



March 2017

Adversity and reform: Ukrainian gas market prospects



Source: OIES based on Naftogaz Ukrainy Annual Report 2015 & Ukrtransgaz presentation (adapted)

The Ukrainian gas market, one of Europe's largest, is in transition away from a set of arrangements based on large-scale Russian imports and post-Soviet economic relationships, to a new set of arrangements underpinned by closer integration with the European market. The transition is taking place against a volatile political and economic background: the large-scale social protests of 2013-14, the removal of president Viktor Yanukovich's government, the annexation of Crimea by Russia, the establishment of unrecognised separatist "republics" in eastern regions, the military conflict that has claimed nearly 10,000 lives (2014 onwards), and the economic slump that has accompanied it. In

reviewing how the gas market has changed during these events,¹ it may be helpful to think of two types of issues. First, issues relating to the Russia-Ukraine gas trade: efforts by Ukraine to minimise its dependence on Russian gas imports, and by Russia to diversify gas transit away from Ukraine, and to other consequences of their failing political and economic relationship, including the arbitration cases between Gazprom of Russia and Naftogaz Ukrainy in the Stockholm Chamber of Commerce. Second, there are issues concerning market development: about the new market arrangements that are emerging, regulation, the changing corporate landscape, and the consequences of price reform being implemented in the midst of a severe economic downturn. One argument made in this essay is that the Russia-Ukraine issues will most likely recede, albeit slowly, into the background, particularly after 2019, and the market development issues will come to the fore. The essay deals first with the Russia-Ukraine issues, and then with the market development issues i.e. changes in demand and supply, and in market structure and regulation.

The transit business and relations with Russia

The volume of Russian gas being transported across Ukraine has been in long-term decline, from 128.5 bcm in 2006 to 67.1 bcm in 2015, and recovered by 22% to 82.2 bcm in 2016. But the decline will certainly resume this year and in future. The main reason for higher transit volumes in 2016 was the increased quantity of Russian exports to Europe, made possible by Gazprom's more flexible pricing policies and the lack of competition from LNG. Russia's total exports to non-FSU countries were a record 178.3 bcm (although this included 11.1 bcm that was sold back to Ukraine via reverse flow).² Even if exports continue at a similarly high level, this year more of them may be diverted through the Nord Stream pipeline. The utilisation of Nord Stream has been rising steadily, with total volumes transported rising from 23.8 bcm in 2013 to 43.8 bcm in 2016. The EC regulatory decision approving Gazprom's access to 80% of the capacity in the OPAL pipeline, taken in October, allows for Gazprom to use close to the full capacity of Nord Stream (55 bcm) this year, reducing transit via Ukraine by a further 10 bcm. This is not certain, however: the decision on OPAL could be overridden by a decision in the European Court of Justice, sought by PGNiG of Poland, to extend an interim injunction that suspended Gazprom's extended use of OPAL, under competition rules. The Court ruling is expected in the next few weeks.³

After 2020, other diversification pipelines, such as Turkish Stream and Nord Stream II, will reduce further the requirement for transit across Ukraine. Construction of the first string of Turkish Stream, which could transport to western Turkey 15.75 bcm/year of gas that currently transits Ukraine, may be completed by the time the current Ukrainian transit contract expires, at the end of 2019. But it is not possible for Nord Stream II to be completed by that time. Some contractual arrangements will therefore presumably have to be made for transit across Ukraine of, at a minimum (i.e. even if Gazprom only sells the minimum stipulated in its current contracts with European buyers), 7-35 bcm/year. Moreover, even when the new pipelines are built, there are many scenarios under which Ukrainian transit would be favourable, at least to countries to which gas would have to travel furthest if it took other routes, such as Slovakia and Hungary.⁴ The future of Ukraine's transit business after 2020 depends largely on how these issues are resolved.

Up to the end of 2019, and possibly beyond, tension will continue to surround the transit business, because of the poor relations between Gazprom and Naftogaz, consequent upon the breakdown of political relations between Russia and Ukraine. Although the companies had a difficult relationship

¹ The essay deals with the gas market rather than energy markets in general. Other important events affecting other energy markets – such as the blockade of coal supplies imported to Ukraine from separatist-controlled areas that was in progress at the time of writing – are not covered.

² "Russian gas transit volumes via Ukraine", Reuters, 3 January 2017; Gazprom, *Ezhekvartal'nyi otchet za 4-y kvartal' 2016 g.*, pp. 69-70.

³ "Gazprom's pipeline ambition faces test in European courts", *Financial Times*, 14 February 2017. On 1 March 2017 Naftogaz applied to the court for leave to join PGNiG's case.

⁴ These issues have been discussed exhaustively in: Pirani and Yafimava, *Russian Gas Transit Across Ukraine Post-2019: pipeline scenarios, gas flow consequences, and regulatory constraints* (OIES, 2016). For estimates of non-Ukraine transit, assuming that one string of Turkish Stream is completed, see Table A.4, p. 62, Scenario B.

before the political and military events of 2014, those events resulted in a significant deterioration. The first result, in June of that year, was the lodging of major arbitration cases at the Stockholm Chamber of Commerce, under the twin contracts – the above-mentioned transit contract, and the supply contract – concluded between Gazprom and Naftogaz Ukrainy in January 2009, and expiring on 31 December 2019. The claims made are summarised in Note 1 below. A second result of the deterioration was the cancellation in June 2014 of the balancing agreement between the two sides, that provides for additional gas to be made available at short notice to meet spikes in demand in Europe. A third result was the (so far unsuccessful) attempts by Naftogaz to transfer away from Gazprom Export the functions it undertakes at the western border of Ukraine for liaising with buyers, which it inherited as a post-Soviet legacy and that Naftogaz argues should, in line with European law and practice, now belong to Ukrtransgaz, the TSO.⁵ A fourth result was that the day-to-day co-operation between companies necessary for the functioning of any large technical system, and acceptance of custom and practice built up over long periods, was put in question.

The absence of such co-operation may have exacerbated two disputes about transit in the winter of 2016-17:

1. In mid-December, Gazprom CEO Aleksei Miller said that volumes in storage in Ukraine were at a record low, that this posed risks for transit to Europe, and that if there were unauthorised withdrawals, flows via Ukraine would be reduced. Both Ukrainian energy minister Ihor Nasalyk and Naftogaz CEO Andrei Kobolev responded that there would be no unauthorised withdrawals and that Gazprom was trying “artificially” to create a crisis; and asked that the EU send monitors to obtain first-hand data. This dispute erupted during a spell of cold weather when demand, and transit volumes, surged. Naftogaz indicated in a press release that part of the problem was failure of the two sides to agree on terms for the supply of additional volumes (see above) by Gazprom to Naftogaz.⁶ A survey by OIES of storage arrangements from 2012 to 2016 and in two earlier years has shown that while volumes stored are lower in absolute terms, the reduction in volumes is not as great, proportionally, as the reduction in Ukrainian gas consumption and the reduction in transit. In other words, in proportion to volumes consumed and volumes transited, the level of storage has risen. Details are provided in Note 2 below. There is only one exception to this trend – storage was lower, relative to transit volumes, in 2016, due to the heightened level of transit mentioned above. Further pressure will of course have been put on the system by the unusually cold winter in much of central and eastern Europe. It may be that problems arose in December on account of a short-term demand spike, caused by cold weather. These problems might have been more easily resolved had there been a balancing agreement in place, and better inter-company relationships.
2. Also in mid-December, Ukrtransgaz published information on the pressures at which gas was entering the Ukrainian system at Sudzha, the interconnection point on Ukraine’s eastern border through which most gas flows, and stated that the gas was being delivered at pressures below that required in the contract. Naftogaz stated that this was putting at risk the stability of gas deliveries to Europe. (The contract refers to a technical agreement that is not in the public domain. Our understanding is that the technical agreement stipulates a pressure of 60 atmospheres.) Naftogaz made a similar complaint in late February.⁷ Our understanding is that the difficulty Gazprom appears to have had in supplying gas at the required pressure may be due to the relative shortage of gas volumes in the Russian network at times of peak demand. This common problem, technically resolvable when companies in the supply chain are working together under normal conditions, may have been exacerbated by the broader breakdown of co-operation.

⁵ Naftogaz Ukrainy, *Annual Report 2014*, p. 13 (on balancing agreement); Pirani and Yafimava, *Russian Gas Transit Across Ukraine Post-2019*, pp. 46-48 (on liaising with customers)

⁶ “Miller rasskazal o riskakh tranzita gaza v Evropu”, *Interfax*, 16 December 2016; “Kiev poobeshchal ne otbirat’ tranzitnyi gaz”, *TASS*, 14 December 2016; “Gazprom’s recent statements show”, Naftogaz Ukrainy press release, 19 December 2016

⁷ “Gazprom prodovuzhuv porushuvati tekhnichni umovi tranzitnogo dogovoru”, Ukrtransgaz web site, 12 December 2016; “Ukraine risks”, *Interfax Russia & CIS Oil and Gas Weekly*, 26 January 2017; “Pressure in the Russian gas transmission system drops”, Naftogaz Ukrainy press release, 28 February 2017

The results of the arbitration cases in Stockholm are expected in April (re. supply contract) and June (re. transit contract). One possible outcome may be that, if the decisions are accepted by both parties, discussions about arrangements between now and the end of 2019, and negotiations on post-2020 transit, could then proceed. It is also possible that tripartite negotiations on supply and transit, including the European Commission, could be revived. These negotiations resulted in ad-hoc agreements that covered the winters of 2014-15 and 2015-16, but not that of 2016-17. It is not at all certain that they could be expanded to cover the wider issues involved in negotiating a new contract. Much will continue to depend on whether there is any change in political relations between Russia, Ukraine and Europe. Another possibility is that the outcome of the arbitration will not be accepted by one or both sides, and that it will inflame already poor relations. In this case it might be that any agreement on post-2019 transit will be minimal, i.e. short-term and flexible, to ensure transportation of gas to destinations that cannot easily receive Russian volumes via any other route e.g. Hungary and Slovakia.

To sum up. In the short term, the prospect of problems with gas transit, arising from e.g. the level of storage or reduced pressure in pipelines, cannot be ignored. But these are essentially strains on bottlenecks that might be exacerbated e.g. by a spell of very cold weather. So far this winter there has been one such spell, during which there were no serious disruptions to transit. In the longer term, i.e. looking beyond 2019, the prospects are unclear, because the way that events unfold will be heavily dependent on (i) the outcome of the Stockholm arbitration and (ii) any possible change in political relationships. All that can be said at this stage is that there is no obvious reason why political relationships might improve.

Demand in the domestic market

The precipitous decline in Ukrainian gas demand may have reached its limit in 2016. Consumption fell from 75 bcm in 2006 to around 60 bcm/year in the early 2010s, to 42.6 bcm in 2014 and 33.8 bcm in 2015. It fell only 0.6 bcm further in 2016. This reduction was concentrated in industry, where consumption fell by about one-tenth, continuing a rapid downward trend. But household consumption rose slightly, for the first time since 2010; consumption by district heating companies supplying industry and the public sector also rose. (Note that the data are not weather-corrected and these small changes may not reflect underlying trends.) The gas sector's own gas use rose, due to the higher transit volumes mentioned above. Consumption volumes as reported by Naftogaz, and estimates for eastern regions not controlled by Ukraine (based on press reports), are shown in Table 1.

An important driver of gas demand is the level of economic activity. In 2014-15, Ukraine experienced a slump second only to that of the early 1990s in severity: GDP contracted by 6.6% in 2014 and 9.9% in 2015. Estimates of GDP growth in 2016 are between 1% and 2%. Industrial production, which fell heavily in 2014-15, is estimated to have risen by 2.4% in 2016. Rising prices for steel and agricultural commodities, which Ukraine exports, have led to some cautious optimism about economic performance in 2017, but much depends on how the political situation and the military conflict develops.⁸ In any case, it appears that the worst of the economic downturn is over and, although gas demand may fall further, – particularly as price reform continues – it will not fall so rapidly as in recent years.

⁸ GDP growth estimates for 2016 are 1% (World Bank, *Ukraine Economic Update*, September 2016), 1.3% (SigmaBleyzer, *Ukraine: Macroeconomic situation*, December 2016) and 2% (ministry of the economy). On industrial production, *Concorde Capital Daily News*, 24 January 2017.

Table 1: Natural gas consumption in Ukraine 2014-2016, bcm

	2014	2015	2016
<i>(consumers at unregulated prices, from 1 Oct 2015)</i>			
Industry	14.4	11.2	9.9
Public sector	0.7	0.5	0.5
District heat for industry	0.4	0.3	1.6*
District heat for public sector	1.1	0.9	
Gas sector own use (transport, etc)	3.6	3.3	3.6
<i>(consumers at regulated prices)</i>			
Households	15.1	11.3	11.9
District heat for households	7.1	5.9	5.7
"Occupied areas" (Naftogaz)	0.4	0.4	0.01
Total consumption	42.8	33.8	33.2
Supplied to areas controlled by separatists			
	0	1.7	2.39
Crimea (estimate)	0.8	1.0	1.0
Total in areas not controlled by Ukraine	0.8	2.7	3.39

Source: Naftogaz Ukrainy, press reports

* In 2016, Naftogaz reported an aggregate total for district heat for industry and the public sector

Table 1 also indicates the volume of gas consumed in eastern areas not controlled by the Ukrainian government. These are: (i) Volumes delivered from Russia, via the Prokhorovka and Platovo interconnection points, to areas controlled by separatist forces in Donetsk and Lugansk. Gazprom reported these volumes as 2.39 bcm in 2016. Naftogaz does not count these deliveries as part of its gas balance, and has no means of collecting payment for them. (ii) Volumes delivered from the former assets of Chernomorneftegaz to consumers in Crimea, which has been annexed by Russia (not recognised by Ukraine or by the international community). These volumes are estimated at 1.0 bcm/year, i.e. about the same as the level of Chernomorneftegaz production in recent years. These volumes are now being supplemented by deliveries, via a newly constructed 400 km pipeline from Krasnodar region to Crimea, which was commissioned in December 2016 and will initially supply a power station at Simferopol.⁹ The arrangements for direct gas supply from Russia to Crimea, and to the separatist-controlled areas, are part of a wider trend towards closer economic and infrastructure links between these areas and Russia (e.g. circulation of the ruble as legal tender in the separatist-controlled areas). These arrangements are likely to remain in place pending a change in the political status of these areas.

From Table 1 it is clear that more than one-tenth of the reduction in Ukrainian gas demand since 2010 can be attributed to the cessation of supply from Ukraine to territories in the east. The remainder of the reduction is due to the economic downturn, and to some limited energy saving, largely as a result of price reform. Assuming continuing economic recovery, however slow, and no significant escalation of the military conflict, Ukraine's gas demand could stabilise in the next few years at around 32-35 bcm/year.

⁹ Gazprom, *Ezhekvartal'nyi otchet za 4-y kvartal' 2016 g.*, p. 67 (re. Donetsk and Lugansk). "Otkryt gazoprovod Krasnodarskii krai-Krym", kremlin.ru, 27 December 2016; "Gazoprovod s Kubani obespechit toplivom stroiashchuiusia v Sevastopole TES", RIA Novosti Krym, 27 December 2016; "Krym uzhe poluchil 20 millionov kubometrov gaza po gazoprovodu iz Kubani", RIA Novosti Krym, 11 January 2017.

Sources of gas supply

It seems likely that Ukraine's demand will be met principally from its own resources, and from reverse-flow deliveries from central European markets. Direct imports from Russia to Ukraine were reduced to zero in 2016, and Ukrainian policy is directed at continuing to meet all its demand from other sources.

The start of reverse-flow deliveries of gas to Ukraine via Slovakia, Hungary and Poland in 2014 initiated a measure of competition between these volumes, priced in relation to the European market, and direct Russian imports under the 2009 contract. In 2015, Naftogaz Ukrainy, the importer of all but a small part of these volumes, apparently used the availability of reverse flow to push down the prices of direct Russian imports. In 2016, the Ukrainian approach seems to have changed: importers (mainly but not exclusively Naftogaz) apparently paid a premium on the prices offered by Gazprom in order to minimise direct imports. In the third quarter, in particular, the prices of reverse flow deliveries (as reported by the economics ministry, based on customs data covering both Naftogaz and non-Naftogaz imports) were significantly higher than the price Gazprom offered. Naftogaz executives have attached importance to Ukraine's ability to get through the calendar year 2016 without direct Russian imports. Import volumes, and prices, for 2014-16, and for January 2017, are shown in Table 2.

Table 2: Gas imports into Ukraine

		From Russia			From Europe		
		Price, \$/mcm	Volume, bcm	Volume, annual total	Price, \$/mcm	Volume, bcm	Volume, annual total
2014	Q1	268.5	6.09	14.45	<i>n/a</i>	0	5.07
	Q2	485	7.84		282	0.60	
	Q3	<i>n/a</i>	0		352	1.63	
	Q4	378	0.52		353	2.84	
2015	Q1	329	2.16	6.07	294.84	3.615	10.0
	Q2	247	1.54		275.27	2.718	
	Q3	247	0		265.68	2.399	
	Q4	227.36	2.37		230-250	1.268	
2016	Jan	212	0	0	231.41	0.915	11.078
	Feb	212	0		200.39	1.254	
	Mar	212	0		198.57	0.478	
	Apr	<i>n/a</i>	0		188.08	0.245	
	May	<i>n/a</i>	0		181.5	0.096	
	Jun	<i>n/a</i>	0		184.3	0.020	
	Jul	167.57	0		210.88	0.410	
	Aug	167.57	0		199.1	1.414	
	Sep	167.57	0		199.61	1.496	
	Oct	<i>n/a</i>	0		180.55	1.544	
	Nov	<i>n/a</i>	0		188.93	1.547	
	Dec	<i>n/a</i>	0		230.01	1.659	
2017	Jan	<i>n/a</i>	0		229.51	1.453	

Sources: 2014-15, press reports, author's estimates. 2016-17, Ukrainian economics ministry statistics, as reported by Interfax-Ukraine

Ukraine's gas supply from its own production, which has been around 20 bcm/year in recent years, exceeded imports for the first time in 2015, and is likely to do so for the foreseeable future. There are two significant components of this upstream supply: (1) production by Ukrgezvydobuvannya (owned by the state via Naftogaz) (14.6 bcm in 2016) and Ukrnafta (controlled by the state) (1.3 bcm in 2016); and (2) production by private producers (4.2 bcm in 2016). Total production in 2016 was 20.1 bcm. There are prospects for increasing supply from both state-controlled producers and privately-owned ones. The government, in a road-map for the upstream published in February, stated its aim of raising output to 27 bcm/year by 2020. Industry participants see this target as extremely optimistic. The extent to which progress can be made towards it will be determined largely by regulatory reform. The state-controlled producers are required to sell gas at regulated prices to Naftogaz, their parent company, to support sales to residential consumers at regulated prices – in 2016, 4849 uah (\$177.78)/mcm, compared to import price levels of 6-7000 uah (\$220-256)/mcm. This is one of the types of price regulation that the IMF is urging the government to abolish. Naftogaz, which buys at regulated prices from Ukrgezvydobuvannya, is warning that, in that case, retail prices for domestic consumers would rise by around 40%. Supporters of the reform argue that it is crucial for the provision of investment funds to Ukrgezvydobuvannya, the shortage of which has for many years obstructed any significant production growth.¹⁰ The privately-owned companies, most of which are controlled by Ukrainian industrial groups, are also pressing for changes in the regulatory framework. In the first instance, they advocate a reduction in the subsoil tax (i.e. royalty) from current rates of 14% and 28% to a flat rate of 12% for new production; this proposal is now under discussion in parliament. They are also lobbying for further improvements in the transparency of licencing. The private producers have doubled their output since 2009-10 and are seen as a potential source of further strong production gains in the coming years.¹¹

Production gains from both state-owned and privately-owned producers will help to offset losses of potential production suffered by Ukraine as the result of the termination of prospective PSA projects. The three most significant of these terminations resulted directly or indirectly from the political and military crisis of 2014. 1. The Yuzivska unconventional gas project on the border of Donetsk and Kharkiv regions, with potential future production of 10 bcm/year, was subject to Ukraine's first Production Sharing Agreement (PSA) with an international major, signed with Shell in January 2013. Operations at the field were suspended in April 2014, due to military activity nearby, and Shell issued a notice of withdrawal from the PSA in June 2015. The licence was reissued in July 2016 to a small company that will have to seek partners with funds and experience if it is to be developed. 2. A consortium comprising ExxonMobil, Shell and OMV had won the exclusive right to negotiate a PSA for the 16,600 sq km Skifska block in the Ukrainian sector of the Black Sea, which is reported to have potential output of 10 bcm/year. After the annexation of Crimea by Russia, the project was put on hold by Exxon; neither it, nor development of the nearby Foroske block, can be expected to move forward while the status of Crimea is a matter of international dispute. 3. Exclusive rights to negotiate a PSA for the Olesska field in western Ukraine were awarded to Chevron in 2012 but talks were disrupted by the 2014 crisis. In December 2014 Chevron abandoned the negotiations. While international majors have continued to work in Ukraine, with ENI exploring blocks in the west of the country into which it invested in 2013, the momentum built up by inward investment prior to the 2014 crisis has been interrupted.¹²

To sum up, gas production has now been stabilised at around 20 bcm/year, despite the loss of Chernomorneftegaz. In the next few years, the main potential for new production is from the existing resources of both state-owned and privately-owned companies, and the pace at which it comes on probably depends mainly on how the regulatory regime develops. The wave of inward investment that

¹⁰ "2016 results: Ukraine increased its gas production", Naftogaz Ukrainy press release, 3 February 2017; "V Naftogaze uzhe razdumyvaiut nad povysheniem na 40% tarifov", *Argument*, 2 February 2017; Natalia Nepriakhina, "I fond s nami: chego MVF khotiat ot Ukrainy", RBK-Ukraina, 13 February 2017

¹¹ The private producers' aggregate output was 4.2 bcm in 2016, compared to 2.0 bcm in 2009 and 2.1 bcm in 2010.

¹² "Shell to withdraw from shale gas exploration in eastern Ukraine", *Financial Times*, 11 June 2015; "Legkaia dobycha", LIGA.Biznes, 28 July 2016; "Russia sinks Ukraine's Black Sea gas hopes", *Platts*, 20 March 2014; "Exxon says pursuit of Ukraine Skifska block on hold", *Reuters*, 5 March 2014; "Ukraina teriaet doverie investorov", *Zerkalo Nedeli*, 29 December 2014.

began in 2013 has been interrupted, postponing for several more years at least the development of the projects on which it had been targeted. In order to meet demand, Ukraine will continue to need imported gas. At current low levels of demand it has been able to do so entirely from reverse-flow deliveries. Ending direct Russian imports has been made a strategic priority by the government and by Naftogaz, and this seems entirely possible. Total capacity for reverse-flow deliveries, as reported by Naftogaz after the expansion of interconnection capacity with Slovakia, is 22 bcm/year.¹³ (It is understood that of the 15 bcm capacity via Slovakia, 5.2 bcm is interruptible.) Assuming 20 bcm/year of domestic production, this implies that demand would have to rise above 40 bcm/year before any call on direct imports from Russia. There is little prospect of such a surge in demand in the next few years. There is also the issue of comparative prices, and the evidence from 2015-16 was that Ukrainian companies were prepared to pay a considerable premium for this diversification away from direct imports. (See Table 2.)

There are scenarios in which direct imports from Russia might be scaled up again: 1. If a wide differential opened between prices in Europe and prices Gazprom wished to offer Ukraine. But at current low price levels in Europe, and the trend towards convergence of Gazprom's prices in Europe with hub prices, this seems unlikely. 2. If Gazprom (and possibly even other Russian companies) began to compete actively for sales in the Ukrainian market – which would require a sea-change in political relationships that seems extremely unlikely at present.

Market development

The three most important aims of the gas market reform being undertaken by the Ukrainian government are:

- creation of a competitive market underpinned by a legal and regulatory framework compatible with the European Union's;
- the break up of Naftogaz Ukrainy, in accordance with that framework; and
- the abolition of price regulation and, in the case of residential customers, its replacement by a system of direct subsidies.

These reforms are envisaged as leading to creation of a liberalised market with competition by a range of upstream players, with prices at a level that reflects cost as well as the supply-demand balance.

The *transition towards a new legal and regulatory framework* has two main bases: a gas market law, adopted in April 2015, and a law on energy market regulation, adopted in September 2016 after considerable delay and parliamentary opposition. Secondary legislation on price regulation and market reform (freedom of consumers to choose suppliers, etc) has been adopted, while amendments to laws to prepare for Naftogaz unbundling were held up by parliamentary opposition. Efforts to move to transparent and non-discriminatory third-party access – i.e. the adoption of network codes and their harmonisation with neighbouring countries, the establishment of market-based balancing mechanisms – have made considerable progress in 2016. Requirements for the storage of gas volumes for insurance purposes, described by the Energy Community as a possible barrier for market participants, and criticised by trading firms, have been abolished.¹⁴

The presence of Naftogaz as a dominant supplier (accounting for nearly 75% of wholesale trading in 2014 and 73% in 2015), and the delays in unbundling the company, have inevitably stymied some aspects of the reform process. But Naftogaz has in effect ceded most of the market for industrial customers to other traders: it supplied less than 35% of that market in 2014 and just 22% of it in 2015,

¹³ Entry capacities are 15 bcm/year at Uzhhorod (from Slovakia), 1.5 bcm/year at Drozdovychi (from Poland) and 5.5 bcm/year at Berehove (from Hungary). Naftogaz has booked 11 bcm of capacity from Slovakia up to 2020, and a further 2.9 bcm up to the end of 2017. Naftogaz Ukrainy, *Annual Report 2015*, pages 28-29, 100 and 106.

¹⁴ "Ukraine Regulatory Authority" page, European Energy Community web site <www.energy-community.org>; Energy Community, *Monitoring of the Gas Market Reform Implementation Plan – Status Quo 1 Year Later*, 20 June 2016; Energy Community, *Ukraine: Energy Community CESEC Report*, August 2016

while continuing to supply 100% of the residential and public sector markets, where sales prices are regulated.¹⁵ In 2016, private traders imported more than 3 bcm, in addition to purchasing gas from Ukrainian producers. Factors that inhibit the development of the traded market include very high transport tariffs, up to three times as high as those in neighbouring European countries. Sales prices for industrial sector customers were liberalised in October 2015, a major step forward for the reform programme, but Naftogaz retains a *de facto* ability to set a range of prices each month, by virtue of its dominant market position.¹⁶

One sign of the progress of market reform is the entry into the Ukrainian market of three traders operating in the European market: Engie, Trailstone and DufEnergy. All three have participated prominently in exporting reverse-flow gas to Ukraine since 2014, and in October 2016 signed agreements providing for them to transport and store gas in Ukraine; Engie began to do this with small volumes from January 2017.¹⁷

The *break-up of Naftogaz*, although favoured by the Ukrainian government, the IMF and Naftogaz management, faces several obstacles. First, work on the separation-out of its transport division, Ukrtransgaz, has been postponed until the completion of the arbitration in Stockholm. Second, the process has been disrupted by political and parliamentary opposition. Third, attempts to find investors in Ukraine's transmission system have made little progress, due to the uncertainties surrounding the future of the gas transit business mentioned above.¹⁸

Finally, *the abolition of price regulation*, and in particular the liberalisation of prices for residential customers, may prove the most difficult part of the reform to complete. The government, in consultation with the IMF, had in 2014-15 worked out a schedule for raising the prices of gas, heating, and other municipal services to full cost-recovery levels (defined as linked to import prices). In 2016, against a background of low international gas prices, the government accelerated the schedule of increases in regulated prices. From 1 May 2016 prices for most residential customers rose to 6897 uah (\$252.87)/mcm, from a range starting at 3600 uah (\$132/mcm)/mcm previously. On 1 July 2016 district heating tariffs were increased by an average of 110%. The government and IMF agreed that a quarterly adjustment mechanism would be applied to regulated prices, and that they would be fully liberalised no later than 1 April 2017. It has been reported, though, that in negotiations with the IMF over the latest tranche of its financing programme, the government is arguing that price regulation will need to be extended, both for residential customers and for Naftogaz purchases of gas from state-controlled producers. In February 2017 prime minister Volodymyr Hroysman stated publicly that the government would not implement any increases in tariffs this year.

There are other aspects of price liberalisation on which the authorities and the IMF are at odds, too. These include: a scheme under which households are allowed to pay winter gas and heating bills by instalments during the warmer summer months, which the IMF is urging should be scrapped; consumption norms for households that receive government subsidies for gas, which the IMF is urging should be reduced further than the government proposes; and a scheme under which government subsidies for households are paid into special accounts and distributed to suppliers by the authorities, whereas the IMF proposes that suppliers are paid directly.¹⁹

¹⁵ Naftogaz Ukrainy, *Annual Report 2014* p. 76, *Annual Report 2015* p. 97

¹⁶ BiznesTsenzor listed the largest importers among private traders in 2016 as: Metida (0.991 bcm), ERU Trading (0.684 bcm), Arcelormittal Krivoi Rog (0.181 bcm), Ukrgaz (0.139 bcm) and Inkorgaz (0.118 bcm). "Kto postavlial gaz v Ukrainu", BiznesTsenzor, 24 Jan 2017. On market development, "Pochemu liberalizatsii gazovogo rynku poka tak i ne proizoshlo", *Forbes Ukraine*, 20 September 2016; P. Vorobyov, "Making Ukraine Europe's new gas supplier", *Petroleum Economist*, September 2016, pp. 42-45

¹⁷ "V dekabre evropeiskie kompanii nachnut postavliat' gaz", *Zerkalo Nedeli*, 24 November 2016; "Engie starts gas supplies to Ukraine", Interfax-Ukraine, 12 January 2017

¹⁸ IMF, *Ukraine Country Report 16/319*, September 2016, p. 14; "Ministry move on Ukrtransgaz reversed", *Argus FSU Energy*, 22 September 2016; "Analysis of situation", Dixi Group, 19 September 2016

¹⁹ IMF, *Ukraine Country Report 16/319*, September 2016, pp. 14-15; "Kobolev – o tarifakh, dolgakh i novykh koznyakh Gazproma", *Fokus*, 11 April 2016; "Groisman otritsaet vozmozhnost' povysheniia tsen na gaz", Interfax-Ukraine 15 February

The ferocity of the political dialogue on these issues is obviously due to the disastrous collapse of living standards in Ukraine. After the steep price increases of 2016, households found themselves paying 25% or more of their monthly income for municipal services, i.e. gas, heat, hot water and electricity, and the level of non-payment has leaped up in the winter months.²⁰ The number of households who qualify for the direct subsidy scheme put in place by the government rose to 9.45 million households, up from 7.5 million in 2015. The background is a steep fall in average real wages: the IMF estimated that at the end of 2015 they were about 30% of their peak in 2013, due to economic collapse, inflation and hryvna devaluation. The World Bank estimated that the proportion of the population living in severe poverty (less than \$5/day per person at 2005 purchasing power parity rates) rose to 5.8% of the population in 2015, and the proportion in moderate poverty to 22.2%; by another measure, i.e. those with incomes under the minimum wage, 32% of the population is in poverty. Slight improvements are projected for 2016-17, but the difficulties of implementing steep price increases under these conditions are clear.²¹

Conclusions

The most likely scenario for the relationship between Russia and Ukraine in the gas sector is that it will continue to weaken, and that, after 2019, the issues surrounding it will fade into the background. Ukraine is likely to continue to keep direct Russian imports at zero, or as near to zero as possible. For Ukraine to require substantial direct imports from Russia, two apparently contradictory conditions would be needed. On the one hand, Ukrainian gas consumption would have to rise above 40 bcm/year. This is only likely with a considerable economic recovery, accompanied by a greater degree of political stability, and/or the return to the Ukrainian gas balance of consumers in the eastern areas currently not under its control. On the other hand, for direct imports from Russia to be required, some serious obstacles would have to arise (i) to Ukraine maintaining the level of domestic production and (ii) to the functioning of the reverse flow trade. But such possibilities seem, on the contrary, only likely to arise in the case of a renewed economic downturn and political crisis.

With regard to transit, Russia is likely to continue to move towards maximum possible diversification of transit away from Ukraine. Although it cannot reduce transit volumes to zero by 2020, it will most likely move as far as possible in that direction, and use the Ukrainian transport infrastructure only as a route of last resort. Transport after 2020 will probably be covered by shorter-term, more flexible contracts. Possibilities for managing the transit relationship depend partly on the outcome of the arbitration cases now pending in Stockholm; but the decisions may not point clearly in any direction. Other scenarios – such as larger volumes of transit, underpinned by an improved relationship between Russian and Ukrainian companies, or the sale of Russian gas into the Ukrainian market at delivery points on Ukraine's eastern border – are technically and commercially possible, but, without a significant improvement in political relationships, can be discounted.

Provided that these assumptions, that the Russia-Ukraine gas relationship will continue its decline, are correct, then the questions about the development of the Ukrainian market will come to the foreground. As Ukraine emerges from the current period of adversity, it will have a domestic gas market with a turnover between 30 and 40 bcm/year (smaller than Turkey, Germany, Italy and the UK, but in a range similar to the Netherlands, Spain and France).

It is likely that the proportion of Ukraine's gas demand met from its own resources will continue to increase. The fact that production has remained at about 20 bcm/year in the last few years, despite the

2017; Natalia Nepriakhina, "I fond s nami: chego MVF khotiat ot Ukrainy", RBK-Ukraina, 13 February 2017; "Igra v monopol'ku", *Zerkalo Nedeli*, 25 February 2017

²⁰ The cost of municipal services (i.e. gas, water, electricity and repairs) for a two-room flat has risen from 17% of average household earnings in 2014 to 31% in 2017, according to research by the Ukrainian Institute for Strategies for Global Development and Adaptation. *Korrespondent*, 25 February 2017, p. 26.

²¹ "Ukraine is Fighting its own Cold War", Bloomberg, 6 February 2017; "Uroven platezhei za kommunalku upak", Golos.ua 23 January 2017; "V Ukraine za kommunalku platiat tol'ko te, kto oformil subsidiuu", *Vechernyi Kiev*, 2 February 2017; IMF, *Ukraine Country Report 16/319*, September 2016, p. 34; Aleksandr Struchenkov, "Dinamika Bidnosti v Ukrainy", *Spil'ne*, September 2016

loss of Chernomorneftegaz volumes, is significant. The winding-up of PSA projects and withdrawal of foreign investment is a setback for efforts to raise domestic production over the long term, but considerable progress may be made from existing assets, whether state- or privately-owned, albeit dependent on further changes in regulation. Even if the efforts at reform are not sufficient, or not sufficiently rapid, to stimulate any substantial increase in production, it seems unlikely that Ukraine's domestic production will fall below 20 bcm/year, a level that it maintained through the 1990s slump and the political and military crisis of the last three years.

Market reform, which has made more progress in the last three years than in the preceding decades, still faces formidable obstacles. While there is agreement among the authorities that Naftogaz should be broken up, transforming Ukrtransgaz into a commercial company, as proposed, will be difficult given the uncertainties surrounding the transit business. Price reform accelerated last year, in the context of comparatively low import prices, and supported by the introduction of a scheme of direct subsidies, an impressive administrative feat. But it will continue to face obstacles related to households' difficulties in paying steeply increased bills at a time of drastically falling living standards. Nevertheless, the political impetus given to reforms by the theme of energy independence may help to overcome these and other problems.

Note 1. Stockholm arbitration

Gazprom has stated that it has made claims under the sales contract signed with Naftogaz in 2009 for payments of debts accumulated in 2013-14 and for interest on those payments. It has been widely reported that, in further filings to the tribunal, Gazprom made claims for under-nominations, under the "take-or-pay" clauses in the contract. Gazprom has stated that it has made claims under the transit contract for unsanctioned withdrawals of gas in Ukraine. Gazprom has stated that its claims under the sales contract total \$31.75 billion, and under the transit contract \$5.861 billion.²²

Naftogaz has stated that it has made claims under the sales contract for repayment of sums paid above the prevailing market price, under a clause providing for price revision. Naftogaz has stated that it has made claims under the transit contract due to provisions, including tariff-setting provisions, being invalid in law; for compensation related to these provisions; and for compensation for Gazprom's failure to supply negotiated volumes for transit. Naftogaz claims the right to transfer its rights and obligations under the transit contract to Ukrtransgaz. Naftogaz has stated that its claims under the sales contract are \$18.1 billion, and under the transit contract more than \$10.2 billion.²³

The mutual claims under the sales contract have been combined in one case, on which a decision is now (March 2017) expected by the end of April 2017. The claims under the transit contract have been combined in a separate case, on which a decision is now expected by the end of June 2017.

Note 2. Storage levels

In view of the repeated disputes between Gazprom and Naftogaz about whether levels of storage in Ukraine are sufficient to support the necessary transit operations at peak times of year, the OIES has surveyed the publicly available information about storage volumes. Some key data are presented in Table 3. This shows that the level of storage at the start of the heating season in October has fallen considerably since 2006, but not as steeply as the level of gas consumption in Ukraine and the level of gas transit. In other words, relative to the levels of transit and consumption, the levels of gas in storage have risen. The exception to this trend was in 2016, when transit volumes increased relative to volumes in storage.

²² Gazprom, *Ezhekvartal'nyi otchet za 4-y kvartal' 2016 g.*, p. 289; "Summa iskov Gazpromu k Naftogazu sostavila \$23.8 mlrd", Interfax, 5 May 2015; "Gazprom: summa pretenzii k Naftogazu prevyshaet isk Ukrainy k RF", Prime Tass 1 May 2015

²³ Naftogaz Ukrainy, *Annual Report 2014*, pp. 26-27; *Annual Report 2015*, pp. 32-34

Table 3: Ukraine storage, consumption and transit

bcm		2006	2009	2012	2013	2014	2015	2016
Pumped in to storage, Apr-Oct	bcm	17.6	10.1	13.4	9	9.7	9.3	6.3
	<i>as % of 2006</i>	<i>100</i>	<i>57</i>	<i>76</i>	<i>51</i>	<i>55</i>	<i>53</i>	<i>36</i>
Volume in storage at start of heating season	bcm	24.8	25.5	20.3	15	16.6	17	14.74
	<i>as % of 2006</i>	<i>100</i>	<i>103</i>	<i>82</i>	<i>60</i>	<i>67</i>	<i>68</i>	<i>59</i>
Total consumption	bcm	75.3	53.1	54.8	50.4	42.6	33.8	33.2
	<i>as % of 2006</i>	<i>100</i>	<i>71</i>	<i>73</i>	<i>66</i>	<i>57</i>	<i>45</i>	<i>44</i>
Total transit	bcm	128.5	95.8	84.3	86.1	62.2	67.1	82.2
	<i>as % of 2006</i>	<i>100</i>	<i>75</i>	<i>76</i>	<i>67</i>	<i>48</i>	<i>52</i>	<i>64</i>

Sources: GIE, Naftogaz Ukrainy, author's estimates