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# Gazprom vs. other Russian gas producers: The evolution of the Russian gas sector



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## HIGHLIGHTS

- Other Russian gas producers, especially Novatek and Rosneft, are taking market shares from Gazprom.
- Gazprom has a monopoly on exports and has had a *de facto* monopoly on the domestic pipeline grid through its control over trunk pipelines.
- Gazprom's greenfield projects are more expensive than those of other producers.
- Gazprom's loss of market shares to other producers in the domestic market may actually be in Gazprom's interest.

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## ABSTRACT

The non-Gazprom gas producers (NGPs) doubled their share of the Russian domestic gas market between 2000 and 2010 and have continued growing since then. For several years especially Novatek expanded. More recently, Rosneft has emerged as a key player, not least through its purchase of TNK-BP. This article begins with an overview of the companies in the Russian gas sector, their resource bases and capacities, and subsequently examines whether differences in field development costs and export market access may make it rational for Gazprom to continue ceding market share to the NGPs. With rising costs of Gazprom's queue of greenfield developments, any delays in Gazprom's investment program may be compensated through increased NGP production. The article argues that the NGPs are ready to fill the gap, may be allowed to do so and are already increasing their market share in an increasingly competitive market. The stage may now be set for a continued gradual transformation of the Russian gas market, in which the interests of Gazprom and the NGPs may be complementary or may be pitted against each other, but those of the Russian Federation are in any case likely to be better fulfilled than in the past.

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## 1. Introduction

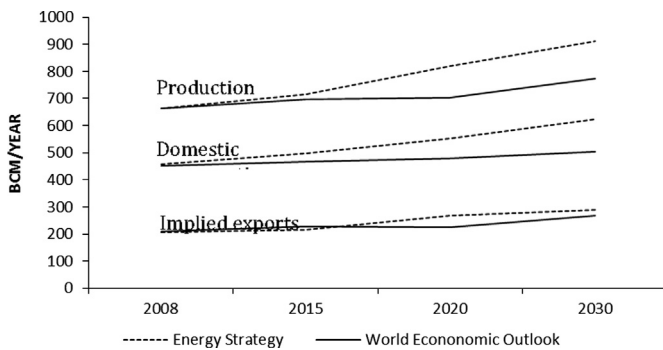
Russia possesses nearly a quarter of the world's proven natural gas reserves and produces around 18% of world output, second only to the US (BP, 2012; IEA, 2012). Historically, the bulk of Russia's gas production came from the West Siberian area of Nadym-Pur-Taz, which provided some 85% of the country's production in the 1990s and early 2000s (Mitrova, 2009). Today, the region's three major fields—Urengoykoe, Yamburgskoe and Medvezhe—are in steady decline. Nonetheless, Russia's official *Energy Strategy* projects that Russian consumption will grow from about 450 to 600 BCM and that demand for Russian exports will increase by 40% in the period 2010–2030 (Energy Strategy Institute, 2009).

In contrast, the IEA's *World Energy Outlook* provides more moderate estimates, as shown in Fig. 1. However, implied exports are relatively similar in the two estimates, indicating that the *Energy Strategy* is counting on domestic demand to drive production growth.

Gazprom, while responsible for around two thirds of total Russian natural gas extraction, is facing some tough decisions: its top-producing fields are in decline; domestic prices, though rising, have failed to reach netback parity; and the company is obliged to ensure that the needs of the domestic market are covered. Historically the price gap between exports to Europe and Russian domestic prices has been wide, allowing Gazprom to cross-subsidize the domestic market with revenues from European exports (Spanjer, 2006). Today, with its queue of greenfield development projects growing more costly, this model looks increasingly unsustainable. The futility of proceeding with this strategy is amplified by downward pressure on prices in Western Europe from expanding North American shale gas supply, new

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**Fig. 1.** Russian production, demand and net export forecasts. Sources: Energy Strategy Institute (2009) and World Energy Outlook 'New Policies Scenario' (IEA, 2010).

LNG projects in other parts of the world and increasing competition from other domestic gas producers.

Furthermore, Gazprom's leverage over its second traditional source of supply, Central Asian gas, was weakened when a second export channel opened up, crossing from Turkmenistan through Uzbekistan and Kazakhstan to China (Ortung and Overland, 2011). When and if (as seems likely) a second leg is added to this pipeline, bringing it from 40 BCM to 65 BCM per year, Russia's bargaining position will be further weakened (RIA Novosti, 2012). After two decades of prickly relations with Russia, Turkmenistan seems determined to diversify away from its dependence on Russian export pipelines.

Table 1 gives an overview of the Russian gas balance for 2010, clearly showing the importance of both Gazprom relative to other sources of supply and the domestic market compared to other markets. Since 2010, other companies, including oil companies producing associated gas and the independent gas companies, have expanded their share of domestic production. Some of the latter are partly connected with Gazprom, although the alliances are constantly shifting and can be difficult to pin down. In this article we follow established usage, and refer to these companies as 'non-Gazprom producers' (NGPs).

Greater fuel diversity of domestic gas supply has been promoted by improving third-party access to the Russian gas grid, the Unified Gas Supply System (UGSS) (Henderson, 2013; Pirani, 2011), as well as by Russian domestic price reform (the long-heralded convergence with the European netback price) (Dansie et al., 2010; Overland and Kutschera, 2011). But the latter also implies a gradual decline in Gazprom's preference for European exports over domestic sales as the profitability of the domestic market begins to approach that of Europe (Lunden and Fjærtøft, 2011).

Regarding exports, the Russian authorities are understandably reluctant to let Russian gas compete with itself in foreign markets. In fact, it has been estimated that, through dual pricing, Russia kept its GDP some 2% higher than would otherwise have been the case in the past (Tarr and Thomson, 2004). A key aspect of the system is Gazprom's monopoly on exports outside the former Soviet Union, enshrined in law in 2006. In addition, it has enjoyed de facto control over the gas grid within Russia through its exclusive ownership of all trunk pipelines in the country, which it has used in several ways to limit NGP growth (Henderson, 2013). The relation between domestic and foreign prices and Gazprom's evolving relative market power abroad and at home creates an important backdrop for our assessment of Russian supply-mix dynamics below.

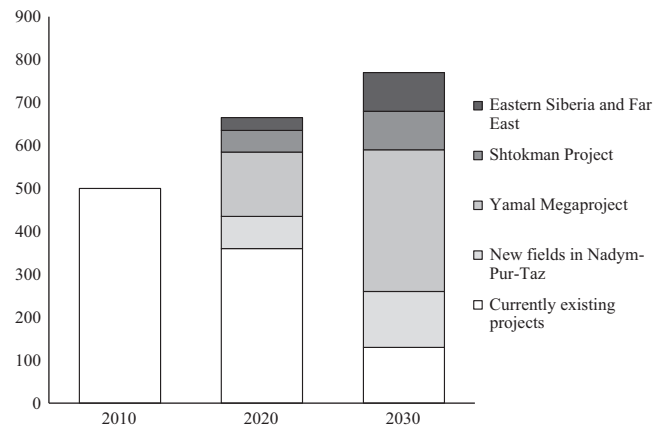
Section 2 analyses Gazprom's future production and investment projections as well as past patterns of capital expenditure. Section 3 provides background information on the NGPs in general and Rosneft and Novatek in particular; and in Section 4 we offer

**Table 1**  
Russia's gas balance 2010, in BCM\*.

| Supply  |     | Consumption (UGSS) |     |
|---------|-----|--------------------|-----|
| Gazprom | 459 | Domestic           | 414 |
| NGPs    | 130 | Exports to FSU     | 56  |
| Imports | 33  | Other exports      | 144 |

\* Note: Figures for supply and consumption do not tally, because some gas is used for transportation. Local utilization outside the Unified Gas Supply System (UGSS) is not included in consumption; and calculating the exact proportion of gas in storage originating in different production years is difficult. Methodology from Stern (2009).

Sources: BP (2010), Gazprom (2011b).



**Fig. 2.** Gazprom's production forecast. Source: based on visual interpretation of Gazprom, 2012b, p. 9.

some explanations for supply dynamics and allocations between the NGPs and Gazprom. Section 5 examines non-economic factors that may play a role in this picture, and Section 6 concludes the article.

## 2. Gazprom's production decline dilemma: market share vs. profitability

Historically, the three fields Medvezhye, Urengoy and Yamburg have made up the bulk of Gazprom's production (Söderbergh et al., 2010). However, as shown in Fig. 2, in the coming 10–20 years an increasing share of Gazprom's production will have to come from new fields. Recent developments such as Yen-Yakhinskoe, South Russkoe and West Pestsovoe in the Nadym-Pur-Taz area, which have all come on-stream since 2005, are relatively cost-efficient, being located close to the existing pipeline grid and other infrastructure (Henderson, 2010). But they are not large enough to compensate for the decline in Gazprom's three core assets. Thus, the much larger Shtokman and Yamal developments will have to provide the bulk of new production capacity, by adding 70 and 200 BCM per year, respectively (Gazprom, 2011b).

As Fig. 3 shows, investments in the development of Shtokman and Yamal are forecast to account for over 40% of Gazprom's total expected capital expenditure over the next 20 years. Although Shtokman has been shelved at least for the time being due to relatively low gas prices and high costs, the project may still be resuscitated during the coming decades, depending on developments in unconventional gas and the supply–demand picture. Meanwhile, work on the largest field on the Yamal Peninsula, Bovanenkovo, is forging ahead. In any case, the complexity of these projects drives high field development costs, which in turn require a high gas price in order to be profitable.

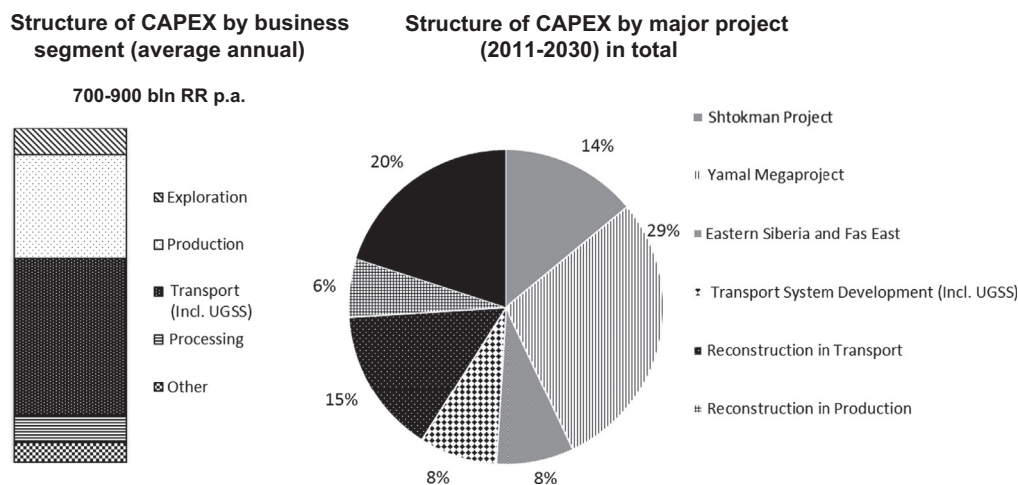


Fig. 3. Gazprom's CAPEX forecast (data from Gazprom, 2011c).

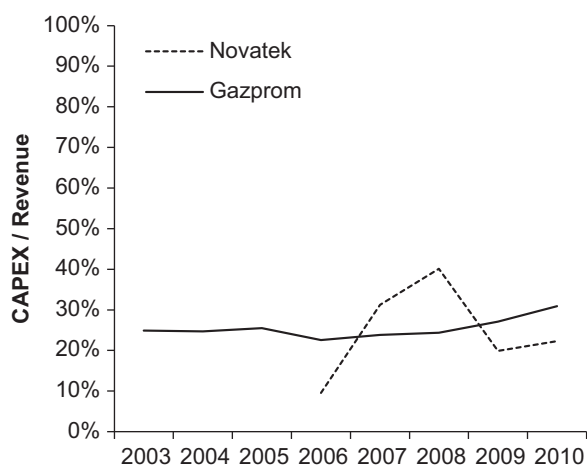


Fig. 4. CAPEX/revenue.

Sources: Novatek Financial Statements (2011), Gazprom (2010, 2011a, 2011b, 2011c, 2011d).

Vast infrastructure investments are also needed—to expand transport capacity, but also to maintain the existing grid, which suffers from severe decay. Forecasts for oil and gas projects should be treated with caution, since they are often too optimistic (Emhjellen et al., 2001). This is especially true in the Arctic, where most of the greenfield projects are located. Although the Bovanenkovo project currently seems to be proceeding successfully, the Shtokman (gas and condensate) and Prirazlomnoe (oil) projects are two examples of high-profile projects where Gazprom plans and deadlines have repeatedly proven unrealistic.

Fig. 4 shows a stable relationship between Gazprom's revenue and capital expenditure. In determining investment levels, Gazprom apparently relies more on budgets and short-term metrics than expected future market conditions. In contrast, Novatek's CAPEX-over-revenue ratio is much more volatile. If the trend observed between 2003 and 2010 holds, Gazprom will respond to a low-price environment by holding back investments in new capacity, thus falling short of the investment levels required to supply the projected volumes. Gazprom had to revise its 2012 budget, reducing capital investments from RUB 1.3 trillion to RUB 710 billion (Mazneva, 2011; Gazprom, 2011c). In 2013 and 2014, the company foresees substantially increasing investments, and plans to spend some RUB 4 trillion during the entire period 2012–2014 (Mazneva, 2011). Consequently, the budget for 2013–15 is scheduled to run at a deficit of RUB 670 billion, which further

underscores the urgency of these investments. If, however, underlying assumptions on prices and volumes fail, as they apparently have for 2012, there may be reason to doubt whether Gazprom will manage to maintain this schedule.

*Energy Strategy* production forecasts rely heavily on keeping the schedules for development of both Shtokman and Yamal. The Bovanenkovo field, the first major project on the Yamal Peninsula, came on-stream in June 2012 (Gazprom, 2012a). The field is expected to increase production from its initial capacity of 30–115 BCM by 2017. For Bovanenkovo, much of the investment is sunk costs and the production schedule is therefore relatively robust. For Shtokman, however, the final investment decision was first delayed numerous times, then postponed until after the 2012 presidential elections, in the hope of gaining further tax concessions (Shtokman, 2011). On 1 July 2012, the joint venture agreement between Gazprom and its foreign partners expired; and a few months later the project was officially halted for the time being (Amiel and Landauro, 2012). These mega-projects represent the very core of the Russian gas future, so delays and ambiguities in decision-making on investments give rise to concerns about future security of supply. But these projects are not the only contributors to Gazprom's production forecast: even if both Bovanenkovo and (less likely) Shtokman proceed as planned, other projects further east as well as in the Ob-Taz Bay are planned to deliver 150 BCM by 2020 and 230 BCM by 2030 (Pirani, 2011). If these fall off the radar due to prioritization of Yamal and Shtokman, that would of course trigger similar worries concerning future production. In sum, if Gazprom should fail to deliver on its projections, there should be room to expand NGP output, as long as overall demand is sufficiently high.

### 3. Non-Gazprom production

The *Energy Strategy* foresees non-Gazprom production rising from a share of 17% in 2008 to 25–30% by 2030, implying growth from 114 to about 245 BCM/year.

The NGPs have an estimated total reserve base of some 9800 BCM, while Gazprom's total reserves are about 33,000 BCM (Henderson, 2010). Based on 2009 production, the reserves-to-production ratio (R/P ratio) of the NGPs was over 80 years, whereas Gazprom's ratio was approximately 72 years. Some sources claim that the NGPs could double, or perhaps even triple, their production relatively quickly (e.g. Henderson, 2013, pp. 13–14), outpacing the *Energy Strategy* estimates.

### 3.1. Oil companies

In 2009, apart from Gazprom there were in Russia some 20 gas producers with annual production above 1 BCM. Of these, 14 were oil companies producing associated gas, of which eight were Russian.

After the gas company Novatek, the oil companies Lukoil, Rosneft and TNK-BP hold the largest reserves of Russia's NGPs (see Fig. 5). Their estimated gas resources total some 3880 BCM, or about 24.4 billion BOE (barrels of oil equivalent). Importantly, a large share of these resources is associated gas that requires only relatively modest investments to be developed if it is located close to the pipeline grid. Lukoil, Rosneft and TNK-BP are also three of Russia's greatest flarers—alone flaring a total of 19 BCM in 2011 by official accounts; the true figure is probably higher (Loe and Ladehaug, 2012). These companies thus have significant supply that could be pushed into the pipeline grid relatively easily—implying marginal costs much lower than greenfield developments. (However, Gazprom-Neft was Russia's second-largest gas flarer in 2011, which suggests that, in addition to the pipeline-access issues of other companies, economic considerations may be hindering this gas from reaching the market.)

Still, the resource base of the oil companies is probably the easiest to develop, if they have access to markets. Accordingly, TNK-BP plans to double its gas production to 30 BCM by 2020 (Akin, 2011). TNK-BP's head of gas sales has even stated that domestic gas sales may prove more profitable than oil exports by 2014, due to relatively low levels of taxation (see Henderson, 2011).

### 3.2. Rosneft's growing role in the Russian gas sector

On 12 December 2012, Rosneft agreed to buy Access-Alfa-Renova's 50% stake in TNK-BP (Rosneft, 2012). This followed an agreement with BP to buy its 50% stake in TNK-BP. Both deals, finalized in March 2013, serve not only to increase Rosneft's oil production, but also boost its gas production to roughly the same size as Novatek (Weaver, 2012). Importantly, on 1 November 2012, Rosneft, in competition with Novatek, snapped up a contract to supply Inter RAO with 35 BCM per year on average over the next 25 years: this indicates the growing clout of Rosneft on the domestic gas market.

Rosneft enjoys strong political backing and is not afraid of challenging Gazprom either. As detailed by Henderson (2013), several of the country's top political actors, including President Putin, have made repeated public calls for a loosening of Gazprom's grip on the UGSS (see also Rosneft, 2012).

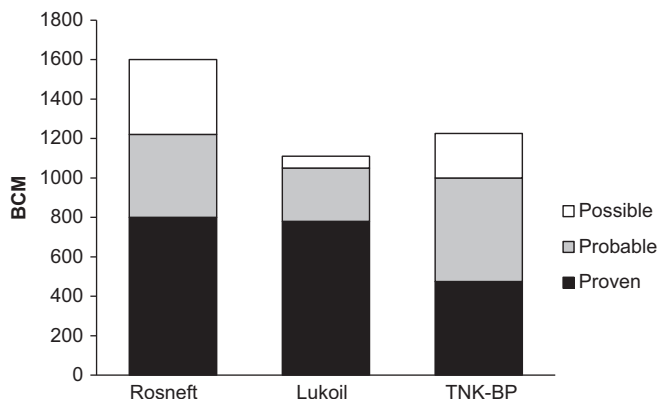


Fig. 5. Gas Reserves of the Largest Russian Oil Companies in 2010. Sources: company data, published reserves estimates (Rosneft, 2010; Lukoil, 2011; TNK-BP, 2010).

### 3.3. Novatek and the other NGPs

Russia's second-largest gas producer, Novatek, is one of the world's five largest gas companies by reserves and stood for half of the new NGP supply contracts with Russian buyers signed during 2012 (Henderson, 2013, p. 25). We therefore examine Novatek in some detail here.

Fig. 6 shows how Novatek's production and market shares have been growing steadily. In 2006, the company produced roughly 30 BCM of gas. By 2010, production had grown to 37.2 BCM, and in 2011 to 52.9 BCM—an impressive year-on-year growth of 42% (Gyetvay, 2012). In 2010, Novatek supplied 13% of the domestic market and accounted for 32% of NGP production (Madick, 2011).

Novatek during the period 2009–2011 enjoyed a whopping 600% replacement ratio, through organic growth as well as its acquisition of SeverEnergiya, Sibneftegas and Northgaz. At year-end 2012 the company's R/P ratio was 30 years (Gyetvay, 2013). Total reserves amount to some 9.4 billion BOE utilizing SEC (Securities and Exchange Commission) methodology (Novatek, 2012). In comparison, Statoil has about 5.4 billion BOE and Total some 11.4 billion BOE (Statoil, 2010, 2011). Here it should be noted that SEC methodology is on the conservative side: the real potential of Novatek—especially based on its development portfolio, not included in the SEC methodology—is significantly greater than this. Applying the PRMS (Society of Petroleum Engineers, 2007) standard, the potential is some 13.4 billion BOE (Madick, 2011).

Regarding dry sales gas, Novatek operates only in the domestic market, which is characterized by artificially low prices. Nevertheless, even without the gas export channel, Novatek has shown it can outperform Gazprom. Novatek's EBITDA (earnings before interest, taxes, depreciation and amortization) and net profit margin in 2011 were 49% and 32%, respectively, while Gazprom secured 14% and 28% including both domestic and foreign revenue (Kruglov, 2012). This cannot be explained by Novatek's formal ability to charge higher prices domestically. In 2010, Novatek's average sales price was only at a 1% premium to the regulated price charged by Gazprom, and by 2012 Novatek's price was actually slightly lower than that of Gazprom, and the company was still making a fine profit (Henderson, 2013, p. 17; see also Henderson, 2011).

The potential for future production growth in the domestic market is slightly more ambiguous. The largest field development project in terms of reserves is the Yamal LNG project, but gas from this field will be exported rather than used to supply the domestic market. An agreement with Gazprom Export on LNG transportation has already been signed, allegedly with Gazprom Export receiving a 1% fee (Kristalinskaya, 2011). The remaining reserves, totaling some 500 MBOE, are divided between several smaller fields and have a positive but limited potential for production

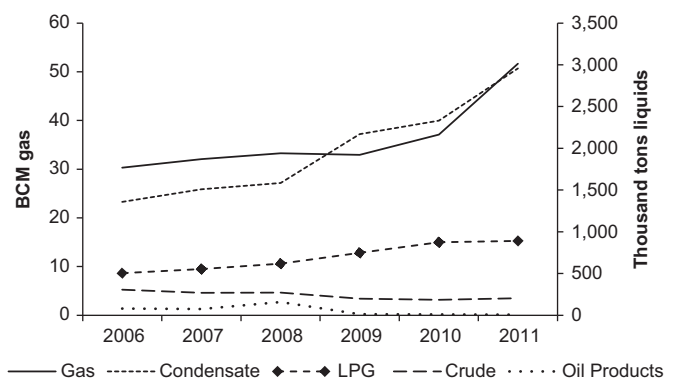


Fig. 6. Novatek Production\* (data from Novatek, 2011). \*2011 production aggregated from first two quarters of 2011.



growth. On the other hand, Novatek has been active in acquiring shares in three companies, Sibneftneftegaz, SeverEnergiya and Northgaz, thus turning to acquisition as a complement to organic growth. Moreover, as noted above, if the PRMS standard is applied, the production potential of Novatek increases by over 5 billion BOE.

To summarize, Novatek seems capable of expanding its asset base by utilizing spare capacity, maturing its exploration portfolio and pursuing active portfolio management. Combined with the reserves of associated gas of the oil companies, believed to be able to double or perhaps even triple their production (Henderson, 2010), there seems to be ample opportunity for the NGPs to increase their already growing production. A key question then is: what will happen if the interests of Gazprom and the NGPs become increasingly misaligned?

Apart from Novatek, Itera has been the most prominent among the non-oil company NGPs. However, Itera's two main assets are controlled by joint ventures 51% owned by Gazprom. Itera's position is further complicated by the signing of a large joint venture with Rosneft, the purchase of 6% of Itera's stock by Rosneft and statements by Rosneft that it intended to buy 51% of Itera in 2012 (Reuters 2012; Upstream 2012). Another company, Northgaz, is 51% Gazprom-owned, making its 'independence' somewhat limited, while Novatek bought a 49% stake in the same company at the end of 2012 (Interfax, 2012). The remaining three companies, Norilskgazprom, Yakutkgazprom and Taimyrgaz, operate only in off-grid environments supplying monotonous isolated from the UGSS and thus do not influence domestic market dynamics.

#### 4. NGP–Gazprom dynamics

##### 4.1. Mutual interest in increased NGP production

Assuming that Gazprom production decreases as a result of lack of investment due to low revenue flows—i.e. assuming that the relation in Fig. 4 above holds—NGP action will be required to cover domestic market demand, in order for Gazprom to be able to fulfill export projections. In fact, NGPs have filled out the domestic market, enabling Gazprom to supply gas to Europe without having to develop new, high-cost production. As Gazprom's old giants in the Nadym-Pur-Taz region decline, this tendency may be reinforced. It could thus be in Gazprom's own interest to allow for higher NGP production in production-quota negotiations with the government, when the marginal cost of Gazprom's production is higher than marginal revenues in the domestic market. According to this logic, Gazprom would allocate its volumes by first optimizing exports, and thereafter observing its cost curves and allocating domestic supplies. Importantly, if marginal revenues for the NGPs are higher than *their* marginal costs, they would gladly let Gazprom off the hook by supplying volumes to the domestic market, thus letting Gazprom focus on profit-generating activities abroad and at home.

Fig. 7 shows a stylized model of Gazprom and NGP volume allocation. Following a dialog with the government, a quantity  $Q_1$  to be supplied at price  $P_1$  is determined. Volumes above that are cleared via market mechanisms, being formally classified as excess quota gas [sverkhlimitny gaz]. Gazprom, having made the most of its opportunities in the European market, observes that its marginal cost ( $MC_{Gaz}$ ) is above the regulated price at the prescribed volume, and tries to reduce its supply toward  $Q_2$ . The NGPs, who put substantial volumes into the market only when Gazprom has had its fill, start at a much earlier stage of their marginal cost curves (illustrated by  $MC_{NGP}$  starting at  $Q_2$ ) and, as argued above, can be induced to supply the delta ( $Q_1 - Q_2$ ). Thereupon, Gazprom may supply the demand that surpasses the quota

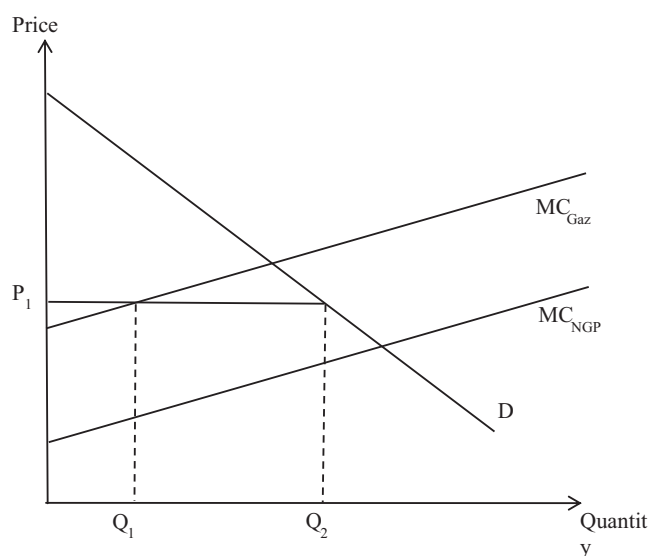


Fig. 7. Gazprom and NGP supply allocation.

Source: created by Lars-Petter Lunden and Daniel Fjaertoft of Sigra Group.

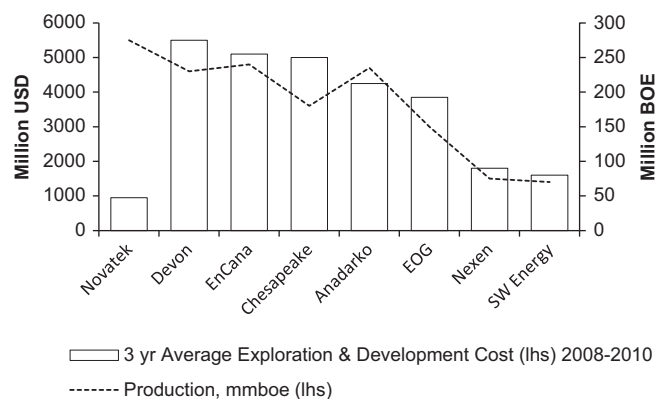


Fig. 8. Novatek reserve replacement costs.

Source: Madick, 2011.

[sverkhlimitnyy rynok] until the point where  $MC_{Gaz}$  intercepts demand ( $D$ ). The extent of volumes supplied by Gazprom vs. the NGPs depends on the de facto monopoly power of Gazprom and thus the ability of the NGPs to market their volumes freely. In a totally free market, the market clearing price would be found in the intersection between  $MC_{NGP}$  and  $D$ . However, in the specific Russian market, the remaining volumes would be sold at differing prices, depending on the slopes of Gazprom's marginal revenue curve and the cost curves of both the NGPs and Gazprom. The market clears at the intersection of  $MC_{NGP}$  and  $D$ .

Fig. 7 reveals two arguments for why the NGPs may be willing to expand gas production and, importantly, why Gazprom may welcome this. Firstly, since the NGP cost curves are likely to start at a lower cost base on the margin than that of Gazprom, the volumes the NGPs put into the market imply lower marginal cost, even with similar overall cost functions. Secondly, allowing the NGPs to act on the regulated volume gives Gazprom the opportunity not only to avoid losing money in the regulated market, but also to gain a larger margin in the market for excess consumption. Whether or not NGPs can supply the domestic market on behalf of Gazprom will depend heavily on the slopes of their marginal cost curves relative to that of Gazprom. Estimates on future levels and their elasticities are not available. However, inferences can be made from Fig. 8, which shows that Novatek has the lowest

expenditure and highest converted production in the peer group. Thus, Novatek should be well positioned to take larger shares of the domestic market, provided that they can continue their history of successful organic growth. Most of Novatek's licenses are located close to existing pipeline grids, making the associated development costs lower than those of the remote Gazprom mega-projects, which require heavy pipeline investments in addition to field development expenditures.

Thus far, we have analyzed the behavior of Gazprom based on the assumption of a short-sighted investment strategy driven by current budget metrics. However, the incentives may still hold in the case of an investment strategy based on more forward-looking price expectations. A far-sighted Gazprom could also be happy to allow Novatek (and others) a growing share of the domestic market. Since Gazprom's development projects are deemed costly, and the development portfolio of the NGPs relatively cheap, Gazprom might prefer to delay its investments in new developments, and welcome the independents to increase production for the domestic market. This could be driven by the marginal cost/revenue dynamics above: but it could also be generated by an inter-temporal optimization whereby Gazprom foresees higher future export prices and opts to wait rather than crowd out cheaper NGP production.

That said, the effects examined so far do depend on low domestic prices. Marginal revenue in Russia is determined by the domestic prices that have been kept at artificially low levels by the authorities, and are most probably lower than the marginal costs of Gazprom. As shown in Lunden and Fjærtøft (2011), the domestic price does not impact short-term supply, only relative shares of production. Consequently, although Gazprom may concede a greater share to the NGPs now, Gazprom is likely to strive to regain market shares once prices begin to increase. The NGPs are thus faced with a dilemma: on the one hand they would like market prices for gas to increase, so as to increase revenues; on the other hand, that would whet Gazprom's appetite for selling domestically, entailing the risk of decreasing their market share.

A possible indication of a deliberate Gazprom attitude towards volume allocations is the fact that Novatek has a tradition of making predictions based on production *capacity* rather than actual production (Henderson, 2010). This fits nicely with a strategy of cooperating rather than competing with Gazprom: Gazprom knows the capacity of Novatek and can accordingly plan its allocation between domestic and foreign markets, allowing Novatek to fill any gap.

#### 4.2. Over-supply and increased third party access, how strong is Gazprom's bargaining position?

As shown above, both the oil companies and Novatek seem ready to produce an increasing share of the Russian market, and Gazprom in some circumstances could welcome gas from other companies. We now turn to the implications of over-supply and reduced Gazprom bargaining power.

As the decision to develop the Bovanenkovo field has already been made, and deviation from the planned production increase schedule seems unlikely, Russia may be faced with excess gas supply if the NGPs increase production simultaneously. The consequences for the Russian gas market will depend on Gazprom's ability to retain or regain its power to exclude others from the UGSS. As can be inferred from the discussion above, and in line with logic of the past, if Gazprom's marginal cost decreases as investments turn to sunk costs, Gazprom would simply deny market access for NGPs. However, even though Gazprom may still have some scope for opaque approval processes and Rosneft (2013) still complains publically of discretionary access treatment, many signs point to increasing access to the UGSS for third parties.

Importantly, the courts have several times supported NGPs in claims against Gazprom (Henderson, 2013).

Given over-supply and transparent access to the UGSS, the allocation of domestic volumes between Gazprom and the NGPs will depend on the relative marginal costs of the various fields of the companies. In other words, the marginal cost curves in Fig. 7 will merge. Gazprom, as before, will first optimize its export allocation and thereafter decide on a volume to supply in the excess consumption market. However, this volume will be lower than before, once the opportunity to sell gas at the intersection of the marginal revenue curve and marginal cost curve is gone. Volume allocation will now work as in any other competitive market: companies with less costly fields will have an advantage, since they can offer gas at lower prices while still making a profit. As indicated by Henderson (2013), the Russian gas market is now more open for competition, since the prices offered by the NGPs are roughly on par with regulated prices (Rosneft, 2013). Increased efficiency in the gas market ensues that cheaper gas is produced first.

The Russian economy would obviously stand to benefit from this situation. However, that will not necessarily lead to corresponding tax revenues for the Russian government, as the tax is largely calculated on the basis of gross revenue rather than profits. Further assessing the optimal outcome for the Russian economy, Gazprom's export monopoly comes into question. Although there is little incentive to have Russian gas compete with Russian gas in foreign markets, this does not necessarily entail that the export monopoly should belong to Gazprom. Instead, an independent organization, perhaps owned by the gas-producing companies, could purchase gas domestically and sell gas externally. That would ensure that the cheapest gas is produced first while simultaneously harvesting revenues from avoiding Russian-to-Russian competition in foreign markets. Suggestions of stripping Gazprom of its export monopoly have been relatively rare, but some examples exist (see Henderson, 2013).

## 5. Powerful interests stimulate increased competition

Although the analysis in Section 4.1 describes a situation where Gazprom could have encouraged increased NGP production, other events suggest that NGP advances may have occurred without Gazprom's blessing. In 2009, in the midst of the financial crisis, Gazprom production decreased by 16%, while that of Novatek increased by 8% (Henderson, 2010). This might be due to the marginal cost and revenue dynamics described above, but another explanation is also probable: Novatek and other NGPs are set on increasing their market share, whether Gazprom likes it or not.

The rapid growth of Novatek correlates neatly with the entry of the powerful tycoon Gennady Timchenko into its boardroom. Volga Resources, controlled by Timchenko, first acquired a 5.07% stake in 2008, which grew to 18.2% in 2009. At the same time, a 51% stake in Tambeyneftegas, which owned the license for South Tambeynskoye (the 'Yamal LNG project') was sold to Novatek by Volga Resources. Timchenko's share in Novatek subsequently increased to 23.1% (Overland et al., 2011). In addition, the fact that the political elite have endorsed the deals between Total and Novatek on both Yamal LNG and Novatek shares indicates the expanding political clout of Novatek's stakeholders (Overland et al., 2011). And Novatek's success in securing tax breaks for the Yamal LNG project far in advance of the investment decision indicates that its management is well-connected. The Yamal LNG project has also received support from the government in the form of preparation of port infrastructure at Sabetta as well as approach and seaway channels for LNG tankers (Mikhelson, 2011). In stark contrast, Gazprom's Shtokman project has yet to secure the fiscal

conditions deemed necessary for an investment decision to be made.

Political support for the NGPs has not been limited to Novatek. After Putin returned to his third presidency, Igor Sechin assumed the position of CEO of Rosneft; he also heads the influential Presidential Commission for Strategic Development of the Fuel and Energy Sector and Environmental Security, and has been an advocate of the interests of the NGPs. While Sechin was chairman, Rosneft filed a high-profile complaint to the Antimonopoly Service, accusing Gazprom of discriminating against independent companies in the allocation of pipeline capacity (Henderson, 2010). Moreover, Sechin reportedly dislikes Gazprom CEO Alexey Miller personally and has for years pushed for increased third-party pipeline access (Wikileaks, 2008).

The resulting situation is paradoxical. Powerful political actors connected with Rosneft (like Sechin) are generally associated with an ideology of statism, but advocate liberalization of the gas sector. The actors associated with Gazprom, including former Chairman of the Gazprom Board Dmitry Medvedev, are generally associated with a more liberal economic ideology, and yet Gazprom has been trying to fight off liberalization in the gas sector.

Progress in market liberalization also points in the direction of increased NGP influence. On New Year's Eve 2010, Prime Minister Putin issued Decree no. 1205 'On Improvement of State Regulation of Gas Prices', which built on Decree no. 333 from 2007 'Concerning the Improvement of the State Regulation of Gas Prices' (Pirani, 2011). The 2010 decree signaled a shift from government-regulated domestic prices to state-regulated tariffs in the UGSS, implying a greater focus on equal access. However, progress in implementing the 2007 decree has been slow, and there is no guarantee that the 2010 decree will be effectuated either. Nevertheless, the wording in the latter does indicate greater bargaining power for the NGPs in their relations with Gazprom.

A heightened focus on flaring could also help the NGPs to promote their interests. Russia flares more gas than any other country in the world: it reportedly wasted some 35 BCM in 2010 (Interfax, 2011). To cope with the problem, the Russian authorities decided to limit flaring to 5% by the end of 2012. However, in order to achieve this goal, the previously flared gas will need an evacuation route—which means access to the UGSS.

## 6. Conclusions

The tide is turning for Gazprom. Although domestic prices have risen steadily, and sufficiently for Gazprom to make a slight profit in the domestic market using its current producing fields, price reform seems to fall short (bar the already approved Bovanenkovo development) of supporting the soaring costs of Gazprom's new field developments needed to compensate for reduced output from the Nadym-Pur-Taz area. In contrast, the NGPs have substantial potential to fill the gap and are queuing up to do so—and apparently with growing government support.

This process is further supported by industrial economics. The NGP portfolios are cheaper to develop compared to those of Gazprom, and, if they continue gaining market access, can supply greater volumes than in the past.

Gazprom can, to the extent it can control access to the UGSS, dictate the market shares of the other producers. Normally, losing market shares is not a good thing—but in the special environment of Russia's domestic market, it could be in Gazprom's interest to lessen its own domestic dominance. First, in the short term, the company could welcome increased NGP production so as not to lose out on export revenues as well as suffering loss of reputation abroad. Second, even a far-sighted Gazprom might be willing to yield market shares to the NGPs if its own development portfolio

proves too expensive compared to the marginal revenues to be obtained.

In fact, the domestic presence of the NGPs is likely to increase whether Gazprom likes it or not. The political leverage of Novatek and Rosneft is rising, and more and more pro-NGP legislation is being passed. In order to be implemented, the ban on flaring will have to be accompanied by market access and further progress on non-discriminatory UGSS access. Moreover, with Gazprom's access to cheap Central Asian gas gradually declining, the NGPs stand out as the only alternative.

The NGPs market share seems set to continue increasing—and, as this article has shown, that may even be in Gazprom's interest. Most likely Gazprom will resist relinquishing its monopoly powers entirely, so that it can limit NGP production in the future, but Gazprom's bargaining power will be under attack from all sides as its supply portfolio loses out to cheaper NGP production. For Russia Inc., it makes sense to develop the most economical resources first.

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## References

- Akin, M., 2011. Better times for Russian gas firms—TNK-BP. Reuters UK, (<http://uk.reuters.com/article/2011/04/07/uk-russia-gas-idUKTRE73635B20110407>) (accessed 20.08.12).
- Amiel, G., Landauro, I., 2012. Gazprom/Shtokman deal ended July 1, but Total still interested—CFO. Dow Jones Newswires. (<http://www.foxbusiness.com/news/2012/07/27/gazpromshtokman-deal-ended-july-1-but-total-still-interested-cfo/#ixzz24D9f6vG4>) (accessed 20.08.12).
- BP, 2010. Statistical Review of World Energy. BP, London, 2012. Statistical Review of World Energy. BP, London. ([http://www.bp.com/assets/bp\\_internet/globalbp/globalbp\\_uk\\_english/reports\\_and\\_publications/statistical\\_energy\\_review\\_2011/STAGING/local\\_assets/pdf/statistical\\_review\\_of\\_world\\_energy\\_full\\_report\\_2012.pdf](http://www.bp.com/assets/bp_internet/globalbp/globalbp_uk_english/reports_and_publications/statistical_energy_review_2011/STAGING/local_assets/pdf/statistical_review_of_world_energy_full_report_2012.pdf)) (accessed 20.08.12).
- Dansie, G., Lanteigne, M., Overland, I., 2010. Reducing energy subsidies in Russia, China and India: dilemmas for decision-makers. *Sustainability* 2 (2), 475–493.
- Emhjellen, K., Emhjellen, M., Osmundsen, P., 2001. Cost Estimates and Investment Decisions. SNF Report no. 30/01.
- Energy Strategy Institute, 2009. Energeticheskaya strategiya.
- Gazprom, 2010. Gazprom Databook. Gazprom, Moscow.
- Gazprom, 2011a. Gazprom Databook. Gazprom, Moscow.
- Gazprom, 2011b. Gazprom in Questions and Answers. (<http://eng.gazpromquestions.ru/?id=7#c302>) (accessed 02.04.13).
- Gazprom, 2011c. All you Need is Gas: Gazprom Investor Day February 2011. Gazprom, Moscow, ([http://www.gazprom.com/f/posts/33/689562/2011\\_02\\_15\\_investorday\\_final.pdf](http://www.gazprom.com/f/posts/33/689562/2011_02_15_investorday_final.pdf)) (accessed 20.08.12).
- Gazprom, 2011d. Board of Directors Approves Investment Program, Budget and Cost Reduction Program for 2012. Press Release. (<http://www.gazprom.com/press/news/2011/december/article126059/>) (accessed 20.08.12).
- Gazprom, 2012a. Gazprom Starts Feeding Gas Into Bovanenkovo-Ukhta Gas Pipeline. Press Release. (<http://www.gazprom.com/press/news/2012/june/article137344/>) (accessed 24.10.12).
- Gazprom, 2012b. Scale Does Matter: Gazprom Investor Day. ([http://www.vedomosti.ru/cgi-bin/get\\_document.cgi/vedomosti\\_13-02-2012.pdf?file=2012/02/13/275730\\_0647454470](http://www.vedomosti.ru/cgi-bin/get_document.cgi/vedomosti_13-02-2012.pdf?file=2012/02/13/275730_0647454470)) (accessed 02.04.13).
- Gyeytay, M., 2012. Fourth Quarter and Full Year 2011 Operational and Financial Results. Novatek, Moscow.
- Gyeytay, M., 2013. Russia's Natural Gas Frontiers: Harnessing the Energy of the Far North. In: Proceedings of Global Energy Conference, Miami. (<http://www.novatek.ru/en/investors/>) (accessed 02.04.13).
- Henderson, J., 2010. Non-Gazprom Gas Producers in Russia. Oxford Institute for Energy Studies, Oxford.
- Henderson, J., 2011. Domestic Gas Prices in Russia—Towards Export Netback?. Oxford Institute for Energy Studies, Oxford.
- Henderson, J., 2013. Evolution in the Russian Gas Market—The Competition for Customers. Oxford Institute for Energy Studies, Oxford ([http://www.oxfordenergy.org/wpcms/wp-content/uploads/2013/01/NG\\_73.pdf](http://www.oxfordenergy.org/wpcms/wp-content/uploads/2013/01/NG_73.pdf)). (accessed 15.03.13).
- IEA, 2010. World Energy Outlook 2010. IEA, Paris.
- IEA, 2012. World Energy Outlook 2012. IEA, Paris.
- Interfax, 2011. Russia Still Undisputed Leader in Gas Flaring. (<http://interfax.com/newsinf.asp?id=290308>) (accessed 20.08.12).

- Interfax, 2012. News Headlines. (<http://www.interfax.com/newsinf.asp?id=383413>) (accessed 11.04.13).
- Kristalinskaya, S., 2011. Total's New Stake in NOVATEK Gives French Access to Yamal LNG. Oil&Gas Eurasia. (<http://www.oilandgaseurasia.com/articles/p/138/article/1470/>) (accessed 23.10.12).
- Kruglov, A., 2012. Gazprom's Financial and Economic Policy. (<http://www.gazprom.com/f/posts/62/691064/2012-06-28-presentation-en.pdf>) (accessed 11.04.13).
- Loe, J., Ladehaug, O., 2012. Reducing Gas Flaring in Russia: Gloomy Outlook in Times of Economic Insecurity. RussCasp Working Paper. FNI/Pöyry, Oslo.
- Lukoil, 2011. Annual Report 2011.
- Lunden, D., Fjærtøft, L.P., 2011. Russian Exports to the EU. What is the Impact of Domestic Gas Price Reform? RussCasp Working Paper, Sigra/Pöyry, Oslo.
- Madick, G., 2011. Novatek—Dawn of a New Decade. In: Proceedings of Deutsche Bank Global Emerging Markets One-on-One Conference, New York. ([http://www.novatek.ru/common/upload/doc/2011.09.07-09-DB\\_NYC\\_GEM\\_1on1.pdf](http://www.novatek.ru/common/upload/doc/2011.09.07-09-DB_NYC_GEM_1on1.pdf)) (accessed 17.08.12).
- Mazneva, E., 2011. Gazprom Sobiraetsa Vlozhit 4 trln. Rubleyvnovye Zastroyki. Vedomosti. ([http://www.vedomosti.ru/companies/news/1456492/rekord\\_investicij](http://www.vedomosti.ru/companies/news/1456492/rekord_investicij)) (accessed 20.08.12).
- Mikhelson, L.V., 2011. Novatek—Focus on growth: Corporate Strategy Day. Presentation, London Stock Exchange, 9 December.
- Mitrova, T., 2009. Russia and Caspian Energy in the Global Energy Balance. Presentation, 20 March, Energy Research Institute of the RAS, Moscow.
- Novatek, 2011. Selected Operating Highlights. Novatek, Moscow.
- Novatek Financial Statements, 2011. Novatek Announces Consolidated IFSR Results for the Year Ended 31 December 2011 ([http://novatek.ru/en/press/releases/index.php?id\\_4=526](http://novatek.ru/en/press/releases/index.php?id_4=526)) (accessed 10.07.13).
- Novatek, 2012. NOVATEK Announces Year-end 2011 Reserves. Press Release. ([http://www.novatek.ru/en/press/releases/printable.php?print=1&id\\_4=500](http://www.novatek.ru/en/press/releases/printable.php?print=1&id_4=500)) (accessed 20.08.12).
- Orttung, R., Overland, I., 2011. A limited toolbox: explaining the constraints on Russia's foreign energy policy. *Journal of Eurasian Studies* 2 (1), 74–85.
- Overland, I., Godzmirski, J., Lunden, D., Fjærtøft, L.P., 2011. Rosneft's offshore partnerships: the re-opening of the Russian petroleum frontier. *Polar Record*, 1–14.
- Overland, I., Kutschera, H., 2011. Pricing pain: the politics of natural gas for Russian households. *Europe-Asia Studies* 63 (2), 311–329.
- Pirani, S., 2011. Liberalization Heralds Change in the Gas Market. *Russian Analytical Digest* 100.
- Reuters, 2012. Rosneft Buys Into gas Producer Itera to Challenge Gazprom. Press Release. (<http://www.reuters.com/article/2012/07/20/rosneft-itera-stake-idUSL6E8IK1ZY20120720>) (accessed 20.02.13).
- RIA Novosti, 2012. China's Growing Economic Importance to Central Asia. Press Release. ([http://en.rian.ru/international\\_affairs/20120629/174304839.html](http://en.rian.ru/international_affairs/20120629/174304839.html)) (accessed 20.08.12).
- Rosneft, 2010. Reserves and Resources. Rosneft, Moscow.
- Rosneft, 2012. Rosneft Signs Agreement to Purchase AAR Consortium's 50% Stake in TNK-BP. Rosneft, Moscow. (<http://www.rosneft.com/news/pressrelease/12122012.html>) (accessed 30.03.13).
- Rosneft, 2013. Key Sustainability Factors. Rosneft, Moscow. (<http://www.rosneft.com/Development/factors/>) (accessed 07.04.13).
- Shtokman, 2011. Shtokman Development AG Board of Directors Reviewed the Company's Activities in 2011. Press Release. (<http://www.shtokman.ru/en/press/news/2011/226/>) (accessed 20.08.12).
- Society of Petroleum Engineers, 2007. Petroleum Resources Management System. Richardson, TX.
- Söderbergh, B., Jakobsson, K., Aleklett, K., 2010. European energy security: an analysis of future Russian natural gas production and exports. *Energy Policy* 38 (12), 7827–7843.
- Spanjer, A., 2006. Russian gas price reform and the EU–Russia gas relationship: incentives, consequences and European security of supply. *Energy Policy* 35 (5), 2889–2898.
- Statoil, 2010. Annual Report 2010.
- Statoil, 2011. Annual Report 2011.
- Stern, J., 2009. The Russian gas balance to 2015: difficult years ahead. In: Pirani, S. (Ed.), *Russian and CIS Gas Markets and their Impact on Europe*. Oxford University Press, Oxford, pp. 54–92.
- Tarr, D.G., Thomson, P., 2004. The merits of dual pricing of Russian natural gas. *The World Economy* 27 (8), 1173–1194.
- TNK-BP, 2010. Reserves. TNK-BP. (<http://tnk-bp.ru/en/production/operations/reserves/>) (accessed 15.09.12).
- Upstream, 2012. Rosneft takes Itera slice. (<http://www.upstreamonline.com/live/article1261225.ece>) (accessed 29.03.13).
- Weaver, C., 2012. Rosneft Gas Deal Turns Up Heat On Rivals. *Financial Times*. (<http://www.ft.com/intl/cms/s/0/7013b568-2442-11e2-b38c-00144feabdc0.html#axzz2Np0KhhIH>) (accessed 30.03.13).
- Wikileaks, 2008. Third-Party Access To Gazprom's Pipelines May Boost Gas Production. (<http://wikileaks.org/cable/2008/11/08MOSCOW3321.html>) (accessed 30.03.13).