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OUT BY THE DOOR, IN BY THE WINDOW: POLITICS AND NATURAL GAS REGULATION IN RUSSIA

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ABSTRACT

Through the ongoing debate about the deregulation of the Russian natural gas industry and the introduction of challengers to the dominant position of *Gazprom*, we examine the combination of vested interests that creates formidable obstacles to that evolution. We do so with particular attention to the role of several regulatory entities - the *Federal Antimonopoly Service* (FAS), the Ministry of Energy (ME), and the Ministry of Economic Development (MED) – that have overlapping responsibilities with respect to monitoring competition, regulating tariffs, and defining and controlling technical standards. We analyze the role of these regulatory entities as meso-institutions, providing intermediation between the macro-layer within which policy-makers define 'rules of the game' and the micro-layer within which firms operate in a context of highly demanding technological requirements. In this perspective, an obvious question (without obvious answer) is: how far can meso-institutions go in making the natural gas market more effective and transparent while meeting the socio-technological requirements of this industry and remaining sheltered from political arbitrariness?

Keywords: Regulation, natural gas, meso-institutions, industrial policy, transaction costs

JEL: K 2; L 11; L 16; L 43; L 44; L 95; P 26

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1: Introduction

As long ago pointed out by Ronald Coase (Coase, 1959, 1974, 1977), the idea that regulation can escape politicization does not make sense if economics is to seriously take into consideration the role of institutions. Regulation is by definition expressing the incentive for policy-makers to interfere on the organization of those markets they consider imperfect or misaligned to social needs.[2] Changing or eliminating regulation is as politically oriented as introducing new ones, as well illustrated by ongoing changes in the regulatory environment of several countries. The substantial question then becomes: what institutional arrangement can avoid transforming economically, socially, and/or politically motivated regulation into political arbitrariness that would challenge effectiveness as well as efficiency?

In what follows, this issue is considered through the example of natural gas regulation in Russia. Ongoing discussions within Russia as well as with the European Union (EC, 2018) raise the question of the deregulation of this market and the introduction of challengers to the dominant position of *Gazprom.* In what follows the combination of vested interests that creates formidable obstacles to that evolution is scrutinized. In doing so, particular attention is paid to the role of several regulatory entities - the *Federal Antimonopoly Service* (FAS), the *Ministry of Energy* (ME), and the *Ministry of Economic Development* (MED) – that have overlapping responsibilities

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[2] In an ideal democracy they would regulate as representatives of the interests of their constituencies (understood in a broad sense).

with respect to monitoring competition, regulating tariffs, and defining and controlling technical standards.

The basic assumption of this paper, to be embedded in an analytical framework developed below, is that these regulatory entities (hereafter, 'meso-institutions') delineate a specific institutional layer which role is central to understanding the factors and forces that inhibit the reform of the natural gas industry in Russia. More generally, meso-institutions are viewed as the set of intermediate institutional arrangements bridging the gap between the macro-layer within which policy-makers define rules and goals and the micro-layer within which firms operate in a context of highly demanding technological requirements. The analysis of the case under review pinpoints that meso-institutions provide a particularly relevant terrain for the expression of clash of interests and for political interference.

Although the paper focuses on the institutional dimension, it is essential to keep in mind the technological background of this major Russian industry. (1) Russia is partially locked-in with natural gas due to resources availability and the heavy sunk investments in infrastructure required for its exploitation and distribution. (2) Continuity in the provision of gas supply is crucial for households and businesses, especially in the long heating period due to harsh climate (seven months or even more). The requirement to do so in order to face extreme climate and geological conditions imposes severe technical constraints on gas suppliers and more generally on the entire gas network. (3) Strong seasonal variations put a lot of pressure on different segments of the network. It is estimated that domestic consumption in the summer can go as low as 40 % of its winter peak, which means important investment in sophisticated storage capacities and in equipment that remains unused over several months. (4) The technical stability of the network is challenged by ageing infrastructure. In 2017, it was estimated that pipelines older than 30 years represented 53% of the total Russian network, up from 42 % in 2013 (Gazprom, 2018).

In this context, an obvious question (with no obvious answer) is: how far can go meso-institutions such as public bureaus or regulatory agencies in making the natural gas market more effective and transparent while meeting the socio-technological requirements imposed on the industry and remaining sheltered from political arbitrariness?

Our paper deals with this issue as follows. Section 2 identifies structural elements of the background in which the Russian natural gas industry and its reform are embedded. Section 3 introduces a conceptual framework that emphasizes the need to disentangle different institutional layers in order to understand the complexity and challenges that reforming this industry faces. Section 4 summarizes different steps made to open the Russian natural gas industry to competition and points out through the strategic issue of pricing the distortions introduced by the overlapping of institutions leading to poorly designed regulation. Section 5 emphasizes how this institutional setting crystallizes diverging interests and provides terrain for political interferences. Going beyond the specific case under review, section 6 concludes with some general lessons about the intricacy of institutional layers in which the political economy of reforms is embedded and about the necessity to pay special attention to meso-institutions for understanding that process.

2. Background: a short introduction to the Russian natural gas industry

Natural gas plays a very special role in the Russian energy system. According to the IEA database, as of 2016 natural gas provided over 50% of Russian primary energy supply, and about 47.9% of Russian power generation (in the EU, the corresponding shares that year were only 23.9% and 18.9% respectively)[3]. This share of gas as primary energy supply in Russia has remained quite stable since the mid-1990s. Combined with its importance for Russian international trade, natural gas is a heavy weight in the national economy. In the aggregate, this industry (including production, transportation, wholesale trading and distribution) reached 6.4% of the entire value of Russian sales in 2018.[4] When it comes to international trade, natural gas exports (including Liquefied Natural Gas) also represent a significant part of Russian exports. In 2018, it provided 12 % of the total value of the aggregate exports of goods,[5] with only oil and petroleum representing a more important share. Consequently, the gas industry is a major source of foreign currencies and one of the key pillars to the ongoing current account surplus (+$114.9 billion in 2018).[6]

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[3] International Energy Agency (IEA) (2018). World Energy Statistics and Balances. http://data.iea.org/. Last consulted: April 08, 2019

[4] Rosstat. Sales of organizations since 2017. https://fedstat.ru/indicator/57710. Last consulted: April 2019

[5] Federal Customs Service of the Russian Federation. Exports and Imports of main goods in January-December 2018

[6] Central Bank of Russia. https://www.cbr.ru/statistics/?Prtid=svs&ch=IncFile_58606#CheckedItem. Last consulted: December 2018

Because of this economic significance and of the dominant role of gas in the internal provision of energy, particularly when it comes to households' heating,[7] any major reform of the industry is socially sensitive and politically risky. Moreover, the introduction of more competition in the sector faces specific challenges coming from: (1) path dependence due to the pervasive heritage of the Soviet era; (2) the specific balance of power between the main market players and regulators; and (3) the co-existence and complex interplay of domestic and foreign interests. Let us briefly review these three structuring components of the background of the Russian natural gas industry.

2.1: Soviet heritage in the energy sector

Restructuring natural monopolies inherited from the Soviet period was an important part of the market reforms initiated at the beginning of the 1990s. However, this process was very slow in the gas industry compared to other industries of the energy sector. Notwithstanding the part played by technical constraints in this situation, the main obstacles came from socio-political factors, part of which was inherited from the Soviet period (see already Joskow and Schmalensee, 1997; and for a more general and recent approach, Ghelbach, 2018).

Beside control over the natural resources, which remains largely in the hands of the state or of companies tightly controlled by the government, three network components of the energy sector deserves particular attention in order to understand the peculiar situation of the natural gas industry: oil transportation, natural gas transportation, and electricity grid. Under the Soviet regime, all of them as well as oil, gas and power production capacities were controlled by the state. Later considered as natural monopolies in the wave of reforms of the Russian economy of the 1990s, intending to switch to a market economy, the energy sector was unevenly transformed, with state control remaining an issue.

In the oil industry, transportation through pipelines was unbundled from production. While pipelines remained under state control (*Transneft*), production was unbundled and privatized within a short period and quite early in the reform process (in 1993). However, it must be reminded that the central government kept a hand on part of this segment (e.g., through *Rosneft*). In the same vein, pricing policies remained also ambiguous: tariffs for transportation remained

[7] In 2017, 40.5% of Russian heat production was based on natural gas (International Energy Agency, 2018).

regulated while the price of oil delivered to refineries as well as the price of petroleum products for final users became determined by the market, at least in theory (more on this below).

Reform of the electricity sector, from power plants to the grid, was more difficult, partially due to technological constraints, among which the very limited possibility to store electricity, which makes the need for coordination among players much more constraining.[8] Nevertheless, this segment was partially restructured and unbundled, with a major step made in 2008. At that date, the long-distance national grid was transferred to FSK (which is the Russian acronym for Federal Grid Company) while regional grids were transferred to 15 regional companies (e.g., "MOESK" for the Moscow region, "MRSK Center", "MRSK South", "MRSK Urals", etc.). However, problems of coordination plagued the system so that in 2012 the central government reinstated a centralized control through the creation of a holding ("Rosseti") that oversees FSK as well as all the MRSKs.

When it comes to natural gas transportation, reform lagged behind. As of 2018, the natural gas market in Russia is dominated by three giants: *Gazprom*, which is a leading producer and holds a monopoly over natural gas transportation and exports; and the so-called 'Independents', which are producers of gas that must go through the Gazprom network for transportation and that are dominated by *Rosneft* and *Novatek*. A major structuring factor and obstacle to reform is the tight regulation of tariffs for gas transportation and of gas prices on the wholesale domestic market, notwithstanding some room for negotiation between these 'Independents' and buyers of natural gas. In sum, the reform of this industry remains in a fog (more on this in sections 4 and 5).

2.2: Upfront imbalance of power: dominance of *Gazprom*

Part of the problem may come from the imbalance of power between the main players and the regulators. Following the initial reforms of the 1990s, gas assets related to production as well as transportation and distribution through pipelines were handed over to a state-controlled corporation – *Gazprom*. While the oil sector was unbundled and oil companies privatized, this did not happen with the gas industry. The state corporation in charge of the sector strongly opposed the idea of unbundling, arguing that gas should remain a 'national property' preserved from dissipation. This position, supported by powerful lobbying among officials, was endorsed

[8] Other well-known factors in the sector are the important loss of energy in long distance transportation and considerable variations in daily and seasonal demand that combine their effect with the very low storage capacities.

by the then prime minister Chernomyrdin (1992-1998). Consequently *Gazprom* was neither unbundled nor fully privatized. Under the reform implemented in 1995–1996, the Russian Federation became the main shareholder with about 40% of *Gazprom*'s shares; 10% were held by *Gazprom* itself and the remaining shares were sold to a variety of investors, including 15% by *Gazprom*'s employees, and 2% hold by foreigners). After this first move, the government and Gazprom gradually increased the availability of shares to foreign investors. By the end 2018, the Russian Federation controlled 50.2% of *Gazprom* through a specific public agency and two state-owned entities, while 24.1% of shares were free floating on international stock markets, the remaining shares being held by different legal entities and individuals (Nikolaev, 1994; Malkova and Igumenov, 2012; Gazprom, 2018).

Statutory remaining a public monopoly, *Gazprom* felt under the law "On natural monopolies" adopted in 1995 and that included a list of regulated monopolies, gas transportation being among them. Somehow paradoxically, there was no provision about gas trading, that is, about rules regarding purchase on the wholesale market and sales on the retail market (to households and Small and Medium Enterprises). The law only imposed on *Gazprom* the obligation to give access to its pipelines to all users of gas transportation services under non-discriminatory access conditions, including regulated tariffs; and transparency of information on capacities, pricing, technical requirements. 'Users' in this context mainly refers to regional gas traders, most of them controlled by *Gazprom*; and, for a limited number of cases, to independent producers or private investors most often benefiting from a local or regional monopoly. In the context of this peculiar market structure, the obligation of 'fair access' remained quite vague, giving *Gazprom* considerable freedom in fixing prices. In 1997, the government order No. 858 intended to clarify the situation by specifying the conditions and procedures of access for third-parties, but without much precision, so that *Gazprom* kept significant control over access. This was particularly so because of ambiguities and overlapping responsibilities on the regulatory side which in combination to technological constraints gave *Gazprom* a lot of leverage (see section 5).

2.3: Intricacy with foreign interests

What may have reinforced the monopolistic power of *Gazprom* and its capacity to influence policy-makers was its intricacy with foreign interests. Indeed, *Gazprom* or more precisely its external branch, *Gazprom Export*, maintains long-term contractual relationships with major

European gas industry players: *OMV* (Austria), *Gasunie* (Netherlands), *Uniper* (previously *E.On*, Germany), *Wintershall* (Germany), *DEPA* (Greece), *Eni* (Italy), and others. This set of large and long-term contracts shape the international responsibilities of *Gazprom*, reinforced by the 2006 law ‘On gas exports,’ which endowed this corporation with exclusive control over international gas trade. As a result, any change in the law and/or transformation in the status of *Gazprom* are represented as threatening the reliability of existing contracts and the negotiating power of the corporation with its Western partners. This situation obviously increased the leverage of *Gazprom* in its negotiation with public authorities considering reform.

2.4: Resulting organizational arrangement

Table 1 summarizes the resulting organization of the Russian gas industry, largely shaped by this combination of factors. Three firms dominate the industry, with a strategic position for *Gazprom*, which clearly benefits from its privileged status in relation to foreign partners. Beside G*azprom*, the Russian government also tightly monitors the other participants to the industry. The case of *Rosneft* is exemplar of the action of this ‘visible hand’.

Table 1: Overview of the Russian Gas Industry (main firms and characteristics, as of 2018[9])

Characteristics / Firm	Status	Domain of Activity / jurisdiction	Allocation of Shares	Main Gas Export Activities and Foreign Partners
Gazprom	State-controlled	-Largest Russian gas producer; -Owner of gas transport system; -Monopoly over export through pipelines -Unofficial "supplier of last resort" for provision of domestic gas	-State: 50.2%; -International free float: 24.1%; -others: 25.6%	-Pipeline exports to Europe (main partners: Eni (Italy), Wintershall (Germany), Uniper (Germany)); -Future pipeline exports to: China (partner: CNPC); -LNG terminal (partners: Shell (UK-Netherlands), Mitsui (Japan), Mitsubishi (Japan)) ; -LNG exports (mainly to Japan, Korea)
Rosneft	State-controlled	-Largest Russian oil producer and refiner; -'Independent' gas producer; Supplier of gas to multiple regions (mostly to industrial users in Urals, Siberia and Center of the European part of Russia); -No gas exports	-State: 50.0%; -BP (UK): 19.8%; -QH (Qatar): 18.9%; -International free float: 5.6%; -others: 5.7%	-Gas production and LNG project on Sakhalin (partners: Exxon (USA), SODECO (Japan), ONGC Videsh (India)
Novatek	Controlled by private shareholders	-Supplier to multiple regions (mostly to industrial consumers in Urals, Siberia and Center of the European part of Russia); -LNG exporter since 2017; -Producer of liquid hydrocarbons	-Private Russian owners: 41.6%; -Total (France): 16.5%; -Gazprom: 10.0%; -International free float: 19.7%; -others: 12.2%	- LNG terminals in the Arctic region (partners: Total (France), CNPC (China)); -LNG exports to Europe and Asia

Source: Gazprom[10], Rosneft[11], Novatek[12]

In this context, the reform of the Russian gas industry faced many obstacles. It must be said that it was not an easy task and it remains a difficult one. The combination of state-controlled energy

[9] We do not refer to other firms in this table since they are very small so that listing them would only introduce confusion.
[10] Gazprom (2018). Equity capital structure. http://www.gazprom.com/investors/stock/structure/
[11] Rosneft (2018). Shareholder structure. https://www.rosneft.com/Investors/Equity/Shareholder_structure/
[12] Novatek (2018). Quarterly Report for 4Q 2018. http://www.novatek.ru/common/tool/stat.php?doc=/common/upload/doc/eo_14-02-18.pdf [in Russian]

giants inherited from the Soviet Union with the strategic place of gas in Russian economy and in its international trade and the complex technical conditions the industry has to overcome due to the variety of physical as well as socio-demographic conditions across regions provides a background of factors making changes extremely challenging and political interference very tempting!

3. Analytical framework: disentangling institutional layers.

However, notwithstanding their relevance, these factors and their combination do not fully capture the specific role of the Russian institutional setting in feeding flaws and weaknesses that inhibit reforms towards building a more competitive natural gas industry. To go a step further in this direction, it is essential to disentangle the different institutional layers involved. More specifically, we shall argue (and substantiate in the following sections) that special attention should be paid to those institutions that bridge the gap between the general rules defined by policy-makers, for example the decision embedded in 'laws', 'orders', and 'directives' to develop competition in the natural gas industry, and how this decision is actually implemented at the micro-level at which firms operate. The framework supporting our analysis of flaws and obstacles in the reform of the Russian natural gas industry relies on this distinction between three institutional layers, with special attention paid to the intermediate one.

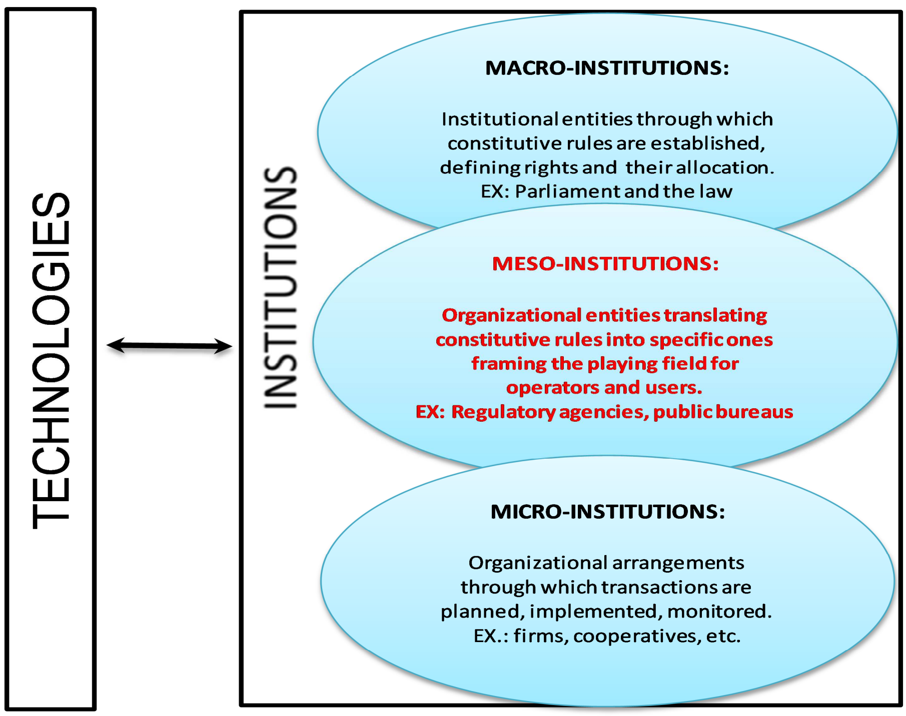
Differentiating institutional layers takes its inspiration from Davis and North (1971), Williamson (2000), and Ostrom (2014). In their classical approach, Davis and North (1971: 6) initiated the now classic distinction between a macro-layer (the 'institutional environment') in which 'rules of the game' are defined; and a micro-layer, populated by players operating within these rules. Refining this distinction, Williamson (2000: 597) referenced four layers according to their time line, splitting the macro-layer into the very long term of customs, traditions and norms, and the long term of formal rules established through the polity, judiciary and bureaucracy; and distinguishing within the micro-layer the level of the governance structures grounded in contractual arrangements, with an horizon limited to decades, and the level of continuing marginal changes in resources allocation through adjustments of prices, quantities and incentives. Also building on Davis and North, Ostrom (2005; 2014) pointed out that 'rules' is a generic term that requires to be disentangled according to the domain they cover. She suggested differentiating 'constitutional' rules, which delineate the domain and mechanisms of choice established by a society; political rules, through which policy-makers define specific rules framing socio-economic activities; and 'operational' rules that actually organize agents' interactions. These different rules correspond to different institutional layers.

Notwithstanding variations, there is a clear consensus among these authors (several others could be listed – see Kunneke, Ménard and Groenewegen, 2019, chap. 2) about the existence of a 'macro layer', within which 'constitutive' rules are established and enacted. 'Constitutive' refers to "having the power to institute, establish, or enact" (*American Heritage Dictionary*). There is also a convergence on the role of these rules: they delineate 'rights-to-use,' establish entities and procedures to support and transfer these rights, and determine conditions and limits to their exercise. Symmetrically, there is also convergence on the existence of a micro-layer, within which operational rules are associated to the organization of transactions so as to create value through conscious coordination (Williamson, 1996: 378; see also already Barnard, 1938: 73; and Selznick, 1948).

However, there remains a blurred zone, which concerns the modalities through which these two layers are interacting. Ostrom (and to a lesser degree Williamson) was clearly aware of the need to fulfill this missing link and to consider modalities through which the general rules defined at the macro level (e.g., a law) are 'translated' into specific ones within which micro-institutions operate (e.g., firms, cooperatives, alliances, joint-ventures, etc.), and to identify the entities through which these specific rules can be implemented. In what follows, and in line with recent contributions (Kunneke et al., 2010; 2019; De Mariz et al., 2014; Ménard, 2018; Ménard, Jimenez and Tropp, 2018), these 'intermediaries' are identified as 'meso-institutions,' providing the missing link between the macro-layer and the micro-layer. More precisely, we understand meso-institutions as delineating this *institutional layer within which specific entities translate, implement, monitor and control specific protocols and guidelines derived from constitutive rules or adopted under the influence of parties operating at the micro-level*. Public bureaus, regulatory agencies, local administrations monitoring private operators of infrastructures, provide examples. On the theoretical side, the abundant and mostly normative literature on regulatory agencies illustrates one specific class of meso-institutions, although without positing them in a more general framework (for extensive reviews, see Laffont and Tirole, 1993; Joskow, 2000; Laffont, 2005).

These meso-institutions play a crucial role in bridging the gap between the general rules of the game established at the macro-level and the specific modalities of transactions organized at the micro-level. They also provide a fertile ground for the expression of conflicting interests and political interference. Figure 1 posits this layer within the more general framework of institutional layers referenced above, with possible overlapping among layers and keeping in mind interdependence with the technological dimension, the significance of which was mentioned as an important dimension in the natural gas industry (see introduction).

Figure 1: Institutional layers with a focus on meso-institutions.



We shall argue that many major problems faced in the transformation of the Russian natural gas industry come out of poorly designed institutions within these different layers. More specifically, our empirical analysis of the tentative reforms of this industry suggests that meso-institutions and their overlapping responsibilities played a crucial role in generating obstacles to reform. A main reason is that meso-institutions are *par excellence* the terrain through which conflicts of interest coalesce and political forces operate, as we will now show.

4. Institutionally grounded distortions: the case of prices

Notwithstanding the obstacles to reform already pointed out in section 2, the Russian authorities managed to unbundle several monopolistic giants inherited from the Soviet period. For instance, important segments in the oil and other energy industries have been unbundled and deregulation of their wholesale market implemented. However, the transformation of the natural gas industry turned out to be a more complicated task because of even trickier combination of technical, political, and socio-economic challenges. Price regulation adopted in this industry provides a digest of the intricacy of tensions and conflicting interests involved and leads to their embeddedness in meso-institutions.

4.1: General pricing rules

By the beginning of this century, the macro-institutional framework for the gas industry was already defined. Beside the general laws mentioned above, a more specific one "On gas supply" was introduced in 1999 that confirmed third-party rights of access and established a regulatory regime for the natural gas industry. According to this law, complemented by the government Order No. 1021, *Gazprom*, which kept exclusive control over natural gas transportation and exports, must transport gas at regulated tariffs and sell gas at regulated price to all buyers on the domestic wholesale market, whether to companies that are themselves suppliers to final users (e.g., traders) or directly to final users (e.g., power plants).[13] On the other hand, gas suppliers not affiliated to *Gazprom* (hence their qualification as 'Independents'), although submitted to the regulated tariffs for gas transportation (as far as their gas was delivered through the monopolistic transportation system of *Gazprom!*), were allowed to freely determine the price at which they sell natural gas on wholesale market. Their only constraint is for their pricing policy to respect competition laws (e.g., no collusion etc.). Therefore, regulated gas prices co-exist with unregulated ones on the domestic wholesale market.

What this institutional arrangement actually meant was that tariffs for gas transportation through pipelines were tightly regulated for the Independents, while *Gazprom* got a lot of flexibility in internally determining its own nominal pipeline fees to be included in pricing gas delivered through the wholesale market. Indeed, the procedure adopted was a typical 'cost-plus' regulation.

[13] According to the Order No. 1021, prices for some buyers (having started or increased their purchases after 2007) can be raised over the regulated level but by no more than 10%.

Gazprom, as the owner of national gas transportation system, must submit to the regulator (FAS of Russia) its estimation of expected gross revenue and the corresponding transportation tariffs that it considers required to finance the maintenance of the system. Those tariffs, if approved, then apply to all *Gazprom*'s competitors (the 'Independents'). Indeed, Gazprom and the Independents are competitors on the wholesale market since *Gazprom* is also active on that market. In principle, the cost-plus procedure should lead to the Independents financing part of the required revenue strictly proportional to their usage of the transportation system, with *Gazprom* presumably financing the rest, which would correspond to its own usage. However, the procedure clearly suffers from well-known biases of cost-plus regulation. Tariffs are fixed by public authorities (in principle FAS, although other meso-institutions interfere –see section 5) based on information provided by *Gazprom* which, as owner of the transportation system, has no well-defined obligation to transfer clearly identifiable sums for the maintenance of its own usage of the system. Indeed, the rule only specifies that *Gazprom* pays the remaining sum needed for the appropriate maintenance of the transportation system once the Independents have paid their contribution.

The resulting equilibrium ended into a locked-in situation for the key players (*Gazprom*, independent producers, big and influential consumers, and regulators), preventing efficient reform.

4.2: Consequential distortions

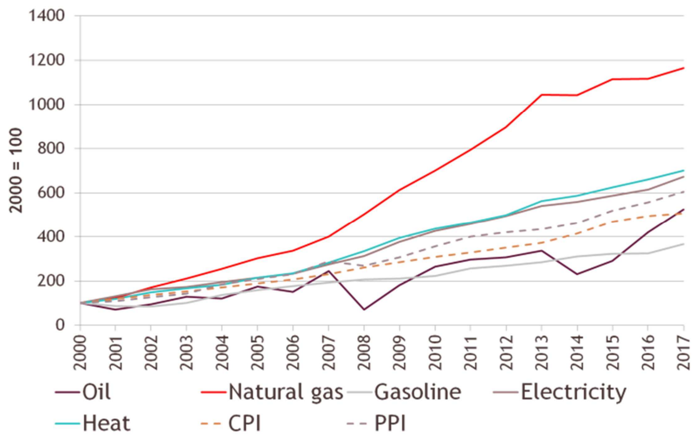
To better understand this locked-in equilibrium and the role played by meso-institutions in its upholding (as analyzed in section 5), it is necessary to briefly review some events that substantiated the distortions introduced by this regulatory scheme. In the early 2000s, the domestic wholesale gas market was unattractive for the Independents due to the low level of regulated prices. Indeed, Gazprom was able to benefit from state control over the determination of regulated prices and its monopoly on exports to sell on domestic wholesale markets at very low price, with the tacit approval by the government who saw that as very convenient for consumers. According to Tarr (2010), domestic gas price at the time covered only about half of long-run marginal costs of production and transportation. Nevertheless, *Gazprom* was able to maintain this strategy on the domestic market and to remain profitable to the detriment of the

Independents thanks to its monopoly over export (reinforced by the law “On Gas Exports” from 2006).

However, in order to allow the renovation of ageing infrastructures (see introduction; and Gazprom, 2018), it became imperative a few years later to dramatically increase domestic prices through regulatory adjustments (see Graph 1). In 2010, the government adopted Order No. 1205 which intended to achieve by 2015 equal profitability for domestic and exported gas through adjustment of regulated prices (the deadline was later extended to 2018). On the one hand, it was expected that the accompanying evolution of regulated prices would allow them to exceed marginal costs (IEA, 2011), so as to make maintenance and investment in transportation infrastructure sustainable, a measure largely favorable to *Gazprom*, although having a negative impact on economic growth (Shastitko et al., 2012). On the other hand, another section of Order 1205 stipulated that once the equalization target would be reached, prices would be deregulated and gas transportation tariffs would be the same for all participants to the industry (*Gazprom* as well as Independents), thus creating an open market, which would challenge the dominant position of *Gazprom*.

Graph 1: Russian Price Indices for specific energy sources (in relation to inflation)

(Wholesale price for industrial users; basis 100 for year 2000)



Source: Rosstat (2018). Price indices for specific goods purchased by organisations. http://www.gks.ru/free_doc/new_site/prices/prom/tab-ind_tov.htm ,

Events confirmed this evolution. The decision from 2010 ended in a significant increase in regulated gas prices on wholesale markets. While transportation tariffs remained tightly regulated, constraining *Gazprom*, the allowed increase of prices on the domestic wholesale market made performance on gas market much more attractive for the Independents. De facto, large Independents captured a considerable share of the market, so that *Gazprom* domestic market share decreased from over 70% in 2009 to about 50% in 2015, partly due to the combination of the more open market and the stagnation of domestic market during and after the global recession of 2008-2009.

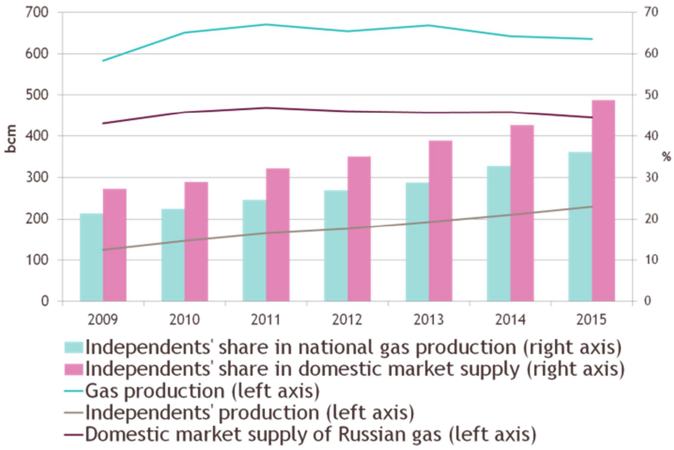
Indeed, as Graph 2 shows, supply of natural gas for Russian domestic consumers remained generally stable after 2010, and so did the total national gas production. The domestic market stagnated because of weak economic growth. Simultaneously, gas production had no prospect to meet more demand from abroad due to: (1) the reform of energy policies in the EU promoting efficiency in the use of existing resources and use of renewable sources that combined with slow growth;[14] (2) increasing competition from foreign suppliers of gas –including LNG (Qatar, Algeria, Nigeria and Norway); (3) political tensions between Russia and its main customers, creating uncertainties among potential buyers; and (4) pricing formula in existing contracts (oil price indexation) that made buyers uncomfortable.[15] However, thanks to expected benefits from the new situation on the internal market, the gas production of Independents grew steadily during that period while that of *Gazprom* declined. As a result of this scissor effect, the share of Independents in total national gas production increased from 21% to 36%. All this production of Independents[16] was sold on the domestic market, since they could take full advantage of the increase in price on that market while *Gazprom* remained constrained by regulated prices on its transportation as well as on its sales on the wholesale market.

[14] See: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Natural_gas_consumption_statistics&oldid=88292

[15] This situation is now changing and becoming more favorable to Russia thanks to a rebound (although a weak one) in European consumption; the decision of the Netherlands to significantly reduce and stop totally its production by 2030; lower prices for Russian gas and contracts renegotiated accordingly.

[16] with the exception of 10–15 bcm produced on Sakhalin-2 for LNG exports.

Graph 2: Russian gas market dynamics, 2009-2015



Source: Authors' calculation, based on:

(1)Rosstat. *Production of main goods in natural terms.* http://www.gks.ru/free_doc/new_site/business/prom/natura/god10.htm;
(2) Ministry of Energy of the Russian Federation. *The outcomes of the Minenergo of Russia work and the main results of the fuel and energy complex functioning in 2015.* https://minenergo.gov.ru/node/4436 ;
(3) CDU TEK. *Operating outcomes of the fuel and energy complex functioning in December 2015.*

In sum, the success of the Independents – primarily *Rosneft* and *Novatek* – was based on a simple strategy. They took advantage of their position on the deregulated price segment to set their price slightly below that of *Gazprom*, which remained committed to regulated prices. So the dual status of prices created a type of Bertrand competition with price rigidity for one player! Moreover, *Rosneft* and *Novatek* also benefited from another institutional distortion. Indeed, wholesale gas prices remain regulated for *Gazprom* because of a policy of 'interregional flattening' to maintain similar economic conditions over the entire Russian territory, particularly with respect to energy. Independents thus adopted a "cherry-picking" strategy made possible by their freedom to contract on the wholesale market while having no obligation to deliver gas to non-profitable regions. As a result, they gained strong positions in the most profitable regions, while *Gazprom* remained committed to deliver gas to all regions at a regulated price, thus trapped in servicing loss-making regions. In this context, Independents expanded at a speed that considerably exceeded what was expected by policy-makers, creating imbalance between policies to support a 'national champion' and policies intending to favor competition. As Graph 2 shows, their share of the domestic market supply went from slightly above 25% to close to 50 % between 2009 and 2015. However, it must be reminded that *Gazprom* kept its monopolistic position on gas exports, which allowed the company to somewhat compensate for its retreat on the domestic market. Indeed, gas exports from Russia in 2010–2015 were relatively stable at 180–200 bcm, with an average price on the European market, the main one for Russian gas, at $370–$380 per 1000 cm, which considerably exceeded the domestic prices fluctuating in the $80–$140 range per 1000 cm, and this gap remained significant even after deduction of a 30% export duties and additional transportation costs at $50–60 per 1000 cm.

Hence, distortions in the institutional design and regulation favored the development of a market with biased competition, fed by misaligned policies that opened room for discretionary political interferences.

5. Meso-institutions and the political economy of reform of the Russian natural gas industry[17]

Indeed, these distortions crystallized in tensions, and in some cases conflicts, among meso-institutions involved in the regulation of the gas industry. The motivation of the Russian government, partially under pressures from foreign partners (EC, 2018), to develop a more efficient gas market required facing in-depth changes not only in regulation, but also in the institutions in charge of their implementation. Diverging interests combined to oppose these changes. The analysis of this situation provides abundant food-for-thought about the role of meso-institutions in the political economy of reforms of network infrastructures.

A key issue in that respect and a major obstacle to the reform of the natural gas industry comes from ambiguities regarding responsibilities for the regulation of its domestic market (including tariffs) and its implementation. At least three public entities, the Ministry of Energy (ME), the Ministry of Economic Development (MED), and the Federal Antimonopoly Service (FAS) are involved in the regulatory process and operate under constant pressure from the leading companies (among which the state-controlled energy giants *Gazprom* and *Rosneft*).

5.1: Overlapping responsibilities among key meso-institutions

[17] For an excellent summary of the underlying macro-institutional problems to reforms, see Ghelbach (2018).

A short description of those overlapping responsibilities is in order here. By its Statute[18], the ME is in charge of "the elaboration and realization of the national policy in the area of gas supply", particularly with respect to the provision of gas to regions, and must "elaborate and realize the measures for competition development on product markets." Also of particular significance are its responsibilities in monitoring supply for the cold season, with an energy sector largely dependent on natural gas (see section 2). Consequently, this ministry is highly concerned with gas supply stability to all Russian regions, with an active and specific role in the formulation and implementation of national gas policies and market regulation that no one can bypass. However, another meso-institution, FAS, is according to its statute[19] in charge of "methods of gas price regulation and gas transportation tariffs regulation." In this responsibility, it sets those prices and tariffs and controls their implementation as well as conditions of access to natural monopoly services (including gas transportation). In addition, FAS should control any action preventing economically feasible transformation of natural monopolies into competitive markets – in other words, it is presumed that FAS contributes to the restructuring of regulated industries into competitive ones. Last, there is the role of MED, which is statutorily[20] in charge of the elaboration of national economic forecasts and can set target indicators. In practice, these forecasts include average growth rates of regulated wholesale prices for natural gas, with Regulations No. 1021 and 1205 prescribing to set prices in accordance to MED forecasts. Moreover, Regulation no. 1021 presumes that the method for price regulation should be coordinated with MED, although formulated by FAS.

This complex set of institutional arrangements can be summarized as follows (Table 2).

[18] Statute of the Ministry of Energy of the Russian Federation (approved by the Regulation of the Government of the Russian Federation No. 400, May 28, 2008).
[19] Statute of the Federal Antitrust Service of the Russian Federation (approved by the Regulation of the Government of the Russian Federation No. 331, May 31, 2004).
[20] Statute of the Ministry of Economic Development of the Russian Federation (approved by the Regulation of the Government of the Russian Federation No. 437, June 5, 2008).

Table 2: Institutional layers in the Russian Natural Gas Industry

ENTITIES & RESPONSIBILITIES / INSTITUTIONAL LAYERS	KEY ENTITIES	RULES AND RESPONSIBILITIES
MACRO-INSTITUTIONS (Institutional entities through which constitutive rules are established, rights defined and allocated)	**Russian Government (Executive)** Main Initiator of Laws and rules through 'Government Orders'; Role of State Duma and Federal Council in adoption	-Establishes general rules through Laws and Government Orders -Allocates rights and controls modalities of access to the industry
MESO-INSTITUTIONS (Organizational entities translating constitutive rules in specific ones and implementing them)	**Ministries & Agencies** Ministry of Energy Ministry of Economic Development Federal Antimonopoly Service	-Elaborate and monitor national policy to secure stability of gas supply (ME) -Method and Forecasts on which regulated prices should be based (MED) -Gas transportation and Wholesale market regulation (FAS) -Rights of access to the transportation network (ME ; FAS)
MICRO-INSTITUTIONS (organizational arrangements through which transactions are planned, implemented, monitored)	**Main Firms** *Gazprom* *Rosneft* *Novatek* Other 'Independents'	-Production (all of them) -Transportation through pipelines (*Gazprom*) -Transactions on wholesale markets (all of them) -International trade (*Gazprom*)

5.2: Conflicts and tensions over reform

As a result of these overlapping responsibilities, tensions developed among regulatory authorities. For instance, in 2010, following the observation by public authorities that regulated prices had become by far too low, the ME, the MED, and the Federal Tariff Service (then in charge of tariff regulation and later merged with FAS) were asked to jointly elaborate a proposal on price deregulation in the Russian gas industry after 2015. The presumption was that the gradual increase of regulated prices in the transitory period 2010–2015 and the adaptation of the domestic market to a reasonable level of gas price would lead to a more competitive market, opening room for a less painful deregulation after 2015. However, this initiative failed, due to tensions among the three public entities, particularly with respect to the rules that should prevail on a deregulated market in order to prevent major shocks. This tension is particularly perceptible between FAS and ME. Indeed, the ME is more or less satisfied with the existing 'hybrid' model of regulation that has secured gas supply at relatively moderate prices and maintained some balance among key players. On the other hand FAS, as the meso-institution in charge of developing competition, is not satisfied with a model that: (1) maintains regional monopolies or duopolies instead of competition for the wholesale gas market; (2) maintains a dual regime, with gas price based partially on regulation, partially on quasi-market mechanisms, which allows Independents to make profits under the umbrella of regulated prices instead of competitive ones.

This situation explains why FAS is the main driving force behind the reform of gas market as it was framed by the government Order No. 1205. Some steps have been made in this direction. For example, in 2014 trading of natural gas was introduced in the Saint-Petersburg International Mercantile Exchange (SPIMEX); and in 2016 mandatory registration was imposed on over-the-counter gas contracts. Such measures were presumed to give FAS benchmarking tools to control possible price deviations on the deregulated segments of the industry, thus identifying anti-competitive behavior, although most natural gas remains traded under regulated price.[21] It should also give consumers opportunities to purchase natural gas at competitive prices, although by 2017 the quantity traded represented only about 5% of the domestic market. This slow progress towards reform signals the relatively weak power of the anti-monopoly authority facing the powerful collusion between micro-institutions, namely: *Gazprom* and the Independents, all of them having easy access to the government.

Indeed, a large scale pro-competitive reform would hurt these powerful groups of interest on four key issues, with dispersed consumers having almost no voice to the debate.[22] (1) **Deregulation of price of gas**. Paradoxically, *Gazprom* could benefit from price deregulation by becoming competitive in the most profitable regions while the Independents would lose the comparative advantage they got in not being submitted to the regulated price of gas and service obligations imposed on *Gazprom*. In sum, fearing to not be able to compete efficiently with the market leader

[21] Lack of transparency makes it difficult to know exactly how much gas is traded at regulatory prices. What is known is that gas produced by the Independents covers about half of the domestic market (until 2017 they did not export at all), selling at market price to Gazprom a small part of their production then resold at regulated prices!

[22] Representation of consumers on decision-making entities (whether public, semi-public or private) and even consumers' organizations are not part of the Russian landscape so far.

in a deregulated market, Independents favor the existing regulation! (2) **Homogenization of gas transportation tariffs for *Gazprom* and the Independents**. The Independents welcome this change because it would help preventing cross-subsidization within *Gazprom* between its transportation segment and its gas production and marketing segments. But of course *Gazprom* opposes because it would likely increase its own transportation costs to the level of Independents in profitable regions while it remains constrained by the law to deliver gas at regulated price to all buyers, including for non-profitable areas, and remains obliged to maintain a stable delivery system including for peak consumption periods, which means heavy sunk costs on its side. (3) **Sharing socio-economic and system stability burden throughout the whole industry**. *Gazprom* welcomes this change, while Independents oppose it because they do not have access to international markets so that they would become more exposed to domestic market fluctuations, increased costs, and political pressures to keep prices low. (4) **Access to export for all suppliers.** Independents welcome this perspective – they have always been trying to access export markets that are even more profitable than their domestic ones. However, *Gazprom* opposes this change because it would weaken its capacity to support the burden mentioned above of servicing poor regions well as its capacity to face the tough competition with foreign suppliers by creating competition among Russian suppliers on foreign markets, an argument to which the government pays a lot of attention.

Reforming along these four axes simultaneously therefore imposes an extremely complex strategy, requiring building a large political coalition, likely at high political transaction costs. On the other hand, partial solutions would lead to comforting considerable advantages to one or the other party in the natural gas industry, weakening the existing Nash equilibrium, and could face increasing opposition from foreign trade partners in a context of international commercial and political tensions.

6. Conclusion

The ongoing situation in the Russian natural gas industry reflects a more general problem. It illustrates well why the efforts of the Federal Antimonopoly Service, the Ministry of Energy, the Ministry of Economic Development and the government in general to go ahead with pro-competitive reforms are stalled. It is often considered that transition is over in Russia and that the approach to economic reforms should be the one that prevails (not always with success!) in developed market economies. The case briefly developed in this paper shows it is not that simple. Because of the tight interdependence among segments of each industry inherited from the Soviet period, restructuring industries is a complex and long-term process, particularly for those industries operating network infrastructures.

An often neglected or even ignored dimension of such reforms is that it also requires reforming institutions. This is a very broad statement that per se can lead to a dead-end, with the vague affirmation that ‘institutions matter’ and must be changed. Our short essay suggests the need to go further. Institutional layers must be disentangled. At the macro-institutional layer, reforms require going beyond simple changes in the law and building new political coalitions supportive to in-depth changes in the existing rules. At the micro-level, focus should not be solely on markets and their competitiveness. Indeed, to make markets efficient requires also reforms at the firm level, for example by allocating real autonomy to their leadership while requiring transparency in management in order to disentangle political interests from economic ones.

However, a main issue raised in this essay and the point we really want to emphasize is the urgent need to pay attention to the meso-institutional layer, that is: the set of institutions in charge of translating and monitoring the general rules adopted at the macro-level and to implement them in a way that provides useful and efficient guidelines to entities (firms, users) operating at the micro-level. This meso-layer is the one in which a lot of lobbying and politicizing happens. In that respect, the overlapping and blurred responsibilities of the different institutions involved in monitoring the natural gas industry (ME, MED, FAS) favor political arbitrariness. Out by the door (e.g., adopting laws to develop markets and transparency), in by the window (e.g., maintaining overlapping responsibilities that favor arbitrariness).

There is a long way to go for making the Russian gas industry and more generally Russian network industries more efficient in delivering appropriate services at adequate costs to users. Several steps have been made already. The specific case developed in this essay indicates the need to go much further, the obstacles this would face, and some avenues along which to proceed. It gives some flesh to what North et al. suggested when they emphasized the differences between an open access society and a limited access society (North, Wallis and Weingast, 2009).

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