

Liberalization of Russian gas exports: benefits and challenges

Alla Yakunina^{1,*}

¹Saratov Socio-Economic Institute of Plekhanov Russian University of Economics, Finance Department, Saratov, Russia

Abstract. Russian gas export liberalization has been discussed throughout the post-Soviet period. Recently, the number of Gazprom's export monopoly advocates has been diminishing as a result of dramatic changes in both European and Russian gas markets, which are: increasing international trade in liquefied natural gas; the EU movement from long-term contracts to the commodity markets and hub pricing; substantially increased share of the non-Gazprom gas suppliers at the Russian domestic market. Although there is a potential risk of price decrease in the EU gas market in the case of the Gazprom export monopoly abolition, the benefits of the Russian gas export liberalization would be greater than losses. The gas resource base and the cost of pipeline gas production would allow Russia to improve its positions in the world market.

Key words: liberalization, gas, benefits, challenges, exports

1 Introduction

The gas sector operating in Russia today is the successor of the Soviet gas industry with very low and stable regulated domestic prices for natural gas, which was a priority resource in the electricity and heat generation. Subsidies for maintaining low domestic gas prices were offset by revenues from gas exports [1]. After the fall of the Soviet Union in early 1990s, Russian gas industry was dominated by one huge firm, state-owned Gazprom, while structural reforms in the oil (another strategic resource) sector resulted in several players in the Russian oil market. While other commodity prices (including oil prices) were liberalized in Russia during 1990s, gas prices remained under strict government control [2].

Dual pricing and cross-subsidization are still inherent in the Russian gas sector today. For many decades, regulated domestic prices for Russian natural gas are maintained at a level below the world market prices. Internal gas prices are entrusted with the function of ensuring social and economic stability. They are set by a political decision of the highest authority of Russia in the "manual" mode to reflect some economically justified (for the industry) and socially acceptable (for the population) gas price level [3].

An important element of this system is the exclusive right to export natural gas in a gaseous state, which is given to Gazprom as the owner of a unified gas supply system. The reason is (as it is postulated in the Federal Law) to protect the Russian economic interests, fulfill international obligations for gas exports, ensure receipt of federal budget revenues

* Corresponding author: alla.yakunina@yandex.ru

and maintain the fuel and energy balance of the Russian Federation. Other producers can supply liquefied gas to foreign markets, but under certain conditions.

The issues of liberalization of both Russia's domestic gas prices and Russia's gas exports have been discussed with higher or lower intensity throughout the post-Soviet period. However, in recent years, the severity of this problem has increased significantly. The main reason for this is significant changes that have been observed in the domestic Russian gas market over the past decades. Back in the early 2000s, gas deliveries within Russia were carried out by Gazprom almost exclusively at regulated prices. Currently, the Russian domestic gas market consists of two segments that operate in parallel. The first and so far the dominant one covers gas deliveries of Gazprom at wholesale prices set by the regulator within the specified range of minimum and maximum prices. The regulated prices are differentiated by zones and bounded from above by the growth rate determined by the Russian Government; the minimum price is formed by a certain formula that takes into account the European market prices of alternative fuels (fuel oil and gas oil).

The second segment of the domestic wholesale gas market is represented by independent producers (who are both vertically integrated oil companies and specialized gas companies), which sell fuel at unregulated prices. The segment also includes the exchange trade in gas at unregulated prices, which began in 2014. Still, the Government regulates tariffs for independent gas suppliers to transport gas through Russia's trunk pipelines. Also, the Government regulates tariffs for gas distributing and marketing organizations.

This natural gas pricing system on the Russian domestic market is the result of multiple changes and adjustments. Still, its current version is transitional as postulated in all documents issued by the Russian Government relating the Russian gas sector. According to the current legislation, Russia from the beginning of 2018 is supposed to switch from regulating wholesale gas prices to regulating tariffs for gas transportation. Until 2018, it was intended to use a formula to gradually approach equal returns on gas supplies for exports and to domestic market. However, mainly due to objective reasons, regulation is currently moving further away from the planned transition to equal profitability, and there is no complete understanding of what pricing method will be used for the Russian gas in the future [4].

No wonder, independent gas suppliers desire to destroy Gazprom's export monopoly to be able to sell their gas at the export price which is significantly higher than domestic price. Over the past decade, the independents have become very strong in the domestic market. Their share of domestic gas sales increased from 12% in 2005 to 34% in 2015 [5]. Accordingly, Gazprom accounts for two-thirds of the gas produced in Russia. The company exports more than 40% of its gas to non-CIS countries. At present, Gazprom's share is about one third of the European market [6].

In the domestic gas market, the main Gazprom's competitors are Novatek and Rosneft. The share of independent suppliers has continued to grow even despite the decline in total gas production in Russia in recent years (Table 1). In 2014, total gas production fell by 4% compared to 2013. Gazprom reduced its gas production by almost 9%, and, by contrast, Novatek and Rosneft increased their gas production by 1.5% and 35%, respectively. This trend continued in 2015. The volume of gas produced by Novatek and Rosneft increased by 9.3% and 10%, respectively, as compared to 2014 [7, 8]. At the same time, gas production by all gas producers in Russia decreased by 1% in 2015, and Gazprom's output decreased by 5%. In 2016, both Gazprom's and Novatek's output decreased very slightly while Rosneft again increased its production volume by 10% [9].

In the Russian domestic market, gas supply exceeds demand considerably nowadays. This strengthens the desire of independent gas suppliers, primarily Rosneft and Novatek, to obtain the opportunity to export their gas by abolishing Gazprom's monopoly on gas

exports or by selling gas to Gazprom at the export netback price (world prices minus export duty and transportation costs).

Table 1. The largest gas producers' shares of gas production in Russia, %

Company	Year		
	2012	2015	2016
Gazprom	73.7	64.1	63.3
NOVATEK	7.8	8.2	7.8
Rosneft	2.6	6.7	7.3
Lukoil	2.6	3.0	2.9
Gazprom Neft	1.2	2.0	2.1
Surgutneftegas	1.8	1.5	1.5
Arctic gas	0.3	3.7	4.0
Other	10.0	10.9	11.0

In this paper we try to understand how solid are the arguments of the liberalization idea's opponents who suggest that the Russian gas exports liberalization would lead to an increased competition among Russian gas coming to the European market from different sources, and to the decrease in the total Russia's revenues from gas export.

2 Theoretical considerations: Literature review

The topic of trade liberalization is well known within the international trade theory. Over the last fifteen years, the heterogeneous firms' approach has received a lot of attention [10, 11]. An important implications of this approach is that trade liberalization in a particular industry leads to reallocation of factors toward more productive firms in the industry. As a result of this reallocation, the productivity of the whole industry increases.

For Russian gas suppliers and consumers, as we see, the gas exports liberalization issue largely comes down to the domestic and foreign market price difference. In 2004, D. Tarr and P. Thomson proposed a model of optimal export and domestic prices for Russian gas, which deserves special attention [12]. The model's assumptions quite accurately reflect the situation in the early 2000s, namely, the existence of a natural gas seller (Gazprom), which is a monopolist in the domestic market and has some market power in the international (European) gas market. Gazprom is able to segment the European market from the Russian market. Over the next few years, gas sales volumes are limited by transportation conditions and long-term contracts, but in the long run the monopolist faces the risk of competition from new producers.

The authors showed that, if Russia is interested in maximizing total revenue associated with export volumes, then the optimal solution for it is double pricing - natural gas in the foreign market is sold at a higher price than in the domestic market. The optimal price of natural gas in the domestic market corresponds to the long-term marginal cost (LRMC), which includes environmental costs in addition to the total cost of doing business. In turn, the optimal price for gas sales by Gazprom at the foreign market reflects a trade-off between additional revenue from sales of additional gas volumes and lost revenue from lower prices. It is in the interests of Gazprom to maximize its export earnings; hence, the foreign market price will be higher than LRMC. The transition to unified gas prices, according to the authors, would cost Russia too expensive, namely, the amount of lost profits would be about 2% of Russia's GDP. Note that the authors assumed that the unified

price reflects LRMC including transportation costs in the case of export sales (that is, an equal-return price based on LRMC was considered).

D. Gordeev, G. Idrisov, and E. Karpel considered a similar model of socially optimal pricing in the domestic and world gas markets [3]. The authors pay special attention to the problem of the ambiguity of the practical interpretation of long-term marginal costs, emphasizing that in practice LRMC can be interpreted as the variable costs of the closing field (if an additional unit of gas is supplied from operating capacities) and as the average costs of the new field (if it becomes closing capacity). The authors argue that, in practice, the impossibility to calculate statistically reliable long-term marginal costs forces (for the social optimality reasons) to depart from the concept of price equality to long-term marginal costs, which implies the maximization of public welfare. The same is facilitated by the inability to directly subsidize gas producing enterprises, and by the need to ensure the sustainable development of extracting companies, which cannot function at a price equal to marginal costs because of the immature Russian financial markets. In addition, the authors note that in the absence of independent arbitrageurs, the connection between the pricing at the international and domestic markets would negatively affect the public welfare.

D. Tarr analyzes the problem of Russian gas exports liberalization and the correlation of the domestic and export prices of Russian gas taking into account the changed situation, namely, in the context of a significantly increased market share of independent gas producers [13]. The author believes that the competition between multiple gas suppliers from Russia to the foreign market would erode or eliminate the monopoly profits of the Russian Federation on gas exports. Therefore, with a more competitive domestic market, the Russian government will most likely retain the exclusive exporting rights to a single entity (as it currently does with Gazprom) or impose taxes on exports. Still, it is necessary to maintain dual pricing with a regulated domestic gas price equal to long-term marginal costs to constrain the exercise of Gazprom's monopoly power (since Gazprom remains, although not a monopolist, but a very dominant firm in the domestic market).

3 Recent changes in the European gas markets: are the models' results still relevant?

The conclusions of the above models are relevant if Gazprom (and hence Russia) retains its market power in the international market. In the models, Gazprom faces a downward sloping demand curve. The optimum markup of price over marginal costs for Gazprom in the European market is equal to the inverse of its perceived elasticity of demand, where marginal costs include transportation costs [12].

In the EU market, Russian gas represented about 30% of supplies in 2014 and that is quite a large share of the market [14]. However, Gazprom's market power is being eroded by the recent change in the pricing mechanism used in the European international gas trade as well as growing trade in liquefied gas. The European market is experiencing a movement from oil price escalation (long-term contracts and the reference pricing mechanism based on oil indexation) to gas-on-gas competition (competitive hub trading and contracts that include a proportion of hub/spot price indexation in the pricing terms, or even a 100% hub price indexation). In the European international gas trade, long-term contracts have dominated since the 1960s. In the 1990s, initially in the United Kingdom and later in continental Europe (after the UK gas network was linked to the Belgian one in 1998), the commodity markets and hub pricing, popular in the USA, began to spread rapidly. To a large extent, this was facilitated by increasing trade in liquefied natural gas, which creates serious competition for pipeline gas, as well as a drop in gas demand in 2008-2009 [15].

The share of gas-on-gas competition in total European gas consumption has increased from 15% in 2005 to 61% in 2014, while the share of oil price escalation has declined from 78% to 32%. However, the shares differ across the region. The most dramatic change in price formation mechanisms is observed in Northwest Europe with a complete reversal from 72% oil price escalation and 28% gas-on-gas competition in 2005 to 12% oil price escalation and 88% gas-on-gas competition in 2014. In Central Europe, oil price escalation has declined from 85% in 2005 to 32% in 2014, while gas-on-gas competition has increased from almost zero in 2005 to over 50% in 2014. In other areas of Europe such as the Mediterranean, the share of gas-on-gas competition in 2014 was only 27%, but in 2005 it was around zero, so the move is significant [16].

An introduction of a new model for European gas trade, which gives greater importance to exchanges for short term products, is an important part of the European economic policy. The European regulators' objective is to develop a market pricing mechanism, generate competition between different sources of supply, and to reduce obstacles to gas circulating within the European network. This is currently reflected in the third legislative package [14, 17].

The changes in the international gas trade and the European policy of market liberalization completely erode the Gazprom model of the Russian gas export based on long-term contracts. The evolving gas-on-gas competition reflects the fact that there are multiple buyers and sellers, rather than a single dominant seller. Gazprom's perceived elasticity of demand is increasing in the circumstances, and the optimum markup of price over marginal costs is going down. The more competitive the market is, the closer price is to the LRMC.

4 Consequences of liberalization: discussion

The most obvious consequence of the Russian gas exports liberalization is the emerging competition between multiple Russian suppliers at the European market, just as they compete in the domestic gas market. The main argument of the supporters of Gazprom's pipeline gas export monopoly is that such competition would lead to a drop in export prices and the respective decrease in the state's revenues from customs duties, profit tax, dividends, and tax on mining.

Of course, there is a chance of falling prices for Russian gas due to the competition between Russian suppliers. At the same time, gas-on-gas competition and liquefied natural gas deliveries have already changed Gazprom's (and hence Russian) position in the European gas market. Liquefied gas deliveries compete with Gazprom's gas in the Asian markets as well. The development of the liquefied natural gas production projects in the world was viewed as a threat to Russia's energy security at a meeting of the Interdepartmental Commission of the Security Council of Russia on economic and social security on July 6, 2017. To ensure Russia's economic security, among other things, the commission recommended to the Russian government to determine the conditions for liberalizing natural gas exports with attention given to the existing risks [18].

It is reasonable to suggest that the drop in prices right after the gas exports liberalization can be avoided (or diminished) if independent producers supply gas to those customers who previously had no contracts with Gazprom. Some European companies want to buy Russian gas but they do not want to deal with the gas monopoly. According to S. Pikin, the Director of the Energy Development Fund, the current Gazprom's share in the European market (the main flow of Russian gas exports) is limited solely to administrative measures and antimonopoly regulation. With more Russian suppliers being at the European market, the share of gas supplied from Russia will increase for benefits of both companies and the budget [6].

Another strong argument of gas liberalization opponents is that the abolition of the gas exports monopoly will significantly reduce Gazprom's export earnings. According to some estimations, if the independents gain access to the export pipeline in proportion to their share in gas production, Gazprom's revenue may decrease by \$ 6.5 billion (with total revenues for 2016 of \$ 100.7 billion) [18]. Accordingly, the company will get less money to subsidize gas supplies to Russian consumers, to finance projects to expand and modernize the unified gas transportation system (GTS) and to supply Russian gas to foreign markets.

Today, Gazprom carries the entire social burden (with the exception of a few regions) of gas supplies to non-industrial consumers at low regulated prices. This reduces the company's profits. The burden of Gazprom's social obligations becomes even more difficult due to the problem of falling profitability of deliveries as the transportation leverage increases. The levels of regulated gas prices minus transportation costs (netback) are much higher in areas close to the production regions, and it is where there is the maximum concentration of independent producers' sales. The further from the region of extraction, the more significantly the margin falls - the difference is 10-20%. Low-profit and unprofitable deliveries go to Gazprom, which is legally obliged to supply gas to Russian consumers at a regulated price. Combined with a lower mineral extraction tax rate for gas, large netbacks allow independent producers use discounts to grab the best and most solvent consumers from Gazprom and still make a large margin on gas sales [19].

Being a state-owned company, Gazprom, unlike independent producers, is legally responsible for the stable and reliable gas supply to Russian consumers and fulfillment of export obligations. This makes it necessary to create and maintain reserve capacities, which are used to cover the uneven consumption of gas in the domestic market in the GTS zone. The difference between quarter production of the Gazprom group in the heating season and outside the heating season is 30 to 45 billion cubic meters [20].

As the owner of the unified gas supply system, Gazprom, on the one hand, has clear advantages over independent producers; but on the other hand, the company is forced to maintain and develop not only the production capacities but also transportation and storage infrastructure, while independent producers develop only extracting. Currently, Russia has the lowest prices for gas transportation in the world. Therefore, the funds for technological development of transportation system can come mainly from Gazprom's export revenues.

Gazprom's advocates do not consider it reasonable to buy gas from independent producers at prices equal to the export netback level, since:

- it would lead to a reduction in the financing of Gazprom's investment programs, including gas transportation and storage, to which the independents do not invest;
- it would make it more difficult to work on state-governed tasks (including the gasification of Russian regions) without considerable co-financing from the federal budget;
- it would weaken the position of the entire gas industry, as independent producers can use the funds received from the gas sales at the export netback prices for investing outside the gas business or for increasing dividends [21].

At the same time, more and more experts are focusing on the inefficiency of Gazprom's export activities. E.g., R. Tankayev, the leading expert of the Oil and Gas Producers' Union, notes that the export component of the Gazprom business model has decreased many times in recent years; in particular, the huge Ukrainian market was lost due to excessive politicization. Also, he reminds that, being a monopolist in the European market, Gazprom will face the problem of the Third Energy Package [22]. S. Vakhrameev, the manager of GL Asset Management, believes that the pipeline gas export liberalization would be useful for Gazprom itself, because, the company would start working more efficiently in the face of the competition [18].

As for Gazprom's social obligations, it should be mentioned that, over the past three years, the possibility of introducing a guaranteeing supplier institution has been actively

discussed. The idea is to split obligations, in addition to the rights, to supply gas to the Russian regions between Gazprom and independent producers. At present, the functions of the guaranteeing supplier are legally being delegated to Gazprom. However, in some regions, independent producers, primarily Novatek and Rosneft, are main gas suppliers. By acquiring the status of a guaranteeing supplier, these companies will have to participate in the gasification of the regions, supply gas to the population proportionally to the share of their presence in the domestic market, and also bear responsibility for the passage of winter maximum gas consumption. At the same time, representatives of both independent gas suppliers and Gazprom consider it possible to give the guaranteeing suppliers access to gas exports proportionally to their social obligations at the domestic market. It is assumed that, in the future, this will facilitate equal economic conditions in the market for Gazprom and independent gas producers [23].

5 Conclusions

Despite the risk of falling short-run gas exports revenues due to competition among Russian companies after the abolition of Gazprom's export monopoly, there are solid reasons to believe that the benefits of liberalizing Russian gas exports will be higher than possible losses. Under the gas-on-gas competition circumstances, firm's market share and profitability depend mostly on its cost and productivity. According to experts, the gas resource base and the cost of pipeline gas production would allow Russia to improve its positions in the world market in the case of Russian gas export liberalization. In this case, the liberalization would lead to an increase in both export volumes and the corresponding revenues of the state.

There is no doubt that in some form - the direct admission of some companies to export deliveries or through Gazprom's purchases of gas from independent suppliers at the export netback price - Russian gas export liberalization will happen the near future. However, it is difficult to call a specific time frame for such a decision. It requires not only economic prerequisites, but also political will.

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