Russia's Natural Gas:
The Strategy and the State Behind It

Stephen Buryk

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Department of International Relations

Advisor: Professor Menon

Lehigh University

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Abstract: The deterioration of natural gas relations between Russia and its main transit corridor, Ukraine, has led to successive stoppages in the flow of natural gas to the European Union. This instability can be directly attributed to Russia's use of natural gas as a tool of foreign policy in Eastern Europe, and the effects of these policies on the EU and Russia's domestic political economy. In order to understand the main drivers behind the breakdowns, this thesis will examine the geopolitical implications of natural gas trade, Russia's external strategy for taking advantage of the commodity's unique attributes, and the internal architecture of the Russian state that makes this strategy possible.

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Introduction

In early January 2009, the Russian government halted natural gas exports through Ukraine, abruptly choking off 42% of the European Union's gas imports. The countries in Russia's immediate vicinity were the hardest hit by the embargo. Bulgaria, dependent on Russia for 96% of its gas needs, could do little to make up for the shortfall when the tap completely closed in the middle of the night.[1] While outside temperatures fell to a frigid -10ºC, 800,000 Bulgarian households lost heat and hot water. Many businesses and industrial firms were forced to cut output or shut down, leading to estimated financial losses of $300 million.[2] In the West, where supplies from the Middle East and the North Sea supplement Russian gas, dwindling stockpiles were a harbinger of increased energy insecurity.

This energy crisis was a direct effect of Russia's use of natural gas as a tool of foreign policy in its relations with former Soviet states in Central and Eastern Europe. Politically weak, financially poor, and dependent on Russia for the preponderance of their gas needs, these countries face a Kremlin that is willing to use natural gas both as a carrot and a stick. If a state chooses to placate the Kremlin with pro-Russian policy or a stake in its downstream gas distribution system, the Russian government will reciprocate with amicable contract terms and subsidized prices. On the other hand, a state that defies the Kremlin by choosing to pursue integration with the West will face a bellicose bargainer capable of using price hikes, pressure to engage in debt for equity swaps, and outright corruption to regain lost control.[i]

The exception to this rule is Russia's main conduit of natural gas – Ukraine – a former Soviet republic through which 80% of Russia's exports to Europe flow. Because of its importance in bringing gas to Russia's wealthiest customers, Ukraine has the leverage to haggle

[i] A debt for equity swap is a transaction where a debtor gives a creditor ownership of an asset in return for concessions on debt repayment.

with the Kremlin for discounted gas. Still, the country's fractured politics, widespread corruption, incomplete market transformation and massive energy inefficiency erode its bargaining position and create instability in gas trade.[3] The conditions caused by the economic warfare waged between Ukraine and Russia led to successive European gas embargoes in 2006 and 2008 and the tumultuous negotiations continuing today. As long as the majority of Russia's gas flows through Ukraine, the Kremlin will be forced to pick between political power over its neighbor or the stability of shipments to Europe.

This symmetry of power between Russia and Ukraine puts Europe in a perilous position, particularly because 80% of the gas bound from Russia to Europe passes through Ukrainian pipelines. When the Kremlin chooses to put pressure on Ukraine to pay higher prices or cede other concessions, as Moscow did during the crises, the reliable delivery of 42% of Europe's gas imports is called into question. European leaders are now compelled to do anything in their power to ensure that gas from Russia continues to flow uninterrupted. These states may find it individually beneficial to forge ties with Moscow on a bilateral basis, but these deals enable the Russian government to play European states off against one another, preventing the formation of a united EU energy policy toward Russia. As for Ukraine, its problems become particularly acute as the Russian gas conglomerate Gazprom begins the construction of bypass pipelines that will connect Russia directly to Western Europe and reward those European countries that cooperate with Moscow.

The dilemmas caused by the Kremlin's use of gas as a tool of foreign policy are not limited to outside Russia's borders. No one can doubt the short-term effectiveness of the Kremlin's strategy. Its consolidation of the oil and gas sector and creation of national champions, vertically integrated state conglomerates created to stand toe to toe with Western competitors,

have returned stability to a country that was in a state of chaos during the 1990s. However, governance under the concept of "Sovereign Democracy", the political ideology that favors a strong executive and the "strategic management" of natural resources, has come at a cost.[4] Russia's social institutions are weak, its politics are corrupt, and its economy is one-dimensional. The Kremlin relies on authoritarian control and capricious regulations to ensure absolute control over resources and to create stable political outcomes. This fusion of the state and the economy has resulted in an overreliance on energy revenues, which are subject to fluctuations in price, as the prime basis of economic prosperity and political stability. Thus, Russia's strength has also become its weakness.

This pattern is unsustainable for all involved – change is inevitable. What matters most is whether the changes that occur increase the stability of the supplier, transporter, and customer relationship, or degrade it to a point where breakdowns in the exchange of a vital commodity become more frequent and destructive. In order to understand the driving factors behind the current instability, this thesis will be organized in three main sections. The first section will be devoted to understanding why natural gas trade cannot be understood through a strictly economic lens, and why geopolitical considerations are paramount to understanding today's economic disputes. The next section will build on the groundwork of the first, identifying the major flashpoints in Europe's gas trade by detailing Russia's natural gas strategy, Ukraine's involvement, and the dilemmas faced by the members of the European Union. The final section will examine the development of the Russian state and economy after the collapse of the Soviet Union, specifically focusing on the recentralization of political and economic power in the state and its effects. Combined, these three sections will provide a detailed analysis of the geopolitical implications of gas trade, Russia's external strategy for taking advantage of the commodity's

unique attributes, and the internal architecture of the Russian state that makes the strategy possible. The study will conclude with a set of policy proposals aimed at reducing the instability in Eurasian gas trade.

Chapter 1: Power in the Pipe

Natural gas is not an ordinary commodity. Unlike fuel oil, fruit, vegetables, consumer electronics and many other goods that regularly trade between states, this vital economic requirement is not solid or liquid at room temperature. Although seemingly innocuous, this attribute limits the options for transporting gas to two: pipeline and liquefaction.[ii] Because of the high costs of liquefying natural gas and shipping it by specialized tankers (LNG), pipelines are the dominant way gas is transported: 93% of global gas demand was sent through this medium in 2004.[5] Gas trade is further concentrated because pipeline construction is very capital-intensive, and subject to large economies of scale and geographical constraints.[6] Concentration also exists on the supply side. Natural gas deposits are not distributed evenly across the globe; they are found only in places that have the proper geologic formations to capture the gas as it forms from organic material. This concentration of routes and supply creates market power for suppliers and transporters, leading to higher prices for a commodity that is vital to economic welfare.

High prices, however, are not the only issue downstream customers must face. When economic terms like supplier and transporter are replaced with the term sovereign state, a political component is added to the equation. States do not always act in an economically "rational" manner: turning a profit may not always be their sole, or even main, motivation. They can choose to view trade simply as a means of economic enrichment in the liberal spirit, or they can easily adopt a more mercantilist view, where economic efficiency takes a back seat to considerations of political power. Thus, in gas trade, geography, and the politics of the land through which the gas passes, are just as important as discrete considerations of supply and

[ii] Natural gas is liquefied through condensation by cooling the gas to extremely low temperatures. The resulting LNG is shipped by cryogenic tankers that are equipped to keep the fuel from turning back into a gas during transport.

demand. Energy security can no doubt come into question when a supplier or transporter state chooses motives other than profit, which is clearly the case in the trade of Russian gas.

There are very few barriers between the Russian state and its most strategic industry; the Kremlin keeps vigilant watch over Russia's lucrative gas deposits and pipelines. In 2007, Gazprom (the Russian state-owned gas monopoly) oversaw 85% of Russia's production, and owned 100% of Russia's transit system.[7] Through these means, the government closely controls the largest gas reserves on earth – 47.5 trillion cubic meters, which translates to 27-28% of the world's total. On top of having vast deposits of its own, Russia also acts as the main transportation bridge for shipping gas out of the Caspian Basin to the European continent, as illustrated in figure 1-1 (see appendix).[8] These reserves, in countries such as Iran, Turkmenistan, Azerbaijan and Kazakhstan, account for another 23% of world gas supplies.[9] The Russian government has consistently sought to constrain the trade of natural gas across Eurasia to keep its geographic monopoly and the advantages that flow from it intact.

The first advantage for the Kremlin is financial. The amount of money that changes hands in natural gas and oil markets is enormous. In 2007, the World Bank estimated that 64% of Russia's export revenues were attributable to the sale of hydrocarbons.[10] This massive flow of foreign currency accounted for anywhere from 50 to 75% of Russia's budget revenues.[11] Dependent on hydrocarbon revenues to finance itself, the Kremlin is unlikely let its lifeblood be controlled by domestic or foreign actors not linked the government. By closely controlling the flow of gas out of the country, the Kremlin ensures money will continue to flow in.

Motivations for control go beyond those associated with fiscal stability. It is undoubtedly of great strategic advantage to own something a neighbor desperately needs. Russia's reliance on natural gas for hard currency is mirrored by Europe's dependence on the commodity for energy.

The EU depends on Russian natural gas for 23% of its total consumption.[12] This number, however, is a misleading aggregate. As figure 1-2 shows, Europe's dependence on Russian energy increases as one moves east across the continent, hitting 100% in some Central and Eastern European countries and all of the Baltic nations. Gas consumption is expected to grow by 2.1% a year from 2000 to 2030, making it the fastest growing primary fuel in Europe.[13]

Because of its lack of domestic supplies, the EU must rely on external sources for its future and current energy needs, as figure 1-3 illustrates. Falling domestic production has forced the EU's reliance on imports up 40% in the ten-year span between 1996 and 2006. Russian imports currently make up 42% of the total.[14] In the case of a supply disruption of technical or political dimensions, switching between fuels for a prolonged period of time in the short term is nearly impossible – natural gas has no immediate substitutes. Although alternative fuel sources like coal, oil and various "renewables" exist, it takes significant time and infrastructure development to make the conversion from one fuel source to another.[15] For the EU, Russia's highest-paying customer, dependence on natural gas is certain in the short run.

The first two advantages just listed are undoubtedly appealing enough to warrant the Russian government's intervention into gas markets. However, they fall short of explaining why gas can be used as an effective tool of foreign policy, as dependence cuts both ways. Although Europe relies on the commodity for energy, the Kremlin also desperately needs the money from gas sales to finance itself. So, what allows Russia to use natural gas as an instrument of coercion? For many countries in Europe reliant on Russian gas, dependence runs deeper. Not only is it impossible for them to substitute for another fuel source, they are stuck with their supplier. In contrast, consider the example of oil, another vital primary fuel. Although the US and many other countries are highly dependent upon oil, they are able to procure it with

relatively short notice from many other sources. Because oil is a liquid at room temperature, it can be easily transported by a variety of means, including pipeline, tanker, truck, and railroad car.[16] Many transportation options allow oil customers to buy the commodity from a diverse set of suppliers, who are aware that if they turn off the tap completely, another company will be happy to oblige a consumer's needs.[iii] Thus, in the case of oil, liquid international markets ensure that supply meets demands in a transaction that is mostly business, depriving supplier states the option of using the liquid commodity for coercive power in foreign policy.

By contrast, the transportation of natural gas is constrained into limited set of long-haul pipelines. So instead of multiple suppliers being connected to consumers via an intricate array of transportation methods, gas consumers are tethered to their upstream suppliers by pipeline. Due to the lack of multiple buyers and sellers in market for natural gas, contracts are not short-term and based on spot prices. Gas contracts are usually long term, setting the quantity, price, and terms of exchange in advance.[17] Marshall Goldman describes the natural gas pipelines that tie Europe to Russia as an "umbilical chord", linking the economic welfare of the downstream party to the decisions of the supplier.[18] Above all others, this characteristic of the trade of natural gas makes it able to be wielded like a weapon. Limited transportation routes leads to limited supply options, which puts the bargaining power squarely in the hands of the country that holds control of both.

[iii] Although OPEC provides some level of cooperation through output controls, it is rarely coherent enough to enforce a complete stoppage of supplies, except in rare circumstances like the oil embargo of the 1970s. Even then, consumer countries subject to the embargo were able to get oil from defector states, the most prominent being the Soviet Union (Goldman, Petrostate 46). OPEC's influence on world petroleum markets has also waned considerably in the decades since the embargo. In 2007 non-OPEC members controlled 60% of world production (Toni Johnson, *Backgrounder: Non-OPEC Oil Production,* Council on Foreign Relations).

Chapter 2: Gas-Powered Policy

Two Europes Connected

The Kremlin's power over those that buy its gas is not immediately apparent. OAO Gazprom is the world's largest natural gas company. It accounts for 17% of global gas production, and acts as a gatekeeper for reserves flowing from the Caspian Basin.[19] One might think that with this level of monopoly power, this Russian gas giant would sell its scarce commodity for a premium price over and above what would be charged in a competitive market and thereby accumulate vast profits. However, Gazprom stays clear of price gouging in many potentially lucrative markets. For example, within Russia its prices are kept at a level that is one-fifth the going rate in Western Europe (around $370 per thousand cubic meters (mcm) in 2008).[20]

Nor does subsidization end at the Russian border. As shown in figure 2-1, many of the countries in Russia's immediate vicinity received a steep discount on their gas purchases in 2007. Belarus was charged just $100/mcm, and Moldova only $170/mcm. Strangely, other states in Russia's "near abroad" were not nearly as lucky.[iv] Estonia and Poland paid $260/mcm and $240/mcm respectively for the exact same hydrocarbons, coming very close to the average prices in Western Europe when transportation tariffs are taken into account.[21] What explains Gazprom's inconsistent prices?

The answer is simple. Although *Gazprom* may receive less monetary revenue from subsidized states, the *Kremlin* is always happy to accept other forms of payment – and in a variety of economic and even political forms. Consider the example of Belarus, which has traded a variety of political and economic benefits to secure cheap gas from Gazprom. In a show of political solidarity, Belarusian leaders chose to postpone their accession into the World Trade

[iv] "Near abroad" refers to the countries that emerged from the break up of the USSR that Russian leaders perceive to be in their sphere of influence.

Organization until they were allowed to join together with Russia and Kazakhstan as a yet-to-be formed customs union.[22] On the economic side of the ledger, Belarus allowed Gazprom to purchase a section of the Yamal European export pipeline,[23] and will become co-owner of the Belarusian gas transportation system operator, Beltranzgaz, in 2010.[24] On the other hand, the nearby Baltic States are charged near European prices for their natural gas. Why? Instead of placating the Kremlin politically and working closely with Gazprom in domestic gas distribution, these states all chose to enter the European Union and NATO, and retain exclusive control over their respective gas transportation systems.[25]

For some of Russia's neighbors, deals to secure low prices make sense. Although the former members of the USSR and its satellite states are independent politically, many must still rely on the Russian pipeline system for the majority of their gas needs. Data on the percentage of individual states' domestic gas consumption reliant on imports from Russia clearly shows the extent of this dependence. Figure 1-2 in Chapter 1 lists the major Russian gas recipients in 2006. Of these countries, 18 of 25 are former members of the USSR or its constituent states. As exhibited in figure 2-2, these 18 rely on Russia for an average of 71% of their domestic gas consumption, while the countries outside this group average just 54%. Eight of these former constituent states rely on Russia for over 85% of their domestic gas consumption.[26]

Trading political and economic concessions for low prices becomes even more attractive to the states in Russia's near abroad when dependence on Russian gas combines with economic woes. Eastern Europe is laden with energy intensive (and massively inefficient) industry, holdovers from the region's days of command and control economic planning. The economies of Central and Eastern Europe tend to use double the EU average of energy per unit of GDP, and inefficiency increases substantially as one travels east.[27] These economies were built in the

Soviet period under the assumption that cheap energy would continue to flow indefinitely from the USSR.[28] The Kremlin is willing to continue providing subsidized rates and favorable contracts, but expects that these states will act in a way that is "conducive to its own interests."[29]

The situation changes as one moves west across the European continent. Gas supplies from Norway, Algeria, Nigeria and Middle Eastern countries, both from pipeline and LNG, have absorbed much of the growth in EU gas demand over the last three decades, forcing the share of gas imported from Russia down from a high of 75% in 1990 to 42% in 2009.[30] In addition, the EU has a distinct advantage over its eastern neighbors when it comes their dependence on Russian energy – the Kremlin depends on the EU to balance its budget. Indeed, Gazprom derives two-thirds of its revenue from gas sold west of Ukraine.[31] Still, gas sales to Western Europe are not devoid of political calculations. They continue to be made through long-term contracts, which forge political bonds between supplier and consumer through shared investment, common bureaucracies and high-level personal contact between leaders. EU leaders seek to ensure that the flow of natural gas remains predictable, and Russia is happy to offer stable, ever-increasing gas flows in return for high prices.[32]

If the Kremlin could have its way, it would be able to carry out both of its strategies with impunity. It would be a reliable, disciplined supplier of a critical commodity to the EU. States in Eastern Europe that wished to receive low prices would have to provide political and economic concessions, or risk endangering their economies. But transforming natural gas exports into political leverage is not as easy for the Kremlin as the data on Europe's dependence might suggest. Standing in Russia's way is Ukraine, a bordering state that, like many others in the area, is reliant on Russia (or Russian transport routes) for a high percentage (66%) of its gas consumption.[33] It also has the dubious distinction of being considered the world's least energy-

efficient country: it uses double the natural gas Germany does per unit of GDP and consumes more gas than Poland, the Czech Republic, Hungary and Slovakia combined.[34] These two characteristics should make Ukraine a perfect candidate for being co-opted by Moscow. In some ways, it has been – political concessions over pushing back NATO referendums and extending the lease of Russia's Black Sea fleet were traded for a lower gas price in late 2006.[35] However, Ukraine has one massive bargaining chip. It is the main transit corridor for 80% of the Russian gas bound for Europe (128.4 billion cubic meters (bcm) in 2006).[36] Besides deliveries that flow directly to Finland and Turkey and a smaller pipeline running through Belarus, the Ukrainian corridor dominates the flow of gas west.[37] This makes it the chokepoint in the system, a fact revealed during the gas conflicts that erupted between supplier and transporter in 2006 and 2009.[38]

The Fraying Link

Since the break up of the Soviet Union, Ukrainian-Russian gas relations have become increasingly volatile. Today, the states' joint gas transportation and distribution system is frozen in time – flows continue as if the USSR still existed, but without the guiding force of a common government.[39] During the 1990s, Naftogaz (Ukraine's state owned gas company) was unable to pay for about 50 bcm of gas annually. In retaliation, Russia would regularly cut supplies to Ukraine, and Ukraine would respond by siphoning gas bound for Europe.[40] At first glance, it may seem that the Ukrainians were clearly at fault. However, assigning blame to a particular party is extremely difficult, as evidence suggests that oligarchs on both sides were behind the alleged theft.[41] This back and forth continued until Ukraine's debt to Russia ballooned to $2.8 billion by early 2000, nearly double what it owed in 1998.[42] The amounts stolen were substantial. From 1999 to 2000, the Kremlin estimated Ukraine stole 15 bcm worth almost $900 million from

their export pipes.[43] When Putin became president in 2000, he vowed not to tolerate the tactic anymore.[44] To reduce the dependence on the Ukrainian corridor, the new administration proposed the construction of a land-based bypass pipeline that would shift 25% to 50% of natural gas to a route through Belarus and Poland.

The message was understood in Ukraine, the bypass line was abandoned, and relations between Moscow and Kyiv became much better as the states worked to improve the existing system to prevent disruptions. An international consortium of Russia, Germany and Ukraine was proposed to refurbish Ukraine's aging transit system with $2.5 billion in funds up front and $15 billion over the next decade.[45] The project was slated to increase Ukraine's gas throughput by 25%.[46] By 2004, it seemed instability in the Russo-Ukrainian gas relationship was nearing its end.[47] However, the coordination and cooperation were short lived. The transaction between Gazprom and Naftogaz became significantly more opaque as RosUkrEnergo (RUE) replaced EuralTransGaz as the main intermediary between Ukraine and Turkmenistan, where the majority of Ukraine's gas originates (more on this switch and intermediaries in general below). Simon Pirani of the Oxford Institute for Energy Studies sees two reasons for the switch. First, Russia wanted to have a stake in the transaction (Gazprom owned 50% of RUE). In addition, the Kremlin wished to end Kiev's direct dealings with Turkmenistan, forcing the Ukrainians to go through Gazprom to make their gas ends meet.[48] In another signal that instability was in the future, the consortium to rebuild Ukraine's gas infrastructure was abandoned over a dispute on what the parties would focus on – new pipelines (the Ukrainian position) or "developing and managing" the system (Russia's point of view).[49] In sum, Ukraine was allowed to keep its valuable transportation system, but Russia could now block Ukraine's attempts to fill it.

In late 2005, Russia and Ukraine continued to clash over gas issues. New price negotiations were tense and neither party budged in their offers. Russia claimed that Ukraine should pay between $160 and $230/mcm in the start of 2006 or give up a chunk of its transportation infrastructure. Ukraine wanted prices to increase slowly, countering that it would siphon off European gas or raise tariffs if Russia decided cut its supplies. In response to Ukraine's hard stance, Gazprom purchased all the available gas in Turkmenistan (30 bcm at the high price of $65/mcm), leaving the country with nothing left over to supply Ukraine. Now there would be no negotiating. The price became $230, and Putin offered only to suspend the price increase for 3 months.[50] When the Ukrainian side declined the offer, gas to Ukraine was cut off on January 1, 2006.[v]

Falling pipeline pressure indicated to European leaders that something was wrong: the Ukrainians had begun to divert a portion of the gas allocated to them under the old contract. Scrambling as countries in Eastern and Western Europe reported a loss of anywhere from 14% to 40% of Russian supplies, Gazprom pumped an additional 95 million cubic meters (mmcm) into the system.[51] In the end, the first crisis was relatively benign for Western Europe. It forced EU members to go without imported gas for a day, but many were able to switch to storage to fill the gap in demand.[52] All gas levels returned to normal by January 4th, when the dispute was halted by a contract agreement between Naftogaz and Gazprom.

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[v] In the background of the negotiations leading up to the 2006 breakdown, larger political movements in Ukraine brought it further away from the Kremlin. Since 2004, Ukraine had set its sights on solidifying its relationship with the West by aligning itself with its main security institution, NATO (The Business and Politics Behind the Russia-Ukraine Gas Dispute, COFR). The Orange Revolution in 2004 and the subsequent victory of Victor Yushchenko in Ukraine's presidential race over the pro-Russian Victor Yanukovych (who was the Kremlin's handpicked successor) led to a further deterioration in relations between Russia and Ukraine.

The new deal struck between the two parties further cemented RUE's place between Ukraine and Central Asia. The company was given powers above and beyond that of its predecessors. It would not just transport gas, but be in charge of operating the pipelines. The barter system (gas instead of money for transit tariffs) was also stopped in return for higher transit tariffs through Ukraine, which were raised to $1.60/mcm/100 km.[53] The new regime was designed to make it much easier to bring Ukraine's gas prices, which rose to $130/mcm ($179.50 in 2007),[54] up to European netback levels.[55] Gazprom did not get all of its wishes; it was still locked out of its prize – the Ukrainian gas transit system.[56] The negotiations paved the way for Ukraine to pay European prices for Russian gas if it continued to refuse to offer any other compensation.

Until October 2008, the trade of gas between Russia and Ukraine seemed to be going smoothly under the new contract terms. In an unprecedented move, Gazprom and Naftogaz agreed in principle to remove RUE as a middleman, move toward market prices, and ensure that Ukraine would be a reliable transporter for no less than 120 bcm of Russian gas a year.[57] These actions would have increased the stability of Russo-Ukrainian gas trade by removing the political component from gas prices and forcing the two countries to interact directly, instead of through shady intermediaries. However, problems arose once again. Naftogaz was in debt to Gazprom, and seemed unable (or unwilling), despite an IMF loan, to satisfy the Russian gas giant, who demanded $2.2 billion to the $1.6 billion that the Ukrainian side claimed it owed. In addition, Ukraine and Russia seemed mysteriously unable to boot out RUE in April 2008, even though both sides had previously decided to do so. Evidence suggests the powerful parties behind RUE pushed hard to keep their position and the windfall profits that came with it.[58]

In an unlucky coincidence, price negotiations occurred during a period of falling oil prices. Gazprom was keenly aware that its revenues would soon plummet as gas prices lagged behind oil prices for six months, and it wanted to secure the maximum price possible.[59] Although both sides' positions seemed bridgeable at first, eventually they reached an impasse: Russia wanted $250/mcm and Ukraine wanted $201/mcm plus higher transit fees. When Gazprom's CEO Aleksei Miller countered that Ukraine would be forced to pay $450/mcm if no contract was signed, Ukrainian officials made it clear they would take gas because, in their view, they were not obligated to supply "technical gas"[vi] to power the system without a contract.[60] Gazprom barked before it bit, announcing on December 18th that in the absence of an agreement they would cut gas to Ukraine. Wishing to avoid being cast as the bad guy, the CEO of Gazprom toured European capitals and created a website, Ukrainefacts, to give the company's side of the story.[61]

The massive supply disruption, which was deemed to be "impossible" before it actually happened, began when Gazprom cut Ukraine's gas supply on January 1, 2009.[62] Eastern Europe began to feel the squeeze on January 2nd. With Ukraine diverting European gas, Poland, Slovakia, Hungary, Bulgaria and Romania were the first to be hit. Ukraine and Russia disagreed on where the missing gas was going. Russian officials accused Ukraine of outright stealing 65.3 mmcm of gas. Ukraine countered that the amount was less than Gazprom claimed, and was mostly technical gas.[63] Gas volumes in the system plummeted as the back and forth continued. By January 6th, local tightness in supply became systemic. The main entry point of gas into the EU in Slovakia was operating at 10% of its normal capacity. Other hubs throughout Eastern

[vi] Also known as fuel gas, technical gas is used to ensure that the natural gas within a pipeline stays pressurized, which is required for the gas to flow. It is combusted in compressor stations that run along the length of the pipeline.

Europe reported similar results. Sometime during the evening hours of January 7th into the morning of January 8th, Gazprom completely turned off the tap to Europe. The crisis was in full swing.

The crisis created by supply interruptions revealed the EU's lack of a united strategy for energy security. In the countries hardest hit by the crisis – Austria, Slovakia, Greece, Poland, Bulgaria, and Romania – fuel oil and coal were substituted for heating and power production respectively. Imports from Norway and Libya, and also from other Russian gas routes like Belarus and Turkey, saw higher usage. However, these measures were by no means enough to satisfy the full shortfall. What was painfully apparent was the inability of European gas markets to deal with the crisis. Some reflected the constriction. There was a 10% rise in price on the National Balancing Point (NBP) virtual gas trading location in Britain, and a 25% rise at the Zeebrugge hub in Belgium. However, most markets in the eastern part of the EU failed completely, registering no price increases at all.[64]

There are many reasons for Europe's failure to cope with the crisis. First, information on gas flows between borders and into the EU was hard to come by – governments did not share information and companies were forced to obtain their own, which was often lacking. The other problem was structural. The European gas transportation system is simply not connected in a way that facilitates the free movements of gas from where it is plentiful to where it is scarce – cross border trading is minimal.[65] And even when it could take place, transmission system operators were trained to mind their own national markets. The EU's January 2009 assessment report drives this point home, explaining that "in some cases such as Italy with Slovenia and with Germany, measures which brought local relief placed neighbors under additional strain."[66] Ultimately, the EU could do little more than send monitors in an attempt to get more information

on gas flows hope for the best. When the Ukrainian side declared they would need 140 mmcm of line pack and 21 mmcm a day of technical gas to restart the pipe,[vii] national governments and their respective state companies – ENI, Gdf/Suez, E.ON/Ruhrgas, RWE, Wingas, OMV, and Gazprom – spearheaded the financing drive.[67]

Feverish consultations between leaders eventually ended this second crisis. On the January 17th, a gas summit began in Moscow, which led to an agreement between Ukrainian and Russian Prime Ministers Yulia Tymoshenko and Vladimir Putin. Naftogaz and Gazprom then signed a new, 10-year deal on January 19th; gas flows resumed the next day.[68] The deal brought some significant changes to the sale of gas from east to west. Ukraine agreed for the first time to pay a price for natural gas based on European "netback" prices rather than Central Asian "net forward" ones, which were initially set at 80% of the European price in 2009. This change paved the way for Ukraine to pay near European prices for gas.[69] In return for this concession, the Ukrainian transit tariff was increased to $1.7/mcm/100km. Finally, RUE was booted out of the transaction; Gazprom now would sell directly to Naftogaz.[70]

Opaque Intermediaries

Although RUE is no longer a link in European gas trade, one big question remains. Why did a transaction with no apparent need for an intermediary have one in the first place? Superficial negotiations mask what lies beneath public summits and statements. Corruption is rampant throughout the Russian and Ukrainian gas sector and extends to the highest levels of both governments. The most recent manifestation of this was RUE, once described by former Prime Minister Tymoshenko as the "most corrupt model created in the last 10 years of the Soviet Union."[71] But, this company was not the first of its kind. It was preceded by EuralTransGaz

[vii] Line pack gas is the minimum amount of gas required to maintain pressure and ensure uninterrupted flow in the pipeline.

(ETG), which was owned by the Ukrainian oligarch Dmytro Firtash. Although its owner had absolutely no experience in gas, the start-up had no trouble quickly securing credit from two Russian banks, and received $1 billion for its services.[72] Firtash is suspected of having significant underworld connections. His secret business partner is suspected to be Semion Mogilevich, a mobster on the FBI's most wanted list.[73]

RUE, financed by Gazprombank and Raiffeisen Bank of Austria, replaced ETG after a media backlash in 2004 that uncovered the corrupt nature of the first company.[74] Transparency was promised, but instead the labyrinth emerged. Shell companies took over for both sides. ARosGas Holdings represented Gazprom, and RUE's proxy was the shady Centragas, which is also linked to Dmitro Firtash, who is said to own 45% of RUE.[75] Roman Kupchinsky, an expert on corruption in gas trade, estimates that Russia's ARosGas has over 11 "financial leasing" companies associated with it, which he believes are "part of an elaborate scheme to secretly distribute the proceeds from RUE."[76]

After the gas crisis in 2006, RUE became the sole intermediary providing the "invaluable" service of taking ownership of gas from Central Asia and selling it to Naftogaz. RUE was rewarded handsomely. While Naftogaz and Gazprom recorded losses in 2006, RUE boasted a profit margin of 17%, pulling in $3 to 5 million per day.[77] According to its own financial statements, during 2007 the company made a whopping $795,191,377 in profit.[78] When it still occupied its position before the 2009 crisis, both Ukrainian and Russian leaders continued to maintain that RUE only existed because the other side insisted on its continuation.[79] Putin even asserted that he did not know all of the Ukrainian owners of RUE, advising curious journalists to "ask Victor Yushchenko," then President of Ukraine. According to Kupchinsky,

the leaders of each state were quite prepared to allow the key decision makers involved in such a vital transaction to remain unidentified.[80]

That corruption on this scale and at such high levels leads some experts to speculate that the January 2009 conflict was not due to pricing issues at all. Former Russian Deputy Energy Minister Vladimir Milov suggests that Gazprom might have balked at the lower than expected payment given to it by Naftohaz through RUE.[81] Edward Chow, an energy market expert at the Center for Strategic International Studies, echoed this sentiment, stating that the row had to do with political infighting over rents from the re-export business in Ukraine. Another respected analyst, Oksana Reinhardt of Deutsche Bank, agrees, noting that "RosUkrEnergo as middleman seems to have made the situation even worse, making all relations between the counterparties involved even more complex."[82]

Pipe Dreams

Despite Russia's numerous attempts to take control Ukraine's transit system in return for its subsidized prices, the Ukrainian government continues to maintain ownership of 100% of its transportation system. The power that Ukraine has over its eastern supplier is evident – the price difference between subsidized gas in Ukraine and market-rates in Western Europe has risen substantially from the late 90s.[83] These examples of crises and corruption indicate that the current state of affairs is not stable. The Kremlin wants a piece of Ukraine's pipeline system or near European prices for its gas. Partial ownership through a consortium, which has been proposed repeatedly, will not do for Gazprom. Ukraine wants to keep ownership of its transit while keeping its subsidy, and gain even more political autonomy from the Kremlin.[viii]

[viii] In addition to matters of gas, over the last five years Ukrainian and Russian leaders have failed to see eye-to-eye on many other substantive issues, including Ukraine's interest in pursuing a NATO MAP, the use of the Russian language in Ukraine, the lease of Sevatopol for

Corruption slowly erodes Ukraine's bargaining position and makes negotiations opaque and unpredictable. Taken together, these conditions create a high stakes game for all participants, including Europe. Any breakdown in negotiations can send shockwaves west, as occurred during the winters of 2006 and 2009.

Thus, Russia faces a substantial dilemma when using gas as a tool of coercion against Ukraine. Gas is not a precise instrument, but a blunt object capable of inflicting considerable damage on the state that wields it. Today, the structure of European gas trade dictates that Russia must trade power over the largest state in Russia's near abroad in exchange for economic profits from Western Europe. With 80% of its gas currently flowing through Ukraine, Gazprom must ensure gas continues to flow uninterrupted to its most valuable customers. If the Kremlin fails, the EU will undoubtedly continue to push toward a coherent energy policy and diversify away from uncertain supplies of Russian gas.

The Kremlin's strategy in the face of Ukraine's monopoly on transit routes to Europe is simple – cut out the middleman. Although Ukraine's transportation potential has yet to be tapped (the state's throughput can be increased by 25% for less cost than any other avenue), Russia is looking to change the rules of the gas game through building additional export pipelines.[84] But instead of going through the countries where it already subsidizes gas and giving bargaining power to a different transit state, the Kremlin seeks to build bypass pipelines through water bodies to the North and South of Eastern Europe. In this way, supply disruptions in Russia's near abroad would go no further down the pipe, allowing Russia to wield its gas weapon much more precisely.

Russia's Black Sea fleet, and Russia's invasion of Georgia (Steven Pifer, *Averting Crisis in Ukraine*, 25 - 34).

The first such pipeline is the Blue Stream, Russia's direct link to the Turkish energy market. Running a total length of 1,213 km and pumping a maximum of 16 bcm a year, it was built by Gazprom and the Italian state energy company ENI, Gazprom's partner on a variety of projects that happens to be owned by a founding member of the EU.[85] The pipeline was extremely expensive, drawing on the technical expertise of the Italians to lay the pipe through very deep waters. This added cost revealed the motive for the bypass. By paying a premium for underwater transport, Gazprom was able to bypass Georgia and deliver expensive gas directly to Turkish citizens. It was also the first time Ukraine's pipelines were ever circumvented. Today, there are talks of expanding the Blue Stream pipeline, dubbed the Blue Stream II project.[86]

Aside from the already built Blue Stream, the bypass closest to being constructed is the Baltic Sea-based Nord Stream pipeline (see figure 2-3). The pipeline, a joint venture between OAO Gazprom (51% stake), BASF SE/Wintershall Holding AG (20%), E.ON Ruhrgas AG (20%) and N.V. Nederlandse Gasunie (9%), will traverse 1,220 km and carry over 50 bcm of natural gas a year when completed in 2015.[87] Originating in the port of Vyborg (near Saint Petersburg) in Russia, the pipe's proposed route carefully avoids Estonian, Latvian, Lithuanian and Polish waters, winding up on the German coast in Griefswald. [88] These states (especially Poland) are widely regarded as the most anti-Russian in the EU.

Officially, the pipeline's operators maintain that its sole goal is "profit, not politics." In a November 2009 op-ed in *The Wall Street Journal*, the communications director of the consortium explained that "whatever the geopolitical implications of such a successful EU-Russia collaboration, it should be recognized that Nord Stream has been set up and operates as a purely commercial organization."[89] However, the article falls short of offering a coherent explanation for how an undersea pipeline can possibly be cheaper than a land-based one. In fact,

the original form of the Nord Stream, the NEP, was supposed to go through Finland, the Baltic States, Sweden and Denmark precisely to minimize costs.[90]

Despite its unpopularity in the states it skirts, the pipeline is the most likely to move from planning to completion – construction has already officially begun. After considerable stalling by Finland, Sweden and Denmark over the environmental (and implicitly the security) implications of the pipeline, by November 2009 the three governments had all approved its construction.[91] Supply is also relatively secure. Nord Stream has specific gas reserves earmarked for it from the Yuzhno-Russkoye field in Western Siberia. That being said, more gas will be required to supply the second stage of the project. Production in the field expected to supply it, the Shtokman,[ix] will not commence in time to power the second phase.[92]

The final piece of the puzzle, obtaining financing, is also nearly assured. In total, the project is expected to cost from 7.5 to 11 billion euros.[93] Due to continued support from major EU members, the consortium secured most of the funds needed to complete the first phase of the project.[94] On March 18, 2010, Nord Stream consortium representatives met with 26 commercial banks in London. The consortium was offered 3.9 billion euros of credit, which will be nearly entirely guaranteed by the German and Italian governments. An additional 1.8 billion euros is expected to come from the consortium partners.[95] Russia may have difficulty securing loans for its portion of this sum, as it is suffering severely from the global economic crisis. Nevertheless, construction has already officially begun on the pipeline. President Medvedev attended a

[ix] The Shtokman gas field was discovered in 1988 in the Russian section of the Barents Sea shelf. The field is gigantic, with nearly 4 trillion cubic meters of gas and gas condensate, and is expected provide supply for Gazprom's LNG push (Gazprom.com). Because of the technical difficulties associated with the field's depth (around 330m), France's Total is a partner in the project. On February 5th, the partners decided to postpone further investment decisions to 2011, pushing the date for production to 2016 (BarentsObserver.com).

ceremony to weld together the first two segments of pipeline on April 9, 2010.[96] In addition to laying pipe, the first compressor station in Vyborg is currently being built.[97]

Russia's southern bypass route is not faring as well as its northern brother. The South Stream pipeline is a joint project between Russia's Gazprom and Italy's ENI (see figure 2-3). If built, it will transport up to 63 bcm of Russian and Central Asian natural gas through the Black Sea (in Turkey's exclusive economic zone) to Bulgaria and further to Italy and Austria. Unlike its Northern brother, this pipeline was not proposed in a vacuum. It is a competitor to a diversification attempt by the EU, the Nabucco pipeline. Nabucco is backed by a consortium of private and state-owned energy companies including Turkey's BOTAŞ, Hungary's MOL, Austria's OMV Gas, and Germany's RWE-AS (see figure 2-3).[98] It represents the EU's own attempt to try to bypass monopolized Russian and Ukrainian routes. The pipe, if constructed, would directly connect consumers in Western, Central, and Eastern Europe with supplier countries in Central Asia, the Caucuses, and the Middle East. Starting on the Georgian-Turkish border and ending in Baumgarten, Austria, it is expected to pump 31 bcm of gas a year a distance of 3,300 km.[99]

If constructed, the Nabucco pipeline would divert the transportation of 10% of Europe's gas supply to an alternate, non-Russian route, resulting in "a dramatic effect on both Russia's price setting in the European natural gas markets and on their ability to dictate terms with Central Asian producers."[100] Thus, there are two main goals for Russia's South Stream pipeline. Like Nord Stream, the pipeline will bypass Ukraine and allow Russia to use its gas for political ends without fear of spooking the EU into a more cohesive push toward diversification. But more importantly, Russia wishes to strike first and make the Nabucco project unprofitable, preserving its monopoly and blocking the EU's attempt at diversification that does not involve Russia.[101]

Both projects are moving along ignoring the fact that there is only enough gas and customers to support one pipeline, most likely due to the incentive for the linchpin of both pipeline routes – Turkey – to bid up the price for its valuable land corridor. Despite the bluster, South Stream remains behind Nabucco.[102] The Russian pipe currently has no earmarked gas reserves.[103] Nabucco, on the other hand, has specific gas reserves pledged to it from Azerbaijan, while Turkmenistan, Kazakhstan, Egypt and Iraq have pledged their support in the future.[104] More importantly, the Nabucco pipeline offers Turkey access to diversified gas supplies and a chance to make the country of vital importance to the EU, a club to which it has been seeking entrance for some time. The EU has reiterated continuously that Nabucco is its priority.[105] Although South Stream will do in a pinch, the benefits of Nabucco for the parties involved make it the clear frontrunner at this point. The Gazprom-owned business daily *Kommersant* recently weighed in on the issue, proclaiming "Nabucco is inevitable."[106]

With all of these proposed routes snaking around on a map, one can lose sight of their ultimate goal. Mikhail Korchemkin of East European Gas Analysis, an industry insider regularly quoted in both Russian and American business journals, offers a big-picture view of the situation. Combining the capacity of Nord and South Stream would yield 118 bcm/year. Unsurprisingly, this number puts Nabucco out of commission, as it is more than enough to absorb Europe's demand for additional imports until 2025 to 2030. But the observation that really tips Russia's hand is the similarity between Ukraine's gas throughput to Europe in 2008, 117 bcm, and the combined capacity of the two bypass pipelines. The numbers match almost exactly and Kochemkin observes that this "is not just a coincidence." It is a message to Ukraine – behave or beware, hard bargaining can be counterproductive.[107]

European Disunion

Through Nord and South Stream, Russia's economic and strategic interests converge. These pipelines will ensure that Russia continues to dominate Europe's gas import market, while simultaneously placing pressure on Ukraine to accept near European prices. But the strategic benefits of Russia's pipelines do not end in its near abroad. Unlike their land-based brothers that move through many countries before reaching their final destination, sea based pipelines forge a direct connection between supplier and customer through shared infrastructure, bureaucracy and the flow of cash and gas. In this way, natural gas pipelines have become a principal means of gaining political influence in the EU. The EU cannot be viewed as a unitary actor when it comes to bargaining with Russia over gas.[108] Different states have different interests, and Russia finds dealing with individual states to be much more "efficient."[109]

The situation is reminiscent of the classic prisoner's dilemma in game theory, where two jailed inmates betray each other and confess under individual questioning, even though it is in the best interest of both collectively to remain silent.[110] The key to understanding this apparent paradox is that a single prisoner (or state), locked away in his own cell, cannot trust his compatriot to remain silent. Lacking perfect information, it becomes rational for both prisoners to look out for their own interests and cut a deal in order to avoid receiving the harshest punishment. If interaction is repeated, there are circumstances where it becomes rational for states to cooperate. One important factor is a state's discount rate, or how much it values present benefits over future gains. With substitutable commodities or interests without immediate economic repercussions, cooperation is significantly easier to maintain. It is hard to imagine the EU dissolving in the face of favorable terms from an outside shipment of bottom-basement priced cotton from Kazakhstan; but a preferential offer to supply a vital commodity like natural

gas creates significant incentives for individual EU states to cut separate deals. The consequences of doing without natural gas, or even experiencing uncertainties about supplies, are dire.[111]

In addition to high individual discount rates, the varied levels of gas dependence among EU members make it difficult for them to act as one. Of the fifteen EU countries listed as major importers of natural gas, Italy and Germany top the list in absolute volumes, importing 21.4 bcm and 37.9 bcm respectively. Their total dependence on Gazprom for domestic consumption, however, pales in comparison to that of the eight top importers who bear the distinction of being in the European Union and importing over 70% of their total requirements for domestic consumption from Russia. These countries – Austria (74%), Latvia (74%), the Czech Republic (79%), Greece (82%), Bulgaria (96%), Lithuania (96%), Finland (100%) and Slovakia (100%) – have vastly different needs and interests than other members of the EU, like Britain and Spain, who didn't even make the list. With high discount rates and differentiated dependence, Russia can exploit cracks in the European Union in a similar fashion to the interrogator pressuring the two aforementioned prisoners. Russia has been very keen to use divide and conquer tactics against the Union, employing both pipelines and more clandestine methods to target the influential members of the EU that account for nearly to half the Russian gas used in Europe: Germany and Italy.[112]

Germany, the main proponent of Nord Stream, is the poster child for Russia's divide and conquer strategy. Germany's gas consumption accounts for 20% of Russia's total gas exports. In the short to medium run, it would be impossible for the state to reduce its dependence on Russian

gas by any substantial amount.[x] Thus, the country seeks to solidify the relationship in steel running along the bottom of the Baltic – the Nord Stream pipeline.[113] From its inception the project was supported from the highest levels of the German government. Former German Chancellor Gerhard Schröder (who was once quoted calling then President Putin a "flawless democrat") lobbied hard for the pipe in his last months in office, backing a $1.46 billion government guaranteed loan to build the pipe. Less than one month after he vacated his position, Schröder decided to become the Chairman of the Board of the Nord Stream Consortium.[114]

Schröder undoubtedly believes his actions are in the best interest of Germany. In an article in Foreign Policy by Daniel Freifeld of NYU's Center on Law and Security, Schröder explained that Germany "must be a partner of Russia if we want to share in the vast raw material reserves in Siberia. The alternative for Russia would be to share these reserves with China." In addition to Schröder, other well-connected officials have joined Nord Stream's payroll. The former Prime Minister of Finland, Paavo Lipponen, was paid to secure permits. The chief executive of the project, Matthias Warnig, served on the East German Secret Police during the same time Putin was an active intelligence officer.[115] The two negotiated the establishment of a branch of the first foreign bank in Saint Petersburg.[116]

Germany's deal comes at the expense of the countries conspicuously left out in the cold by Nord Stream – Estonia, Latvia, Lithuania and Poland – who raised their security concerns during the negotiation process.[117] When Nord Stream was being delayed by stalling Scandinavians, Russia turned to Germany to lobby the obstructing parties, which they did

[x] Germany's dependence on Russian natural gas started out benign. The country sought to reduce its dependence on unstable oil suppliers in the Middle East while dodging the environmental risks associated with nuclear energy. The USSR was close in proximity and rich in gas, so Germany decided to begin supplementing its imports from the North Sea. A small flow of Russian imports meant to be supplementary eventually turned into a torrent causing dependence (Marshall Goldman, Petrostate 137 - 138).

through a campaign to label the Russian-backed pipe as a diversification attempt for the Union.[118] However, the pipeline clearly separates countries within the EU, drawing a line between those that have secure gas and those that don't. For some, including the Polish foreign minister Radek Sikorski, the deal to create the Nord Stream resembles the secret 1939 German-Soviet pact to divide up Poland and refrain from attacking each other – a "Molotov-Ribbentrop" pipeline.[119] A *Wall Street Journal* op-ed by the same name explains the sentiment: "Germany is aiding Russia's run around Central Europe." To the EU states without the strong ties Germany enjoys with Russia, the message is clear; "Nord Stream will allow the Kremlin to cut off gas deliveries to Eastern Europe through current pipelines without reducing energy supplies to Germany."[120] An open-letter directed to President Obama signed by many former Central and Eastern European heads of state and intellectuals, including the former Presidents of the Czech Republic, Romania, Poland and Slovakia, drives this point home. It cites energy security, and specifically "Russia's abuse of its monopoly and cartel-like power inside the EU" as a major threat to the security of Europe.[121]

Russia's favorite southern European partner is Italy.[xi] Most recently Gazprom and the Italian energy giant ENI have teamed up to build the South Stream pipeline. In similar fashion to Nord Stream, Romano Prodi, the former Prime Minister of Italy, was offered the job of chairman of the project, but he ultimately turned down the position.[122] In addition to pipelines, Italy and Russia have a history of cooperating on less transparent transactions. During May 2005, the scent of high-level bribery was discovered in the contract allowing Gazprom to sell directly to the

[xi] In addition to Italy and Germany, the Kremlin has sought to strike a preferential deal with Hungary to kill Nabucco. Although a member of the European Union and ostensibly a supporter of the Nabucco project, Russia offered to make Hungary the European hub for South Stream's gas, in addition to putting an attractive long-term supply contract on the table (Marshall Goldman, Petrostate 137 - 138).

Italian domestic market, which eventually led to the cancellation of the deal. A Viennese intermediary called Central Energy Italian Gas Holdings (CEIGH), owned in part by a close friend of Prime Minister Silvio Berlusconi, was slated to play a large roll in the transaction.[123] ENI was also involved in Putin's renationalization campaign. In 2007, ENI purchased $5.8 billion worth of the plundered oil company Yukos and then immediately turned the property over to Gazprom (more on this in Chapter 3).[124]

Italy's example reveals another means by which the Kremlin sows disunion – through the dispersion of funds to the right people. The list of opaque companies in Europe owned by Gazprom is staggering. The company controls all or part of 166 subsidiaries, which includes minority ownership of gas distribution in Bulgaria, Estonia, Greece, Hungary and many other countries.[125] But some subsidiaries go beyond gas, and even defy rationality. In one particularly strange instance, Gazprom saw fit to move into the automobile repair market in a small town in Germany. But Gazprom didn't want to risk large amounts of capital; they decided to start small, only acquiring a seven-person shop called ZMB Mobil.[126]

In addition to the small and strange, Gazprom's shady intermediaries extend to high levels of prominence. Centrex Europe Energy and Gas AG sells all of Russia's gas that enters Austria. Although the company is of vital importance to Austria's energy security, its owners chose a low-key headquarters: an inconspicuous three-story building in a residential area with no mailbox or nameplate.[127] This lack of transparency was the hallmark of CEEGAG from its inception. Gazprombank founded the company, but the Russian bank's identity was hidden through the use of a Cypriot holding company and a private foundation. The company's business strategy is also best kept secret. According to Roman Kupchinsky, the company made 47 million

euros in profit in 2006. From 2004 to 2009, an exclusive fund for the mostly anonymous shareholders shot up twentyfold.[xii]

[xii] In addition to graft, CEEGAG helps Gazprom in other goals. It has a considerable stake (20%) in the development of Austria's strategic gas hub, the Central European Gas Hub (CEGH) in Baumgarten. Experts speculate its participation may be a clever way to mask Gazprom's involvement in the project. The Russian gas giant owns 30% outright in the hub, but its stake goes up to 50% when combined with Centrex's. This purchase could be a ploy to cut the proposed Nabucco pipeline off from its intended termination point and distribution hub (Roman Kupchinsky, *Gazprom's European Web*, 19).

Chapter 3: Levers of the State

The Very Visible Hand

As illustrated by the previous chapter, the structure of the Eurasian gas market creates a situation where the gains to the Kremlin from strategic political behavior such as preferential bilateral deals, subsidized gas prices, and embargoes (threatened or enforced) greatly outweigh the benefits of letting market forces determine the most efficient allocation of resources. Not all governments are able to take advantage of the strategic power that natural gas offers; it takes a state with a significant amount of control over private companies to wield the weapon effectively. Transportation and extraction cannot be subject to the laws of supply and demand; they must be subject to the laws of the ruler.

Because the Russian government controls the energy sector, it is well positioned to wield the gas weapon. Moreover, power is not only centralized in the Russian federal government, it is personalized in the hands of the former President and current Prime Minister, Vladimir Putin. Vladislav Surkov, the Kremlin's first deputy chief of staff and chief ideologist, coined the term "Sovereign Democracy" to describe this uniquely Russian regime. In the Russian government, Surkov explains, the president "is the guarantor of the democratic constitution and of a balanced separation of powers among the executive, legislative, and judicial branches."[128] In Surkov's view, Russia's natural resources are a means to advance the national interests, and the state should decide what those interests are. Lilia Shevtsova, a senior associate of the Carnegie Endowment for International Peace and outspoken critic of the extent of the state's power in Russia, acknowledges that Surkov's vision has become the reality and that Russia has a ruler "standing above society" controlling the "levers of power".[129]

Although many levers of power do exist, Russia's energy wealth is in a class of its own. Natural gas is a strategic commodity that can be used simultaneously to achieve foreign policy goals and enrich the state. Oil, although not as useful for coercive power over other states because of unconstrained international transport, is still a massive source of foreign currency for the Russian government, accounting for more than 60% of export revenues when combined with natural gas sales.[130] The majority of Russia's international commerce is directly tied to whether the state can achieve its foreign policy goals and pay its bills.

The Kremlin achieves control at home and abroad through a mercantilist policy, where the economic goals of individuals are subordinate to the will of the state. There is very little separation between the Kremlin and Russia's strategic economic sectors. Through Gazprom, the Kremlin controls about 80% of natural gas production.[131] More importantly, Gazprom has complete control over the Unified Gas Supply System: the only way to move gas from field to market.[132] Control, however, does not end with direct ownership. Private property rights, especially in sectors deemed to be of strategic importance, are not hard and fast – assets are simply on loan from the state. The institutions that form the bedrock of a liberal market economy (the rule of law and property rights) are malleable; private property can quickly be made public if requirements of loyalty to the state are not met. The Kremlin sets the rules and can break them at any time.[133]

Russia's top leadership sees control of Russia's strategic sectors as vital to the success of the state. As a doctoral candidate in economics at Saint Petersburg's mining institute, former President Putin was already enthusiastic about the application of mercantilist policy.[134] In an article entitled "Mineral Natural Resources in the Strategy for Development of the Russian Economy," Putin lays out his case. First, he points out that Russia's wealth of natural resources

make up a sizeable portion of the country's GDP, which he estimates at 50% at the time of writing. He concludes that the share of export receipts in the state budget that are directly or indirectly related to the "raw minerals complex" is around 70%, and is thus of vital importance for fiscal and social stability.[135] Finally, Putin alludes to the special characteristics of oil and gas that make their control a strategic advantage over one's opponents, explaining they act "as an integrating factor within Russia, in the CIS and with the world community."[136] It is not clear whether he fully understood which countries would benefit from the dependence, but he does state that the Russian government has "a high degree of responsibility in taking various decisions about domestic and foreign economic policy, aimed at furthering the geopolitical interests and maintaining the national security of Russia."[137]

Giving a glimpse into the future, Putin decries what he describes as state sponsored market reforms that let "strategic management of the natural resource complex slip from its hands." In line with Surkov's thinking, he advocates the use of the state's strong hand to guide the strategic development of all natural resources, "regardless of whose property the natural resources and in particular the mineral resources might be." Little did Putin know, he would be able to act on his convictions a mere two years after the publication of his article.

The Votes for Shares Scheme

Russia's mercantilist energy policy took root during a turbulent time for the state's economy and government. Following the collapse of the Soviet Union, privatization initiatives pursued by the Yeltsin government gave the country the façade of a young liberal democracy going through growing pains. However, Yeltsin was not motivated by a love of efficient markets – privatization proved an effective way to stay in power by buying support.[138] Further along in time, the perilous economic condition of Russia forced Yeltsin to divest state-owned companies

in order to secure cash to prop up a fiscally ailing government.[139] Whatever the reason for their sale, state owned companies tended to fall into the hands of those with the best connections over those with the best managerial ability, endowing a new class of oligarchs with considerable wealth.

The first wave of privatization was a poorly planned voucher scheme during which managers had to be bribed with shares in order to cede control. Because of its flaws, outside shareholders wound up controlling only around 25% of most mass-privatized companies, and the largest most profitable companies chose not to participate.[140] Mass voucher privatization was followed by cash privatization, where the Kremlin sought to auction stakes in companies to secure the largest amount of cash possible. Managers, on the other hand, preferred less transparent deals where they could avoid competitive bidding.[141] The newly born oligarchs ultimately won out, and many of the state's most valuable possessions, including the energy giants Yukos, Sibneft, and LUKoil, were seized in opaque transactions that came to be known as "loans for shares schemes."[xiii]

Privatization placed large portions of extremely profitable enterprises into the hands of a small group of kleptocrats or oligarchs with little or no outside control or oversight. By 2001, 85% of the value of Russia's sixty-four largest companies was owned by eight shareholder groups.[142] The new oligarchs consisted of two groups: first, former nomenclatura from the Soviet Union's Communist Party; and second, black marketers with the very valuable knowledge of how to manipulate markets.[143] But as few became massively wealthy, the Russian economy reeled. GDP shrunk almost 30% from 1992 to 1998.[144] Poverty levels grew substantially while

[xiii] Under these schemes, the Kremlin would put valuable (but underpriced) state property up as collateral for loans from banks without any intention of ever paying the loan back. Once the state defaulted, the bank would collect its prize at a fire-sale price.

inflation wiped out savings. Spooked investors and asset-stripping oligarchs pulled capital out of the economy, causing a massive depreciation of the ruble. By the end of 1999, the Russian government was essentially bankrupt, with foreign reserves totaling only $6.6 billion late in 1999, compared to a liability of $16.6 billion to the International Monetary Fund.[145]

Putin's Property

This anarchy did not last long. The turn of the millennium brought with it a new Russian President, Vladimir Putin, a former KGB officer who served in East Germany, Federal Security Bureau director, and deputy mayor of Saint Petersburg, who had proven his mettle in Russian politics by staying loyal to both his boss in Saint Petersburg and President Boris Yeltsin when the men were confronted with charges of corruption.[146] He was picked to continue the policies of his predecessor.[147]

The oligarchs received a very different leader than they had hoped for. In March 2000 Putin became president, and was able to quickly implement his policies because of two factors. First, because his clean-cut and capable appearance was a sharp contrast to Yeltsin's usual drunken state, Putin's approval rating oscillated in the low 70%, high 60% range during the entire first year of his term.[148] Second, a coordinated restriction of supply by OPEC led to a significant jump in the price of oil, which went from a low of $11 a barrel in 1998 to a high of $35 a barrel in 2000.[149] With the public behind him and an independent source of cash streaming into state coffers, Putin had the political and financial clout to challenge some of the vested interests in the Kremlin and oligarch class. Frenzied and corrupt privatization gave way to targeted renationalization designed to rein in the powerful oligarchs that had built their dubious fortunes during the Yeltsin years. At a meeting with 21 oligarchs on July 28, 2000, Putin drew a line in the sand – rich tycoons would no longer be allowed free rein. In the mercantilist spirit,

oligarchs that could be co-opted by the Kremlin would be, and those who could not would have their assets and their freedom violently divested.[150] Most of the oligarchs gave in to Putin's pressure; the boldest chose to fight over Russia's valuable resources. No altercation was as fierce as the one to control the oil sector.

After privatization, the government controlled only about 4% of oil output.[151] Putin decided this situation was untenable, and moved to shore up control and destroy a particularly vocal oligarch, the CEO of Yukos, Mikhail Khodorkovsky, in one swift move. At the time, Khodorkovsky was directly challenging the power of the state by seeking oil deals with other countries, showing interest in the Presidency, and openly criticizing the administration. Putin punctured Khodorkovsky's confidence on October 25, 2003, when the self-made oil baron was arrested and charged, along with his company, for tax evasion, grand theft, fraud, forgery, embezzlement, and extortion.[152] In a surgical strike designed to cripple Russia's largest oil company, its main production subsidiary Yuganskneftegas was seized as payment for back taxes.[153] Yukos soon went bankrupt and was bought by Rosneft, the state oil company, in December 2004. Rosneft served as the organizer, bidder and chief creditor in the auction, which resembled the predetermined kind of privatization that had put Yukos in Khodorkovsky's hands in the first place.[154] This purchase, combined with Gazprom's of Sibneft from the acquired Roman Abramovich, put the government's stake in oil production above 50%.[155]

The fall of the oligarchs from their positions of power coincided with the rise of another group – the "siloviki" or former members of Russia's security services. Leaders close to Putin from these branches of the government, which include the prosecutor's office, the Interior Ministry, the FSB, the tax department, and other agencies charged with enforcing the law, found themselves in powerful positions in both government and industry during Putin's presidency.[156]

The rise to prominence of one former security officer is especially illustrative – Igor Sechin, the chairman of the board of Rosneft (the state owned oil company involved in the targeted dismantling of Yukos), also happened to be Putin's deputy chief of staff during his administration. His background indicates that he was involved in clandestine activities for the Soviet Union. Other members of the siloviki control positions of power in the ministries of the economy, transport, natural resources, telecommunications and culture. The most strategic resource draws the most control. Robert Lucas of *The Economist* estimates that more than a quarter of Gazprom's management is drawn from the security services.[157] In addition to pulling from his former colleagues in the security apparatus, Putin also tapped many associates from his days working for Anatoly Sobchak, the former mayor of Saint Petersburg. Dmitry Medvedev was the legal consultant to Putin's committee on foreign affairs before he became the Chairman of the Board of Gazprom and ultimately the President of Russia.[158]

The Price of Control

The Russian government may believe it is acting in Russia's best interests by taking control of the country's resources. In his aforementioned article, Putin argues that state intervention into natural resource markets can spark the magic that supply and demand alone cannot, leading to innovation and sustainable economic development. However, he does not back up his claim with any evidence of the success of centralized control. Putin simply explains that some developed countries have had "effective state involvement in long-term projects to exploit natural resources."[159] But Russia is not a developed country with functioning social institutions and a strong rule of law. The structure of the Russian government dooms the Kremlin to succeed in some of its tactical goals, but fail in its main one – to develop all of Russia's resources, not just those underneath the ground, in a way that is in the interest of the people of Russia.

Putin holds a massive amount of power in his hands. However, he cannot make and carry out these decisions singlehandedly. The history of privatization and renationalization shows that although Russia's leader calls the shots, he needs an apparatus to carry out his wishes. During Yeltsin's time, bought oligarchs and managers kept an unpopular ruler in office. During Putin's and now Medvedev's era, power has returned to the state. However, policies must still be paid for by compensating the bureaucracy and business community that implements them. Resembling a classic rentier state, Russia acquires its cash abroad through oil and gas, and redistributes it internally to powerful actors working to promote the state's goals.[160] Because rentier states derive their support from the distribution of rents gleaned from abroad, they are much less likely to allocate funds effectively. In a state that relies on taxation of its citizens for government revenues, taxpayers have the incentive to vote for a government that uses their hard-earned income in a way that coincides with their views. For rentier states, the driving incentive is to maximize streams of revenue received from the government.[161] "State patronage, high tariff barriers, cheap imports, profitable contracts, and subsidies" are well entrenched in the system.[162]

To Western ears, this style of government may sound severe. However, it does not appear to be unfavorable to the people living under it. Putin's approval rating has been staggeringly high, hovering over 80% for almost all of 2007.[163] What if Russia's government, where big business and government form a strong bond, is just a natural choice for stability after a decade of chaos? Comparing the present day to the 1990s, ordinary Russians have much to be happy about. Poverty in Russia was cut in half during the beginning of the Putin's presidency.[164] As GDP growth clipped along at an average 7.3% from 2002 to 2006, 12.5 million people broke above the poverty line, causing absolute poverty levels to drop from 19.6% to 11.1%.[165]

It would be wonderful for both the ordinary citizens of Russia and its leaders if this stability continued. However, Putin's mercantilist policies have some unsightly side effects. Direct payments – favorable treatment and money from the state – are neither the only nor the most potent means by which rent-seekers enrich themselves. The real power of those charged to carry out the government's wishes lies in controlling the rules of the economic game. The conflict created by this control, according to Vladislav Inozemtsev, the editor in chief and publisher of Svobodnaia mysl', is a simple one:

> [T]he bureaucratic class secures power and wealth by controlling changes in the rules, not by observing the rules for a long period of time. Stability, in any more or less precise definition of the word, poses a mortal danger to the power elite, without exception.[166]

For bureaucrats, the most valuable part of the job is not their salary, but the sway they hold over the private sector: their ability to extract rents like bribes and kickbacks and ultimately set the rules by which Russian businesses must run to survive. On the flip side, since solid rules do not really exist, businesses are not rewarded with profit based on competitiveness. They are rewarded for their ability to work within the corrupt legal system and opportunistic bureaucracy. In this manner the Russian system creates a well-connected class of people whose interest is to keep inefficiencies for their exploitation.[167] To these bureaucrats and businessmen, corruption is not an unsightly way to make a little extra money; it is the backbone of the political and economic system.[168] At the same time, Putin and all those in the upper echelon of the Kremlin must rely on this expensive apparatus to carry out their policy goals.[169] Commenting on this culture of corruption that breeds in states reliant on commodity incomes, Terry Lynn Karl, an

expert on rentier states, remarked that they eventually "become weak giants that could be rendered ineffective by hundreds of rent-seeking Lilliputians."[170]

An excellent example of this predatory symbiosis can be seen in the relationship between small and medium sized business (SME) owners and the government. Facing predatory regulations and ever changing rules, SME owners are forced to operate in the "shadow" economy, which some estimate to be up to 80% of the size of the real economy, in order to survive.[171] Under these conditions, regulators can "find fault with any entrepreneur" if they so choose, and SMEs become dependent on and vulnerable to the government.[172] The World Bank found that firms in Russia have a nearly 20% chance of being forced to bribe officials during a standard set of business transactions. As shown in figure 3-1, this number is much higher than that of similar countries in Eastern Europe and Central Asia (10%), and way above the probability for upper middle-income countries worldwide (just above 5%).[173] Bribes are also growing substantially in size. The INDEM foundation, one of the first Russian NGOs, estimates a sevenfold increase in bribe size from 2001 to 2005.[174] As the Russian government seeks to solidify its control of the strategic sectors of the economy, its methods limit the transparency and freedom in all sectors.

Words Meet Reality

But what if a policy goal does not allow for rent seeking? Objectives like modernization and building a diversified economic base, both expressed as priorities by many Russian leaders, require the creation of an innovative economy that needs decentralization and stable rules to take root. Leaders seem to notice there is a problem. In an opinion piece in Gazeta.ru entitled "Russia, Forward!" President Medvedev rails against the interest of bureaucrats and businessmen in controlling revenue streams from the government, noting that "the raw materials market should

not decide the destiny of Russia," and extols the virtues of a diversified, innovative economy.[175] In an interview with the Russian magazine *Itogi*, the Kremlin's chief ideologist Vladislav Surkov echoes his boss' sentiments, decrying bureaucratic corruption and parasitic businessmen who are uninterested in creating new products and technologies with social value to Russia.[176] Even Prime Minister Putin, a vocal believer in Russia's economic strength, recently acknowledged at a meeting for foreign investors at VTB bank in Moscow that the government must focus on "modernizing the economy and forming a more sustainable and diversified economic structure."[177]

In their public relations pieces, both Medvedev and Surkov identify rent-seeking and corruption as problems. However, both fall short of explaining a way to diversify that strikes at the heart of the problem: the incentive to diversify cannot exist with centralization based on hydrocarbons and malleable property rights. President Medvedev speaks of simplifying time zones and building business incubators in universities.[178] Surkov proposes a two-pronged approach that promotes energy efficiency while cultivating a creative "culture and psychological climate." He speaks of American entrepreneurs turned tycoons like Bill Gates, Thomas Edison and Henry Ford, and makes the claim that the government should work to support Russian versions of these successful innovators.[179]

But his words and deeds do not match up. If the Kremlin wanted innovation, it would remove the roadblocks preventing it. This disconnect is apparent when surveying the World Bank's 2010 *Doing Business Report*. According to the bank, a Russian entrepreneur faces a process that ranks 108 out of 183 countries, down 18 spots from the year before, if he or she wishes to start a business.[180] Once registered, a would-be-innovator faces a construction process that is so opaque it is ranked second to last in the world, comparing favorably only to Eritrea![181]

Finally, even if an entrepreneur is able to succeed in the domestic market, it is not easy to distribute a product abroad. Cross border trading ranks 162nd in the world, in line with sub-Saharan Africa.[182] This type of red tape, which is the exact source of revenue and power on which the bureaucracy and big business feeds, makes it very easy to see why Marshall Goldman once remarked that "except for vodka, caviar, and the Kalashnikov weapons, almost no commercial products manufactured in Russia have ever won an international competitive preference."[183] In the end, markets boil down to incentives, and in Russia, the incentive is not to innovate or export. The Kremlin's closely controlled energy sectors are allowed limited access to the outside world; all others must fight to survive in the extremely poor business climate left in the wake of such policies.

Besides entrepreneurs willing to take risks to bring new products to market, external capital from foreign investors plays an extremely important role in creating innovation in developing countries. Foreign direct investment (FDI) is a misleading term; smart multinational corporations will undoubtedly work to transfer technology and knowledge in addition to capital in order to ensure their ventures succeed.[184] However, multinationals trying to bring innovation to Russia are forced to work within the corrupt system, or face painful consequences. One illustrative story involves the Swedish furniture company IKEA. Hoping to open is flagship store near Moscow in 2000, IKEA was presented with an ultimatum from the local energy distributor: pay a bribe or shut down. IKEA decided to do neither, and installed diesel generators instead. But this solution was not the end of the story. Acting in cahoots, the person in charge of renting the generators and the generator company massively inflated the rental cost. When IKEA found out about this corrupt deal, it sued in civil court, but lost twice, costing the company an

additional 5 million euros. IKEA's lawyers were surprised to see that "the opposing lawyers seemed to know the outcome of these cases in advance."[185]

How well does the experience of IKEA fit the overall Russian economy? An annual survey by the Expert Analytic Center showed consensus among fifty top managers of various Western businesses that the investment climate in Russia is deteriorating, citing worsening corruption and decreased property right protection.[186] In this situation, it is clear why foreign multinationals choose to work closely with the government instead of trying to brave the regulatory and legal system in Russia. As the rules governing the economy become more volatile, international businesses will choose the stability of working with the government, which could amount to giving kickbacks and bribes, but most likely involves betting with the Kremlin in their own strategic industries. If they accept the Kremlin's rules, foreign companies can also be part of the profitable symbiosis. At the latest investment forum in Sochi, Jeffrey Immelt, the CEO of General Electric, expressed interest in such ventures, stating that GE would be happy to "work with leading companies, national champions."[187] The evidence supports Immelt's views. As figure 3-2 exhibits, foreign direct investment accumulated by the energy and metals sector accounted for a whopping 53% of the total in 2008![188] The non-energy and metals related manufacturing sector only pulled in 11%. Small and innovative is obviously not as appealing as big and well connected. Unfortunately, these investments only exacerbate the unhealthy relationship between business and government at the expense of innovation in the rest of the economy.

With the amount of FDI flowing into the gas sector, one would expect Putin's "holiest of holies" to match the best in the world in productive efficiency. However, as in any other sectors of the economy, business decisions follow politically efficient, rather than economically efficient

patterns. The state subsidizes gas prices to prop up industry and keep home heating cheap. The domestic price (around $28/mcm) is 15-20% of the market rate Gazprom charges Germany. In 2006, Gazprom recorded a $420 million loss from such sales.[189] Low prices support wasteful energy use, and diminish the amount of capital Gazprom can invest into production and distribution.

What is left over for investment is also allocated according to political calculations. Money is sorely needed to rebuild Russia's aging domestic gas transmission infrastructure; 70% of Russia's domestic transmission pipelines were commissioned before 1985 and over 19,000 km (around 12.5%) have exceeded their 30-year lifespan. However, only 20% of the $93 billion spent on pipelines went to the refurbishment of the aging domestic system.[190] The majority went to building additional export pipelines, like the Nord Stream, which are built for political effectiveness rather than cost effectiveness. When Gazprom does choose to lay pipe, it costs $3.3 million per kilometer compared to the world average of $1 million.[191] As shown in Figure 3-3, misallocated investment has led to sharply rising transmission costs.

Investment in domestic production has also been neglected. As illustrated by figure 3-3, costs in quarter two of 2009 have risen 33% from 2008 levels.[192] At the same time, the Energy Information Administration expects production growth to stagnate at around 1-2% by 2010, which is well under Europe's expected growth in demand.[193] The solution, as exhibited by the scenario shown in figure 3-4, is to make conditions favorable for independent gas producers. Gazprom, however, regularly denies outsiders access to its monopolized transmission system – the only way to bring gas to market in Russia. One glaring example of this situation is Gazprom's failure to allow in the byproduct gas from oil drilling. Russia currently flares a whopping 45% of its petroleum gas, which exceeded the amount flared by Nigeria, Iran, Saudi

Arabia, Algeria and Indonesia combined in 2008.[xiv] The inefficiency accepted by Gazprom and its Kremlin handlers boils down to control. As indicated in an internal Russian communication from 2003 ("The Division of the Gas Market: First Lessons and Perspectives"), pipelines are just another means of controlling oil companies and bending them to the Kremlin's will.[194]

[xiv] Flaring is the process by which excess gas is "burned off" or combusted, instead of being injected into a pipeline for shipment.

Conclusions and Recommendations

Natural gas is confined to a limited set of capital-intensive pipelines as it flows from Central Asia to Western Europe. Due to the structure of Eurasian gas trade, the welfare of dependent downstream customers is contingent upon the trade policies of upstream suppliers and transporters. This set up, and Russia's repeated willingness to take advantage of it, are the root causes of the constant clashes between Russia and Ukraine over natural gas. Constrained transport allows Russia to use gas to reward and punish highly dependent states in its near abroad. Russia's strategy works well throughout Eastern Europe, with one visible exception. Dependency cuts both ways in Ukraine. The country transports 80% of Russia's gas exports to its highest paying customers. As the chokepoint in Russia's supply lines west, Ukraine demands special privileges from its eastern neighbor. When Russia obliges, it loses political power over Ukraine for the sake of the stability of gas shipments to Europe. When Russia chooses instead to push back, as it has been increasingly willing to do, it compromises the stability of the transit corridor by which the EU receives 42% of its gas imports and 23% of its total gas consumption. Corruption is rampant throughout these dealings, making them opaque and unpredictable.

Stability is not likely to come from Russia. Control of energy resources gives the Kremlin access to a formidable tool of foreign policy and an independent means by which to finance itself. The government has grown to take advantage of this opportunity, compromising the dynamism of the Russian economy in the process. Russia seems willing to deal with these side effects. The state is built to take advantage of its geopolitically important position. Entrenched interests in Russia's bureaucracy and business will do everything in their power to ensure that streams of revenue stay stable. Reform in Ukraine is also unlikely. Corruption ensures that those with the ability to create change find it not in their interests to do so.

Thus, the push for stability must come from the EU, Russia's highest paying customer. Because Russia relies on the EU to balance its budget, the EU can wield considerable leverage over Russia and Ukraine if it can act cohesively. But the EU should be wary, as not all "energy security" options are equal. Although the two bypass lines proposed by Russia may cut out today's source of instability, these projects will cement Russia's position as supplier to influential countries in the EU, further compromising the union's collective energy security in the future. Solutions to solve today's instability and prevent future conflicts must do the opposite: strip dependency issues out of gas trade. One model to consider is the international oil market, which prevents dependency issues through diversification of routes and suppliers. Customers buy oil on short-term spot markets, which connect buyers to a diverse set of suppliers through a variety of transportation options. Liquid markets prevent dependency on any particular country or transportation route.

Europe's customers will have some help in achieving increased levels of energy security from trends in international gas markets. On the supply side, technological innovation in the United States has made once prohibitively expensive shale gas deposits profitable to extract.[xv] Shale gas could make up 50% of US production by 2035, which would significantly reduce the US' need for gas imports.[195] This development will have widespread consequences for European gas trade. Russia will not be able to sell its natural gas to the United States, which will prevent Gazprom from entering a very lucrative market and reinforce Russia's dependence on Western Europe to finance its budget. In addition, shale gas extraction will increase domestic natural gas

[xv] Shale is a sedimentary rock made of organic material. Its gas is usually much less concentrated than normal deposits, and must be extracted using a technique called hydraulic fracturing, which blasts the gas free from the rock using water, sand and chemicals.

production in Europe, where Germany, France, Hungary and Poland have significant reserves of up to 16 trillion cubic meters.[196]

New modes of transportation are also gaining prominence. LNG, which traditionally satisfied only a small portion of gas demand, is expected to supply nearly 40% of European annual consumption in 2011.[197] New tankers and terminals will increase LNG shipments from suppliers like Qatar, whose imports to Europe more than doubled in the third quarter of 2009. More suppliers and transit options will make long-term supply agreements less attractive, and force more natural gas trading to short-term spot markets, significantly reducing Russia's ability to use gas for political ends. This trend was already evident in 2009, when spot market trading increased by 43%.[198]

Europe can take advantage of these developments, and also help to hasten the growth of a more liquid international gas market through investment in infrastructure. European countries can take advantage of increased gas supply freed up by slackened US demand by building LNG terminals. The construction of the Nabucco pipeline would also strengthen the EU's energy security, as this project would open a route for major gas producers in Central Asia to ship the commodity directly to Europe without crossing monopolized Russian routes. However, these measures still fall short of addressing the major concern facing the EU: a lack of a common energy policy. Because of this reality, they will do little to prevent Russia from continuing to forge individual relationships with EU members, or cutting off gas to specific states.

Vaclav Bartuska, the Czech Ambassador-at-Large for Energy Security and EU Special Envoy on Energy Security who helped mediate the 2009 gas crisis, sees no "silver bullet" for ensuring Europe's energy security, but views "interconnectors" as the most important measure for forging the EU's collective energy security. Building links between European natural gas

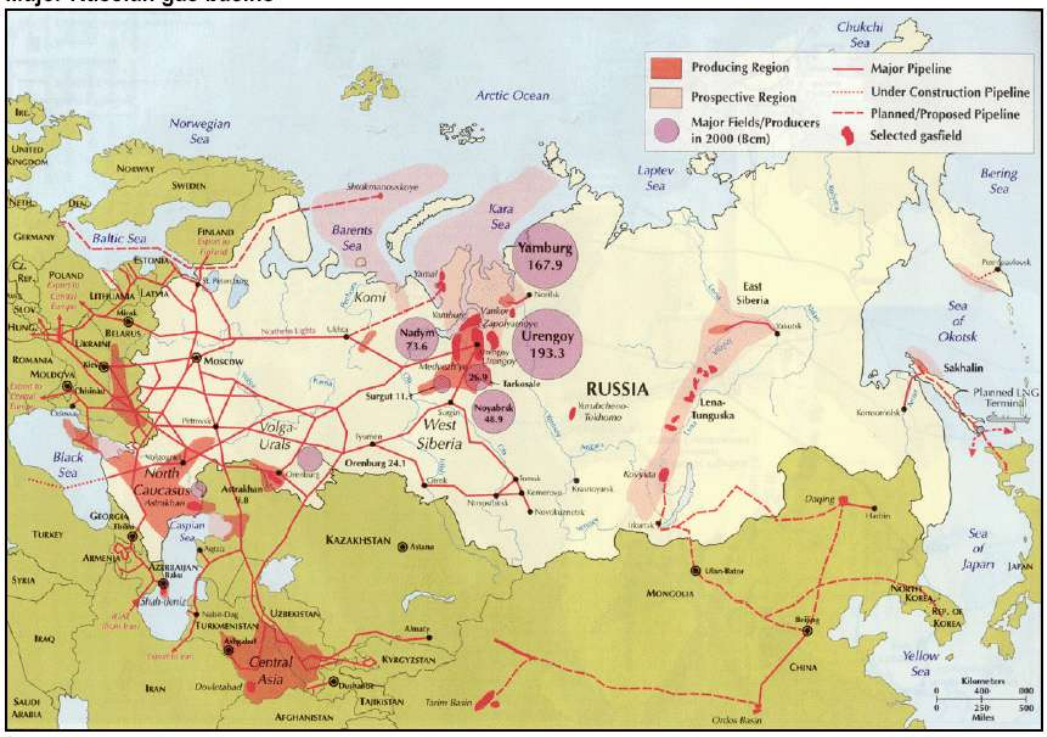
markets would make it possible for member states to "supply one another whenever any supplier stops or cuts deliveries."[199] Through a unified gas market supported by a foundation of shared infrastructure, the EU can cement its collective position as Russia's most lucrative export market. Linked together, the countries of the EU would face a common fate, making it extremely difficult for Russia to forge bilateral relationships or cut gas to any specific country. Gas would be allocated according to supply and demand, not political calculations. Through this measure, the EU would have a strong incentive to use its position as Russia's highest paying customer to force change in the practices of upstream transporters and suppliers. Bartuska put it bluntly, explaining that, when it comes to the EU's energy security – "United we stand, disunited we freeze."

Graphs, Maps and Tables (Endnotes follow this section)

Chapter 1

Figure 1-1

Major Russian gas basins



Source: IEA

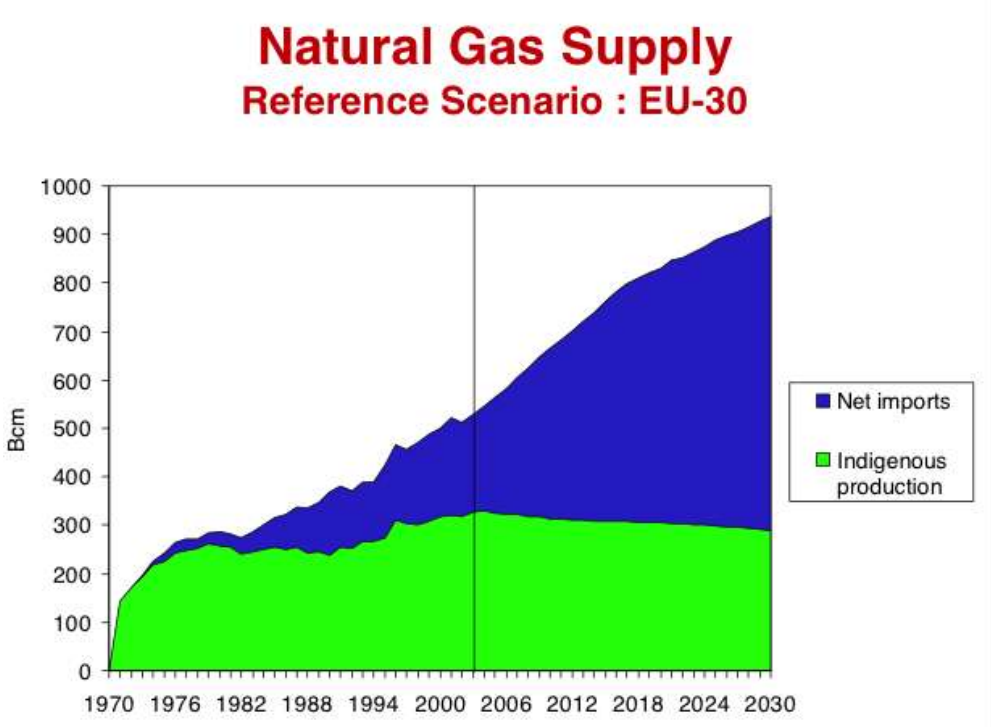
Source: Energy Information Administration, http://www.eia.doe.gov/cabs/Russia/Maps.html

Figure 1-2

Rank	Country	2006 Exports (bcf/y)	2007 Exports (bcf/y)	2006 % of Domestic NG Consumption
1	Germany	1,339	1,378	37%
2	Turkey	703	828	64%
3	Italy	756	742	25%
4	France	353	346	20%
5	Czech Republic	261	247	79%
6	Poland	272	247	47%
7	Hungary	272	226	54%
8	Slovakia	240	223	100%
9	Austria	233	191	74%
10	Finland	173	166	100%

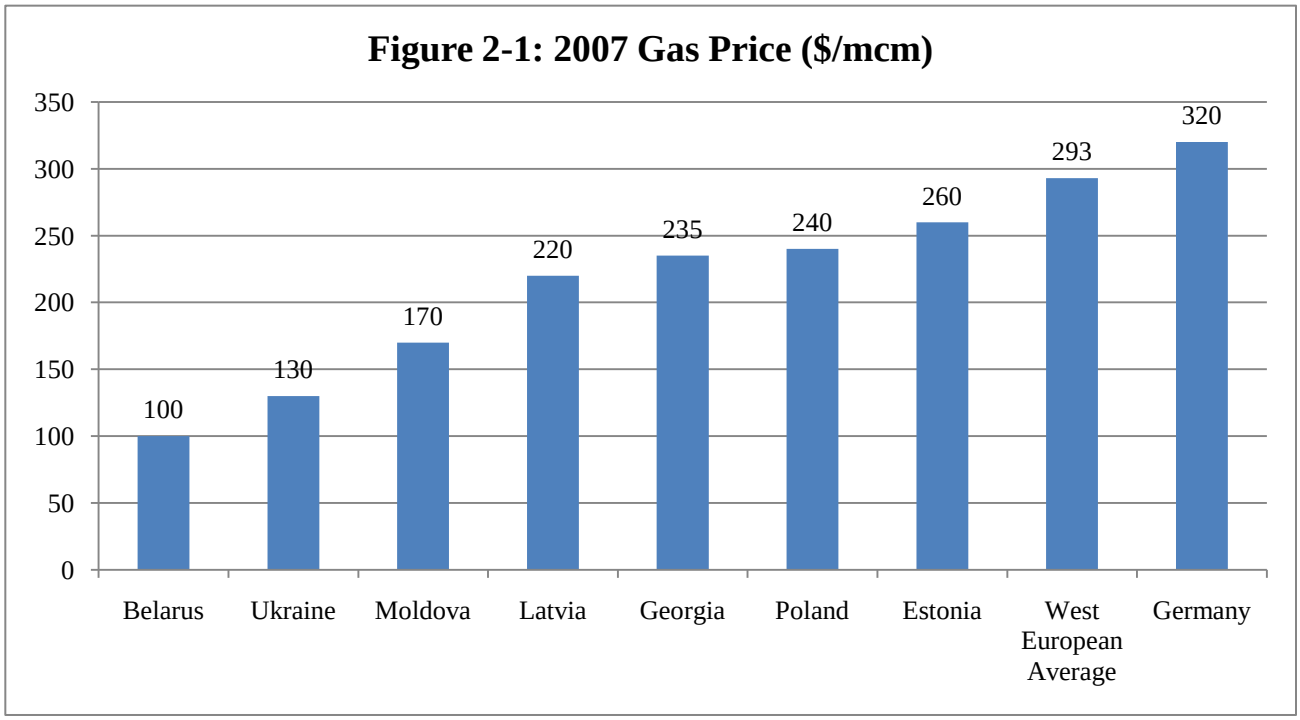
11	Romania	180	138	28%
12	Bulgaria	113	120	96%
13	Greece	95	111	82%
14	Serbia & Montenegro	74	74	87%
15	Croatia	35	35	37%
16	Slovenia	25	18	64%
17	Switzerland	14	11	12%
18	Macedonia	4	4	100%
Total		**5,145**	**5,105**	
Sales to Baltic & CIS States				
1	Ukraine	2,085	2,240	66%
2	Belarus	724	763	98%
3	Lithuania	99	122	96%
4	Latvia	49	72	74%
5	Armenia	57	71	99%
6	Estonia	25	49	11%
7	Georgia	49	36	99%
8	Kazakhstan	28	32	3%
Total		**3,117**	**3,385**	
Source: Energy Information Administration, http://www.eia.doe.gov/cabs/Russia/NaturalGas.html				

Figure 1-3

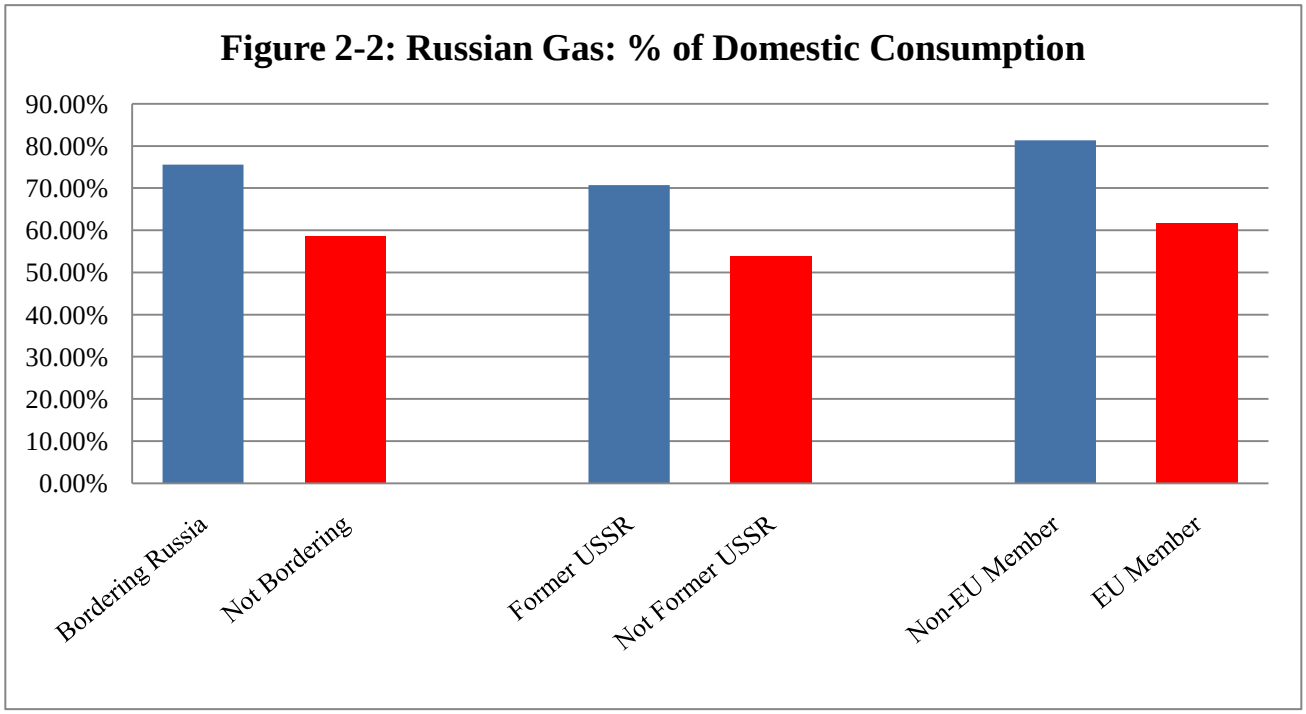


Source: International Energy Agency, www.iea.org/Textbase/nppdf/free/2003/weio.pdf

Chapter 2

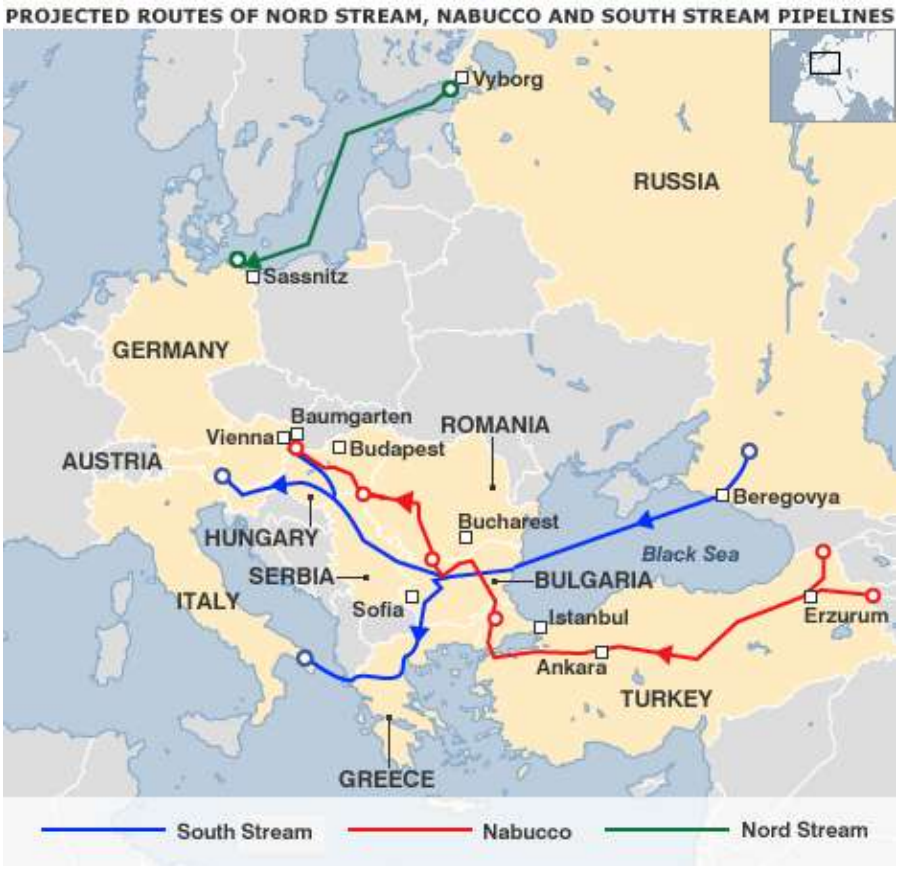


Source: Simon Pirani, *Ukraine's Gas Sector*, www.iea.org/Textbase/nppdf/free/2003/weio.pdf



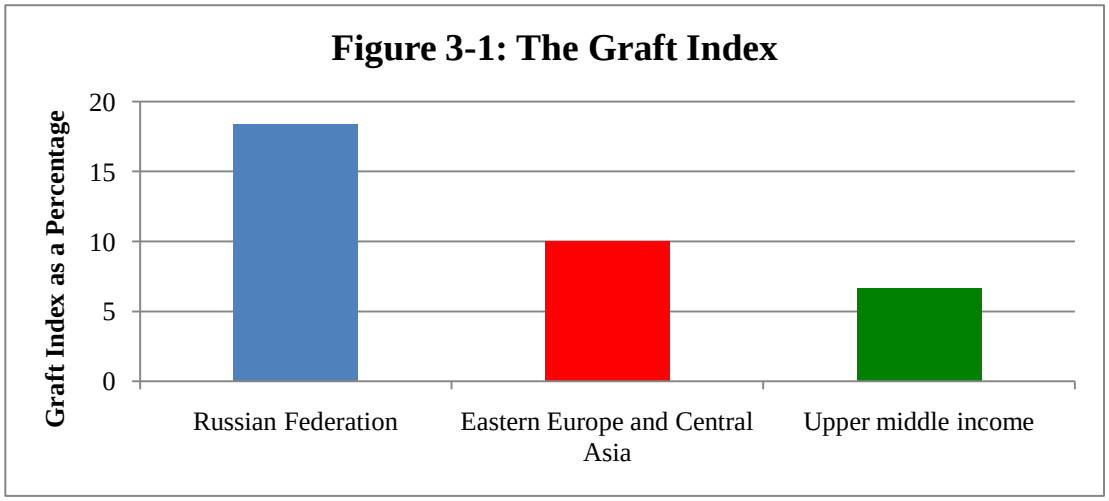
Source: Energy Information Administration, http://www.eia.doe.gov/cabs/Russia/NaturalGas.html; and author's calculations

Figure 2-3

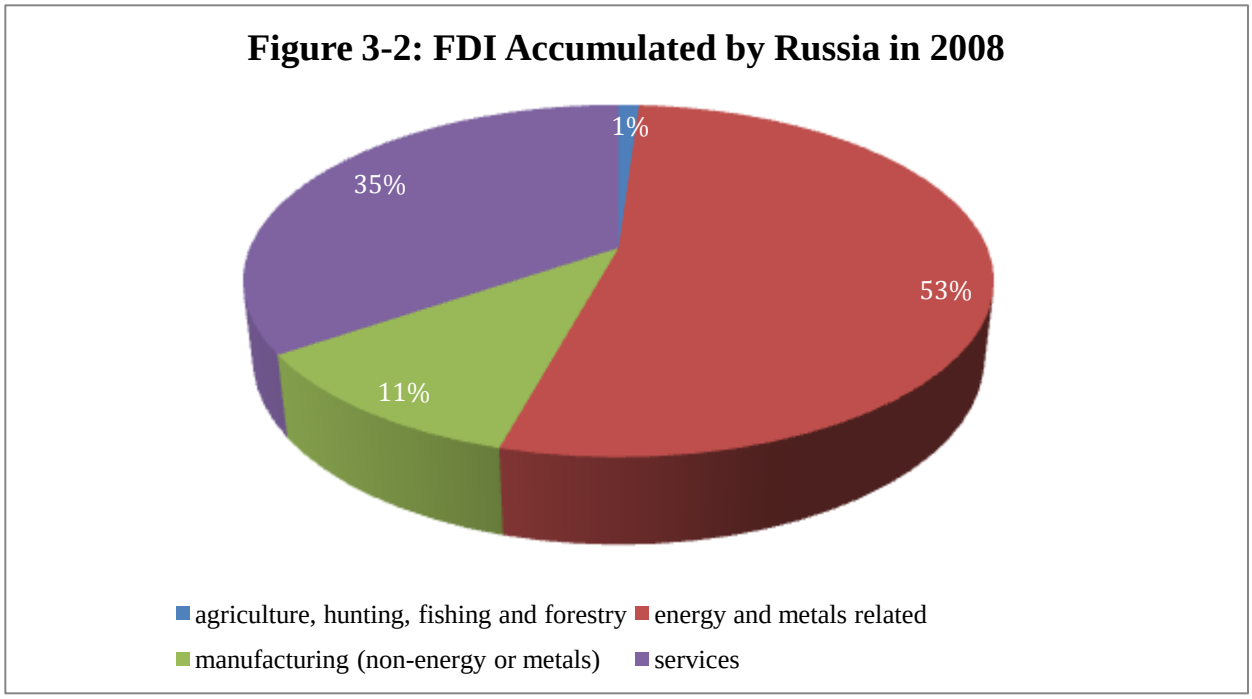


Source: Europe's Energy Portal, http://www.energy.eu/

Chapter 3



Source: World Bank Enterprise Survey, http://www.enterprisesurveys.org/CountryProfiles/



Source: Rosstat, http://www.gks.ru/bgd/regl/b09_12/IssWWW.exe/stg/d02/24-10.htm; and author's calculations

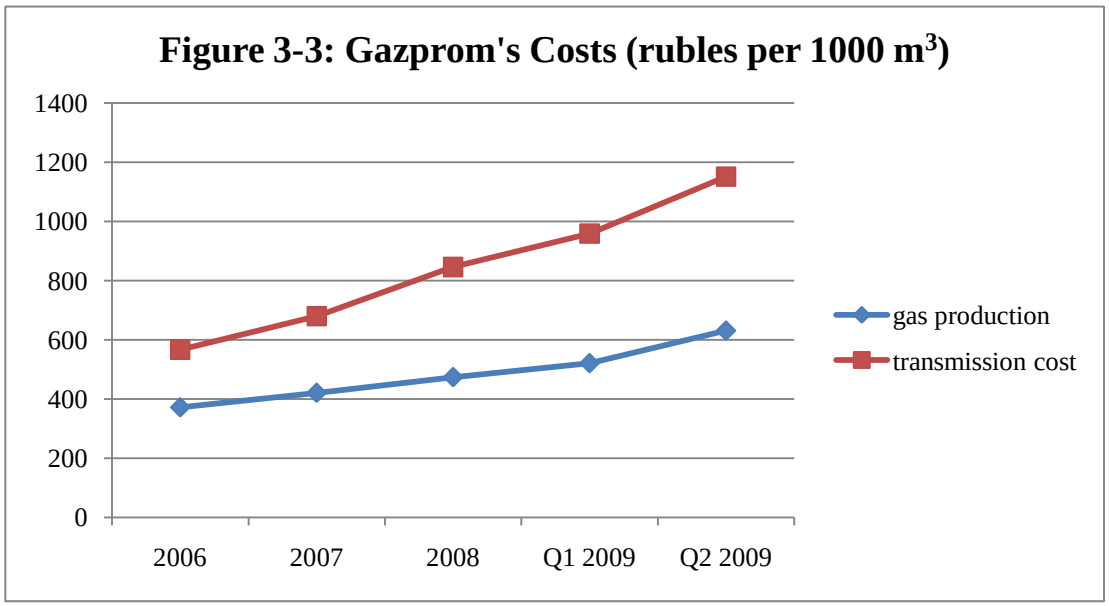


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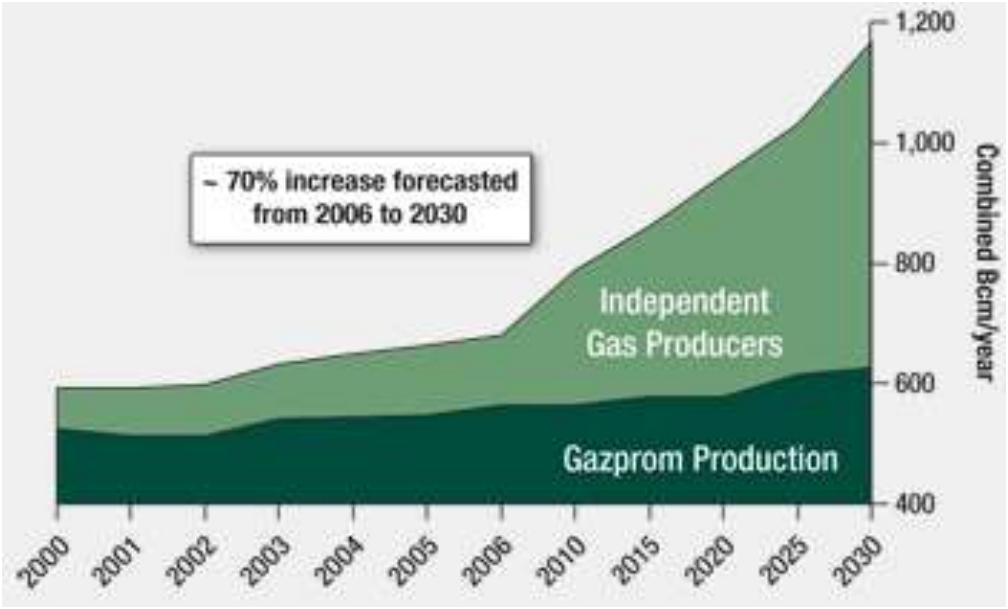
Figure 3-4



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