



Society of Petroleum Engineers

**SPE-191647-18RPTC-MS**

## **Recently Announced Reforms in the Russian Domestic Gas Market: Impact on the Market Players' Value in New Realities of International Gas Trading**

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This paper was prepared for presentation at the SPE Russian Petroleum Technology Conference held in Moscow, Russia, 15–17 October 2018.

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### **Abstract**

Over the past two years, the Federal Antimonopoly Service of the Russian Federation (from now on referred to as FAS) raised the issue of the internal gas market's efficiency, as well as possible scenarios for its partial or complete deregulation. Previously several times settled task has been discussed in the context of the transition to market pricing of wholesale gas volumes and the preservation of state regulation regarding tariffs for the transportation of gas through the Unified Gas Supply System (from now referred to as UGSS). However, to date, the regulation of the domestic gas market, pricing rules and tariffs for transportation have not changed significantly, except for somehow development of the gas exchange trading (SPIMEX), which nevertheless also has some problems and constraints to the development of open market trade.

The main criticism in this issue is the currently applied pricing regime, which consists in the presence on the over-the-counter (OTC) market of monopolistically regulated prices and the so-called open pricing mechanism, and exchange prices on the Saint Petersburg International Mercantile Exchange (SPIMEX) gas exchange, respectively. Experts agree that such a system leads to an asymmetry of the market, and, as a consequence, its inefficiency, unequal position of players in the market, as well as risks of a serious shift of the balance towards one player in case of a significant change in gas market regulation. In this regard, each separate proposal of the FAS on reforming the domestic gas market, whether it relates to the division of the dominant seller into production and transportation or the abolition of price regulation, faces severe contradictions on the each player's side. Thus, the pilot project in three subjects of the Russian Federation (Tyumen Region, Yamal-Nenets, and Khanty-Mansiysk Regions) was discussed to be settled in 2016 on the abolition of the lower boundary of the monopolistic regulated gas price for industrial consumers. The project, however, has not been implemented due to the reason mentioned above for the disagreements of all interested parties.

Such aspects further exacerbate this problem as the share of the gas industry in exports, and, in particular, the export of liquefied natural gas (from now on LNG). The role of LNG in the transformation of global, regional gas markets has been noted over the past decade by the IEA and Russia, as one of the players in this industry, is also setting strengthening rules the positions of Russian gas companies in LNG markets as one of the country's developments priorities.

The paper briefly examines the proposed reforms on the abolition of the gas price lower limit for industrial consumers in the context of the impact on independent gas producers, their market position, market value and credit rating. Also, the work considers the development of exchange trade in natural gas, as an indicator of open pricing and related problems.

## Introduction

The proposed reform in the Russian domestic gas market, initiated by the FAS, comes from the problem described below and consists of the following. Independent Gas Producers (hereafter as IGP) operate on the market, mainly represented by two companies (OJSC NOVATEK and OJSC Rosneft) in high-yielding regions (YaNAO, KhMAO, Tyumen Region, Chelyabinsk Region, Central and European Russia). IGPs supply gas to large industrial consumers (mainly to electricity generating companies, large industrial enterprises), while receiving certain profitability. This situation has arisen after the deregulation of gas prices for independent producers and the delineation of the minimum and maximum gas price limits for different consumer groups regarding the monopoly company. In this regard, independent producers in high-yielding regions were able to give discounts to buyers from the lower limit of the regulated price set for the monopoly company thereby intercepting the market share. In turn, the current monopolist represented by OJSC Gazprom has obligations of the so-called "guaranteeing supplier" for the trouble-free supply of natural gas to the residents, as well as in loss-making and low-income regions. This, in turn, reduces its profit in general, as it in addition to it has no possibility of compensation at the expense of high-yielding areas.

The loss of shares in the high-yielding areas with the biggest margin over the past few years has amounted to more than 100 billion m cub of gas. The monopoly company, thus, argues in favor of noncompetitiveness of this scheme and the unequal position of market participants.

FAS presents different grounds for reforming the gas market. Since 2014 the gas exchange was re-established. However, sales volumes on it do not exceed 5% of total natural gas consumption. Also, more than half of the gas sold on the exchange is provided by Gazprom, which can not indicate fully competitive pricing. Nevertheless, the FAS states that the price of gas on the exchange is on average 5-7% below the regulated price boundary (lower limit), which is set for the monopolist, and therefore it makes sense to use the stock index as an indicator of a fair price. Proponents of this reform argue that lowering the price of gas for industrial consumers will lead to a reduction in the cost of their products and as a result, it will positively affect end-users, demand, and in addition, a competitive gas market will be developed. For example, for a generating company, gas is a primary product that occupies a significant share in the cost of electricity production. In practice, all this, on the contrary, can negatively impact the general economic situation, which is studied in this article.

The work consists of three parts. The first examines the foreign experience of deregulation of natural monopolies, as the Russian gas market is represented by a monopoly company, the regulation of which causes numerous disputes; in the second - the mechanism of influence of the cancellation of the lower bound of the price for gas producers and their competitiveness was considered. In the third part, the mechanisms of exchange pricing, existing problems at the SPIMEX, and proposals for further development of regulation of the domestic gas market in Russia are discussed. In the first two parts, the author gives an extended analysis of an earlier study, which is the basis for a detailed analysis of trading mechanisms.

## World practice of natural monopolies deregulation

The concept of "antimonopoly regulation" in its general terms refers to activities aimed at limiting the actions of a monopolist. In this context, the concept of "monopoly" can already be considered in a quite complex manner. In a broad sense, monopoly is always contrasted with perfect open competition and is viewed as the ultimate degree of imperfect competition, which dictates favorable conditions for functioning in the market. Accordingly, proceeding from the theory of public welfare, the state, in this case, undertakes obligations

to limit the power of the monopolies, if such take shape naturally in the capital and asset-intensive sectors. Criticism of monopoly power was mentioned in his famous work by A. Smith, calling it "Monopoly ... is a great enemy to good management..." (Smith, 2007, 28).

In modern economic systems, the emerging of monopoly, as well as the development of regulatory instruments, are very multifaceted. Also, the views of the government, of individual economists, and even more economic agents, are divided into the need for the existence of monopolies at all. This creates a considerable number of difficulties in the development of antimonopoly regulation measures and the state's protection of competition. Questions also arise about the borders of regulation and intervention of the country in actions of naturally developed monopolies. The existence of markets for imperfect competition today is pervasive. In the context of globalization, the largest companies occupy large shares not only in local but also in international markets. Thus, the antimonopoly policy is a key component of the defensive competition policy, along with measures to prevent unfair competition. Its implementation proceeds from the fact that, regardless of the conditions for the formation of dominant firms in the market, they have incentives and opportunities to restrict competition and redistribute the benefits of consumers to their advantage (Avdasheva, 2010, 3). The regulation of monopolies is thus a process characteristic of both developed and developing countries.

The most fabulous experience in these issues is concentrated in the United States. It should be noted that in general, the first antitrust case took place in the United States and was connected with the regulation of railway transport. It resulted in, perhaps, the most famous Sherman act, adopted by the US Congress in 1890. The basic idea behind the law was to counter the concentration of power that in some way reduces economic competition and trade (Neale, 1960, 19). One of the main provisions of the law is the ban on any action that restricts trade between states or with foreign countries. This prohibition applies not only to formal cartels but also to an agreement on setting prices, limiting the volume of industrial production, stock markets, etc. The second key clause makes illegal all attempts to monopolize any part of the trade in the United States. Nevertheless, the law was ad-literate about the ideal, because it lacked many interpretations of specific concepts (for example, interstate commerce and resale, and so forth).

This was amended in two successive Clinton Acts and the Federal Trade Commission in 1914. Among the most notorious cases that came under these laws, we can note the case of price discrimination of the Aluminum Company of America which continued for more than a two decades from 1912 to 1951 (later, however, the company was acquitted), as well as an equally famous case about The division of the American Telephone and Telegraph Company. It should be noted that the second case is a somewhat representative example of the oil and gas industry. The industry in which the company operated is quite capital and capital-intensive. The company laid cables throughout the country, and also 1956 the first transatlantic telephone cable was laid. Pricing was based on tariff regulation and controlled by the US Tariff Commission, and the monopoly of the company was approved at the state level. After more than 100 years of history (since the phone was created in 1876), in 1974, one of the most famous cases of the intentional antitrust law of the monopoly by the state began, lasted 10 years and on January 1, 1984. AT&T was divided into 8 companies and 7 regions on a territorial basis. The uniqueness of this case lies in the state initiative on the division of monopoly, under the control of which was at that time the entire telecommunications market in the United States. This case is still the largest in history, involving 1 million employees at AT&T and more than 150 billion dollars of assets.

The emergence of natural monopolies also characterizes the gas industry since the main feature is transported through pipelines that require significant capital costs. Historically, three regions with pipeline transport and gas trade have developed in the world: North America (the USA and Canada), Europe and the countries of the former Soviet Union. Widespread gas consumption began in the United States after World War II, and the first attempt to transport gas in the liquefied form that initiated this type of trade was made in 1959 when the first LNG tanker was delivered from Louisiana to the UK (Pirrong, 2014, 25).

In Europe, the first attempts to consume natural gas on an industrial scale were in Italy, but the revolution occurred only after the discovery of one of the world's biggest deposits of Groningen, as well as deposits in the British sector of the North Sea. The growth of the economy and the development of industry at that time also affected the development of gas production in the Soviet Union, where the industry developed as an integrated system (which is actually the subject of discussion), and since 1970 the export of pipeline gas to Europe began after the notorious deal with Germany "gas-to-pipes". A critical moment for the development of the gas industry throughout the world can be considered the 1973 oil embargo when all the oil importing countries realized the need for diversification of energy sources. The same historical precedent can be viewed as an impetus for the development of the LNG sector, when Japan (at that time depended on oil supplies) forcing the transition to gas consumption in the electric power industry, becoming the first largest consumer of LNG.

For the US, it played an equally important role, but more to the extent of LNG exports and the deregulation of the gas industry. The problem was the tight regulation of wellhead prices and tariffs, which constrained the export/import of LNG, as well as many issues in gas trading between states. In the end, after a sharp jump in gas demand in Asia, the US government realized the need for deregulation of the industry. The first attempt was made in 1978 when for the newly discovered deposits the controlled price of the well was canceled. This led to a jump in supply, but again created distortions in the market due to the emerging asymmetry of supply and demand. The complete deregulation process, like in the case of AT&T, took more than a decade until the fully open gas market (Henry Hub) was established in the late 1980s. Also, three more, in our opinion, significant and representative examples of the effective deregulation of the gas industry, namely the allocation of the transport component in Canada and the UK, should be highlighted. The case of the European Union on the creation of the Single Gas Market should also be considered separately, which, however, is a more complex example than in the case of the two countries cited. In Canada, the separation of the transport system occurred after the 31 October 1985 Act (Agreement on Natural Gas Markets and Prices, Halloween Agreement) on the abolition of state regulation of gas prices ([National Energy Board, 1996](#), 18). In the UK, the process was political in nature, when the changed party decided to split the state-owned British Gas corporation at the time. More details on the state deregulation of the gas industry and the role of these processes in the development of open liquid markets in the US, EU, and the UK are discussed in ([Talipova A., Parsegov S., 2018](#), 31).

Pipeline transportation of gas has been and remains the primary means of transporting gas, despite the rapidly developing LNG market in the last couple of decades, which accounts for two-thirds of international gas trade ([IGU, 2018](#), 13). Also, it should be noted that it was pipeline transport and related constraints that determined the regional structure of gas markets, which is unlikely to change in the medium term. So, according to statistics, about 72% of all produced gas in the world is consumed within the producing countries, and only 28% are traded between the countries (pipeline transport + LNG) ([IGU, 2018](#), 13). Thus, in all available open, liquid gas markets, which were formed by pipeline transport, at a certain point after the concentration of the monopoly and its high regulation by the state, an objective process of deregulation began. Moreover, only after that, a perfectly competitive gas market was created (for more details see [Talipova A., Parsegov S., 2018](#), 31). Deregulation in most cases took place entirely in one stage, and only in the US was a long-term nature, when the prices for the well were first canceled and after the complete process of abolishing state intervention took place. All this today gives the countries serious competitive advantages both in terms of creating their benchmarks and developing fully functioning physical and financial markets, where the latter provide benefits to players in the management and hedging of risks.

## **Regulation and prerequisites for reforms in the Russian gas market**

The existing monopoly of Gazprom, both in gas supply to Russian consumers and in gas exports, is usually called the problem for the country's economy for the past ten years. Moreover, since there have not been such

reforms in the history of the country, the opinions of all interested parties on this issue vary greatly. In this regard, possible studies of this issue are reduced to either building simulation models with the possibilities of iterations and determining the consequences of the planned reform, or to logical conclusions based on the available theoretical assumptions and models of competition, as well as the experience of other countries.

In the first case, the main difficulty lies in the availability of complete and objective data for each player in the gas market, including production and consumption by regions in Russia, consumption by customer groups, depending on volume, elasticity of demand in the medium and long-term, production costs and distribution, other data related to the company's activities. Such complete and sufficient information is not available today, which, accordingly, makes it impossible to build a full imitation model that would provide objective estimates of the effect of the reforms being implemented.

In the second case, the reasoning creates a firm basis for the debate, since both opponents and reformers do not have a solid empirical basis for argumentation. For example, some researchers in this field are inclined to the fact that the need for market reform is needed for a long time and the reform will lead to the establishment of objective gas prices and will also put all producers on an equal footing, which will be achieved, among other things, by establishing equal tariffs for transportation and UGS (or the abolition of cross-subsidization, in other words).

Consequently, theoretically, reform will lead to a consumer gain, which will further strengthen the competitiveness of Russian gas on the world market (Gordeev et al., 2015, 10). Another group of researchers suggests a different development of the situation from the planned reforms. The liberalization of the domestic gas market, and in particular, the removal of the lower boundary for Gazprom, may well provoke a situation of deliberate price dumping in high-yielding regions by a leading firm that has a monopoly position and, as a result, has a scale effect, large transport capacities and negotiating power in general. Consequently, the situation in the domestic gas market cannot be called competitive, but prices that correspond to the laws of supply and demand (Talipova A., 2018, 30).

Additional complexity in the case of reform will create and the basis of the price, which now will not be determined by the lower limit of the price. The question arises, but in what way will this basis be determined? According to the Federal Antimonopoly Service, the basis price should be the exchange price for gas, as well as the prices of OTC transactions, information on registration of which is expected to be collected on a regular basis. The use of the exchange price as an indicator is argued by the difference in prices on the exchange and the lower limit of the regulated price for Gazprom at the level of 5-7% in favor of the former. Moreover, since it is taken into account that the exchange price is objective, after the reforms it is assumed that all other prices will also decrease.

However, the liquidity of the stock exchange (the St. Petersburg International Commodity Exchange) is currently insufficient (20.3 billion cubic meters of gas at the end of 2017 equal to 5-6% of total domestic consumption). For comparison, the liquidity of the British gas exchange (the NBP gas hub) covers more than 90% of domestic gas consumption, and Henry Hub in the US - 100%. Also, more than half of the gas sold on the exchange is held by Gazprom's companies, which already implies the potential for price manipulation. All this raises fears, as it can again lead to a situation with dumping when gas on the exchange will be represented only by one supplier, and it will also determine contract prices. This can eventually lead to a non-competitive price decline, caused by the desire to take market share in high-yielding regions, as a result of the reduction in revenue (and also in the context of state gains and tax revenues) of the remaining participants, which will prevent them from implementing long-term investment programs, debt, etc. As for the consumer's benefit in this situation, then given the low elasticity of demand for gas at a price, one should not expect a severe effect.

### **Legislative suppositions for reforming the gas market in Russia**

Attempts to improve the domestic gas market were first announced in the early 2000s and were based on the concept of a transition to the equal profitability of prices between export and domestic markets. Since

2007, the existing pricing system is in place (described earlier). At the same time, regulated prices are differentiated by zone, but are limited by the growth rate set by the Government of the Russian Federation as a whole; the minimum price limit is formed according to a specific formula (given from 2011). Also, the general regulatory system sets differentiated tariffs for transporting gas through Russia's trunk pipelines to independent gas suppliers. Prioritization of the transition to the equal profitability of gas prices in 2007 was due to some factors that have mostly lost their relevance today (for more details, see Energy Bulletin of the Analytical Center under the Government of the Russian Federation No. 21, 2015). In December 2010, the Russian Government issued Resolution 1205 (hereinafter PP-1205), which specified the date of transition to deregulated prices and the regulation of only tariffs for transportation via main pipelines from 2015, and in the transitional period (2011-2015) the use of a price formula based on the equal profitability of gas supplies to domestic and foreign markets was assumed. In 2014, the third edition of PP-1205 was issued, in which it was stated that the principles of reforming the gas market remain the same, but the execution dates are shifted to January 1, 2018. Thus, the transition period was extended to 2011-2017. The same period of transition was preserved in the fourth edition of PP-1205 from September 2015.

Thus, to date, the domestic gas market in Russia has developed the situation that de jure the terms of execution of PP-1205 expired in the part of the transition period, and the reforms that were to follow at the beginning of the 2018 year are still de-facto not conducted. Also, there have been no significant regulatory changes in the past 7 years of the transition period, except for the resumed exchange trades, which will be discussed later. In 2018 a national plan for the development of competition for the period 2018-2020 was adopted, according to which incentives for the introduction of market pricing should be created in the domestic gas market. Suggested reform proposes to liberalize gas market by July 1, 2019.

Some changes, in spite of everything, nevertheless occurred, in our opinion, for the better. This is primarily the expansion of the presence of a share of independent gas producers on the market while maintaining the monopoly position of Gazprom, which still retains the position of the dominant seller. The exchange mechanism as such is an excellent tool for market development, and its emergence in the Russian gas industry could also be called a positive aspect, if not for the existing shortcomings, and, more importantly, the appearance of the exchange occurred without changing the monopoly structure. If we turn again to Part 1 (or more details of [Talipova A., Parsegov S., 2018, 31](#)), we will see that the emergence and development of exchange trade in all countries where it is currently developed has occurred only after the complete deregulation of the industry and the creation of equal conditions for all sellers. One of the arguments, in this case, the FAS again leads the thesis that when trading on the exchange, full access of the third parties to the Unified Gas Transmission System (UGSS) is provided in unlimited quantities. However, at the same time, it is not mentioned that property and income from paying for the use of UGSS, even with gas sales through the exchange, are in charge of the monopolist.

### **Possible failures of the reform and negative impact on gas companies**

Along with the historically established dominance of Gazprom, for objective reasons, there are two features in Russia on the gas market that have no analogs in international practice:

1. Mutual location of gas deposits and consumers.
2. Appearance of independent gas producers on the market.

Due to natural and geographical conditions, the main regions with gas reserves are the north of Western Siberia, Yamal, and Taimyr, where 9.98 trillion. m<sup>3</sup> of proved reserves. This natural feature caused the emergence of various regions on the territory of the country, which Gazprom, as a monopolist, determines how high-yielding, middle-income, low-profit and loss-making. Below is the data on the structure of supplies ([Figure 1](#)). This is the basis for Gazprom, supporting the abolition of the lower boundary of the gas price set.

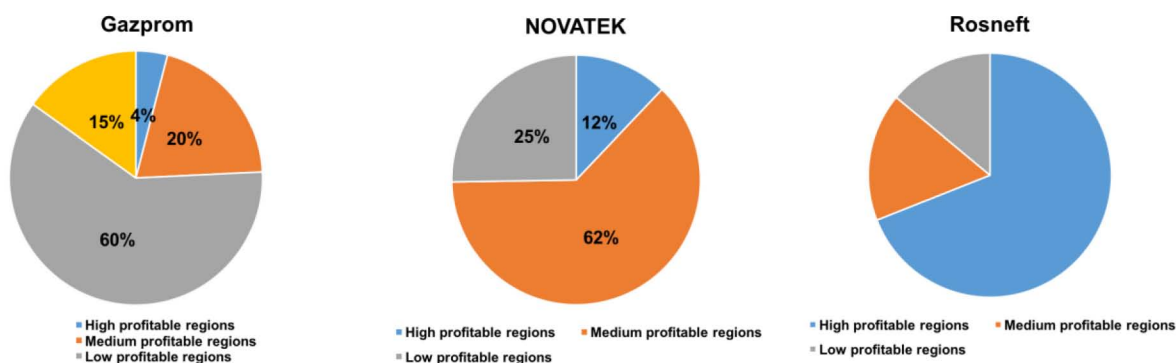


Figure 1—Structure of deliveries in the Russian market in the breakdown by profitability.  
Source: presentation of OJSC Gazprom

In addition, another argument in favor of giving the monopolist the opportunity to make discounts to industrial consumers on a par with independent producers is the gas supply of a group of consumers to the population (Figure 2), as a social load; implementation of the program of gasification of regions, in which independent producers do not participate; as well as the modernization program for a unified gas supply system (UGS) (Talipova, 2018, 30).

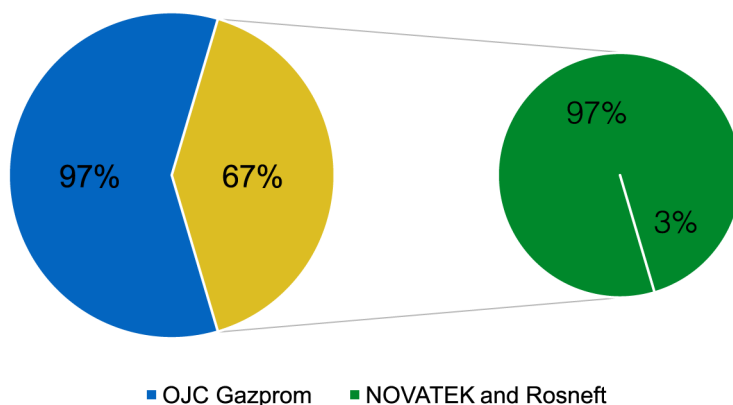
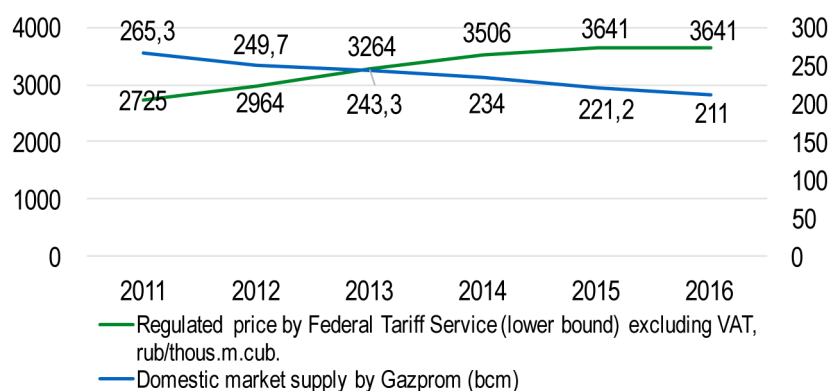


Figure 2—Structure of deliveries in the Russian market by a breakdown by consumer groups.  
Source: presentation of OJSC Gazprom

At first glance, this requirement (to make equal conditions in high-yielding regions by canceling the lower price) is entirely justified, and Gazprom seeks to maximize its profits. Indeed, in recent years since 2011. The growth of regulated prices for industrial consumers is observed, and the share of Gazprom is decreasing (in 2016 the monopolist sold 211 billion cubic meters on the domestic market, compared to 265 billion cubic meters in 2011) (Figure 3).

However, with such a reform, the regulator leaves unchanged such features of the market as the preservation of the UGSS in the monopoly structure, the monopoly on the export of network gas and the regulation of tariffs for transportation, which, in fact, is justified again by the monopolist. All this creates distorting effects on the implementation of the reform, which, under absolutely equal conditions, would likely lead to the expected results, but with such distorting effects, makes the reform, on the contrary, uncertain, since the monopolist, using its advantages, can set a fairly low price, especially in high-profit regions, thereby displacing independent producers to the well (buying gas from independent costs at a cost per well) or even from the market (replacing own gas) (Talipova, 2018, 30).



**Figure 3—Tariffs on the regulated segment (PJSC Gazprom).**  
**Source: PJSC Gazprom, Ministry of Energy**

All this, in our opinion, will lead to a deterioration in the position of independent producers in the gas market due to the following peculiarities:

1. First, the situation with the positive effect of the reform (Figure 4) is practically impossible (both in theory and in practice) for a straightforward reason: gas is an intermediate commodity in a very large production chain and until the product becomes final, the expected a reduction in gas prices of 8-10% might result in a reduction in the price of the goods at the final stage by no more than 1-1.5%, which can not be called a significant effect justifying the expediency of this reform.
2. Secondly, to make a new basis for pricing stock quotes, when on the exchange again, in fact, more than half of the sales fall on the dominant supplier, it is also not entirely correct. In this case, it is only the practice that the price of Gazprom also guides all producers selling gas at the exchange, but now at the exchange auctions, and not in legal documents.
3. For independent producers, this can become a severe adverse effect, which more than likely will affect the economy as a whole for several reasons. Independent producers implement large export projects, which are (in the future) expected to strengthen the country's competitiveness in the world LNG markets (Yamal LNG, Far East LNG), will bring export earnings, taxes, etc. Losing profitability in the domestic market, producers will lose investment opportunities; they will not be able to service debts, investment projects will be extended, etc. At the same time, they will have fewer opportunities in the domestic market to develop the industry: to carry out exploration, invest into greenfields, etc. Also, it should be noted that with a decrease in total revenue due to price reduction (revenue = volume \* price), tax revenues (MET in the first place, only if it is not canceled, and then this item needs to be revised) will decrease.
4. Demand for gas is not highly elastic at a price (that is, in theory, with a price drop of 1%, its consumption will increase sharply by more than 1%). Prices for goods from those producers for whom gas is a raw material are more dependent on the external situation on world markets (metallurgy) or do not depend at all (electricity, if it is a perfectly competitive market).
5. A somewhat contradictory situation seems to be when attempts are being made to form a competitive market while leaving a vertical structure and monopoly advantage in the export of network gas. In other words, the UGSS remains in Gazprom's asset, which by default moves its advantages of economies of scale and the ability to set a lower price.



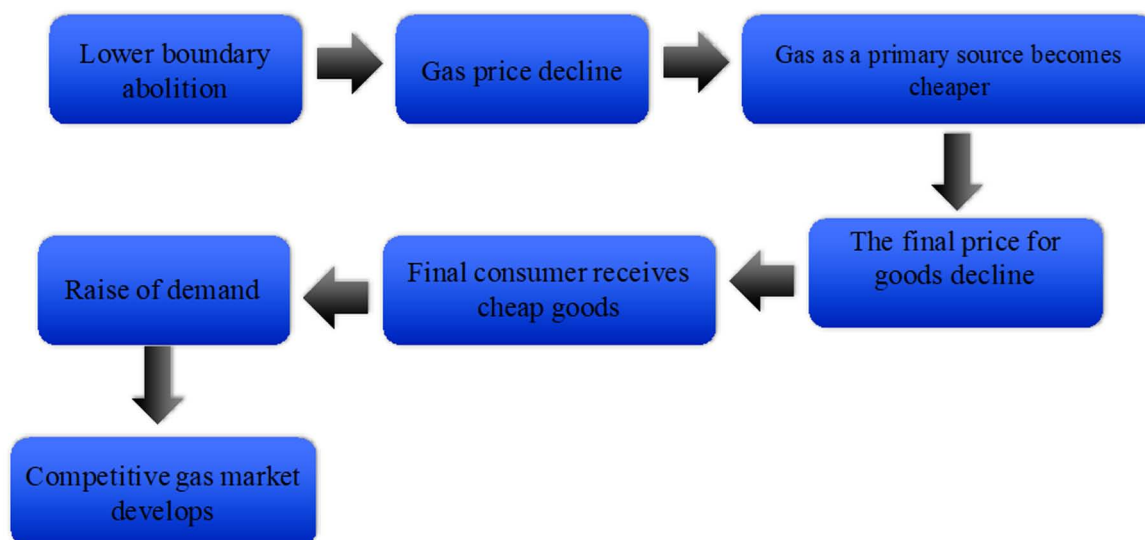


Figure 4—The proposed mechanism for implementing the reform and possible impact.

In part 3 of these effects, this aspect was discussed in detail earlier (see [Talipova, 2018, 30](#)), including elements of the impact on independent gas producers, including LNG exporters, their competitiveness, and rating. In this paper, we note only the main points.

The impact of the reform on the removal of the lower boundary of the gas price, as expected by state regulators, will bring benefits to the end consumer (that is, to industrial companies), but this will have a second, negative effect for producers. Doubts about the real impact of the reform are shown above. There is no doubt that with the cancellation of the lower price, it will immediately go down for one simple reason: supporting this reform, the monopoly company will seek to occupy market share in the large-scale industry segment, and this is only possible if the consumers are offered a lower price than the independent producers in conditions of low elasticity of demand. It should be noted that a detailed description of the reasons for the active support of this reform is also given in the work ([Talipova, 2018, 30](#)). The model of the impact of reform in this way can be divided into two parts: on the one hand, this will change the alignment of forces in high-yielding (primarily) regional markets, on the other - directly affect the internal state of players. Consequently, at the company level, the short-term effect will immediately affect the operating flows and working capital (Net Working Capital - NWC), and in the medium term, it will change cash flows from investment and financial activities. This analysis considers only the "left block" of influence, referring to the internal situation of an independent producer with positive marginal costs ([Figure 5](#)). All the "effects" from the reform will be in the "gap" between revenue and net cash flows of the company and reflected in different components. It should be noted at once that this model is purposefully built on the company's open reporting data due to their correctness, reliability, and comparability with other market participants.

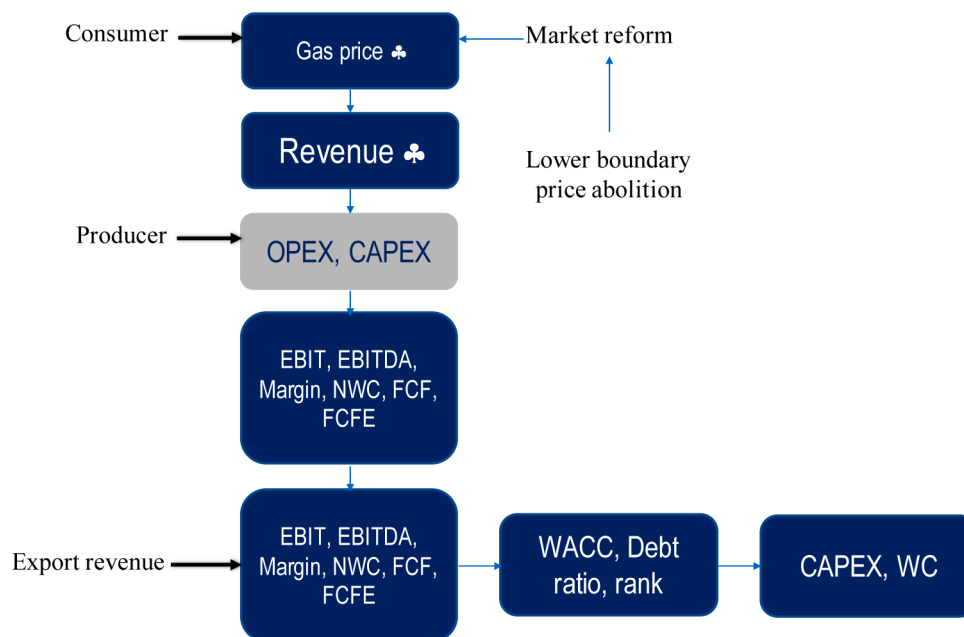


Figure 5—Two levels of reform impact and model components.

In calculating the adverse effect on independent producers, we adhere to the following prerequisites:

1. First, in addition to lower prices and possible losses in internal market volumes, the main contrary argument for the company is the effect of operating profit on investment flows, or rather, its decline.
2. Secondly, following the logic of the first paragraph, this means that all else to be equal conditions (except for price reduction and loss of market share), having a specific IRR rate for the project, WACC can exceed it in the given circumstance cs, which will make the project unprofitable. The discount rate is justified as follows: "The discount rate is 12% in real terms (constant prices), which reflects the typical level of risk for the oil industry (10%) with a premium (2%), taking into account the location of the project in Russia (Damodaran, 2016, 7). Further, we see that the higher the cost of debt, the higher the rate and the worse with an unchanged IRR.
3. Third, the WACC increase is a kind of consequence of an unfavorable change in direct and relative indicators (as mentioned earlier, through a change in the credit rating). By direct indicators, we mean the change in two types of net cash flows: FCFE (Free Cash Flow to Equity) and FCFE (Free Cash Flow to Firm). By relative indicators (multipliers) we mean the generally accepted indicators of financial stability, the definitions of which can be found in open access or calculated independently: DEBT / EBITDA, as well as the impact of net debt (cleared of cash and equivalents) Net Debt / EBITDA; EBITDA / Gross Revenue; Debt / Equity; Cash Flow / Debt; DEBT / FCFO (Free Cash Flow from Operations).

With the help of direct indicators, we show a negative impact in the short run on operational flows, and this is also a prerequisite for the adverse effects in the medium term. Further, in the medium term, direct indicators, together with multiples, affect the change in the cost of borrowing. Each of the leading agencies provides an overview of their valuation methodologies on websites, but in terms of a broad fundamental approach, they all consider the combination of financial risk and business risks in obtaining a credit report. It is the interaction between business risk and financial risk that is the critical factor in the "rating" process. That is, the degree of financial risk that a company can tolerate at a certain level of credit quality depends to a large extent on the profile of its business risks and the dynamics of the industry in which it operates. More details on the results of the assessment and description of the prerequisites can be found in work.

This analysis, in our opinion, is also relevant in the case of stock indicators. The only difference in this case is that with the abolition of the lower border, independent producers will have the opportunity to justify monopolistically low prices, and consumers are monopolistically high, whereas in the case of exchange trade this is excluded because any stock exchange is initially viewed as a site for which prices are formed openly on the basis of supply and demand. In the case of reform on the Russian gas market, this characteristic of the exchange as an objective indicator is somewhat distorted, as all players retain their original positions in the market. Exchange mechanism is considered in the third part of this paper.

## Exchange trade as an indicator of competitive prices

Gas trading in Russia started in October 2014 on the stock exchange of SPbMTSB (SPIMEX) after the experiment with the electronic trading platform of Gazprom Mezhrefiongaz, LLC in the period 2006-2008. (for more details about the experiment, see [Henderson et al., 2018](#), 12). By the end of 2017, trading volumes slightly exceeded 20 billion m<sup>3</sup> of gas, which is 21% higher than the same indicator in 2016, but still not enough to the target of 35 billion m<sup>3</sup>., Determined by the FAS. The target indicator, in this case, reflects 10% of industrial gas consumption in the domestic market, except the consumer population category. Starting from January 2017, monthly indexes on gas are published publicly. The dynamics of the indices show, among other things, the seasonality characteristic of the market. However, it can be noted that exchange prices maintain a stable dependence on regulated wholesale prices, which no longer makes it possible to speak of it as an objective exchange indicator ([Figure 6](#)).

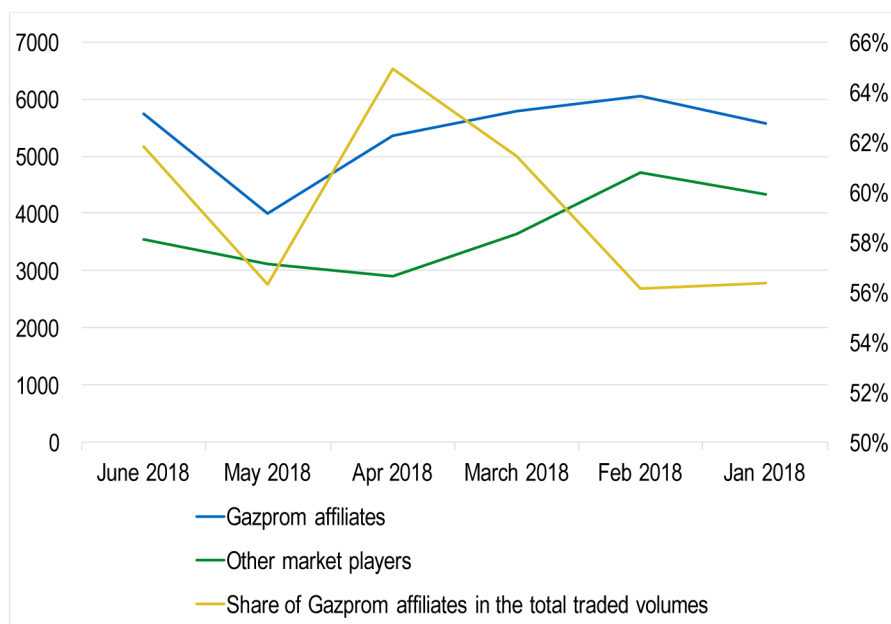
At the end of 2017, according to the established parity of trading, on the exchange between independent gas producers and the dominant company in the amount of 50/50 (that is, with a target of 35 billion m<sup>3</sup>, the monopolist has the right to sell on the exchange no more than 17.5 billion m<sup>3</sup>, respectively).

Gazprom sold on the exchange all the permissible volume of gas (with this regulation) in the amount of 17.5 billion m<sup>3</sup>, and its total share in the exchange trades thus increased to 86%. The asymmetry of trading on the stock exchange arose earlier, which should also be noted. For example, in November 2016, Gazprom's sales accounted for 97% of all exchange trades.



**Figure 6—The volume of trading on the stock exchange and the stock exchange price index in the domestic Russian gas market.**  
Source: OJC SMIPEX

Even more interesting is the fact that the structure of trade in terms of months during almost the whole period of the functioning of the exchange does not change. Also, the share of Gazprom Group companies participating in the purchase of tradable gas does not change (the share is stable - 60% +/- 2-5%). In [Fig. 7](#) shows the results of trades on gas purchase on the exchange since the beginning of 2018. and, correspondingly, the share of Gazprom companies on them.



**Figure 7—The volume of purchased gas on the exchange in the context of buyers and the percentage of companies of Gazprom Group.**  
 Source: compiled by the author by data of JSC "SPbMTSB" (SPIMEX).

Thus, at the exchange trades, the situation is almost the same as for the over-the-counter market: more than 80% of the total gas sold is accounted for by the monopolist company, and nearly 60% of the purchased gas again falls on the same structure. Thus, the monopolist sells and buys gas from himself, thereby increasing the marginality of its constituent companies. Also, given that these companies then sell this gas to industrial consumers under standard contracts in the over-the-counter market, it is easy to assume that they can also dump this way at the expense of low prices and the absence of actual payment of the transportation tariff to oneself, and intercept buyers. In the summer of 2017, OJSC SPIMEX sent an application to the Government of the Russian Federation with a request to abolish the parity of trade on the exchange between the monopolist and independent producers. If this measure is also implemented as part of reforming the internal gas market, as a transition to exchange trading, this will mean de facto monopolization of the market, only through an exchange mechanism.

All risks of the appearance of additional gas volumes on the exchange from PJSC Gazprom are reduced thus to the following:

1. Dumping prices. At the moment, there is a problem: Gazprom sells gas on the exchange to its own affiliated persons, i.e., with the obligation to enter into a supply agreement with Gazprom Mezhhregiongaz. This is due to the requirement of the FAS to conclude transactions for transportation under equal conditions with the NPG. If the dominant supplier is allowed not to enter into binding supply contracts, he will be free to manipulate prices. The whole problem lies only in the monopolistic structure of the seller of gas in the person of Gazprom and the company-transporter also in the person of Gazprom. It turns out that most of the gas is sold and bought by one company in essence, which no longer makes trading in the stock exchange. In the first case for NPG, there is a risk of establishing a monopolistically low price. In the second case, Gazprom will in principle be able to set an arbitrarily low (or high) monopoly price, acting in its interests and creating market-based unreasonable volatility on the exchange.
2. Risk of loss due to other transportation tariffs. Since the stock exchange transport is considered "deposit + BP + consumer", then this automatically increases the cost of the final gas price for the consumer. Taking into account point 1 at the same time, a situation may arise where the final price

will be higher in remote regions, unlike those close to the extraction centers. Moreover, this is another risk for NPG loss of exchange buyers because of the high final price when it will be easier for them to switch to selling produced gas at the well, which will mean their expulsion from the market.

3. Elimination of the par value of sales on the exchange or increase of parity. For the first case, we will assume that additional volumes of Gazprom's gas on the exchange are not fixed - and can be any. That is, Gazprom is allowed to trade any volumes on the exchange at a free price. It is clear that these are not additional domestic sales, but volumes that replace the gas that could be sold under OTC contracts. This automatically removes the concepts that the stock exchange must meet, namely, liquidity. Also, due to the limited volumes of gas, the main risk will be that Gazprom will be able to replace the volumes of other producers on the exchange simply because it has more production capacity. Already, the NPG and the Ministry of Economic Development of the Russian Federation said that the parity requirement might not be met for the simple reason that there is no such quantity of gas from the NPGs for sale on the exchange. Gazprom, by issuing significant volumes on the exchange, thereby gets the opportunity to "create" such a price on the stock exchange, which is now not available to it in the over-the-counter market and is limited by the lower limit. Also, it must be remembered that the exchange price is considered everywhere a certain benchmark, and in this case it turns out that one company gets the opportunity to control it. NPGs are thus in the position of impossibility to influence prices.

Thus, today regulated prices are differentiated by zones but are limited by the growth rate set by the Government as set by the government. In the autumn of 2014 the exchange trade in gas began, the prices within which are also not regulated. Also, differentiated tariffs for transportation of gas through trunk pipelines for NPGs are set; Tariffs for GDOs are regulated by the state. The government, as an alternative, albeit an indirect regulatory instrument, proposes to introduce an index of a fair wholesale price for gas, which will be a weighted average for three components:

The price of equal profitability for export gas supplies (questionable);

- Exchange price;
- Weighted average price of over-the-counter transactions.

Its introduction carries specific risks both from abolishing the lower limit of regulation as such and from the appropriateness of this indicator and its components in general. A detailed description of the risks and shortcomings is given in [Appendix 1](#).

The introduction of the price indicator can be called a specific embodiment of the contradictions between the liberalization of prices in conditions of the preservation of natural monopoly. Actual, three components include and take into account the interests of only one company, as in the case of the exchange, and with equal profitability and over-the-counter transactions, most of which fall to the monopolist. Also, the third component is the most difficult to administer and verifiable. In this regard, this creates additional difficulties for its use, and on the part of manufacturers - other manipulation possibilities. It is also an open question to introduce balancing and reselling of gas, which is expected by the end of 2018.

### **Future prospects for Russian gas market reformation**

The proposed by FAS reforms to deregulate the domestic gas market in Russia, based on the analysis, do not show economic justifications and are quite contradictory. They will not allow to increase competition between gas producers, but, on the contrary, will only strengthen the dominant position of the monopolist in case its organizational structure and exclusive right to export network gas will be preserved. In our opinion, further reform of the gas market in Russia should take place in the following main areas:

1. Maintaining the status quo in the domestic market for pricing regulation;

2. Strengthening competitiveness of gas producing companies in external gas markets, including the fast-growing LNG market;
3. Stimulate the development of exchange trading mechanisms with the preservation of existing players' parities in traded volumes.

Deregulation of the lower price limit, as shown, will lead to an increase in the monopoly position and a weakening in general of the position of independent gas producers. Under conditions of strategic development towards strengthening positions in external gas markets, such a situation should be unacceptable.

The so-called "shale revolution" or the development unconventional resources is an accomplished fact. Technologies are improving at a rapid pace, and the economy of such projects is becoming more and more favorable (for more technical and economic aspects, see Bromhead and Butt, Kenomore et al., Parsegov et al., 4,6,9,10). The increase in the number of LNG projects and liquefaction capacities is also provided through this. By 2023, a record increase in LNG capacity of almost 75 million tonnes is expected in the USA, excluding those already operating (Table 1). In addition, in July 2018, Cheniere launched its own LNG futures trade, thus declaring its readiness to form its own global benchmark, and to develop spot trade, which will allow the subsequent US projects to bring regional markets closer together and, upon successful implementation, create a basis for arbitration. This will also hedge the volatility risks. LNG from the USA today can be called the main player, which, perhaps, is not the most influential and major player, but definitely is the one who changes the "rules of the game" in the market. In such a rapidly changing market environment, maintaining competitiveness should be among the top priorities in the implementation of reforms. The weakening of the positions of producing companies in the domestic market will inevitably lead to the impossibility of quickly reacting to changes in external markets.

Nevertheless, the emerging advantages, the political events that have unfolded recently in the relations between the USA and China, namely the declared trade war and China's reciprocal proposals on 25% increase in duties on LNG from the USA, can undermine these planned projects. Instead, for the rest of the producers, including for Russia, a potential window of opportunity is being created in such way, both in terms of increasing volumes to China and strengthening the LNG position in Europe. In this regard, the development of free exchange trading of all types of gas in this situation will allow medium and small-tonnage projects in Russia to also enter the markets of Europe and Asia, for which it is necessary to carry out a number of reforms and remove barriers, including:

1. deregulate the whole export of LNG and introduce a rule of TPA access to the UGSS, which first of all will allow to develop medium- and small-tonnage production and exports;
2. to improve existing mechanisms of exchange trade, namely: to introduce daily and weekly balancing on natural gas trades, which is currently not available; to revise the principles of the transfer of property rights in exchange trades with gas, which today actually inhibits the growth of traders on the exchange and makes it impossible to balance less than a month.
3. to consider the potential creation of our own virtual and physical gas hubs close to the European and Asiatic markets that would allow us to involve our own LNG volumes in international trade and create competition for the newly emerging ones.

**Table 1—Expected LNG projects in the US, introduced in the period 2019-2023. and capital costs, USD/tonne**

Project	Expected operational year	Expected CAPEX, USD/tonne	Capacity, tpa
Corpus Christi LNG	2019	850	4,5
Elba Island LNG T7-10	2019	1300	1
Sabine Pass LNG T5	2019	550	4,5
Golden Pass T2	2021	600	15,6
G2	2021	550	14
Plaquemines LNG	2023	800	20
Lake Charles T2	2023	650	15
Total			74,6

Source: authors, according of the data from companies

## Conclusion

In this paper, two components of the proposed reform on deregulation of the domestic gas market in Russia, scheduled for July 1, 2019, were examined. The following conclusions were drawn from the analysis:

1. Any reform of the deregulation of a monopoly, by granting a dominant company greater freedom to establish a price in the market, contradicts the theory of economics as such, when the market power of a monopoly is precisely regulated by price caps on the part of the state, and also can not have a positive effect in the conditions preservation of the company's monopoly structure;
2. The introduction of a stock price indicator as a market indicator of the formation of the latter cannot be considered useful either in the conditions of maintaining a monopoly position, since already on the stock exchange there is a situation where, in fact, the monopolist sells and buys himself. It is not yet possible to call this process exchange trading;
3. The proposed reforms give a serious advantage if they fully implement the FAS monopoly and create severe risks for independent producers. The proposed reform mechanisms allow the monopolist to set a low price both on the exchange and on the over-the-counter market. In an optimistic scenario, this will lead to a serious decline in financial results, as shown in Part 2, if pessimistic - may lead to the replacement of independent producers so that it is more profitable for them to sell gas at the well.

To solve this problem, it is necessary to analyze the domestic gas market in Russia thoroughly, to understand its key influencing characteristics, and already on this basis to develop benchmarks.

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## Appendix 1

### Analysis of the features and disadvantages of the proposed components of the competitive price indicator in the domestic gas market

Component	Description	Features and disadvantages	Risks of application	Possible Solutions
The price of equal profitability	In 2007, the need to move to the two stages from the prices of the domestic market, formed within the limits set by the Government of the Russian Federation for the growth of average gas prices, to prices of equal yield between the external and internal markets. It was assumed that an equal yield will be provided in comparison with European markets (less transportation costs and export duties, that is, netback prices will be formed).	The main feature is that the European market now takes into account inter-fuel competition. This is due to the fact that Europe is a net importer. In the case of the Russian domestic gas market, the country itself provides itself with the necessary resources. It is necessary to compare prices not on inter-fuel competition, but on other features inherent in Russia and its domestic commodity markets.	The main risk is the exogenous nature of this indicator. The structure of gas contracts in Europe is still dominated by long-term contracts and it will not change quickly. Also, most of the spot contracts are still tied to the price of oil. Either there are contracts tied to coal, as well as contracts with government regulation. All this does not complicate the structure of the factors that will affect this component of the indicator, but also do not make it expedient to use it. Thus, the volatility of the indicator for all producers will reflect by a third not the volatility of the Russian economy, but changes in the external market, provided that one company supplies gas there.	If FAS applies this indicator as a component of a fair price, then "participation" of all producers in it should be equivalent. And since at the moment only one company has access to the export of pipeline gas, the indicator also reflects only its export earnings. In general, the indicator of equal profitability, and even more so on the European market, in the medium term will not reflect fair prices. This will (and not fully) in the case of the prevalence of spot contracts tied to gas. Instead, it may be more appropriate to analyze the possibility of introducing certain coefficients of equal profitability across all regions of the Russian Federation, which would include not only the transport component, but also other elements of the price. This would allow, among other things, to revise the practice of cross-subsidization.
Exchange Price	In accordance with the Order of the President of JSC SPIMEX dated September 29, 2017, starting from October 24, 2017, the bidding in the Natural Gas Section of JSC SPIMEX is carried out in the mode of "Two-way counter auction" on the basis of unaddressed orders with trade for the day ahead and a month in advance.	Since 2014, the gas exchange has again started operating. However, the volume of sales on it does not exceed 5% of the total consumption in the country (to call the exchange price adequate and competitive, it must be sold at least 15-20% of the total consumption of this product in the country). In addition, almost 60% of the gas sold on the exchange is again in Gazprom, which again indicates that prices are not set in a competitive way. Nevertheless, the FAS states that since the price of gas on the exchange is 5-7% on average for the year below the lower limit of the price that is set for Gazprom, it means that it should be canceled and go to the price base of the one that is set on the exchange. What is the position of the state? Proponents of this reform argue that lowering the price of gas for industrialists will lead to a reduction in the cost of their goods (for example, for an electricity generating company, gas is raw materials and its	First, the situation with the positive effect of the reform is practically impossible for one simple reason: gas is an intermediate commodity in a very large production chain and until the product becomes final, the expected reduction in the gas price of 8-10% may result in a decrease in the price of the goods at the final stage no more than 1-1.5%, which can not be called a significant effect, justifying the feasibility of this reform. Second, to make stock quotes a new basis for pricing, when the monopoly position of the gas of one company is again on the exchange, is also wrong, then we simply continue the practice that all producers are also guided by the price of Gazprom, but now on the exchange, and not in legal documents. Demand for gas is not highly elastic at a price (that is, with a 1% price drop, its consumption will increase sharply by more than 1%). Prices for goods from those producers for which gas is a raw material are more dependent on the external situation on world markets (metallurgy) or do not depend at all (electricity). The situation when attempts to form a competitive market is made somewhat contradictory, leaving at the same time a vertical structure	The stock indicator should be entered when the trading volume on it is at least 30% of the domestic market consumption. Otherwise In addition, to use this component of the indicator, it is necessary, like the European market, to develop its own so-called "churn rate", which would reflect the main indicators of competition on the exchange, and (if possible) also include the features of the Russian domestic gas market. Secondly, there should be clearly stated rules for the use of pipelines in this case. Thirdly, the procedures for accounting for gas through the exchange and through contracts should be worked out. Finally, there should be a clear mechanism for the obligations of exchange participants in order to avoid situations with manipulation and setting of own prices.

Component	Description	Features and disadvantages	Risks of application	Possible Solutions
		goods - electricity) and all this will eventually affect consumers positively, increase demand, and in addition, a competitive gas market will also be developed. In practice, all this, on the contrary, can negatively affect the overall economic situation (see Further Risks).	and a monopoly advantage of Gazprom. In other words, the GTS remains in Gazprom's asset, which by default leaves its advantages in terms of economies of scale and the ability to set a lower price.	
Weighted average price for OTC transactions	OTC transaction is an ordinary bilateral long-term contract	For IPGs, its feature is the ability to offer any price to the consumer.	In this case, there are quite a lot of conflicting situations: -which number of transactions will be taken into account -how to check it (extra load on audit) -This relates to issues of commercial confidentiality	This benchmark can be set aside, but not in the form in which it is offered now. Perhaps, we should pay attention to the structure of these transactions (with large and medium ones) and taking into account not only the prices of over-the-counter contracts, but also the volumes and geographic location.