the former seeking to maximise profits and rents while the latter will be aiming to limit the exercise of market power either to encourage efficiency (through competition) or for distributional or other reasons. In particular, governments are likely to intervene to disturb one element of the gas industry that is particularly common – monopoly power. This can happen across the whole supply chain as the high cost of infrastructure and the scale and specificity of the asset base naturally leads to vertical integration and the potential for market power. Indeed gas transportation is often viewed as a natural monopoly, with governments either owning or strictly regulating its operation. Furthermore, geography can also play a significant role as transport costs can make up a much higher proportion of the final cost of the consumer price than is the case for oil or coal. As a result, governments are tempted to intervene, using their regulatory powers in order to ensure that the rents are distributed “fairly” between the companies, consumers and the state.

Russia provides examples of all these complex issues

Over the quarter century of the post-Soviet era Russia, as a major gas exporter with a very large domestic gas market, has been forced to address all the issues of the gas pricing debate outlined above. The move from a command economy under the Soviet Union through the shock of a rapid application of free market principles in the 1990s to an increasing reversion towards state control in the 2000s has seen the argument between economic efficiency and optimal distribution of benefits played out against various political and economic backdrops. Overall, though, the progression has been consistently, although gradually, towards the adoption of an increasingly market-based model, albeit with a continuation of significant government intervention at present. However, it may now be the case that the development of global gas markets, and Russia’s interaction with them, could become a catalyst for a final push towards a market-based pricing system.

It is valuable to chart the progression of gas pricing in Russia in order to provide the context for the current debate. In the Soviet era, domestic fuel prices were calculated on the basis of production costs, and were very often insufficient for producers to generate a return on “investment” – in other words they

⁵ Fattouh, B. & El-Katiri, L. (2012) *Energy Subsidies in the Arab World* Arab Human Development Report Research Paper Series, United Nations Development Programme

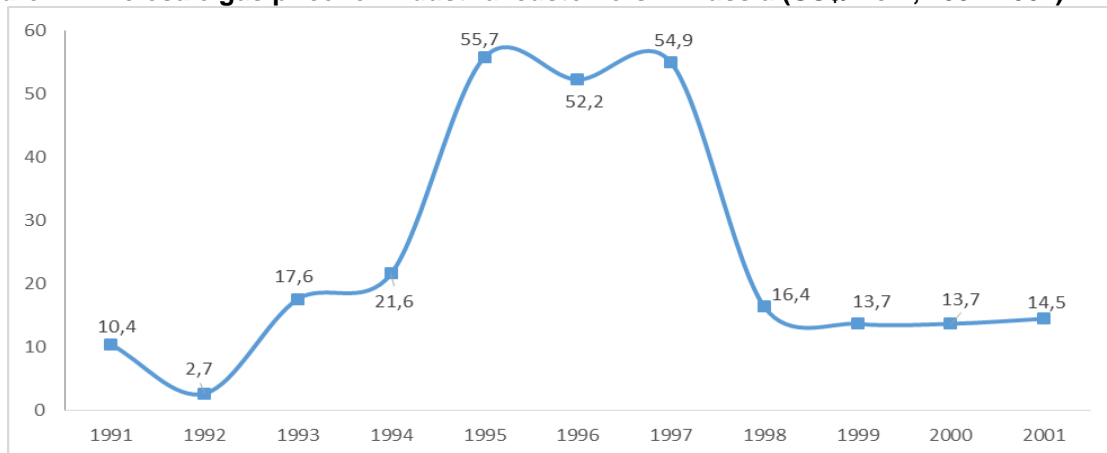
⁶ Aissaoui, A, (2016) *Algerian Gas: Troubling Trends, Troubled Policies* Working Paper NG 108, Oxford Institute for Energy Studies, Oxford



did not cover costs plus a profit margin. Indeed, the basic concept of Soviet-era pricing was to base prices on an average industry cost, not the long-run marginal cost, based on the principle that each industry was part of a large common enterprise – the national economy. The result was that domestic fuel prices were a small fraction of the levels seen on the world market, providing a large implicit subsidy to domestic industry and consumers.

As a result, once the Soviet period ended in 1991, gas prices started to rise from a very low base. Initially, as market prices were freed, the price levels for all commodities started to rise very sharply, especially for oil and coal, and the official government objective was that prices for gas should be based on the cost-plus principle in order to allow gas producers to make a return on investment. However, it soon became clear that a rapid rise to this level would cripple the domestic economy and could have disastrous social consequences, and in 1993 a government resolution established an average industrial price of 7,900rr/mcm plus a trader premium of 1,100rr/mcm, to be indexed on a monthly basis relative to the industrial price index. In this way the price was capped and used as a means to curb inflation, although it still clearly bore no relation to industry costs and profit. Indeed, in a further attempt to control inflation prices were frozen from October 1995 until the end of 2000, with the only fluctuations being due to changes in the rouble exchange rate.

Figure 1: Wholesale gas price for industrial customers in Russia (US\$/mcm, 1991-2001)



Source: Gazprom, ERI RAS

This approach to pricing could be justified, however, by the fact that the industry was dominated by one player, Gazprom, which had inherited its entire asset base from the Soviet Ministry of Gas. Given that Gazprom accounted for 90% of Russia's gas output at the time and owned the gas transmission and distribution pipelines, but had made no direct investment in them, it made sense for the government to ensure that the benefits of gas sales were spread across society. Essentially, in order to guarantee that the distribution effects of gas supply were shared by the Russian population in a society where the post-Soviet institutions remained very weak, undermining tax collection and social security measures, the easiest answer was to keep gas prices low in order to provide cheap fuel for industries struggling with the new economic realities and for residential consumers who needed sufficient energy to keep them warm in a freezing Russian winter. In this early period, then, the distribution effects took priority over the economic efficiency of a gas industry that had a large established asset base and could also survive on the proceeds of export sales to Europe.

By the early 2000s this situation had started to change, as demand for Russian gas grew both domestically and in export markets while supply options started to become more limited as Soviet-era



assets began to go into decline.⁷ A two-stage 38% increase in gas prices in 2002 was intended to incentivize new investment and curb demand growth, but then fears of economic destabilization and high inflation led the government to introduce a cap which limited growth in natural monopoly tariffs to 20-23% per annum. This provided a clear example of the conflict between economic efficiency and distribution benefits which the Russian government has constantly had to resolve, but the need to shift the balance towards incentivizing new production was becoming clear. In addition, pressure was being applied by the WTO and the EU to bring gas prices up to a level where they would at least cover all costs, including funds for future investment.

As a result, in 2006 President Putin agreed to a government proposal to increase the domestic gas price up to the level of the export netback price,⁸ linking the two markets for the first time. The key drivers of this move were to curb domestic demand by encouraging efficiency, to provide an incentive for new investment in gas production and also to correct the significant distortions in the energy market in Russia, where the prices of gas, oil and coal had diverged widely. The result had been that consumers had switched where possible to cheap gas, leading to gas accounting for over half of total primary energy demand. Given Gazprom's commitment to meet domestic demand (albeit with quotas for industrial customers which limited the availability of gas at regulated prices), the company was having to limit its export ambitions at a time when gas demand in Europe was growing rapidly.

In May 2007, the Russian authorities introduced Resolution No.333 which enshrined the export netback target into law, and mandated domestic gas price increases of 15-25% per annum until 2012. The implication of this move was that at an oil price of \$60/barrel at the time (with the oil price being the main driver of gas prices in Europe) the implied domestic gas price in 2012 would be \$120-130/mcm. Unfortunately, this government-mandated approach to gas prices demonstrated the key flaw of state-planning, namely a lack of flexibility to changing circumstances, as by 2012 the oil price had reached a level of around \$110-120/barrel. As a result, although the domestic gas price had risen it was still well short of the export netback level. This led to a postponement of the target to 2014 and then to 2015-2018, when it was also planned to switch from regulation of prices to regulation of transport tariffs only (with the Federal Anti-Monopoly Service currently suggesting that this should happen by mid-2018). However, it must be acknowledged that, in one sense at least, it was positive that during this period the domestic and export prices were not physically connected, as the result would have been such a dramatic rise in the domestic price that the economic impact would have been very severe with regards to industrial competitiveness and inflation. Therefore, although the limits of state planning were revealed, the need for government regulation of prices during an interim period was confirmed.

Russian government Resolution No. 1205, published in December 2010, underlined this transitional phase, suggesting that domestic prices should rise towards the export netback level over a period of years (initially 2011-2014) according to a formula managed by the Federal Tariff Service (FTS). The stated objective of the new regulation was "elimination of the disproportions caused by the low price of natural gas compared to the prices of alternative fuels and the prices of materials, equipment and services consumed by the gas industry. The adopted decision on increasing natural gas prices on the domestic market will create necessary conditions for the growth of investments in gas production, will help overcome the shortage of gas on the domestic market and will stimulate consumers into energy saving and energy efficiency."

The FTS was mandated to apply a process of reducing multipliers in order to ensure that the gap between domestic prices of gas and other fuels (for everyone other than residential consumers) closed gradually. The first element of flexibility was also introduced allowing the regulated gas price to vary in

⁷ Makarov A.A., Malakhov V.A., and Mitrova T.A. (2005) *Natural gas effective prices in Russia* Russian power generation in XXI century ISEM, Irkutsk

⁸ The netback price is defined as the wholesale price at the European border less the gas export tax and less transportation costs from Central Russia.



a range of +3% to -3%, calculated on a quarterly basis. Furthermore, Resolution No. 1205 also suggested that government regulation of prices would end once domestic prices had reached the export netback level, with regulation then being focused on transportation. The implications of this remain important today, as one of the most critical factors in establishing a market-based system for gas pricing is to establish a transparent and unified transportation tariff within a system with full third-party access rights.

Domestic competition and economic stagnation have changed the outlook since 2014

By the end of 2013 the momentum towards export netback parity had somewhat stalled due to the doubling of the oil price, which kept taking the target further away and led to a variety of extensions to the target date. However, perhaps even more importantly, it had also become clear by then that the domestic price had already reached something of an equilibrium level due to increasing levels of competition from third party producers, who had begun to challenge Gazprom's market dominance.

During the 2000s Gazprom had been pushing the Russian government to increase domestic gas prices in order to allow it to cover its costs and generate funds for new investment, in particular in the fields on the Yamal peninsula. Indeed, a number of analysts believed that the initial export netback target of \$120-130/mmbtu was driven by the breakeven cost of the Bovanenkovo field.⁹ Essentially Gazprom argued for a price driven by economic efficiency and the long-run marginal cost of its new gas, but perhaps miscalculated in failing to anticipate that other producers would also be incentivised by this higher price and could potentially offer lower cost supply. The result was that by 2009 Gazprom announced that it was breaking even in the domestic market, but by 2012 a number of third party producers, led by Novatek and Rosneft, had started to sign significant contracts with domestic customers at prices below the regulated price.¹⁰ Again the inconsistencies of government regulation had been revealed, in as much as Gazprom's regulated price, which had once been very low, now appeared to be too high, as there was clearly sufficient gas in Russia that could be priced below it and still make money. The actions of the "Independents",¹¹ who were not bound by any price limitations, clearly demonstrated the potential for a competitive market to exist, and also demonstrated that the domestic price had reached a level which could be regarded as balancing supply and demand, even though the constraints on Gazprom's pricing strategy made this a somewhat artificial equilibrium.

In 2014 a second important incentive to restrain domestic gas prices emerged, catalysed by the Ukraine crisis, the subsequent sanctions imposed by the EU and US, and the consequent economic recession in Russia, which was also driven by the halving of the oil price in 2015/16. These factors encouraged a much more cautious government approach to domestic gas prices, with the result that, following a 15% increase in the regulated price in July 2013, the price was frozen in 2014, increased by only 7.5% in 2015, was frozen again in 2016 and has increased by only 3.9% in July 2017. The current budget also foresees increases of 3.4% in July 2018 and 3.1% in July 2019, below the anticipated rate of inflation.

Figure 2 shows the slowing of the growth in the rouble price of gas in Russia after 2013 (the prices are annualised and reflect the fact that changes are implemented mid-year in July), but also shows the dramatic impact of the devaluation of the rouble versus the dollar, with the Russian currency having effectively halved in value since 2014. This has reduced the domestic gas price in US dollars to around

⁹ Henderson, J. (2011) *Domestic Gas Prices in Russia: Towards export netback* Working Paper NG57, Oxford Institute for Energy Studies, Oxford

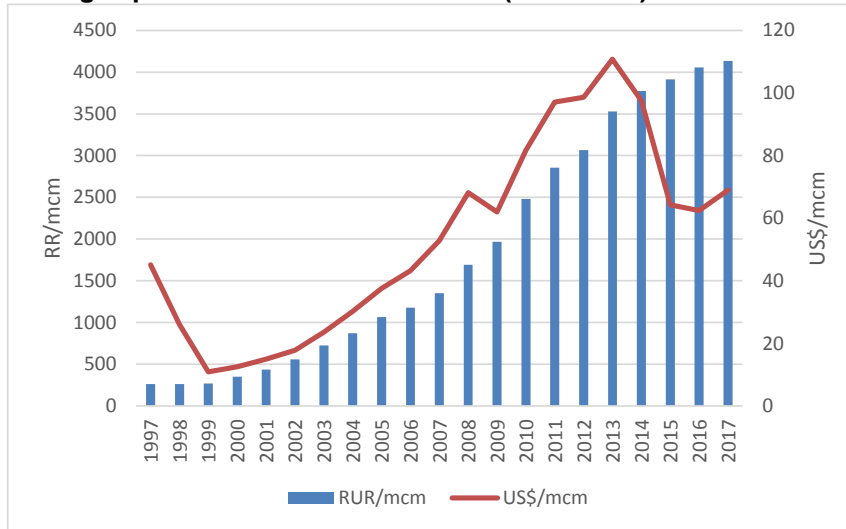
¹⁰ Henderson, J. (2015) *Competition for Customers in the Evolving Russian Gas Market* Europe-Asia Studies, Vol. 67, No. 3, May 2015, pp.345-369

¹¹ In Russian legal terminology non-Gazprom gas producers in Russia are officially known as independent gas producers



\$70/mcm and provided a great boost to any gas consumers in Russia who produce goods for the export market. As a result, one incentive to regulate the domestic gas price has been removed, as its competitiveness relative to global prices has clearly been sharply improved.

Figure 2: Domestic gas prices in roubles and dollars (1997-2017)



Source: Federal Tariff Service

History of gas trading in Russia

Before examining the current state of gas trading in Russia it is useful to consider the historical developments that have occurred over the past three decades. As mentioned above, Gazprom has dominated gas sales in Russia throughout the post-Soviet era, but it has done this through its Mezhhregiongaz subsidiary, which was formed in 1996 in response to the major non-payments crisis that was occurring at the time.¹² Indeed in 1997 it was reported that only 29% of Gazprom’s sales were actually paid for at all, with only 12% being paid for in cash.¹³ As a result Mezhhregiongaz set up a network of 62 subsidiaries across the country in order to improve payment discipline and enhance the company’s sales ability. This network of regional subsidiaries continues to exist in 2017 and they are some of the most active traders on the St Petersburg gas exchange.

Another important event in the 1990s came with the passing of Russian government decree No. 865, passed in July 1998, which gave independent producers the right to sell gas to Russian consumers at free (i.e. unregulated) prices.¹⁴ This had very limited impact at the time because of the very low level of regulated prices (which were as low as \$12/mcm following the devaluation of the rouble in 1998/99), meaning that independent producers could only make a profit by offering gas at a significant premium to Gazprom. As a result, they could only hope to sell to consumers needing extra “non-regulated” gas, severely limiting their opportunities. However, over time the impact of the 1998 law would be felt as regulated prices rose and the opportunity to generate profits while still competing with Gazprom started to develop.

¹² Gazprom Mezhhregiongaz LLC. JSC Gazprom, URL: <http://www.gazprom.ru/about/subsidiaries/list-items/mezhregiongaz/> (as of 09/24/2017).

¹³ Stern (2005), p.50

¹⁴ On the introduction of amendments in Decree of the Government of the Russian Federation dated March 7, 1995 No. 239 “On measures to normalize state price (tariffs) regulation”. Electronic Fund of Legal, Normative and Technical Documentation, URL: <http://docs.cntd.ru/document/901714333> (as of 09/24/2017).



The next phase in this development came in 2002, when the government granted Gazprom the right to purchase gas from independent producers at market prices,¹⁵ thus facilitating the use of third party gas in the domestic market. Until then independents had struggled not only to compete on price but also to secure suitable access to the trunk pipeline system owned by Gazprom, and so the opportunity to sell to Gazprom became an alternative form of gas monetisation strategy. In order to facilitate this purchase and sale of third party gas, and in anticipation of possible further liberalisation, Gazprom set up the Electronic Trading Platform (ETP), with the objective of establishing a benchmark price but also in the hope of retaining full control of the gas trading process (which would remain a recurrent theme over the next few years).

The ETP offered independent producers the opportunity to sell their gas at “market” prices, although initially (between 2002 and 2004) they only sold to Gazprom, which in turn remained the only seller of gas to around 20 regional gas companies and a number of large individual consumers. In essence this was a trial period, with approximately 2.5bcm of gas traded over the three-year period and with the principles of routeing, price and tax calculation being established and ultimately forming the basis for direct contracts offered by the independents at a later date. The trial period ended in 2005, at which point Gazprom formed a working group with all interested gas producers to prepare for the launch of full gas trading at unregulated prices on the ETP under a new legal framework.¹⁶

In 2006 Mezhhregiongaz then launched a second experimental version of the ETP, this time including third party producers as active participants. At the same time two other trading platforms were launched, but neither had the credibility of the Gazprom-managed system and the backing of a government decree (No. 534).¹⁷ The parameters for the new exchange were that during the trading period from November 2006 to December 2007 the target sales should be 10bcm, evenly split between Gazprom and third parties (indeed the system was known as the 5+5 experiment).¹⁸ Gazprom was to act as a facilitator, agreeing to transport any gas sold to consumers by itself or by third parties, thus ensuring the security of any trade. The trades themselves were for delivery in one of three time horizons – one day, ten days and one month,¹⁹ and trading was conducted in the form of a continuous double auction.²⁰ As a result both gas trading and transport trade were connected to the ETP, allowing independent producers to access the transport system (known as the United Gas Supply System or UGSS) on a competitive basis.²¹

The experiment was generally regarded as a success, and for 2008 it was agreed that the volumes should increase to 15bcm, again on a parity basis (in other words 7.5+7.5), with the proviso that at no point should Gazprom’s volumes exceed third party volumes by more than 15%.²² The total allowed volume only equated to just over 3% of domestic gas consumption,²³ but nevertheless it marked another important step towards establishing a true price benchmark. However, it is interesting to observe that,

¹⁵ Gas came to exchange. Interview with Alexander Petrov, Head of the gas market development department of Mezhhregiongaz, Securities Market magazine, №2 (329) 2007. URL: <http://www.rcb.ru/rcb/2007-02/8122/> (as of 09/24/2017).

¹⁶ Gas came to exchange. Interview with Alexander Petrov, Head of the gas market development department of Mezhhregiongaz, Securities Market magazine, №2 (329) 2007. URL: <http://www.rcb.ru/rcb/2007-02/8122/> (as of 09/24/2017).

¹⁷ On the experiment of the gas sale on ETP. Gas Market Development, ProfGas LLC, URL: <http://profgaz.com/razvitiye-rynka-gaza/> (as of 09/24/2017).

¹⁸ First year progress of the ETP Mezhhregiongaz in the framework of "5+5" experiment. Energy Market magazine, No. 12, 2007. URL: <http://www.e-m.ru/er/2007-12/23365/> (as of 09/24/2017).

¹⁹ Mordushenko Olga. Gas for the Day Ahead. Exchange Trading is Proposed to be Conducted Daily. Kommersant dated 10/18/2007. p. 14 (Thursday). Cited by: App. E to the Lecture 5. Series of lectures on Securities Market, Selisheva A. S.

²⁰ Electronic Trading Platform JSC Gazprom: purpose for creation, functioning mechanism, effectiveness. Overview of e-commerce, URL: <http://elcomrevue.ru/elektronnaya-torgovaya-ploshhadka-oao-g/> (as of 24.09.2017).

²¹ Ibid.

²² The Ministry of Energy developed a draft resolution on gas trading using exchange technologies. Regnum, URL: <https://regnum.ru/news/economy/1145204.html> (as of 09/24/2017).

²³ Free gas market in Russia: development institutions. Sokolova E.V. // Saint Petersburg University bulletin, Issue 8, Management, 2014, №4. URL: <http://cyberleninka.ru/article/n/svobodnyy-rynok-gaza-v-rossii-institut-razvitiya> (as of 09/23/2017).



as noted above, the Russian government was at the same time pursuing an alternative pricing strategy, namely to increase the domestic price to netback parity with the European market, following a pronouncement to this effect by President Putin. This would have implied a doubling of the domestic price from around \$65/mcm in 2007 to around \$120-140/mcm in 2011, assuming that the oil price remained in the \$50-60/barrel range prevalent at the time, and would have led to the European spot price becoming a key benchmark for Russian domestic gas prices, with the further implication that the domestic ETP prices could also have been linked to the European market.

However, the combination of the two targets had an unfortunate consequence, as the price on the ETP jumped to \$100/mcm in December 2007,²⁴ anticipating the advance towards netback parity more than three years in advance and offering a price at a 40% premium to the prevailing regulated price. This undermined the credibility of the exchange in the eyes of the government, who soon believed it was not ready to act as a benchmark price setter, and also discouraged consumers from extensive trading – only 6.1bcm changed hands in 2008, just 40% of the 15bcm target.²⁵ Furthermore, by the end of 2008 the global economic crisis had led to a sharp fall in the oil price (from over \$100 to \$40/ barrel), not only undermining the Russian economy but also bringing the export netback price down to a level at which the government target of netback parity and the high price on the ETP became somewhat untenable.

As a result, the ETP experiment started to lose credibility, not helped by the fact that it was not really regarded as an independent price-setting mechanism (because of Gazprom's heavy involvement) and did not really encourage significant competition between suppliers or between consumers.²⁶ Furthermore, the regional monopolisation of gas sales, with gas largely being sold close to its source of production, meant that even amongst the independent producers there was a lack of real competition because each tended to dominate consumers in its own local area, while in other non-producing regions there tended to be a gas deficit, or at least less interest from gas suppliers to sell gas on the exchange to consumers in that region.²⁷

Consequently, although the Ministry of Energy developed a draft resolution to extend gas trading into 2009 it was not approved by the Federal Antimonopoly Service, for the ostensible reason that it did not allow a further development of the market to permit consumers to sell any surplus gas they had from the long-term contracts with Gazprom. Indeed, Gazprom had actively lobbied against this new clause, arguing that a gas surplus already existed because of the 2009 economic downturn and that any re-sale of contracted gas would therefore cause a gas price collapse on the exchange.²⁸ Perhaps not surprisingly it was reluctant to allow the full force of the market to operate, even though of course for consumers it would have provided a significant benefit.

The lack of relevant approvals meant that experimental trading on the ETP halted at the end of 2008, as had been initially planned, and during the next three years the exchange was dormant as the Energy Ministry proposed various directives to re-start activity which were debated in parliament and in the gas sector but which were ultimately rejected.²⁹ In March 2011, though, then President Dmitry Medvedev rekindled the idea with an instruction that a functioning gas exchange should be a government priority, as a result of which the Ministry of Energy was again tasked with formulating a proposal. This time it offered two solutions, the re-start of the ETP and also trading on a commodity exchange in St

²⁴ Gas exchange heads towards record highs. Kommersant, No. 235 (3811) dated 12/10/2007. URL: <https://www.kommersant.ru/doc/838188> (as of 09/24/2017).

²⁵ Russian Gas Market. PJSC Gazprom, URL: <http://www.gazprom.ru/about/marketing/russia/> (as of 09/24/2017).

²⁶ Gas came to the exchange. Interview with Alexander Petrov, Head of the gas market development department of Mezhtregiongaz, Securities Market magazine, №2 (329) 2007, URL: <http://www.rcb.ru/rcb/2007-02/8122/> (as of 09/24/2017).

²⁷ Gas exchange lost its relevance. Kommersant №97 (4152) dated 06/02/2009. URL: <https://www.kommersant.ru/doc/1180873> (as of 09/24/2017).

²⁸ Gas exchange lost its relevance. Kommersant №97 (4152) dated 06/02/2009. URL: <https://www.kommersant.ru/doc/1180873> (as of 09/24/2017).

²⁹ The Ministry of Energy developed a draft resolution on gas trading using exchange technologies. Regnum. URL: <https://regnum.ru/news/economy/1145204.html> (as of 09/24/2017).



Petersburg (now SPIMEX). Gazprom, not unexpectedly, objected to the idea of two trading platforms, complaining that it would make transport logistics very difficult, but in April 2012 the Russian authorities approved Directive No. 323 on gas trading via a commodity exchange, opening the way for competition to the ETP.³⁰ The Ministry of Energy, supporting Gazprom, continued to lobby for a return of gas trading to the ETP alone, attempting to remove the words “commodity exchange” from the decree and replace them with “organised trading”, but by May 2014 this opposition had been weakened and Deputy Prime Minister Arkady Dvorkovich instructed both the FAS and the Ministry of Energy to ensure that gas producers sold at least 5% of their output on an exchange.³¹ The result has been the formation of a gas exchange on SPIMEX which now has significant support from government officials and the gas sector.

The SPIMEX Gas Exchange

SPIMEX was established in 2008 as a commodity exchange for the trading of oil and oil products, and it now offers spot and derivatives trading across a broad range of contracts with the goal of creating “an understandable and transparent mechanism to set fair prices for basic commodities produced in the Russian Federation and CIS countries”.³² Furthermore, other commodities such as wood and construction materials are also now actively traded on the exchange. However, gas trading was only started in October 2014, although it is interesting to note that the concept was based on a proposal from the Presidential Energy Commission, implying that it has support at the highest levels of government. Indeed, at the official ceremony to launch the gas exchange Igor Sechin, the secretary of the Presidential Commission and CEO of Rosneft, stated that “now we can say that there is a new alternative [to regulated gas prices] and a transparent tool to estimate a “fair” market price for gas.”³³

Trading on SPIMEX

The SPIMEX gas exchange initially provided the opportunity to trade gas at four trading locations, all located at balancing points around compressor stations (CS) on the Russian trunk pipeline system. These were Nadym CS, Vyngapurovskaya CS, Yuzhno-Balykskaya CS and Parabel CS. The first three are all located close to gas producing regions, with the Nadym CS being at the heart of the core West Siberian region. As a result it became the most important trading location, dominating volumes throughout the 2015-2017 period. In consequence, SPIMEX took the decision in October 2017 to combine two of the other three trading points (Vyngapurovskaya and Yuzhno-Balykskaya) into one larger location, now known as Lokosovo. As can be seen in Figure 3 below, Nadym continues to dominate, but Lokosovo also has reasonable volumes while Parabel, which is furthest from a production area, has negligible trading.

Initially contracts were only offered for month-ahead trades with a lot size of 100,000m², but in October 2015 a day-ahead contract was introduced in an attempt to expand the liquidity of the market. All prices are quoted in RR/mcm, but importantly it should be noted that all trades are bilateral only, meaning that there is no re-sale of gas on the SPIMEX Exchange. Essentially, only gas produced directly by a supplier can be sold on the exchange, and it must then be taken by the purchaser for consumption. “Excess gas” under contracts from Gazprom or other producers cannot be re-sold to a third party on the

³⁰ Russian Gas Society stands for exchange gas trading on the base of Interregional Oil and Gas Complex Exchange. BigPower Electric. URL: <http://www.bigpowernews.ru/news/document41217.phtml> (as of 09/24/2017).

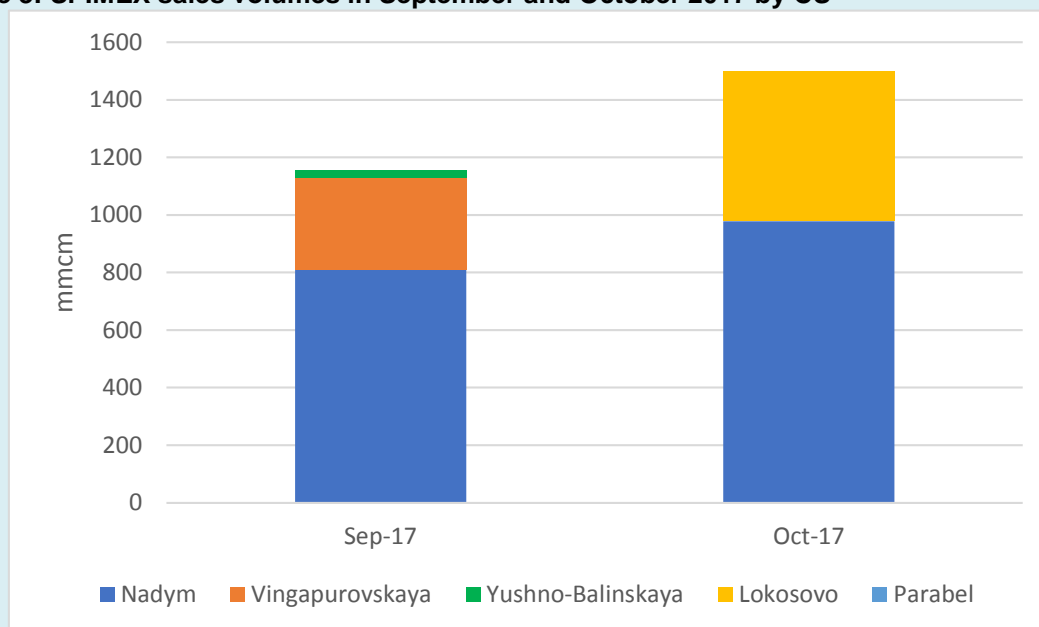
³¹ Gas exchange is looking for the sellers. Barsukov Y, Kommersant, 08/14/2014, Cited by: App. E to the Lecture 5. Series of lectures on Securities Market, Selisheva A. S.

³² For details see <http://spimex.com/en/about/about/>, accessed 23 Nov 2017

³³ Gas trading was launched on SPIMEX, Oil & Gas Journal Russia. URL: <http://ogjrusssia.com/news/view/news-837/108> (as of 09/24/2017).

exchange. In addition there are no risk management products available on the SPIMEX Gas Exchange, as futures and other derivative products have not yet been introduced.

Figure 3: SPIMEX sales volumes in September and October 2017 by CS



Source: SPIMEX Bulletin

Once a trade has been completed, Gazprom Mezhrefiongaz Delivery then provides agency services for natural gas transportation, with access to the pipeline system guaranteed for all gas traded on the exchange at a pre-agreed tariff. However, one important caveat is that pipeline access must be negotiated in advance of a trade being completed, which has led to complaints that Gazprom has a significant conflict of interest as it has prior knowledge of trading activity. In addition Gazprom has taken on the official status of commodity delivery operator for gas on SPIMEX meaning that it is assuming the role of balancer for gas sold out of the exchange onto the Russian gas market.

However, despite the high level support, there has also been some opposition to the new exchange. Gazprom had been lobbying for some time prior to its formation for the right to sell some of its gas at a discount to the regulated price, in order to compete with the independent producers who were doing just this and were winning market share as a result. However, the Head of the Federal Antimonopoly Service, Anatoly Golomolzin, saw the launch of the exchange as a riposte to this request, arguing that Gazprom could now compete with the independents on the open market and would not need a change to the regulated price rules.³⁴ Gazprom's response to this was to withdraw from trading on SPIMEX in January 2015, only three months after the launch, ostensibly because of a concern over tax risks involving difficulties in reclaiming VAT from its transport division.³⁵ In reality it seems that it was perhaps seeking a pretext to set up an alternative exchange for gas export trading, but in any case after a warning from the FAS, Gazprom returned to SPIMEX in March 2015.

Nevertheless, Gazprom's opposition to the changing structure of gas sales, and its consequent reduced control over the market, was clear. In another twist, in 2016 it announced that it had been offered the

³⁴ Gas exchange lost its relevance. Kommersant №97 (4152) dated 06/02/2009. URL: <https://www.kommersant.ru/doc/1180873> (as of 09/24/2017).

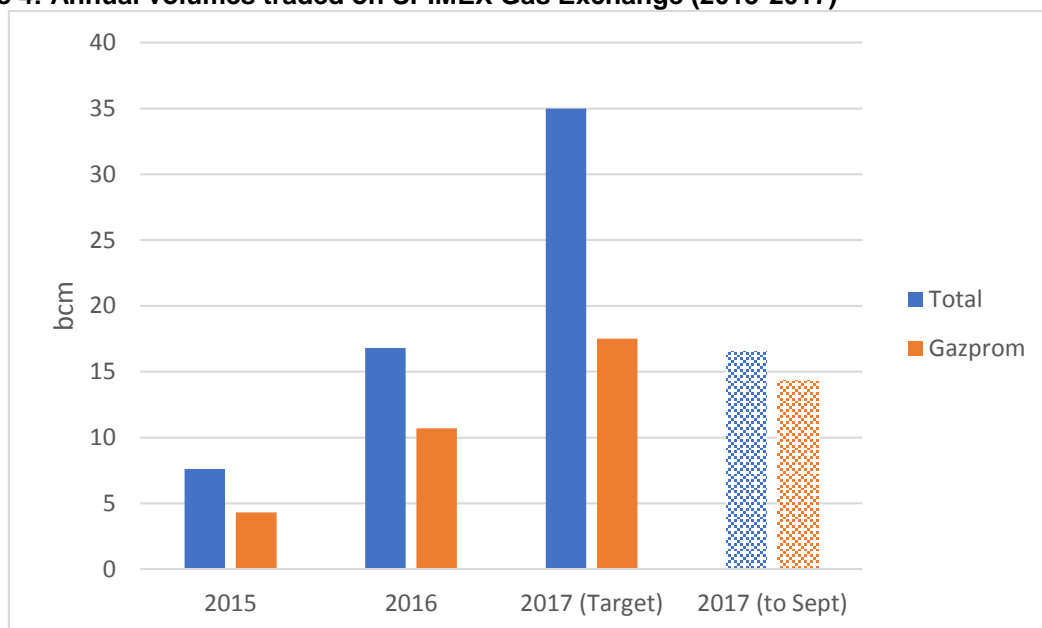
³⁵ Gazprom quitted the gas exchange. Kommersant, №12 (5222) dated 01/27/2015. URL: <https://www.kommersant.ru/doc/2654559> (as of 09/24/2017).



opportunity to trade gas on the Moscow Energy Exchange (Mosenex) and was planning to agree to do so due to alleged problems with metering of SPIMEX traded gas,³⁶ with the Bank of Russia providing its approval for the new exchange in June 2016. However, it now seems that this may have been another negotiating tactic, as Mosenex gas trading has still not commenced and in July 2016 Gazprom agreed with FAS to increase trading on SPIMEX to 35bcm in 2017, with Gazprom contributing half of this volume. It was also agreed that the total monthly trading should not be less than 3bcm (including all participants) and that Gazprom would not trade on any other platform until this target had been reached.³⁷

Figure 4 shows the annual volumes traded on the SPIMEX gas exchange since 2015, and although there is an obvious growth trend it seems to be clear that the 2017 target will not be met, principally because independent producers do not have sufficient spare gas once they have fulfilled their long-term contract sales. Despite this, volumes in the first nine months of 2017 have already reached the level for the whole of 2016, suggesting that annual growth will be achieved overall, but it seems likely that the total for 2017 will be in the range of 20-22bcm, around two thirds of the 35bcm objective. In addition it is also very clear that Gazprom will dominate sales, as in the year to date it has accounted for 86% of total volumes brought to the market, meaning that independent producers have fallen far short of their 17.5bcm target. Indeed non-Gazprom supply to SPIMEX totalled only 2.25bcm for the first nine months of 2017.

Figure 4: Annual volumes traded on SPIMEX Gas Exchange (2015-2017)



Source: Interfax, SPIMEX Bulletin

Gazprom does not just feature on the sell side of the exchange, though, as the regional subsidiaries of Mezhtregiongaz also play a prominent role as buyers of gas. Figure 5 below shows an analysis of the buyers on the SPIMEX Gas Exchange during 2017 and underlines that although there are normally more than 60 buyers active in the market, the share of Gazprom subsidiaries can in some months be as much as two thirds of total trading. The average for the first nine months of 2017 was a lower 41%,

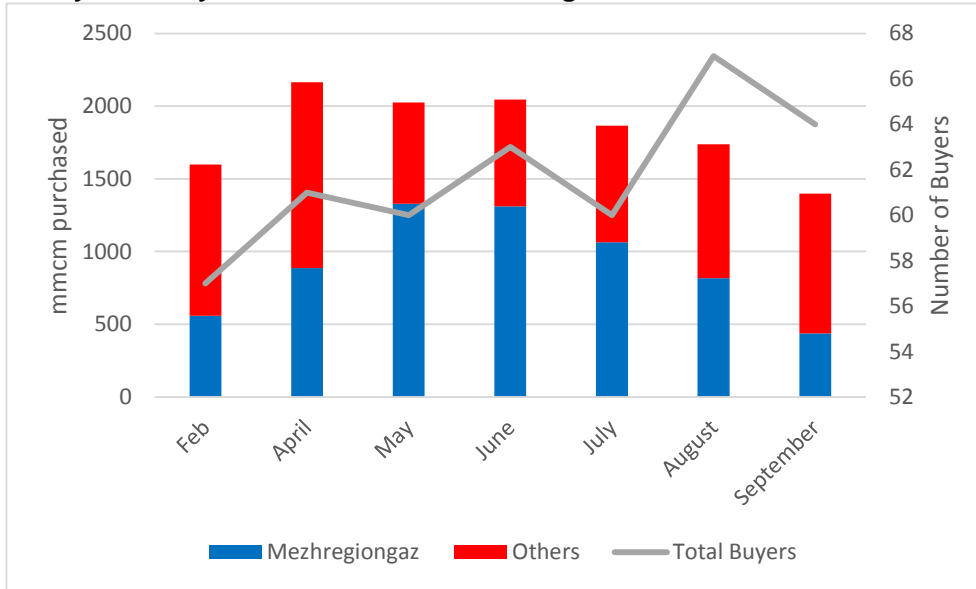
³⁶ Interfax, 5 May 2016, "Gazprom to limit gas trading on SPIMEX due to problems with gas consumption metering

³⁷ Gazprom and FAS agreed to double the exchange trading turnover, 07/08/2016. Интерфакс. URL: <http://www.interfax.ru/business/517646> (as of 09/24/2017).



but nevertheless it has caused some observers to question the true price-setting ability of SPIMEX given the prevalence of one player on both sides of the market.

Figure 5: Analysis of buyers on SPIMEX Gas Exchange in 2017



Source: SPIMEX Bulletin, Interfax

Other major purchasers of gas include power producers such as Enel Russia, industrial enterprises such as EuroChem (which was the largest purchaser on the exchange in July 2017 for example) as well as a number of traders and smaller commercial entities. In addition, existing producers such as Rosneft and Novatek have also appeared as buyers as well as sellers, acquiring gas to meet the demands of their long-term contract customers at times of highest consumption. Rosneft, for example, was one of the largest purchasers of gas on the exchange in September 2017.³⁸

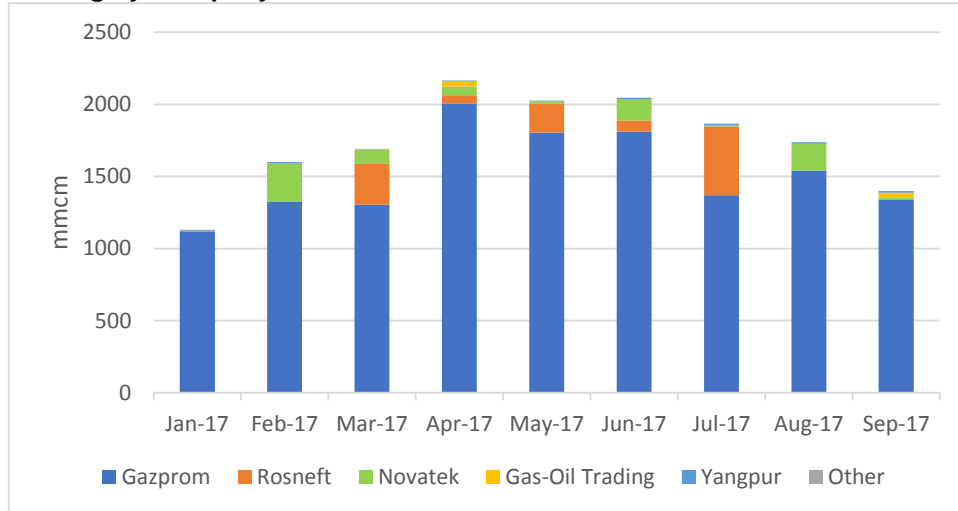
On the supply side, Novatek and Rosneft are perhaps not surprisingly the most active participants among the independent producers. Three other smaller players, Gas-Oil Trading (which represents Lukoil), ETK³⁹ and Yangpur, have also appeared on the list of sellers, but as can be seen from the graph below only the three major players make any significant impact on the exchange. It is also clear that Rosneft and Novatek do not contribute on a regular or even basis. To take Rosneft as an example, it did not sell any gas at all in January, February, August or September, but was the largest non-Gazprom seller in March, May and July. Novatek's sales patterns are equally volatile, although the company has sold some gas in every month except January. Overall, though, Gazprom has accounted for 87% of total sales on the exchange in 2017, with Rosneft having a 7% share and Novatek making up 5%, with the other three smaller companies accounting for the remaining 1%.

³⁸ Interfax, 1 Sept 2017, "Rosneft begins buying gas on SPIMEX; prices rise on reduced offers, rising demand"

³⁹ Evropeyskaya Treydingovaya Kompaniya



Figure 6: Trading by Company on SPIMEX in 2017



Source: Interfax, OIES Analysis

Seasonal impacts

One of the reasons for the variation in non-Gazprom contribution relates to a broader trend in trading on the SPIMEX gas exchange, namely seasonal variations. As can be seen in Figure 7, which shows monthly volumes at the various trading points, there is a significant swing between summer and winter trading, with volumes increasing sharply in the warmer months. This is because during the colder winter months demand under long-term contracts will be fully utilised, meaning that most producers have very little spare gas to sell on the exchange. During the summer months, when demand is lower and customers utilise the flexibility arrangements in their contracts to reduce purchases, suppliers will have more gas to offer at SPIMEX, with the result that volumes increase. This is particularly the case for the smaller producers such as Rosneft and Novatek, who have signed a significant amount of new contracts since 2012 and have limited (at least relative to Gazprom) gas resources to fulfil them. Furthermore, they also have no access to storage to provide for peak demand as Gazprom is the monopoly owner of all the UGS facilities in Russia.

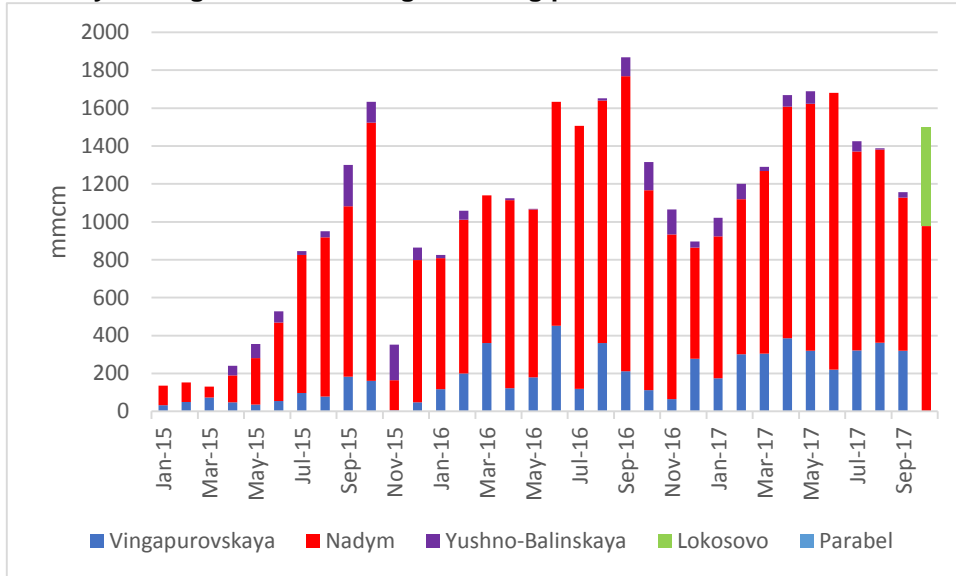
The issue of resources is highlighted even further by the fact that Rosneft in particular often becomes a buyer when demand is highest, using its trading subsidiary SL-Trading. In February 2017, for example, it was the largest individual buyer on the exchange, purchasing 0.29bcm of gas during the month.⁴⁰ It then became a seller for the months of March through to July, before halting sales in August and becoming a buyer again in September, with SL-Trading purchasing 0.155bcm of gas and being the largest non-Gazprom customer on the exchange.⁴¹ The ability of Rosneft, and other producers, to react to seasonal swings in their individual gas balances, and the fact that overall the SPIMEX exchange shows a seasonal swing in both volumes and prices (see Figure 8), suggests that market forces are operating and that the gas exchange is starting to reflect the forces of supply and demand within the Russian domestic market. However, there are a number of major obstacles which remain to be resolved before SPIMEX and the Russian authorities can truly claim to have created a benchmark for prices within the country.

⁴⁰ Interfax, 1 March 2017, "Rosneft biggest gas buyer on SPIMEX in Feb, regional cos buy a third

⁴¹ Interfax, 2 Oct 2017, "Lukoil resumes selling gas on SPIMEX; second biggest seller in Sept after Gazprom

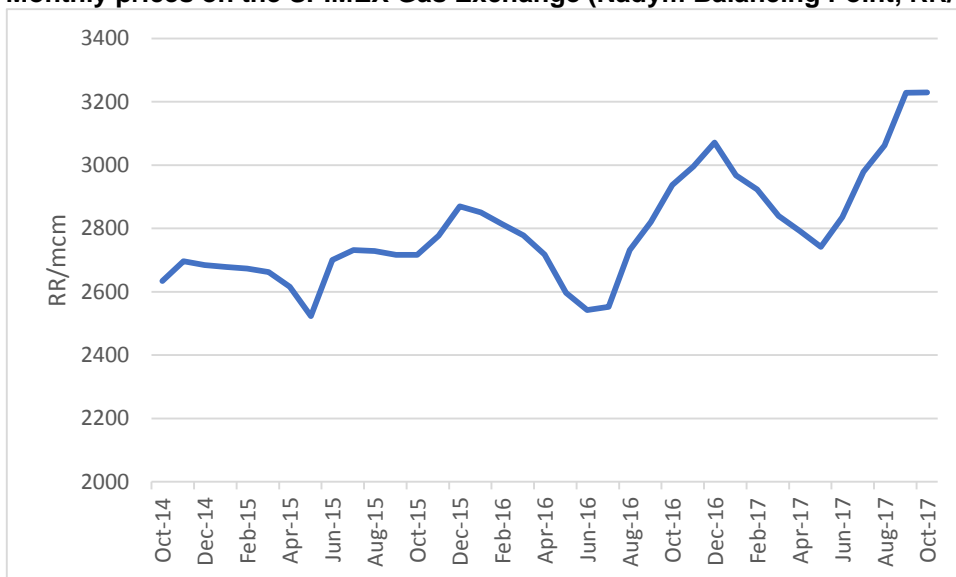


Figure 7: Monthly trading at the SPIMEX gas trading points



Source: SPIMEX Bulletin

Figure 8: Monthly prices on the SPIMEX Gas Exchange (Nadym Balancing Point, RR/mcm)



Source: SPIMEX Bulletin

Key issues for the further development of the SPIMEX Gas Exchange

The Gas Exchange at SPIMEX has been in existence for just over three years at the time of writing of this paper, and so it is clearly unreasonable to expect it to have developed into a fully liquid trading platform. Development of the European market is still continuing and has taken the best part of two decades to reach its current form (Heather, 2015). Nevertheless, it can still be useful to review progress to date and also the comments of key market participants in order to assess the main remaining issues and the further changes that need to be made. The authors have conducted a survey of approximately



twenty actors who either use the SPIMEX Gas Exchange actively or act as regulators or commentators (referred to hereafter as the Skolkovo survey), and below we use some of the direct responses (quoted anonymously) to highlight some of the key issues that are relevant for the further development of the exchange.

Perhaps not surprisingly, overall comments about the success of the Exchange to date show a mixture of positive and negative responses. On the positive side, quotes included the assertion that “we have a stable trend towards creating liquidity, increasing the number of participants and increasing the number of regions involved in exchange trade,” while it was also claimed that “the price generated by our Exchange is in fact a market price, according to objective criteria.”⁴² However, a more nuanced view offered the thought that “trading volumes at the gas exchange are growing at a satisfactory rate” and more obtusely that “the gas exchange is evolving but following its specific nature,” suggesting a slower and more uneven development trajectory.

This less encouraging viewpoint was reinforced by other respondents who questioned the definition of the SPIMEX Gas Exchange, stating for example that “the gas exchange is operating but it is impossible to call it an exchange in the sense in which the term is used in Europe...its role is rudimentary at this stage.” Furthermore, it was asserted that “the exchange in Russia is an instrument forced from above and there are doubts as to whether it is performing the functions which are assigned to it in the ideal scenario,” with an explanation of this situation being offered as “it is fairly difficult to expect an exchange to do anything before overall institutional changes have taken place in the gas market.” In the absence of these changes to date, the most negative respondents claimed that “at the moment the gas exchange is a foreign mass on the body of the Russian gas sector,” and that “I am sceptical about the prospects for the Russian gas exchange. It rarely works when you place the cart before the horse.” Finally, when one particularly bleak respondent was asked about his views on the development of the gas exchange, he replied “it is already over. The emperor has no clothes!”

Given this varied range of assessments, but bearing in mind in particular the criticisms about the nature of the exchange at present and the lack of an adequate institutional structure, it is certainly worth asking fundamental questions about the current state of competition on the SPIMEX Gas Exchange, the liquidity of the products being offered, the availability of adequate infrastructure to facilitate trading and the options for further development. The following section addresses some of the key issues in turn, catalysed by further responses from our survey.

Dominance of Gazprom versus adequate volumes

A clear issue that is apparent from many of the graphs above is the dominance of Gazprom on the SPIMEX Gas Exchange, especially on the supply side. This is an obvious consequence of the size of Gazprom relative to the other market participants and its access to a huge reserve and production base. If liquidity on the exchange is to be increased then Gazprom will have to contribute significant volumes. The main problem, of course, is that a dominant player can influence prices by managing flows of gas available for sale. This issue was highlighted in particular during the Skolkovo survey of exchange participants. Although some praised the exchange for making it “possible to buy gas at lower prices” and for “offering flexibility thanks to daily trading,” others were much more critical, in particular arguing that “in practice there is one supplier [Gazprom] and one buyer [Mezhregiongaz] at the exchange” meaning that in practice “there is no real competition.”

The Russian authorities have tried to address this issue by insisting that Gazprom meets minimum targets while also trying to balance supply with third parties, which has resulted in the objective of equal volumes that started with the 5+5 objective in 2006. However, while it might have been reasonable to ask independent producers to sell 5bcm on the exchange in 2006, when they had significant associated

⁴² All quotes are taken from a confidential survey conducted by representatives of Skolkovo Energy Centre, Moscow, with all respondents being guaranteed anonymity.



gas available that might otherwise have been flared, requiring them to sell 17.5bcm in 2017, when they have large long-term contract commitments and limited resources, has clearly been unachievable.

One solution to this problem would be to end the 50:50 split between Gazprom and the independent producers, in order to allow Gazprom to sell a greater volume of gas on the exchange. Indeed, given that the Ministry of Energy has proposed that the total volume sold on the exchange should increase from 35bcm in 2017 to 50bcm in 2018 and potentially 100bcm in 2020, this may be the only way to achieve greater liquidity in the gas market, because third party producers are likely to struggle to provide 25bcm in 2018, never mind 50bcm in 2020 given their current commitments. Both SPIMEX and FAS have requested that the limits on Gazprom volumes be lifted, warning that without such a change there could be a shortage of gas on the exchange leading to a sharp rise in prices. They argued that Gazprom would most probably have reached its 17.5bcm limit by October/November 2017 (it had sold 16.6bcm by the end of September, while third parties have actually reduced sales compared to 2016). Furthermore, an audit of exchange activity by FAS in March 2017 confirmed that the main reason for a lack of third party activity was the long-term contractual obligations that Rosneft and Novatek have signed, meaning that there is not enough spare gas to meet the gas trading target.⁴³

Objections have been raised by the Ministry of Economic Development and by other market players, who are not unnaturally concerned that Gazprom could increase its influence over the domestic market if it takes a greater share of gas trading. One respondent to the Skolkovo survey summarised the issue as follows: “Gazprom will be able to expand its niche in the market and compete with the independent producers, offering discounts. At first glance, this is good for the consumer, since the monopoly would be willing to offer lower prices than the “progressive” independent companies. But later Gazprom could displace the independent producers and start behaving in a non-market manner. When there is a shortage of gas in the market, it could start inflating the prices ...” One compromise solution has been to suggest that if the limits on Gazprom sales are lifted then it should not be able to sell gas at a price below the minimum regulated price in respective supply regions, in order to avoid price dumping and unfair competition. In other words, it should not be able to undercut the regulated gas price in any specific region. Although this has some logic, because Gazprom could certainly undermine competition given its current excess of gas supply, any price restriction, especially related to regulated prices, would clearly undermine the concept of an open gas market.

The re-sale of gas on the exchange

The issue of Gazprom’s excess supply and how to re-distribute it also highlights another major problem for gas trading at SPIMEX, namely that at present there is no ability to re-sell gas on the exchange. In other words once a purchaser has bought gas from a supplier it must take physical delivery, without the option to on-sell all or part of the gas to another third party. This not only creates risk for consumers, because there is no option to re-sell gas that might not be required if demand is lower than expected, but also prevents new suppliers and traders from entering the market. As summarised by a respondent to the Skolkovo survey “you need to implement two ideas. Firstly, to allow the sale of any surplus which arises during the monthly auction or in the course of daily trading on the exchange. Secondly, any consumer should be allowed to resell any surplus arising under long-term contracts.”

Clearly, for the SPIMEX Gas Exchange to become representative of a true trading hub, actors should be allowed to buy and sell gas on a continuous basis, thus increasing the churn ratio (discussed below). However, the ability to re-sell gas would also be one way to increase competition in the domestic market as it could allow, or even require, Gazprom to sell extra gas on the exchange to other producers such as Rosneft and Novatek, or to traders, in order for them to then sell the gas onto new customers or just to trade as a financial instrument. This happens in a very limited way at present, with Rosneft buying extra gas to fulfil its long-term contractual commitments during periods of highest demand, but a more

⁴³ FAS studied the exchange activity of the gas suppliers, Izvestia, 03/21/2017. URL: <https://cdn.iz.ru/news/672272> (as of 09/24/2017).



radical approach would be to facilitate much greater trading of Gazprom's surplus gas. This would of course require Gazprom to take a larger share of initial gas supplied to the exchange, but would then allow a much broader trading environment to emerge.

SPIMEX is certainly interested in addressing this issue, initially in regard to the re-sale of unused gas. SPIMEX Vice President Anton Karpov outlined in an interview in January 2017 that the ability for consumers to balance their gas requirements in a liquid market necessarily requires the ability to purchase and re-sell gas, and he suggested that at first this should just apply to exchange traded gas only.⁴⁴ However, the obvious extension of this, as acknowledged by Karpov, is to allow the trading of unwanted long-term contract gas, although this would also need resolution of the issues surrounding regulated prices as the government would be reluctant to condone any practice that could lead to a sharp rise in prices for end-consumers. However, Karpov suggests that a shift could be facilitated if the swing factor in regulated price contracts is removed. Currently customers can take 10% more or 20% less than contracted to allow for flexibility of demand, but if this were to be removed then consumers could trade the gas on the exchange instead, increasing liquidity. Furthermore, the ultimate conclusion could be an expansion of the role for exchange prices in long-term contracts (they are already used in some contracts) if and when a suitable volume of gas can be supplied and freely traded in multiple transactions.

Introduction of derivative products

The potential for exchange prices to play a greater role in the domestic market raises a natural concern, normally expressed by the Russian government, about the potential for dramatic price movements which could undermine industrial and domestic consumers. In a market context, suppliers, buyers and traders are also concerned about price volatility and in order for a market to function properly, and for liquidity to increase significantly, derivative products need to be introduced in order to allow for risk management. Forward contracts can allow suppliers and consumers to fix prices at future dates and therefore guarantee a secure revenue stream (as is being done by many shale producers in the US at present), while the introduction of options and futures products can introduce a new stream of financial products that can attract a broader range of market participants and increase trading activity. As Heather (2012) points out, it is these products that can transform an OTC market into a true exchange, and can allow a wide range of players to both buy and sell physical gas and also to manage future price and volume risk.

Respondents to the Skolkovo survey also noted the shortage of products offered on the SPIMEX Gas Exchange, saying that "a normal exchange should provide an opportunity to make contracts not only for a month or a day. It should make not only physical deliveries but offer futures and generally provide liquidity in the market in order for all players to meet their interests. It is impossible to hedge output, selling for a day or even a month. We need instruments which are longer term and which offer more liquidity." However, it was also stated that this is unlikely to happen in the near term, as many other changes will be required first. "It would be logical to see futures at the gas exchange - maybe in 10 years. This is a derivative market where you can hedge the price for the following year and earn money. Maybe, speculate. But this is a completely different level of development for the exchange. When a normal market for forward contracts or normal spot trading is in place, then you can talk about futures."

As and when a variety of products have been introduced, it will be possible to start to measure the success of an exchange using various parameters. As defined by Heather (2017) these include the number of market participants, what products are traded there, how much volume is traded and over which periods, the tradability index and the churn ratio.⁴⁵ To take an example of one of the most successful hubs in Europe, TTF in Holland, it had more than 40 active participants, a full range of actively traded products and saw 22,230TWh (2,400 bcm) of total traded volume in 2016. The tradability

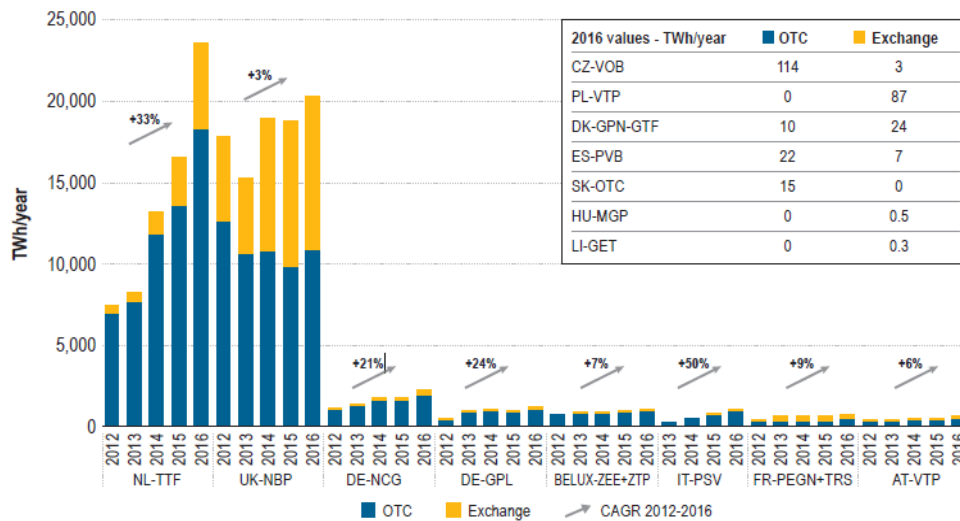
⁴⁴ Nefte Compass, 26 Jan 2017, "Gas trading takes off as SPIMEX fine-tunes market mechanisms"

⁴⁵ Heather (2017), pp.2-13



index measures the tightness of bid/offer spreads, the amount of volume available at each price and the amount of volume available along the future price curve. The index is measured from 1 to 20, with 20 being the best, and TTF scored the maximum of 20, reflecting the tight bid/offer spread available for all products offered along the whole curve from within day to yearly strips. Finally the churn index measures the traded volume relative to the physical gas throughput at a hub, in other words the number of times that a parcel of gas is traded and re-traded between its initial sale by the producer and the final purchase by the consumer. Markets are generally deemed to have reached maturity when the churn rate reaches 10, and in 2016 TTF scored 57.

Figure 9: Traded volumes at EU hubs via market platforms (2012-2016)



Source: Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2016 (Gas Wholesale Markets Volume), ACER/CEER, October 2017

A brief comparison between TTF and SPIMEX demonstrates that the Russian gas market has some way to go before it can claim to have a truly functioning exchange. The number of active participants on the supply side is 5, although only three of these offer any real volumes, while in an average month around 15 buyers account for the vast majority of all purchases. Furthermore, the exchange only really offers two products (a day-ahead and month-ahead contract) and total traded volume reached 16.8bcm in 2016, the tradability index score would certainly be very low as there is no real forward curve to assess. Finally, the churn at the SPIMEX would be 1, as no re-sale is permitted and so each trade is between one seller and one buyer; however, the churn ratio for Russia, as calculated in North America or in Europe would be <math><0.1</math>.⁴⁶ While these statistics suggest that SPIMEX is certainly not yet a full benchmark hub, this is not to denigrate the progress that is being made. As Heather (2015) points out, it can take at least 10-15 years for a fully functioning and liquid gas market to develop,⁴⁷ as has been seen both in the US and Europe, and so SPIMEX could not be expected to achieve similar results in only 3 years. Nevertheless, the analysis does highlight how many more steps need to be taken over the next decade.

Access to transport capacity and underground storage facilities and the setting of transport tariffs

Perhaps the first major step, and one identified by Heather (2015) as the key to the success of any gas hub, is access for all market participants to gas transportation at a fair tariff.⁴⁸ Third party access to the

⁴⁶ The churn being calculated as the total traded volume divided by the total physical consumption
⁴⁷ Heather (2015), pp.5-10
⁴⁸ Heather (2015), p.6



Russian gas trunk pipeline system (the UGSS) has been mandatory since the passing to the Gas Law in 1998, and has further been guaranteed for all gas traded on the SPIMEX gas exchange, but there are a number of specific issues within the details of this legal framework that can undermine non-Gazprom players. For example, one significant complaint is that although pipeline access is guaranteed for all gas that has been traded on SPIMEX, it must be agreed in advance by the participants and can be refused before a trade has been completed. In other words, if a consumer in a specific region intends to buy gas in one month, he must notify Gazprom of the intention in order to secure pipeline access for the volumes to be purchased. This clearly gives Gazprom prior notice of potential demand for which it can compete. Furthermore, if access is granted in one month, it can then be refused in the next for the same volume to the same destination if Gazprom decides that the management of the overall system demands a change. In this way, Gazprom has an obvious potential lever over gas consumers that it can choose to exercise almost at its own discretion.

Respondents to the Skolkovo survey have emphasized the issue of access to transportation and storage, and have also asserted that it is part of a wider institutional problem in the gas sector in Russia. First of all, they confirmed that the current allocation system gives Gazprom a clear competitive advantage – “the issue of transportation permits, which participants must receive before trading on the exchange, is a way to exert pressure. There was a situation where one large industrial organisation in the south was allowed access to the GTS one month, and the following month Gazprom came to its senses and did not give a permit.” Secondly, there is the question of equal access, and avoiding the issue of Gazprom claiming that there is not enough capacity on certain routes – “a possible solution would be to move away from collecting applications in advance and to provide online information to all bidders about free capacities. You can disclose the information on capacities themselves, and there will be no need for any applications.” Thirdly there is the issue of access to storage, which is currently not available – “Everyone should have equal access. Formally, there is access to the pipelines, but there is none to the storage facilities. Without underground storage facilities, trading on the exchange is impossible for the participants interested in physical volumes.” And finally, one respondent offered an obvious, but radical solution - “In Europe, there is the Third Energy Package to regulate unbundling of energy suppliers from network operators, and network operators are not a player that affects the competitive environment. That is not the case with us. The network is a market player, influencing the competitive environment, since it is affiliated with one of the market players. This is a basic violation of the rules. Everyone should operate in the same conditions.”

A related issue concerns tariffs, which again are to an extent in Gazprom’s control. The current tariff is based on two components – a fixed capacity charge and a fee based on the actual route used to flow the physical gas. Unfortunately this second fee can alter depending on how Gazprom chooses to manage the system overall, and so customers on SPIMEX who have agreed access to the trunk pipeline cannot be sure what the exact price of their gas will be when it arrives at the point of consumption.⁴⁹ A solution would be to establish fixed prices for transportation of gas to the various balancing points and then from the balancing point to a specific gas distribution point. As a result the producer would know how much it will cost to get the gas to the balancing point and the buyer will equally know how much it will cost to move the gas to the distribution plant in its local region. However, until this issue is resolved it will be difficult for participants in the exchange to have full confidence about the ultimate cost of delivered gas.

This debate is now part of a much broader discussion on gas transportation in Russia, being led by the leading independent producers who are also claiming that the current fees for third party users are too high compared with the fees that Gazprom charges itself.⁵⁰ Gazprom has responded by asserting that third parties do not fund the maintenance or expansion of the UGSS, and also that they do not have other obligations as the supplier of last resort that Gazprom takes on. These issues have much broader

⁴⁹ Nefte Compass, 26 Jan 2017, “Gas trading takes off as SPIMEX fine-tunes market mechanisms”

⁵⁰ Interfax, 16 Aug 2017, “Tariff indexation for gas transport by independent cos put back until next year”



implications for the management of the domestic gas sector as a whole, but the fact that they do link back to an important foundation for trading on SPIMEX suggests that the future of the gas exchange is closely linked to the future balance of corporate influence in the Russian gas industry. As one respondent to the Skolkovo survey summarised “We cannot say that all the wishes of Gazprom are unfair. Gazprom’s desire to be able to trade at free prices is fair. Gazprom's desire to share the responsibility of acting as guaranteed supplier is fair. On the other hand, it is clear that Gazprom is playing a little underhand - because it is impossible to fulfil the function of a guaranteeing supplier without access to the UGS. Gazprom wants to share its responsibility, but it is not ready to provide access to underground gas storage facilities, let alone the mechanisms for setting UGS storage tariffs - and, especially, for domestic transportation tariffs.”

Establishing a virtual hub

One option for resolving some of the transportation issues would be the creation of a virtual hub or hubs around which all trading could take place and potentially located close to consumers rather than production centres. This could certainly simplify the process for buyers and sellers, as at present trading tends to concentrate around the trading hubs with the most physical gas available, in order to minimise the transportation distances. If a virtual hub with standard transport tariffs, perhaps based on an entry/exit model,⁵¹ could be established, then transparency of the full cost of gas would be improved and gas trading could therefore become more attractive to a broader range of buyers. In support of this view, one respondent to the Skolkovo survey stated that “if we are speaking about the long-term perspective, it is strategically more correct to switch to trading at a virtual hub within the market zones. There can be several of these (which is most likely given the size of Russia and the UGSS).” Meanwhile another asserted that “we need to make reforms following the example of the electric power sector. Let those who supply gas to the pipeline pay Gazprom for cubic metres and for the maintenance of the GTS. Let it be any participant in any location within the price zone. In fact, we will get a virtual balancing point. This will be more correct, since the molecule is not marked in any way.” Clearly, then, this is an option which exchange participants would value, and would appear to provide a logical route towards establishing a standard transport cost for customers and buyers alike. It will require some regulatory changes to occur, specifically to the methodology for calculating transport tariffs, but again it is therefore possible to conclude that the development of the exchange could help to encourage broader enhancements of the Russian gas sector as a whole.

Guarantor of supply, pressure on consumers and administrative accounting issues

The Skolkovo survey also identified other significant issues that market participants believe are hindering the development of a true gas exchange on SPIMEX. Perhaps the most fundamental is the need to ensure that gas which has been purchased is guaranteed to flow to the consumer who has bought it. One respondent described the situation as follows: “One of the fundamental rules is that a stock exchange is a tool which performs its basic functions. This is a 100% guarantee for the fulfilment of obligations. If a buyer bought gas at the exchange, and a supplier eventually failed to fulfil its obligations - which has not happened but theoretically could happen, then the problem would be solved via a mechanism within which the buyer will receive the gas in any eventuality, if he needs to deliver it to the consumer. There is no such mechanism on this exchange. A supplier that has not fulfilled its obligations will pay a fine, but the consumer will still not receive gas.” A solution to this issue is being prepared, with Gazprom having announced that it is ready to take on the role of commodity delivery operator for SPIMEX.⁵² In this role it would act as the overall balancer in the commercial balancing system on the Russia gas market, which would essentially mean that it would ensure that supply and demand are balanced, supplying any shortfalls in return for fees from the relevant market participants.

⁵¹ 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.

⁵² Interfax, 21 Nov 2017, “Gazprom prepares to get status of commodity delivery operator for gas on SPIMEX”



However, although this would clearly solve the issue highlighted above, it would also give Gazprom further control over the gas market and the gas trading system, which could undermine the goal of increasing competition. In an ideal scenario balancing should be done by a neutral party on purely safety grounds under a transparent balancing regime that includes commercial incentives and penalties.

This concern is amplified when one also considers that consumers of gas are already coming under pressure from Gazprom and its subsidiaries not to trade on the exchange. Respondents to the Skolkovo survey (presumably buyers of gas) stated that they are often put under pressure, saying “We are told [by Gazprom]: “We will sell you (gas) at the tariff, but you do not go to the exchange. If you go, we will use the right to uniformity, and you'll regret this ten times.” As the right to uniformity is essentially the right to balance the overall gas system in line with optimal capacity utilisation, it is clear that if Gazprom takes on extra balancing duties without strict regulation, the consequences could be difficult for other market players. An example of potential problems was provided by another survey respondent: “Often the mechanism of “entering into uniformity” is used to penalise. For example, if a consumer decides to break away from Gazprom to go to the exchange, then you can suddenly start being fined for uneven take-off of gas. You go to the stock exchange - you worsen the performance of a Gazprom subsidiary, then you pay for it!” It should also be noted that consumers have also complained about threats from non-Gazprom producers if buyers consider moving to the gas exchange, suggesting that all producers are concerned about disturbing the current status quo.

On a more basic level, buyers and sellers of gas at the SPIMEX exchange are concerned about loopholes that can be used for nefarious purposes while also being worried about the administrative burden that is being placed on market participants. As one seller described: “Problems with daily accounting should be resolved. As part of the discussion on the introduction of commercial balancing, the question arises: how to register who consumed what daily? Now all this is still unspecified. Will the consumer disclose this information? Does the consumer have the technical capability? Is this information commercial? We already have consumers who use this loophole to steal gas when they go to the exchange.” However, on the opposite side of the argument buyers have complained that: “Requirements for consumers in terms of accounting are growing. Many consumers are not ready for this. Firstly, they have never faced this. Secondly, perhaps they do not even have their own accounting system - it is handled by their current gas distribution organization. Thirdly, relationships required for adequate exchange of information on the traded market have yet to be built.” As a result, there appears to be a clear need to resolve the mechanisms for the governance of trading activity, gas delivery to fulfil trades and accounting for transactions in order to increase confidence in the Exchange and trust among all the players working on it.

Exchange links to regulated prices and European netback

Beyond these practical issues, though, is the question of the potential impact of various other price mechanisms on SPIMEX gas price formation. It should perhaps not be a surprise that the SPIMEX price is closely linked to the regulated price which dominates the Russian market, but nevertheless it should be noted that the discount of the SPIMEX price to the regulated price has remained fairly constant at 3-5% over the life of the exchange, and as a consequence has shown an upward trend over the past three years (see Figure 6 above). Since 2014 the regulated price has risen by a compound rate of 11.7% (7.5% in July 2015 and 3.9% in July 2017, remaining flat in July 2016), and over the same period the average annual SPIMEX price has risen by 11.04%. Indeed, more specifically in July 2017 one respondent to the Skolkovo survey noted that “the regulated price was indexed in July by 3.9%. The price at the gas exchange went up by nearly as much in the very first monthly trading session in July (3.4-3.5%). This happened in the summer, when the price should not increase!” As a result of this positive link there is an obvious rationale for all producers, not just Gazprom, to want the regulated price to remain in place, if it can guarantee an element of stable growth over time. The risk, of course, is that government policy to boost economic growth and reduce inflation limits further increases, but



nevertheless the incentive not to disturb the status quo would appear to be quite strong, especially as the regulated price currently limits Gazprom's ability to compete with the independent producers.

However, there is an alternative and potentially more exciting link to external prices that could provide a more positive future for the SPIMEX Gas Exchange. As Figure 10 shows, in 2016 the domestic gas price in Russia finally reached export netback parity with the European gas price, and has remained close to that level in 2017 despite the rebound in European prices. As a result, although the outcome has been achieved thanks to lower export prices rather than a dramatic increase in Russian domestic prices, the Russian government's 2006 objective has finally, if somewhat accidentally, been achieved. The consequences of this outcome are unclear. On the one hand, it could just be a short-term anomaly as domestic regulated prices are due to rise only very slowly over the next two years while European prices are likely to be much more volatile, if history is any guide. Indeed, as the long-awaited new LNG supply surge arrives on global markets it is even possible that the Russian price could be higher than the European price for a while,⁵³ although this is unlikely to last for long.

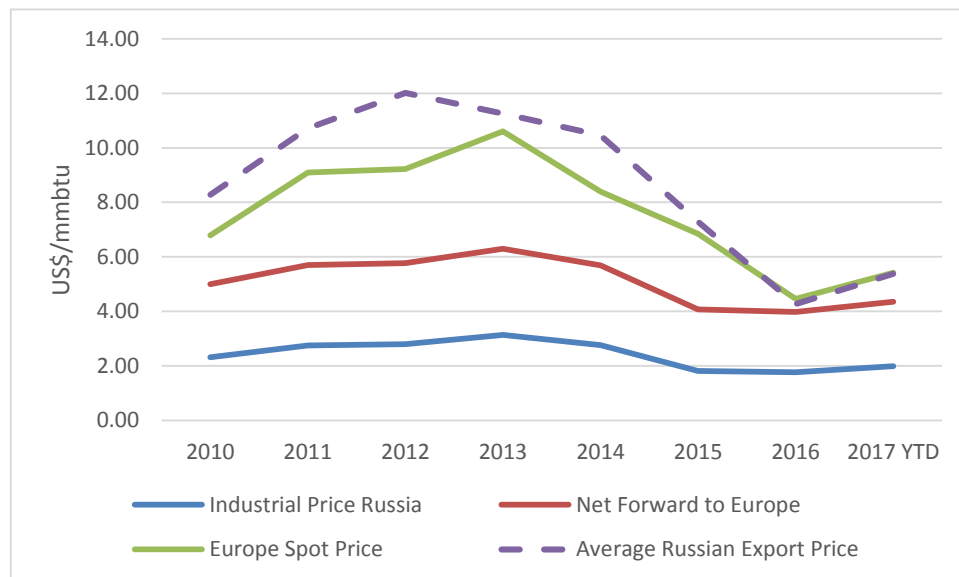
However, the mere fact that the Russian domestic and export prices are proximate on a netback basis, as opposed to the former being well below the latter for most of the post-Soviet period, provides an opportunity for the SPIMEX Gas Exchange. Given the location of St. Petersburg at one end of a major gas export pipeline (Nord Stream) which has a current capacity of 55bcm but which could increase to 110bcm if the planned expansion is completed,⁵⁴ the logic of the SPIMEX Gas Exchange having a potential future role as a trading hub for domestic and exported gas is clear. If Nord Stream is expanded to 110bcm this would account for around 60% of Russia's exports to Europe in 2016 (182bcm), meaning that North-West Russia would become a critical junction for the country's gas flows. Although this would not mean that SPIMEX must become a trading hub for this exported gas, especially given that Gazprom currently has a monopoly on all gas pipeline exports, it certainly provides a long-term possibility, especially if the implications for domestic prices remain minimal.

Momentum towards such an outcome is limited at present. Although the issue of ending Gazprom's export monopoly has been raised a number of times over the past 2-3 years, in particular by Rosneft and its CEO Igor Sechin, the response from the Russian government has been muted at best. Most recently, indeed, Energy Minister Alexander Novak denied that any significant change in the export monopoly for pipeline gas would be considered in the near future. However, any disturbance of the status quo before the presidential election in March 2018 was never likely, and so it remains possible that the discussion could re-emerge once the elections are over. Further weight could also be added to the argument by the pressure being applied by the EU over the construction of Nord Stream 2 (the planned expansion that would double capacity), with the European Commission looking for ways to ensure that the pipeline could only go ahead if it complies with Third Energy Package rules. This would imply third party access being granted to the pipeline, meaning that Gazprom might not be the only company to send gas through it. Although this would not imply any greater role for the SPIMEX Gas Exchange, of course, it would nevertheless provide an avenue for greater trading of Russian gas to take place, with St. Petersburg being an obvious location for it if the Kremlin decides that it would like to create a Russian gas benchmark and trading hub for Europe.

Figure 10: Russian industrial gas price compared to European spot price

⁵³ Rogers (2017), p.7

⁵⁴ For details see www.nordstream2.com, accessed 4 Jan 2018



Source: Argus Data, OIES Analysis

Conclusions

The idea that SPIMEX could become a location for trading of Russia's gas exports is clearly a dramatic one, and should be immediately caveated with the statement that it is very unlikely to occur in the near future for a number of reasons. The most obvious, as noted above, is that Gazprom still enjoys a monopoly on piped gas exports that is unlikely to be broken soon, but a more fundamental reason is that the Gas Exchange is a long way from being a true domestic trading market, never mind a market place at which foreign companies might be prepared to operate. As Heather (2015) has noted, there are at least ten major steps that need to be taken by a gas hub (or traded gas market) before it can claim to be a liquid hub,⁵⁵ and the SPIMEX exchange has hardly taken the first of these yet.

Nevertheless, a start has been made, volumes have increased and prices do appear to reflect the seasonal effects that one would expect in a country with a climate such as Russia's. The prices on the exchange are clearly still related to the dominant regulated price for Gazprom contracted sales, and volumes on the exchange are largely supplied by the country's biggest producer, Gazprom. Furthermore, the largest buyer is the group of Gazprom subsidiaries grouped under the Mezhtregiongaz banner, suggesting a further skewing of the market place. However, in general the gas price on the SPIMEX exchange is lower than the regulated price, which one would expect given the oversupply of gas in Russia, and although customers face physical and contractual constraints to trading and also threats from their existing suppliers, they are nevertheless able to access competitive gas supply. Much more needs to be done, of course, to resolve practical and strategic issues, but the progress made in only three years suggests that attention should be paid to the further development of the SPIMEX gas trading.

Indeed, the strategic location of the exchange at one end of the Nord Stream pipe suggests that its future could be very significant, if it can create a sufficient number of traded contracts with a delivery point in NW Russia. However, given the bureaucratic obstacles involved and the fact that any fundamental changes could well involve major institutional disruption, especially for Gazprom, one is

⁵⁵ Heather (2015), p.6



tempted to suggest that the outcome will be binary. Either the SPIMEX Gas Exchange will be a major catalyst, or at least contributor, to liberalisation of the Russian gas sector, or it will have no impact at all and will fade into obscurity.

This conclusion is suggested by some of the more dramatic responses to the Skolkovo survey, which can provide specific views on the two extreme outcomes that may occur. On the one hand the SPIMEX Gas Exchange could be a driver of change, if the Russian authorities decide to take its future seriously, because without change it will not be able to function properly. As one respondent stated: “In principle, gas exchange trade is the right idea. This is a useful thing for any normal gas market. But if we look at how the markets of Europe developed in the not so distant past ... in fact it was only the Third Energy Package that changed the position of the companies and increased the demand for trade at these hubs. Roughly speaking, Russia needs the First Energy Package, which would do all that. We need everything that is in the Third Energy Package.” Meanwhile another was blunter about the position of Gazprom and the need for fundamental change if the Exchange is to function properly: “I cannot blame Gazprom for being malicious - it just plays by the rules that are there. Like its colleagues played in Europe, until the state dealt with them. This led to the transport tariffs halving. Everything became more transparent, there was competition. And the way things stand now, monopoly is just acting as a monopoly. They read the textbooks well. And while the textbook is correct, nothing will change without the institutional structure of the market changing.” Indeed, as a third reply concretely concluded “It is not reasonable to expect the gas exchange will gradually and smoothly develop into something meaningful without changing the system.”

Of course, at the other end of the spectrum of outcomes is the scenario in which Gazprom’s position, and the status quo in the Russian gas sector, are maintained by a government that does not want to risk dramatic change and its potentially disruptive economic and political consequences. In this scenario, the outlook for the exchange is relatively bleak, and a number of respondents to the survey expressed their lack of confidence with statements such as “I honestly do not see the long-term goal of developing the exchange”; “gas trading has been developing for three years now, but at a declining rate”; and most negatively “you ask about the development of the gas exchange – it is already over!”

Nevertheless, perhaps the most realistic view, and one which confirms both the binary nature of the likely outcomes and establishes why continued study of the SPIMEX Gas Exchange can be a valuable exercise is expressed in one final quote:

“In any case the reform of the gas industry will take place as a reform from above in Russia. Therefore, there will either be some focused decisions (related to the restructuring of the industry, the introduction of market principles, the liberalization of prices, and the separation of the monopoly component of the gas business from the competitive one), or nothing will happen.”



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