

A Market Between us: Reducing the Political Cost of Europe's Dependence on Russian Gas

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Abstract

The geopolitical implications of Europe's reliance on Russian gas are a prominent source of concerns among European (and even American) policy makers. We analyse the dynamics of the European Union's gas supply since 1970 and find that while imports have been growing consistently, dependence on Russia has gone down considerably. The trend towards diversification of supply sharply accelerated after 1990. But gas supply diversity is confined to Western Europe; Eastern Europe's small gas markets are highly dependent on Russian gas. We conclude that the emergence of a single European gas market, where national markets would be integrated through pan-European competitive trading, would significantly reduce the energy security and foreign policy implications of the EU-Russia gas relationship.

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1. Introduction

The conventional wisdom, at least in foreign policy circles, posits a direct and necessary relationship between the level of 'dependence' of Europe on Russian gas and the existence or severity of threats to its political unity and strategic autonomy towards Russia. Europe, so goes the idea, would improve its ability to defend its collective interest vis-à-vis Russia if it reduced its reliance, absolute or relative, on Russian gas.

Since 1990 there has been an impressive reduction in the relative dependence of the EU on Russian gas and the volumes imported from Russia have not grown since 2000. Yet at the same time the perception that Russian gas presents Europe with one of its most pressing geopolitical challenges has spread and deepened.

We propose a new approach emphasising the large differences between Eastern and Western Europe in terms of dependence on Russian gas and the segmentation of the European gas system along national borders. We conclude that the emergence of a single European gas market, where national markets would be integrated through pan-European competitive trading, would significantly reduce the energy security and foreign policy implications of the EU-Russia gas relationship and improve Europe's ability to speak to Russia with one voice.

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The second section of this paper analyses the dynamics of European natural gas supply over the past thirty years with special reference to imports from Russia. In the third section we explain why the creation of a single European gas market would increase Europe's energy security and reduce the foreign policy implications of the gas relationship with Russia; we also discuss the barriers to gas market integration in Europe. The fourth section draws some conclusions.

2. Assessing Europe's dependence on Russian gas

The perception that Russia dominates the European gas market, that this dominance is growing and can only continue to grow, is not confirmed by the data. It is at odds with the historical and current status of the EU's natural gas supply and is unlikely to materialise in the future.

2.1. Thirty years of growing consumption, imports and supply diversity

Over the past forty years, natural gas consumption has grown steadily in Europe¹; much faster than primary energy consumption (Figure 1, p. 27). Natural gas covered less than 5% of Europe's primary energy needs in 1965 compared with 25% in 2006. During this period, the dynamics of the EU's natural gas supply have been marked by two trends: the rising share of imports and a growing diversity in import sources.

Since the mid-1970s, indigenous EU production has remained roughly stable at about 200 billion cubic meters (bcm) per year and the growth in natural gas demand has been almost entirely met by imports (Figure 2, p. 28). While consumption has grown 2.5% per year on average since 1975, imports have grown more than 8% per annum, reaching nearly 300 bcm

¹ Unless otherwise stated, "Europe" refers to the current membership of the EU (27 member states).

in 2007. As a share of gas consumption, imports grew from nearly zero in 1970 to 60% in 2006.

At the same time the geographical structure of gas imports has been diversifying and the share of Russian gas has been declining. Russia has established itself as the largest exporter of gas to the EU with exports going from zero in 1970 to 130 bcm per year today. But from the early 1980s onwards, imports from other countries have grown even faster than imports from Russia, and much faster since 2000; between 1990 and 2006, 80% of EU gas import growth has originated from countries other than Russia. Accordingly, the share of Russian gas in the total EU gas imports has declined sharply, from 80% in the early 1970s to 60% in 1995 and 40% today (Figure 3, p. 29)².

The diversification trend is not only about suppliers but also transport modes and routes. Until the early 2000s most of Europe's imports came by pipeline (though Algeria has been exporting liquefied natural gas to Europe since the late 1960s). In the 2000s Europe has been an important player in the rapidly growing market for liquefied natural gas (LNG) and since 2002, most of the rise in EU gas imports has been LNG from new suppliers. Even pipeline routes from Russia itself have been diversifying; the so-called Yamal-Europe pipeline from Russia to Germany via Belarus and Poland went online in the 1990s, reducing the European-Russian gas trade's reliance on the Ukrainian corridor³.

In summary, the past thirty years have seen a steady growth in EU gas consumption and imports and a trend of diversification that has accelerated since 1995. Russia, though a large supplier to the EU, does not dominate Europe's gas supply.

² As a share of EU gas consumption, imports from Russia grew rapidly in the 1970s and 1980s to reach 30% in the early 1990s before stabilising at about 25%. As a share of total primary energy supply, imports of Russian gas have stabilised between 6% and 6.5%. (Figure 3, p. 29)

³ On this pipeline see Nadedja M. Victor and David G. Victor, "Bypassing Ukraine: exporting Russian gas to Poland and Germany", in D. Victor, A. Jaffe and M. Hayes (eds.), *Natural Gas and Geopolitics: From 1970 to 2040* (Cambridge, Cambridge University Press, 2006), p. 122-168.

2.2. Europe's dependence on Russian gas is unlikely to grow

Anticipation of increasing European dependence on Russian gas in the next fifteen to twenty years has been based on three main assumptions: strong gas demand growth in Europe, declining European production, and the existence of very large reserves in Russia. We will look successively at the prospect for EU gas consumption, internal gas production, imports of Russian gas and finally imports from other countries.

2.2.1. *Future gas consumption growth may have been overestimated*

Over the past twenty years (1987-2007), gas consumption in the EU27 has grown much faster on average than overall energy consumption (2.2% and 0.23% per year, respectively as shown in Figure 4, p. 30). This rate of growth is unlikely to be sustained in the future.

Between 2000 and 2006, the electricity generation sector accounted for nearly 80% of gas consumption growth in the EU27⁴ and natural gas should remain an attractive fuel for the power-generation industry, especially in a context where greenhouse gas emissions are regulated. Gas is the least carbon-intensive of all fossil fuels, generating roughly half the amount of CO₂ per KWh than is emitted by a modern coal-fired plant; as such, imposing a financial penalty on CO₂ emissions – as the EU Emission Trading Scheme (ETS) does – supports gas demand. At the very least, meeting the EU emissions target – a 20% reduction in CO₂ by 2020 compared to 1990 levels – and the associated cap on the EU Emission Trading Scheme, will require more intensive use of existing gas-fired capacity at the expense of coal-fired power plants⁵. Depending on assumptions about electricity demand growth, the actual

⁴ Source: Eurostat data.

⁵ See Deutsche Bank Global Market Research, “Abatement statement: a big need for fuel-switching over 2008-2020”, 10 March 2008. For evidence of fuel switching during the trial period of the ETS see Meghan McGuinness and Denny Ellerman, “CO₂ abatement in the UK power sector: evidence from the EU ETS trial period”, MIT, CEEPR Working Paper 08-010, September 2008.

implementation of Germany's early retirement of its nuclear fleet⁶, and deployment of renewable generation capacity, further carbon abatement might be required in the electricity sector beyond the existing fuel-switching potential, increasing the need for new gas-fired capacity.

Still, power generation represents less than a third of gas consumption in the EU and demand in other sectors, especially industry, is much less secure. In a context of very high prices, total gas consumption had started to decline in Europe long before the economic crisis unfolded (see Figure 4, p. 30).

As shown in Figure 5 p. 31, the projections published by the International Energy Agency and the US Energy Information Administration over the past decade have become more and more conservative regarding gas consumption growth in Europe. The IEA's *World Energy Outlook* (WEO) published in 2000 projected a growth of more than 3% per year on average to 2030, against 1.5% in the WEO 2005 and just 1% in the WEO 2008. The US Energy Information Administration's *International Energy Outlook* (IEO) published in 2006 projected a growth of nearly 2% per year; in the 2007 and 2008 issues European gas consumption growth until 2030 is at 1.2% and 1.4% per year on average, respectively. In November 2008 the European Commission released the first report of its Market Observatory for Energy with projections up until 2020. The two "baseline scenarios", respectively with "moderate" and "high" oil and gas prices, show an increase in gas consumption of 0.95% and 0.25% per year on average between 2006 and 2020⁷.

2.2.2. *EU production should continue to decline*

Between 2000 and 2007, EU annual gas production has declined by 40 bcm or 2.5% per annum on average. There is a wide consensus within the European gas industry that this trend

⁶ See the analysis by Lehman Brothers Global Equity Research, "German Utilities", 16 April 2008, p. 4-7.

⁷ European Commission, Market Observatory for Energy, *Europe's Energy Position: Present and Future* (Luxembourg, Office for Official Publications of the European Communities, 2008), p. 14. The two scenarios called "New Energy Policy" show zero or negative gas consumption growth with moderate and high oil prices, respectively.

will continue, driven by rapid decline in UK production and slower decline in the Netherlands, noting that these two countries represent three quarters of total EU production. In light of the recent North American experience, the potential for ‘unconventional’ gas production – especially coal-bed methane – is increasingly discussed in Europe but is not perceived as capable of reversing the declining trend. Accordingly, if the European gas industry is to continue to grow, imports will have to compensate for indigenous production decline as well as meet any growth in demand.

2.2.3. *Russia is not in a position to increase gas exports to Europe*

The much-discussed new pipeline projects from Russia to Europe, Nord Stream under the Baltic Sea and South Stream under the Black Sea, have distorted the perceptions about the future of Russian natural gas exports to Europe. These two pipelines are not intended to increase export *volumes* but create alternative *capacity* in order to allow the servicing of Russia’s European export contracts without transiting through Ukraine or increasing its reliance on the Belarus-Poland corridor⁸. Whether bypassing Ukraine is a cost-effective way of solving the transit insecurity issue is debatable but, as it would weaken Ukraine considerably, it serves Russian foreign policy objectives as well. It would also allow Gazprom to treat exports to Ukraine as an adjustment variable, reducing exports when the Russian gas balance becomes too tight without jeopardising the relationship with Gazprom’s large clients in Europe.

For, despite its control over the largest reserves in the world, Gazprom finds itself in a supply situation that appears to be increasingly challenging. The three ‘super-giant’ west-Siberian gas fields which account for the bulk of its output are now in steep decline (Figure 6,

⁸ Currently slightly less than 80% of Russian exports to Europe transit through Ukraine’s infrastructure. The first phase of Nord Stream would allow the immediate redirection of almost 30 bcm/y away from the Ukrainian corridor. The gas industry in Central Europe is actively preparing for this re-organisation of the flows. (Author’s interviews with gas companies in the Czech Republic, November 2008 and Hungary, February 2009. For a perspective from Slovakia see Andreas Rau, “Central European Gas Transmission in a Changing Environment”, Presentation to the Central European Gas Congress, Prague, 27-28 February 2008, p.9, available at cgoa.cz/cs/download/sepk-02-presentace-rau.pdf, last accessed 9 March 2009). If the two phases of Nord Stream plus South Stream were built, Ukraine could be bypassed by 2020.

p. 32). The ability to maintain current production levels (let alone increase them) in the coming decades critically depends on the development of a new generation of super-giant fields on the Yamal Peninsula. As seen in Figure 6, Gazprom's official view is that Yamal will come on stream in 2010⁹. The executives interviewed for this research among the European gas industry consider this to be impossible; some mentioned 2015 as a more realistic date for Yamal¹⁰.

Gazprom is not in a position to meet all of its commitments (internal Russian demand plus export contracts) from its own production only. It critically depends on two other sources of gas: the so-called 'independent' Russian producers and imports from Central Asia, especially Turkmenistan. In 2006 each of these sources constituted approximately 8% of all natural gas transported by Gazprom's transmission network, or slightly more than 110 bcm combined¹¹. These two sources of non-Gazprom gas in addition to the development of smaller satellite fields in West Siberia could be thought of as a bridge that is supposed to allow Gazprom (and Russia) to wait for the Yamal fields to come on line¹².

There are uncertainties regarding the volumes that Gazprom will be able to source from Turkmenistan. The existing infrastructure and strong business and political relationship tend to place Russia at an advantage compared to China, and certainly to Europe, in the competition for 'access' to Turkmenistan. But the ability of Turkmenistan to convert its huge

⁹ The chart reproduced in Figure 6 (p. 32) was downloaded from Gazprom's website (gazprom.ru) in September 2007; it has since been removed from the website.

¹⁰ Interviews in energy companies in Norway, France and the UK, May-June 2008. One of our interviewees expressed the view that Gazprom would not be able to develop Yamal without involving foreign oil and gas companies; to our knowledge, such a possibility has never been publicly mentioned by Gazprom or the Russian authorities.

¹¹ In 2006 a total of 717.8 bcm of gas passed through Gazprom's transmission system. In that year they produced 556.0 bcm and withdrew 48.2 bcm from storage. 57.0 bcm came from Central Asia, amounting to 7.9% of the gas that Gazprom transported. (Using the BP Statistical Review of World Energy's data for gas production and consumption of Central Asian countries, and IEA data for imports of other countries from Turkmenistan, Kazakhstan, Uzbekistan and Azerbaijan, the implied Central Asian exports to Russia amounted to 55.4 bcm, quite close to the figure given by Gazprom.) Therefore (by calculation) 56.6 bcm (i.e. another 7.9% of all gas transported in the Russian system) must have come from independent Russian producers. All the figures from Gazprom are from their Annual Report 2006, p. 37 (gazprom.com/documents/Report_Eng.pdf).

¹² I owe the bridge analogy to a conversation with Thane Gustafson of Georgetown University.

undeveloped gas reserves¹³ into production capacity and long-term functioning export relationships remains to be proven. As for independent Russian producers, they are not allowed to export and there is no regulated regime for them to access the transmission network. Their incentive to increase their production depends on the price that Gazprom is willing to pay for their gas but also on the credibility of its commitments to them. As these two sources of gas become more strategic the price that the state-controlled monopoly is willing to pay to Central Asian and independent Russian producers rises. But the length and strength of the ‘gas bridge’ on which Gazprom relies are uncertain.

Meanwhile, Russia’s internal gas consumption has been growing, driven by economic expansion and especially rising electricity consumption (according to the IEA, gas accounted for 46% of electricity generation in Russia in 2006 against 19% for the OECD). In this context, the issue of gas prices on the Russian market becomes very important. Russian consumers – both industrial and domestic – pay a fraction of the prices paid by European consumers (when they pay at all). Raising prices is a key condition for controlling gas demand growth as well as increasing the profitability of supplying the Russian market, and it has been an official policy goal for a long time. The latest plans by the government stipulate that prices in the internal market will be on a par with European prices by 2011 (adjusted for transport). The deep economic crisis in Russia will probably make it politically even harder to reform energy prices, though the fall in oil-indexed prices in Europe during 2009¹⁴ will reduce the gap to be bridged.

Depending on the assumptions that one makes about the various terms of this equation, the assessment of Russia’s gas balance falls somewhere between a tight but manageable

¹³ In October 2008 the first results of an audit commissioned by the Turkmen government were made public. They tend to confirm that the country’s reserves could support a large increase in gas exports. See Bruce Pannier, “Independent audit shows Turkmen gas field ‘world class’”, Radio Free Europe/Radio Liberty, rferl.org, 14 October 2008 (accessed 16 October 2008).

¹⁴ In the long-term contracts between Gazprom and European importers the price is indexed on oil products with a time-lag of about six months; therefore, following the collapse in the price of oil from July 2008 onwards, contractual gas prices will start to fall during the first quarter of 2009.

situation and an impending gas crisis¹⁵. The current financial crisis could have two diverging effects: on the one hand Russian gas consumption will go down sharply and exports to Europe will be reduced as importers only take the minimum contractual volumes and short-term import contracts are not renewed; on the other hand Gazprom could find it difficult to finance its exploration and production programme and may have to reduce capital expenditures on strategic projects, further delaying Yamal's development.

As long as Gazprom lives on the 'gas bridge' between west Siberia and Yamal it is unlikely that exports to Europe will increase at all. From the late 2010s onwards the servicing of the existing contracts¹⁶ will be gradually transferred to Yamal, and possibly the Shtockman field in the Barents Sea¹⁷, limiting the volumes available for new contracts.

2.2.4. Imports of non-Russian gas will continue to grow

As previously discussed, non-Russian gas exports to Europe have grown very rapidly over the past 25 years. These were a mix of pipeline gas from Algeria and Norway and, especially from the late 1990s onwards, LNG from a growing number of countries in North Africa, the Middle East, Sub-Saharan Africa and the Caribbean. As Russian exports stagnate and internal EU production declines, continued growth in the European gas market depends on the growth in imports of non-Russian gas.

The potential for growth in EU pipeline gas imports is very significant but its realisation is uncertain. The Norwegian official figures show exports reaching a plateau of 120 to 140

¹⁵ See J Stern, *The Future of Russian Gas and Gazprom* (Oxford: Oxford University Press, 2005), esp. p. 30-35; p. 50 f.; p. 206 f. For a recent analysis developing a moderately pessimistic view see Nadejda Makarova Victor, "Gazprom: Gas Giant under Strain", Stanford University, Programme on Energy and Sustainable Development, January 2008.

¹⁶ In 2006, major existing long-term contracts with European importers were renewed until 2030-2035: 2036 for E.ON-RuhrGas, 2035 for ENI, 2030 for BASF-Wintershall, 2026 for OMV and 2030 for GDF. See Dominique Finon and Catherine Locatelli, "Russian and European Gas Interdependence. Could Contractual Trade Channel Geopolitics?", *Energy Policy* 36 (2008), p. 430.

¹⁷ This very large field located offshore in the Barents Sea, would be developed by Gazprom in partnership with Total of France and StatoilHydro of Norway; the official plan is to market half of the production as LNG and half piped to Europe. A final investment decision is expected in the first quarter of 2010.

bcm/year by 2020¹⁸, suggesting that exports to the EU could reach at least 100 bcm against 80 bcm in 2008. There are two new pipelines being built from Algeria to Spain and Italy respectively, with a combined capacity of 16 bcm/year¹⁹. The important discoveries made in Libya as well as the normalisation of the geopolitical situation there since 2004 mean that the country could significantly expand its gas exports to the EU in the future. The realisation of this potential is contingent on the investment climate remaining favourable, which can not be taken for granted²⁰.

The companies forming the Shah Deniz II consortium in Azerbaijan have approximately 10 bcm/year of gas to market in the coming years and are considering shipping it to Europe via the South Caucasus Gas Pipeline, the Turkish transmission network and either the Turkey-Greece-Italy Interconnector or a new pipeline from Turkey to South-Eastern Europe. Negotiations between the consortium and the Turkish and Azeri governments are under way²¹.

Pipeline exports to Europe from either Turkmenistan or the Middle East (especially Iran) are a distant and highly speculative prospect, despite the high level of political interest in this in Europe²². Unlike Norway, Algeria, Libya or even Azerbaijan, there is no active market for exploration and production in Turkmenistan and no clear prospect for international oil and gas companies to sign contracts there²³. Furthermore, there are serious political and legal

¹⁸ See Norwegian Ministry of Petroleum and Energy and Norwegian Petroleum Directorate, *FACTS. The Norwegian Petroleum Sector 2008*, Oslo and Stavanger, May 2008, p. 47-51.

¹⁹ The Medgaz pipeline to Spain was completed in January 2009 and is expected to come on stream by mid-2009; the Galsi project to Italy is expected to enter in operation in 2013. See Eric Watkins, "Medgaz Algeria-to-Spain gas pipeline completed", *Oil & Gas Journal Online*, 8 January 2009.

²⁰ In February 2009 the Libyan leader Moammar Qadhafi mentioned the possibility to re-nationalise the oil and gas industry. See "ExxonMobil shrugs off latest Qadhafi remarks", *Oil & Gas Journal Online*, 16th February 2009.

²¹ Gazprom has also expressed a clear interest in buying this gas and importing it into Russia. (author's interviews with BP and StatoilHydro representatives, Brussels, January and February 2009).

²² The EU is actively supporting the Nabucco gas pipeline project that is supposed to bring Central Asian and Middle Eastern gas to Europe via Turkey. For recent official endorsements of Nabucco and a 'Southern gas corridor' by the EU see European Commission, Second Strategic Energy Review, An EU Energy Security and Solidarity Action Plan (Brussels, 2008), p.4-5 (available at ec.europa.eu/energy/strategies/2008/2008_11_ser2_en.htm, last accessed 9 March 2009; or Mirek Topolánek, Speech at the Nabucco Summit, Budapest, 27 January 2009 (available from eu2009.cz, last accessed 9 March 2009).

²³ On 16th April 2009 RWE, the German gas and electricity company that is a partner in the Nabucco consortium, signed an exploration and production agreement with the government of Turkmenistan concerning an exploration block in the

issues around the building of a Trans-Caspian gas pipeline²⁴. As for Iran, it is unclear why it should burden itself with complex transit issues while, assuming nuclear-related sanctions have been removed and the country manages to define and implement a gas-export policy (something it has not been able to do in thirty years), it could market its gas as LNG and benefit from a very advantageous location to arbitrage between Asian and Atlantic markets, as Qatar does²⁵.

The prospects for increasing LNG imports into Europe look even better. Between 2008 and 2012 there will be both rapid expansion of world liquefaction and European re-gasification capacity, with EU capacity increasing by 80% from 102 bcm/year in 2008 to 183 bcm/year in 2012 (Figure 7, p. 33). In a rapidly globalising market where contracts become more flexible and cargoes (even contracted ones) can be re-routed to the highest-price markets, there is no guarantee that gas will flow in at the rate suggested by the terminal's capacity²⁶. But with the combination of dynamic indigenous gas production in the United States, sharp decline in Asian and global economic growth and strong worldwide LNG supply growth, Europe should find itself in a good situation to access the LNG market in the next five years²⁷. After that the market could tighten as the rate of growth of global liquefaction capacity slows down and demand rebounds in Asia and North America, but there is considerable uncertainty.

Western Caspian Sea (see "RWE says it will develop, deliver Turkmenistan gas", Reuters, 16th April 2009). This is a promising development.

²⁴ Russia and Iran maintain that building a pipeline across the Caspian Sea requires the agreement of all five bordering countries.

²⁵ Calculations done by Jim Jensen in 2006 showed that a 25 bcm/yr project from Iran to Europe would cost \$2.5 per MMBtu as LNG (delivered to Italy) and \$3/MMBtu by Nabucco (delivered to the German border). See Jim Jensen, "The Prospects for Natural Gas Exports from the Middle East", Presentation to a Chatham House Conference on 'Investment in the Middle East: What is at Stake?', London: Chatham House, 2006 (p. 22-25). Note that the gas export projects that were put on hold in 2008 by Shell, Repsol and Total because of the nuclear-related sanctions were all LNG projects.

²⁶ For an illustration focused on the North American market, see Deutsche Bank Global Market Research, *Global LNG: Sink without a Tap*, 18 June 2008.

²⁷ The International Energy Agency expects between 60 and 100 bcm of European LNG imports in 2010 and between 80 and 160 bcm in 2015. See International Energy Agency, *Natural Gas Market Review 2007* (Paris: OECD/IEA, 2007), p. 64.

2.3. Europe is not over-dependent on Russian gas

Europe's reliance on internationally traded gas is increasing but the EU is not over-dependent on Russian gas. Its gas supply has been diversifying for decades and the trend is accelerating. Russia covers 40% of the EU's gas imports and this share is declining, equating to 25% of gas consumption and just 6.5% of primary energy consumption. Europe's indigenous natural gas production is declining and should continue to do so but Russia is not in a position to expand its gas exports to Europe in the coming fifteen to twenty years. Outside Russia, there is significant potential for expansion of gas exports to Europe by pipeline from existing and new suppliers, but its realisation is uncertain; European imports of LNG should continue to expand rapidly, at least in the coming decade.

Russian gas will not be a driver of the future dynamics of European gas supply which will be driven by the interaction between the rate of decline of European production, the availability of additional volumes of non-Russian gas and the rate of growth of gas consumption. There seem to be two credible scenarios: (1) a moderately expanding European gas market where the share of Russia continues to decline; and (2) a moderately declining European gas market where the share of Russia is roughly stable. An expanding European gas market where an increasing share of imports and consumption is covered by Russia – a scenario that dominated the main projections until recently – is highly unlikely to materialise.

3. Addressing the foreign policy implications

If dependence on Russia is declining and should continue to do so, why is Russian gas such a sensitive and especially divisive issue in European politics? To answer this question we will have to look at national energy situations behind EU average figures, and to

understand the structure of the European gas industry or, more precisely, the lack of a single European gas market.

3.1. Gas consumption is in the west, dependence on Russia is in the east

EU27 averages as presented in the first section do not tell the whole story about Europe's dependence on Russian gas. There are very large differences between member states as to the size and structure of their energy economies, the role of natural gas in their energy supply, the share of imports in gas supplies and the share of Russia in gas imports.

In many respects, the former iron curtain still separates two very different Europes as far as natural gas is concerned. Gas consumption is heavily concentrated in Western Europe (Figure 8, p. 34): the 'old 15' member states account for 86% of the gas consumed in the EU; the seven biggest gas markets in Europe are all in the EU15. The UK, Germany and Italy each consume more gas than the 12 new member states combined. In contrast, gas markets in Eastern Europe are small or very small, which simply reflects the fact that most of the new member states have small economies and hence relatively low levels of energy consumption²⁸.

The gas supply structure is also very different. For the EU15 it is very close to what has been described in the previous section for the EU27 (Figure 9, p. 35). In contrast, the 12 new member states import roughly three quarters of the gas they consume with almost 100% of imports coming from Russia (Figure 10, p. 36). There has been some diversification of import sources in the past several years (in the Czech Republic and Hungary, for instance) but this remains marginal. The average rate of dependence on Russia for the new member states is 60% against 20% for the EU15 (Figure 11, p. 37). Three Eastern European countries have dependence rates of 100% and six above 80%. All but one of the 10 new member states from

²⁸ The average share of natural gas in the energy mix is very close in Western and Eastern European countries though there are large differences amongst both groups.

Central and Eastern Europe rely on Russia for at least 50% of their gas, against only three countries of the EU15.

Western European gas markets are large and, on average, much less dependent on Russia than the much smaller Eastern European markets. On balance, slightly more than two thirds of Russian gas consumed in Europe is imported by the EU15. But, as Figure 12 (p. 38) shows, this is unevenly distributed and two countries, Germany and Italy, together account for nearly half of the total. The third biggest importer of Russian gas, France, imports less than half the amount of Italy and a quarter that of Germany. This concentration of Russian gas exports in Germany and Italy means that roughly 40% of Gazprom's entire profits are generated by export to these two European countries²⁹. Large gas importing companies in Germany and Italy truly are strategic partners for Gazprom. By contrast, Eastern European countries, most of them highly dependent on Russia, tend to import small volumes of Russian gas. Taken together they are far from a negligible outlet for Gazprom but individually they each amount to a tiny share of the Russian company's exports and profits.

Figure 13 (p. 39) summarises the situation of the 25 European gas markets³⁰ vis-à-vis Russian gas.

3.2. Europe is a patchwork of national gas systems

Those differences would have limited political implications if Europe had a well-functioning gas market. Competitive trading would allocate physical supply across the continent irrespective of which specific import contract brought it into Europe. There would still be large and small entry points for Russian gas into Europe but each country would be part of a wider market enjoying a high degree of supply diversity. But such a market does not

²⁹ Gazprom makes around 80% of its profits in its exports to Europe.

³⁰ Cyprus and Malta do not consume any natural gas.

exist. The industrial and contractual structure inherited from the early years of the Soviet-European gas trade is still largely in place.

The first gas import contracts with Russia were signed by Western European countries (Austria, Germany, France, Italy) in the 1970s, following the first large-scale exports of Soviet gas to the countries of the CMEA in Eastern Europe. The Western clients of the Soviet ministry of gas (that would become Gazprom in the early 1990s) were large utility companies with a dominant (often monopolistic) position in their national market; these companies were able to contract for large volumes of gas over two or three decades under fairly rigid conditions. These contracts included a take-or-pay clause guaranteeing a minimum cash-flow to the supplier irrespective of demand conditions. Prices were set against alternative fuels in each specific market through an indexation formula; the price clause was backed by a 'destination clause' that prevented importers from re-selling Russian gas in other markets. This rigid contractual structure was designed to support massive investment in transaction-specific infrastructure, especially the 5000 km pipelines from West Siberia to Europe. Note that there is no Soviet or Russian specificity here: import contracts for Algerian, Norwegian and even Dutch gas all included roughly the same features. Finally, these contracts benefited from strong political backing and were, to a large extent, government-to-government agreements even if the industrial and financial entities involved on the European side had varying degrees of government ownership.

The gas trade between the Soviet Union and the Eastern European countries of the CMEA developed in the 1960s under schemes of co-investment and barter deals. Cheap Soviet gas fed the development of heavy, energy-intensive industries in Eastern Europe. After the fall of the USSR and communist bloc, gas trade was gradually (and sometimes painfully) restructured as Russia raised prices considerably and asked its former satellites to pay in hard currency. For most countries in the region, this process took place in the context of a broader set of economic reforms required to prepare for EU membership. The gas contracts with

Russia have many common features with Western European ones though often are of shorter duration.

This contractual structure supported the development of the largest commercial gas relationship in the world, contributing to the penetration of natural gas in Europe and the diversification of energy balances after the first oil shock. But it was not developed with Europe in mind. In particular, the idea of a European gas market was explicitly rejected. The sharing of the commercial risks through long-term, rigid contracts and the necessity of strong government backing both pointed to a juxtaposition of strictly bilateral arrangements. Similarly, the monopoly position of large importers of Russian gas in Western Europe was considered instrumental to the management of risks further down the supply chain and was thought to be a logical and unavoidable implication of the 'natural monopoly' characteristics of gas transmission and distribution networks. In the 1970s and 1980s the rapid penetration of imported gas into Europe (from Russia, Algeria and Norway) was done under an industrial and contractual model which was incompatible with the development of a European, competitive market for gas.

As gas consumption increased and Western European markets matured, the economic drawbacks of the historical industrial organisation became clearer and the case for a single, competitive gas market grew stronger. The segmentation of the European market along national boundaries helped to maintain monopoly rents that the process of liberalisation was supposed to make disappear. This segmentation was supported by long-term contracts for capacity on cross-border pipelines that complemented the supply contracts themselves. The quasi-absence of short-term gas trading on free markets meant that little gas-to-gas competition occurred and no credible prices emerged that reflected the supply-demand balance and the seasonality of the gas business. These characteristics led to large inefficiencies in the working of the European gas industry, the identification of which was the basis for the drive towards EU-led restructuring and liberalisation.

3.3. Market segmentation empowers Russia and divides Europe

Beyond its economic cost to Europe, the segmentation of the European gas system has serious foreign policy implications. The absence of a single competitive market where gas moves freely across Europe maintains a direct link between commercial gas contracts and bilateral political relationships. This structure makes Russian gas a highly divisive issue in European politics. It also empowers Russia's foreign policy towards the continent by allowing Moscow to dissociate its strategic relationships with large client nations in Western Europe from its policy towards Eastern European countries.

The segmentation of the European gas system is central to the relationship between Russia and its two largest gas clients in Western Europe, Germany and Italy. There is a widely shared perception among the German political elite that the gas relationship with Russia works very well for Germany and could work well for the whole of Europe if only all EU member states acted "rationally" towards Moscow³¹. Pan-European gas market integration would reduce Germany's ability to politically manage its energy interdependence with Russia; or, to put it differently, a segmented gas market ensures that those who have "irresponsible" foreign policy attitudes vis-à-vis Russia are the only ones to pay the price.

Russia, for its part, extends offers of privileged 'energy co-operation' to Germany and Italy that make them key partners in implementing Gazprom's strategic vision in Europe. This is especially true of the Nord Stream and South Stream pipeline projects that would allow Russia to re-route its gas exports to Western Europe away from the Ukrainian corridor. These pipelines would isolate the large gas export contracts with Germany and Italy from the political and energy realities of Eastern Europe. For Italy and Germany this offer may be difficult to refuse from an energy security perspective; at the same time, minimising gas transit through Eastern Europe structurally empowers Russia's foreign policy in its "zone of

³¹ The analysis in this paragraph is based on a discussion between the author and a group of fifteen German senior politicians, government officials and public intellectuals organised by the European Council on Foreign Relations in Berlin on 4 December 2008.

special interests” by entrenching the divergence of interests between Eastern and Western Europe. As such, the Nord Stream and South Stream projects are a manifestation of the merger between Russia’s gas export policy and its post-cold war foreign policy towards Europe, arguably one of the most important foreign policy moves initiated by Moscow under the leadership of Vladimir Putin.

For countries in the upper-left section of Figure 13 (p. 39), the absence of a pan-European gas market makes their dependence on Russia a real political constraint. It is tempting to ‘buy’ energy security (or at least the appearance of it) by engaging in pro-Russian foreign policy³². Reciprocally the gas relationships offer Moscow the ability to reward or punish Eastern European countries, overtly or subtly, all the more easily that Gazprom’s export contracts in this region are small as a share of Russia’s total gas exports to Europe. Moreover, the contradictions between the management of the gas relationship with Russia and the key political orientations of the government is a source of internal tensions in several Eastern members of the EU – let alone Ukraine – where part of the political and economic elite’s allegiance still lies with Russia³³.

The benefits that Moscow derives from a segmented European gas system are not primarily about gas. Gazprom would benefit from an integrated and competitive market by easily commercialising gas anywhere in Europe and arbitraging between markets. It could also exercise its market power much more directly by adjusting its export volumes to the state of the European market (just as OPEC adapted to the transformation of the oil market in the early 1980s by becoming a formal cartel, adapting its production to defend prices). Russia derives foreign policy gains from a segmented gas market in Europe. It empowers Moscow’s revisionist agenda in Europe³⁴ by creating or reinforcing divisions among EU member states.

³² The cases of Bulgaria and Slovakia may be cited here.

³³ These internal tensions were made very clear by our interviews in Estonia, Lithuania and Latvia, conducted between 30th March and 2nd April 2009. There were clearly visible even in more ‘westernised’ EU member states such as the Czech Republic, Poland and Hungary.

³⁴ On the revisionism of Russia’s foreign policy see Andrew Monaghan, “‘An enemy at the gate’ or ‘from victory to victory’? Russia’s foreign policy”, *International Affairs* 84:4, 2008, p. 717-733.

The European responses to the Russian invasion of Georgia in August 2008 and the contrast in attitudes towards political and economic co-operation with Ukraine illustrate European divisions.

Russia has consistently fought against EU-sponsored reforms promoting market integration, and Gazprom is actively trying to prevent the emergence of traded markets in continental Europe. Alongside other sovereign gas exporters Russia opposed the abolition of the ‘destination clause’ in European gas contracts. More recently, the control of the industry’s ‘mid-stream’ (transmission, storage and ‘hubs’), essential to constraining the development of pan-European competitive trading, has become central to Gazprom’s commercial strategy in Europe³⁵.

The relationship between the organisation of the European gas market and the political division of Europe over Russia is further illustrated by Table 1 and Table 2 (p. 40). There is a clear, if not perfect, match between the EU countries’ foreign policy position towards Russia – as characterised by two recent rankings, one from a European think-tank³⁶ and the other one from a government-controlled Russian newspaper³⁷ – and their position during the European debate about ‘ownership unbundling’ of transmission networks – a measure proposed by the European Commission in order to overcome some of the barriers to market integration³⁸. The countries that tend to have a friendly relationship with Russia opposed the measure and vice versa.

³⁵ The acquisition by Gazprom, in January 2008, of 50% of the Central European Gas Hub and trading platform at Baumgarten (Austria) fits into this strategy; so does the creation by Russia’s state gas company of numerous new companies in the European gas ‘mid-stream’.

³⁶ European Council on Foreign Relations, *A Power Audit of EU-Russia Relations*, London: ECFR, 2007.

³⁷ Izvestia, "Русский вопрос" раскол Европы ("Russkii vopros" raskalol Evropy), <http://www.izvestia.ru/politic/article3120068/> (2 Sept 2008). I thank Vessela Tcherneva of the European Council on Foreign Relations for finding this article and translating the ranking of EU countries.

³⁸ European Commission, Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/55/EC concerning common rules for the internal market in natural gas, unofficial version, September 2007.

3.4. A single gas market would have significant political benefits

Pan-European market integration, through competitive gas trading, would bring major political benefits. It would increase the security of gas supply for all consumers and member states, spread gas supply diversity across Europe, and make large import contracts or infrastructure projects between European actors and Russia less politically divisive in Europe.

The first benefit of gas market integration in Europe would be to increase collective supply security by allowing price and other market mechanisms to reallocate physical supply efficiently in case of supply shortfall or demand surge. Just as the short-term price of gas increases in New York, Atlanta and Chicago alike when supply from the Gulf of Mexico is temporarily unavailable³⁹, a single and competitive European gas market would create a high degree of *de facto* solidarity between all (or most) gas consumers across Europe. A Nato-like ‘solidarity clause’ in the EU treaty (or a separate energy treaty) would be ineffective without market integration and no longer needed if Europe had a single competitive market. Competitive gas trading in a single market is both necessary and sufficient to create solidarity between consumers.

Market integration would also export supply diversity from Western to Eastern Europe. The infrastructure in place to transport Russian gas westward would allow for multiple swaps with the diversified markets of Western Europe, virtually moving non-Russian gas (including LNG) eastwards. This is especially true for the largest gas markets in Central Europe like Austria, Hungary, the Czech Republic, Slovakia and Poland⁴⁰. Yet non-Russian gas can

³⁹ On the ability of the US gas market to efficiently respond to supply and demand shocks, see Jeff D. Makhholm, “Seeking Competition and Supply Security in Natural Gas: the US Experience and European Challenge”, Boston, NERA Economic Consulting, 2007, p. 8-11. For a comparison of the structure of the U.S and European gas industries see Makhholm, “Seeking Competition” and International Energy Agency, *Development of Competitive Gas Trading in Continental Europe*, Paris, OECD/IEA, 2008, p. 61-71.

⁴⁰ The Baltic countries are more problematic as they are not connected to the European gas transmission network and would benefit less from European gas market integration. Addressing the political problem associated with their dependence on Russian gas is likely to take the form of increasing the competition *against* natural gas itself, possibly with the aim of driving gas out of their energy economies.

already physically flow to areas of Central and Eastern Europe in significant quantities, as was proved possible during the gas crisis of January 2009⁴¹. Beyond the existing infrastructure, a competitive gas market would create a rationale for investing in new transmission capacity to increase interconnections and exploit trading opportunities between markets⁴².

Finally, the emergence of a single competitive gas market would ‘Europeanise’ gas import contracts without the need for political or administrative intervention. In an integrated market with competitive trading and contracting, all sources of supply would technically merge into a single ‘pool’, significantly loosening the link between commercial contracts and bilateral political relationships.

Building a single competitive gas market in Europe would bring supply diversity to most countries in Central and Eastern Europe, significantly improve the resilience of the European gas system to supply disruptions and Europeanise the bilateral import relationships with Gazprom. It would help Europe advance its unity and counter Russia’s strategy of merging its gas export policy with its divisive foreign policy. Gas market integration should be a central priority of a strategic energy policy for Europe.

3.5. Can the barriers to gas market integration be overcome?

The creation of a single European gas market has been an official goal of the European Union for nearly fifteen years but the story so far is mostly one of failure. Despite the recent agreement on a third package of liberalisation measures the resistance of key governments (like Germany) may be difficult to overcome. Yet large gas companies from continental Europe are increasingly interested in a pan-European market.

⁴¹ See OMV Gas GmbH, presentation at the workshop on “Secure natural gas supply: experiences from the gas crisis”, Florence School of Regulation and Energie Control, Vienna, 3 April 2009, p. 7.

⁴² International Energy Agency, *Development of Competitive Gas Trading...*, op cit, p. 80-81.

Europe has a well developed network of gas transmission pipelines. The emergence of a European gas market supposes that any market player can buy the right to use any pipeline to ship their gas from one point of the system to another, at a price that reflects the cost to the pipeline's owner⁴³. The policy challenge is to make transmission pipelines work as an 'enabling platform' for pan-European competitive trading. For that to be possible, gas companies have to be effectively broken up vertically, with transmission pipelines separated from the supply business at least financially and operationally, if not in terms of ownership. This key reform is called 'unbundling'.

Despite establishing and then reinforcing the separation of transmission from supply the two European gas directives of 1998 and 2003⁴⁴ have largely failed to trigger the emergence of a single gas market⁴⁵. This failure led to the launch, in 2005, of an enquiry by the Directorate General for Competition of the European Commission. The findings, published early in 2007⁴⁶, confirmed how dysfunctional the European gas market was and motivated the preparation of a project of third gas directive⁴⁷. The two main innovations proposed by the European Commission to overcome the barriers to a single market were the *ownership* unbundling of transmission pipelines and the creation of an Agency for the Co-operation of Energy Regulators.

At the European Council of March 2007 the twenty-seven member states reaffirmed in the clearest of terms that single, competitive gas and electricity markets were the ultimate

⁴³ For detailed analysis on this point see The Brattle Group, *Methodologies for Establishing National and Cross-Border Systems of Pricing of Access to the Gas System in Europe*, Report to the European Commission, 17 February 2000.

⁴⁴ Directive concerning common rules for the internal market in natural gas (98/30/EC), 22 June 1998 ('First gas directive'); Directive concerning common rules for the internal market in natural gas (2003/55/EC), 26 June 2003 ('Second gas directive').

⁴⁵ For two analyses of the state of market integration in Europe five years after the first and second directives, respectively see: Dominique Finon, "European Gas Markets: Nascent Competition and Integration in a Diversity of Models", in D. Finon and A. Midttun, *Reshaping of the European Electricity and Gas Industry: Regulation, Markets and Business Strategies* (London: Elsevier, 2004), p. 119-150 (the paper was written in 2002); and International Energy Agency, *Development of Competitive Gas Trading in Continental Europe* (Paris: OECD/IEA, 2008), p. 36-60.

⁴⁶ European Commission, Inquiry pursuant to Article 17 of Regulation (EC) 1/2003 into the European gas and electricity sectors (Final Report), COM (2006) 851 final, 10 January 2007.

⁴⁷ European Commission, Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/55/EC concerning common rules for the internal market in natural gas, unofficial version, September 2007.

goal⁴⁸. Yet the two-year debate and negotiation that followed saw Europe divided along the usual lines. Member-states that fully embrace the vision of single competitive European energy markets (a group led by the UK and the Netherlands) supported the Commission's proposals while those who have had reservations ever since the beginning of the liberalisation effort (including Germany and France⁴⁹) opposed ownership unbundling. The latter have in effect defended the traditional organisation of the European gas industry against a policy push towards liberalisation that they view as a dangerous leap into the unknown, potentially endangering the security of Europe's gas supply by weakening the European gas companies and calling into question the nature of the links with external suppliers. Resisting European market integration is also consistent with the interest of incumbent gas companies in maintaining their dominant positions on their national markets and constraining the emergence of pan-European competition.

It is unlikely that EU member states will soon converge politically on a truly shared gas vision. The emergence of a single competitive gas market would help Europe develop a more coherent and united foreign policy approach towards Russia but, as I have shown earlier, Russia's strategic partners and largest client countries in Europe have an interest in resisting gas market integration to avoid creating material solidarity with other member states that have a strained political relationship with Moscow. This unsatisfactory situation looks like a fairly stable equilibrium.

In contrast, the situation and interests of large continental European gas companies, that have traditionally resisted liberalisation and integration, have been evolving over the past few years. Pure gas companies such as Ruhrgas of Germany or Gaz de France have been merged

⁴⁸ Council of the European Union, "Brussels European Council 8/9 March 2007. Presidency Conclusions", 7224/1/07 REV 1, CONCL 1, 2 May 2007, p. 16.

⁴⁹ For an early account of the opposition between the old and new visions for European gas, see Jonathan Stern, "Traditionalists *versus* the New Economy: Competing Agendas for European Gas Markets to 2020", The Royal Institute for International Affairs, Briefing Paper New Series No. 26, November 2001. For the arguments of the "traditionalists" in the context of the recent European debate see: Letter from François Loos, French Minister of Industry, to Commissioner Andris Piebalgs, 10 January 2007 (available from industrie.gouv.fr and euractiv.com); and also Letter from the Ministers in charge of energy of Austria, Bulgaria, Germany, France, Greece, Luxembourg, Latvia and Slovakia to Angelika Niebler, Chairwoman of the ITRE Commission, European Parliament, dated 29 January 2008 (available from euractiv.com).

into large gas and electricity holdings, E.On and GDF-Suez respectively. The new entities have a diversified portfolio of assets, especially in electricity generation, making gas less strategic for them. Their gas supply portfolio is also more diversified and they are active players in the expanding and globalising LNG market (especially GDF-Suez). Even if they will be managing large import contracts with Gazprom for the next three decades, the near-term expansion of their gas supply activities in Europe relies on their ability to bring non-Russian gas to Europe.

German and French energy companies heavily invested in Central and Eastern Europe before and after the EU enlargements of 2004 and 2007, including by acquiring stakes and sometime full control of local gas supply, network and storage companies in countries such as Hungary, Slovakia or the Czech Republic. To grow in this region they need to be able to increase the penetration of non-Russian gas from their supply portfolio in North-Western Europe; for that they need a European gas market that works. Furthermore, as demonstrated by the gas crisis in January 2009, these companies want to be able to move gas from west to east when supplies from Russia are disrupted, to supply their customers and prevent crises in their relationship with the local governments. Their ability to do so during the crisis was constrained by the under-development of market institutions (such as national ‘balancing markets’ or regional gas exchanges) and the lack of market integration between Western and Central Europe. In the post-crisis policy discussions in Europe, some continental gas companies have become advocates of a pan-European gas market – if a market on their terms – as a way to advance Europe’s gas security⁵⁰. It is not certain though that continental European gas companies need a pan-European market more than they need to protect their national markets.

Another factor that may help overcome barriers to competition and integration in European gas markets is the action of the European Commission’s Directorate General for

⁵⁰ Author’s interviews in Hungary, Austria, France, Germany and the Czech Republic, February-April 2009, and participation to industry and policy workshops after the January 2009 gas crisis.

Competition (DG COMP). DG GOMP is pushing for divestiture of transmission networks as it negotiates settlements of legal cases with energy companies. In 2008 it obtained the divestiture of the high voltage electricity network of E.On and the gas transmission network of RWE, both in Germany⁵¹. It is thought to pursue the same goal in its prosecution of an anti-trust case over a cross-border gas pipeline between France and Germany involving E.On and Gaz de France⁵². The European Commission has not succeeded in obtaining the divestiture of transmission networks through legislation but it is using litigation to the same effect in key energy markets in Europe⁵³.

4. Summary and conclusion

The political impact of Europe's reliance on Russian gas in the coming decades will be determined less by how much gas the EU imports from Russia than by how the EU gas system works. A pan-European competitive market would improve short-term energy security by increasing the system's resilience to supply disruptions and reduce the political divisiveness of Russian gas in Europe.

Therefore the debate about Europe's energy security policy should be re-balanced. A strategic gas policy does not necessarily mean that Europe should develop an active foreign energy policy; instead, priority should be given to overcoming barriers to the emergence of a single competitive gas market. The EU is endorsing and facilitating projects such as the southern gas corridor and the Nabucco pipeline, or the trans-Saharan gas pipeline from Nigeria to Algeria and Europe. Yet those projects are mostly irrelevant to the ability of Europe to cope with large-scale supply disruptions like the one it experienced in January

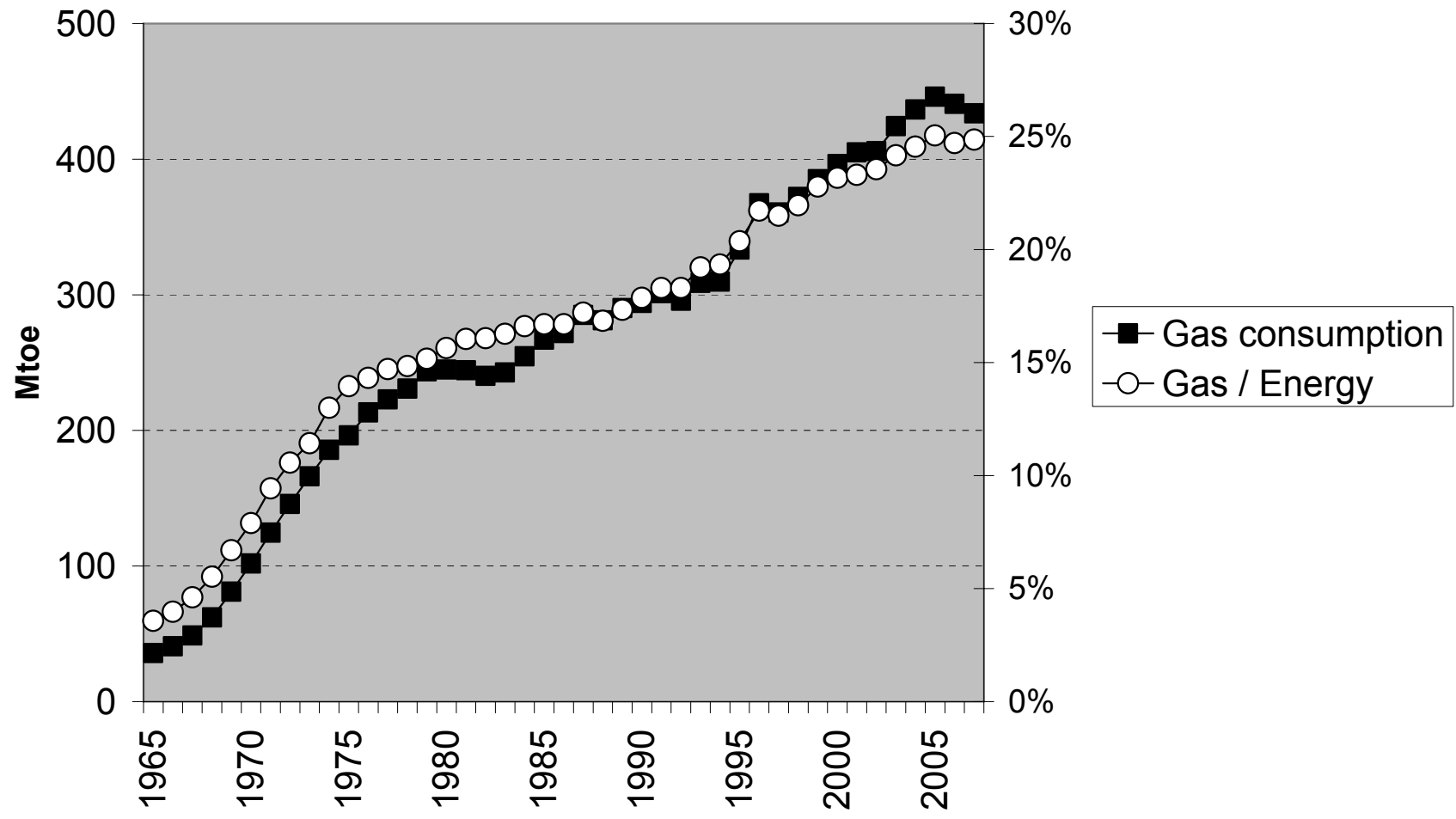
⁵¹ "Eon agrees break-up to appease Brussels", *FT.com*, 28 February 2008; "RWE to sell gas TSO", *Lehman Brothers Utilities Newsround*, 2 June 2008.

⁵² On 14 April 2009 an industry daily newsletter was commenting: "E.ON wants to keep its gas network and is ruling out a settlement with the EC, believing the antitrust proceedings are unjustified". *Nomura Utilities Newsround*, 14 April 2009.

⁵³ Alistair Buchanan, "Energy Sector Enquiry: 'The Glove and the Fist'", Presentation at the Cambridge-MIT joint conference on "Policies for a Sustainable and Secure Electricity Market", London, 27 September 2007.

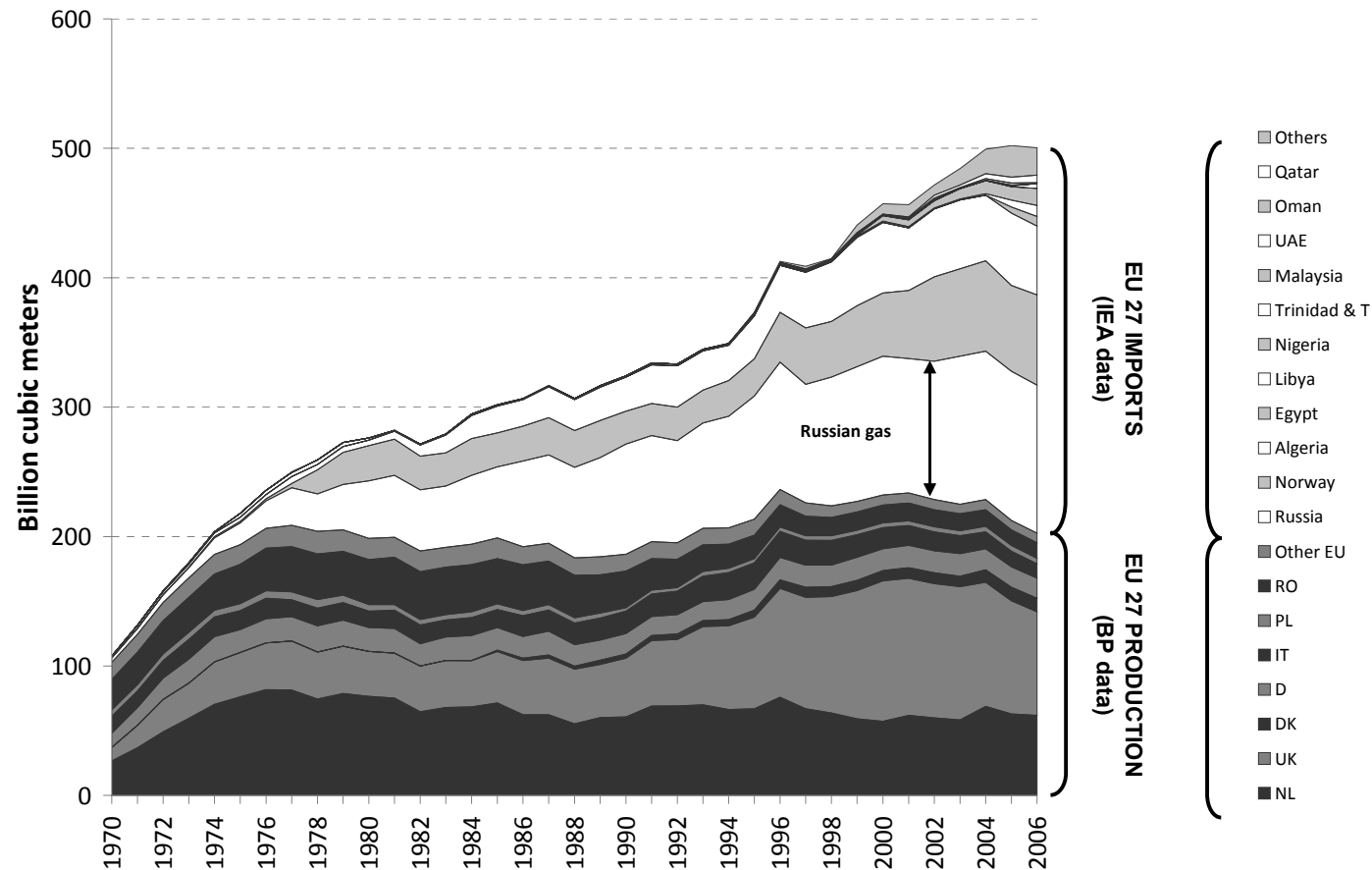
2009, or reduce the foreign policy divisions rooted in the structure of its gas relationship with Russia. European gas security is a domain where strategically and geopolitically significant outcomes are to be achieved primarily through regulatory reforms of European gas markets and industry.

Figure 1. EU27 gas consumption, 1965-2007



Source: BP Statistical Review of World Energy

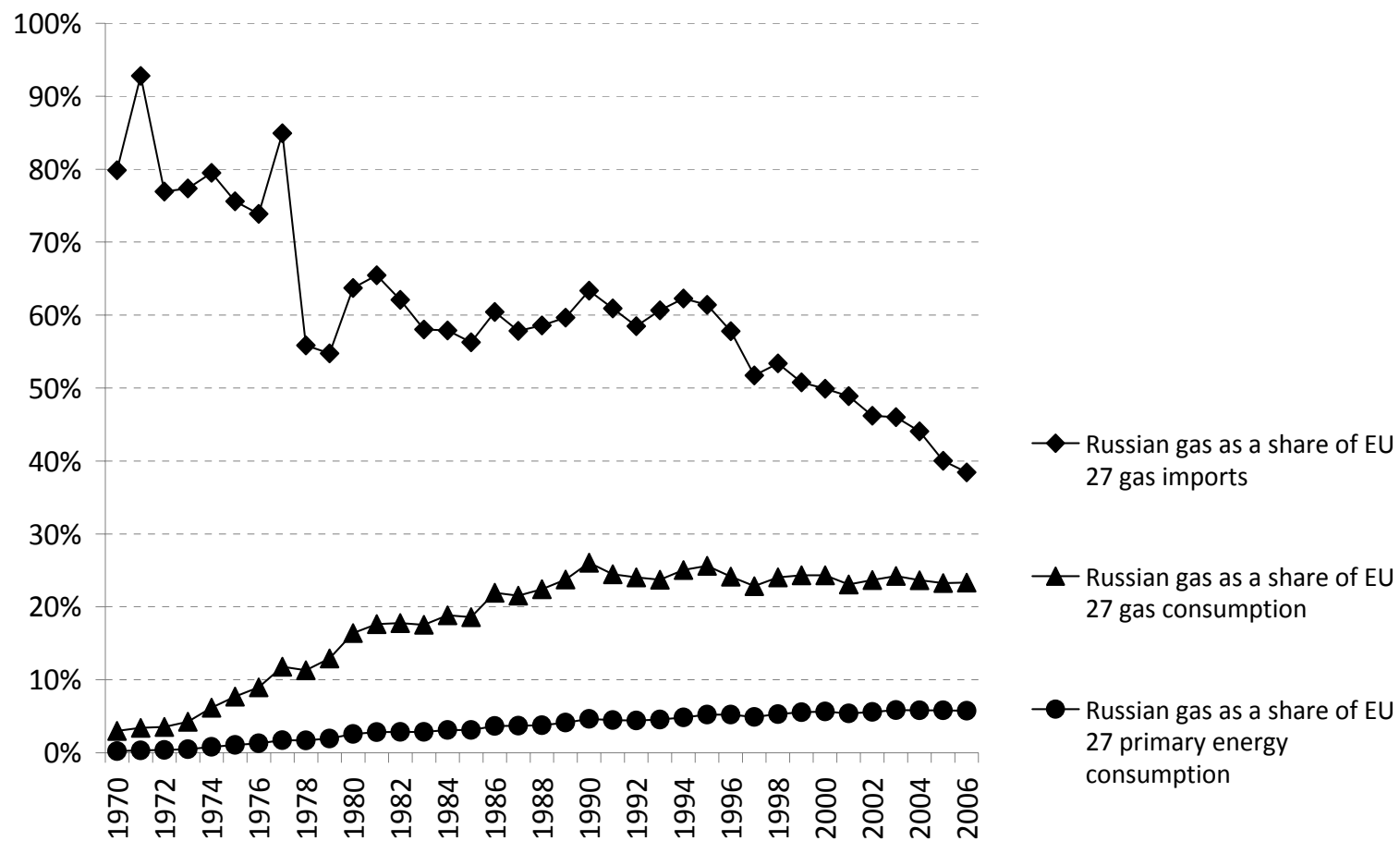
Figure 2. EU27 gas supply, 1970 - 2006



Sources: International Energy Agency; BP Statistical Review of World Energy

Note: The EU27 gas production data is from the BP Statistical Review of World Energy (available from bp.com). The import data is from the International Energy Agency, Natural Gas Information Database (accessed via ESDS International). remaining data is taken from the IEA up until 1990 and from Eurostat from then onwards. Note that IEA data does not include information on imports into Estonia, Bulgaria, Latvia, Lithuania or Slovenia. According to data from Eurostat (ec.europa.eu/eurostat/) the combined gas consumption of these five countries in 2006 was slightly more than 10 bcm, out of which almost nine were imported from Russia. Gas import data shows contracted volumes, not actual shipments; as gas contracts typically include some flexibility, the top line of the graph does not accurately reflect EU gas consumption (plus stock change).

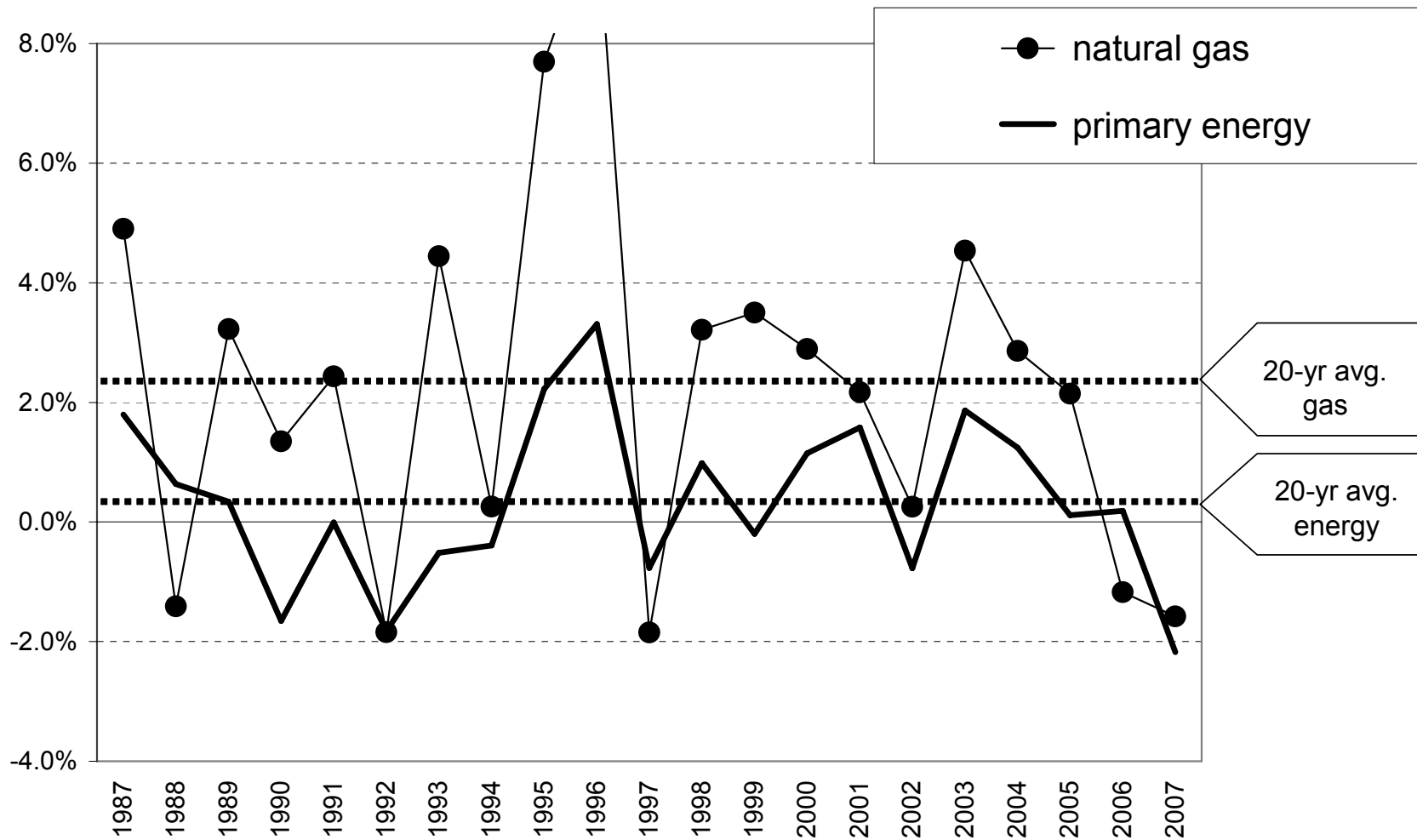
Figure 3. EU27 dependence on Russian gas, 1970-2006



Source: BP Statistical Review of World Energy; International Energy Agency

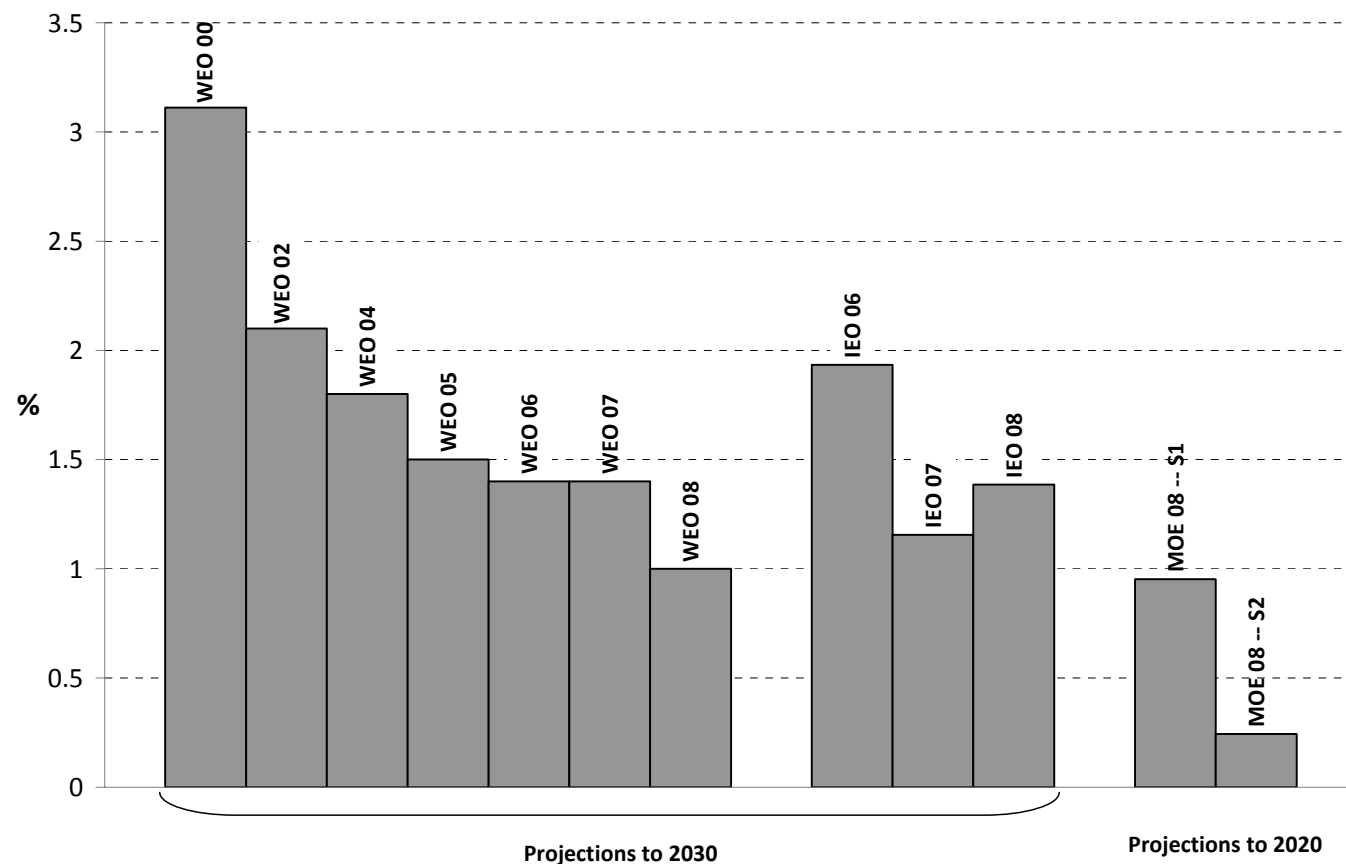
Note: Data on imports from Russia into the EU27 is from the same source as Figure 2. Data on gas consumption levels and primary energy consumption are from the BP Statistical Review of World Energy.

Figure 4. Energy and natural gas consumption growth (EU27, 1987-2007)



Source: BP Statistical Review of World Energy

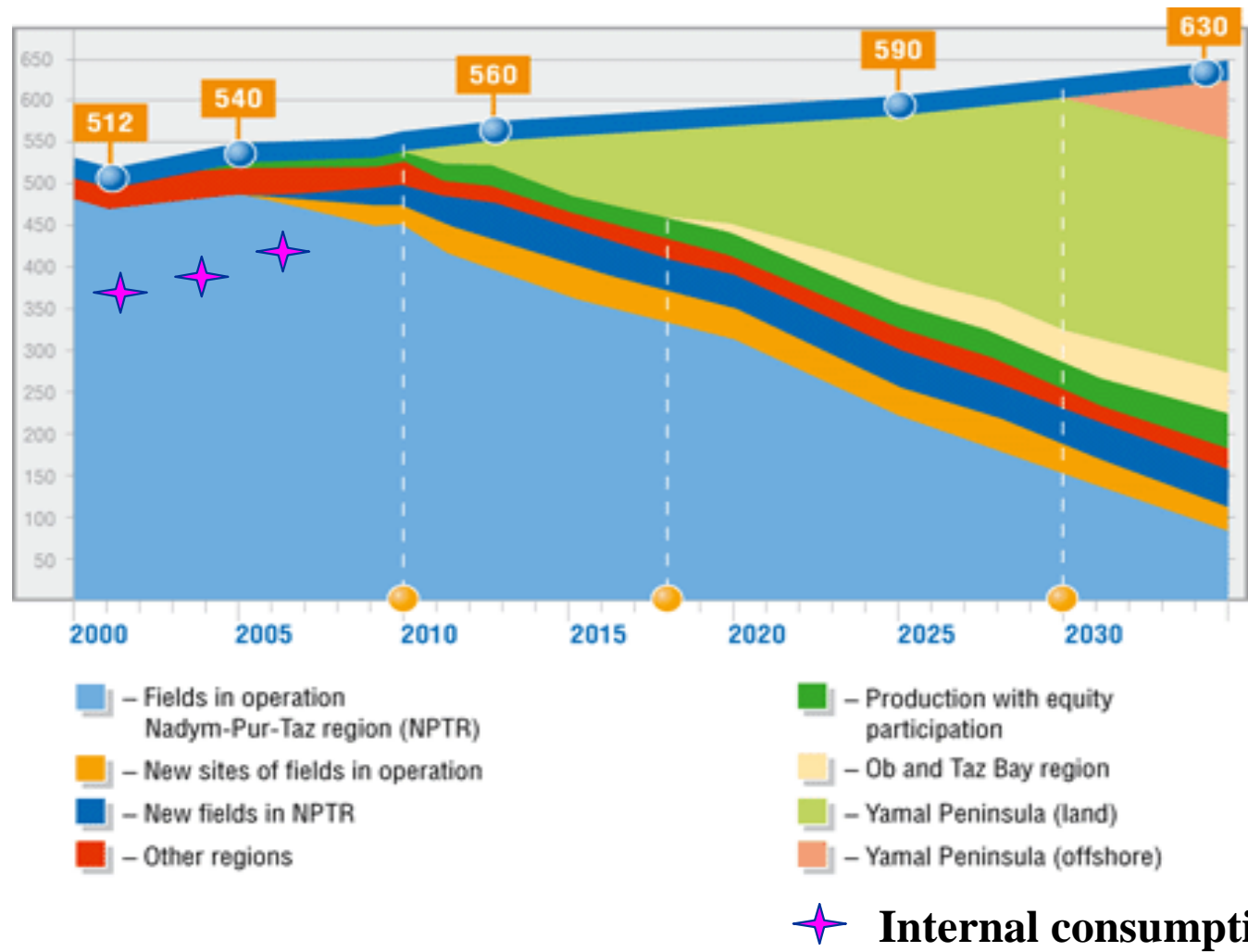
Figure 5. Average annual rate of gas consumption growth in Europe to 2030 or 2020 (projections from IEA, EIA and European Commission)



Source: International Energy Agency; US Energy Information Administration

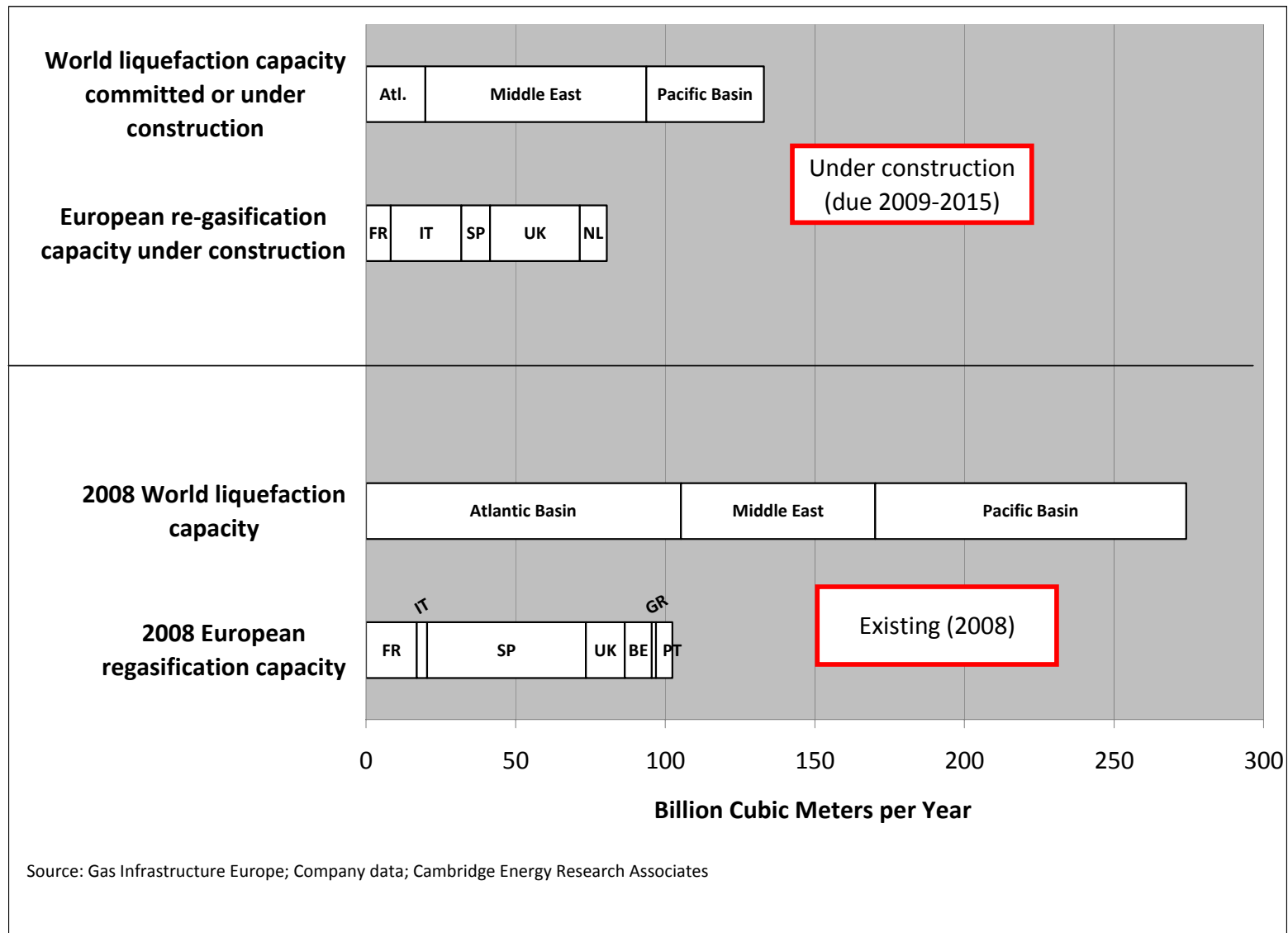
Note: The graph shows the average annual rate of growth in gas consumption for European countries (European members of the OECD for the IEA and EIA reports and European Union for the EU report). The average rate of growth is calculated from the year of publication to 2030 or 2020, as appropriate. The only sizeable gas market that is a member of the OECD but not the EU is Turkey. Several EU member states with small or very small gas markets are not members of the OECD. "WEO 04" means International Energy Agency, *World Energy Outlook 2004*. "IEO 06" means US Energy Information Administration, *International Energy Outlook 2006*. "MOE 08" means European Commission, Market Observatory for Energy, Report 2008, *Europe's Energy Position: Present and Future*. For IEA and EIA reports only the "reference scenario" is considered; for the MOE report "S1" refers to the scenario with "constant policies, moderate oil prices" and "S2" is for the scenario with "constant policies, high oil prices". None of the alternative policy scenarios produced by the IEA and MOE are considered here; they show much lower rates of growth of gas consumption in Europe.

Figure 6. Gazprom's gas output (2000-2035)



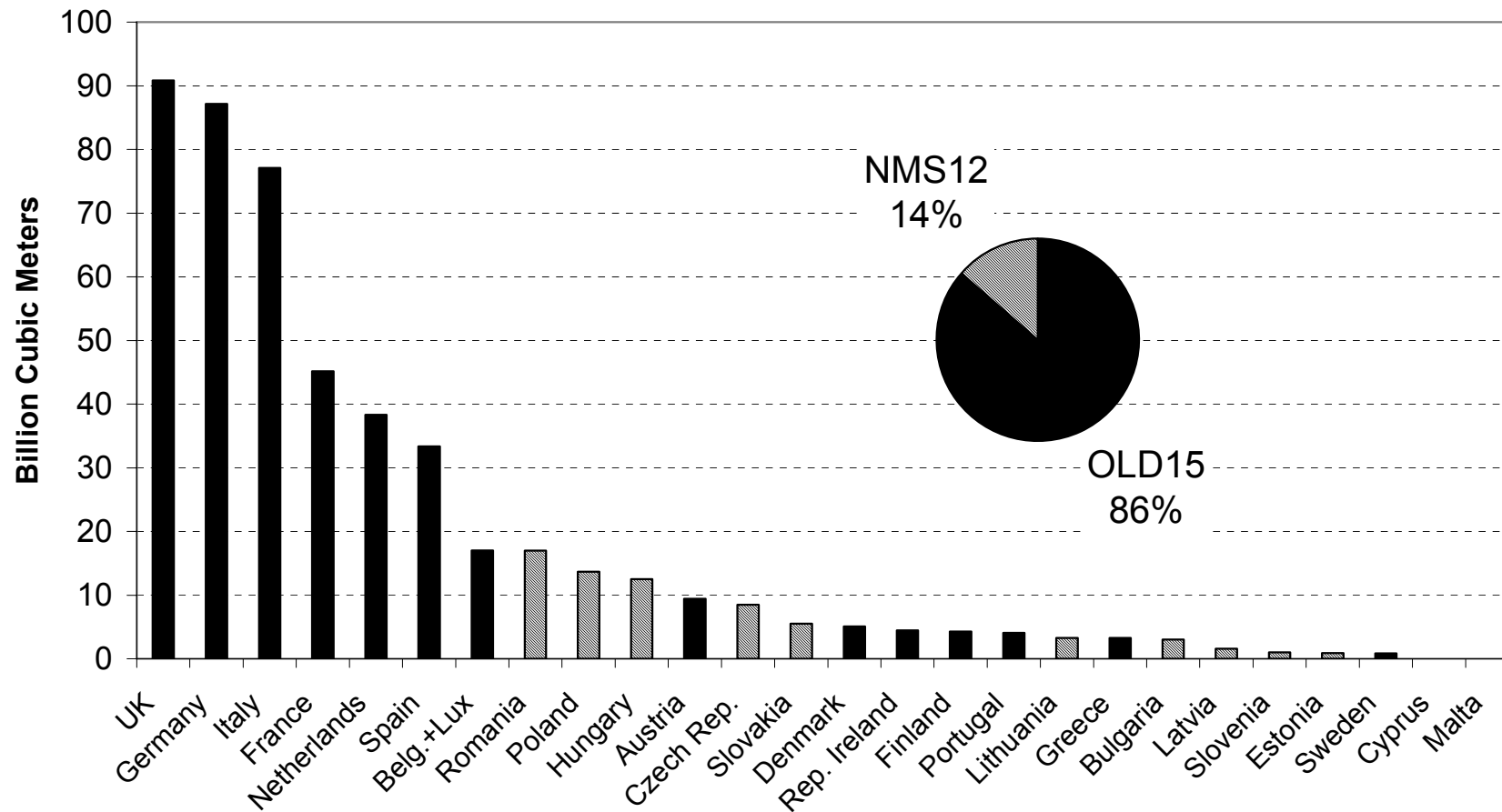
Sources: Gazprom's output graph from gazprom.ru; Russia's natural gas consumption from *BP Statistical Review of World Energy*

Figure 7. World LNG liquefaction capacity and European LNG regasification capacity, 2008-2015



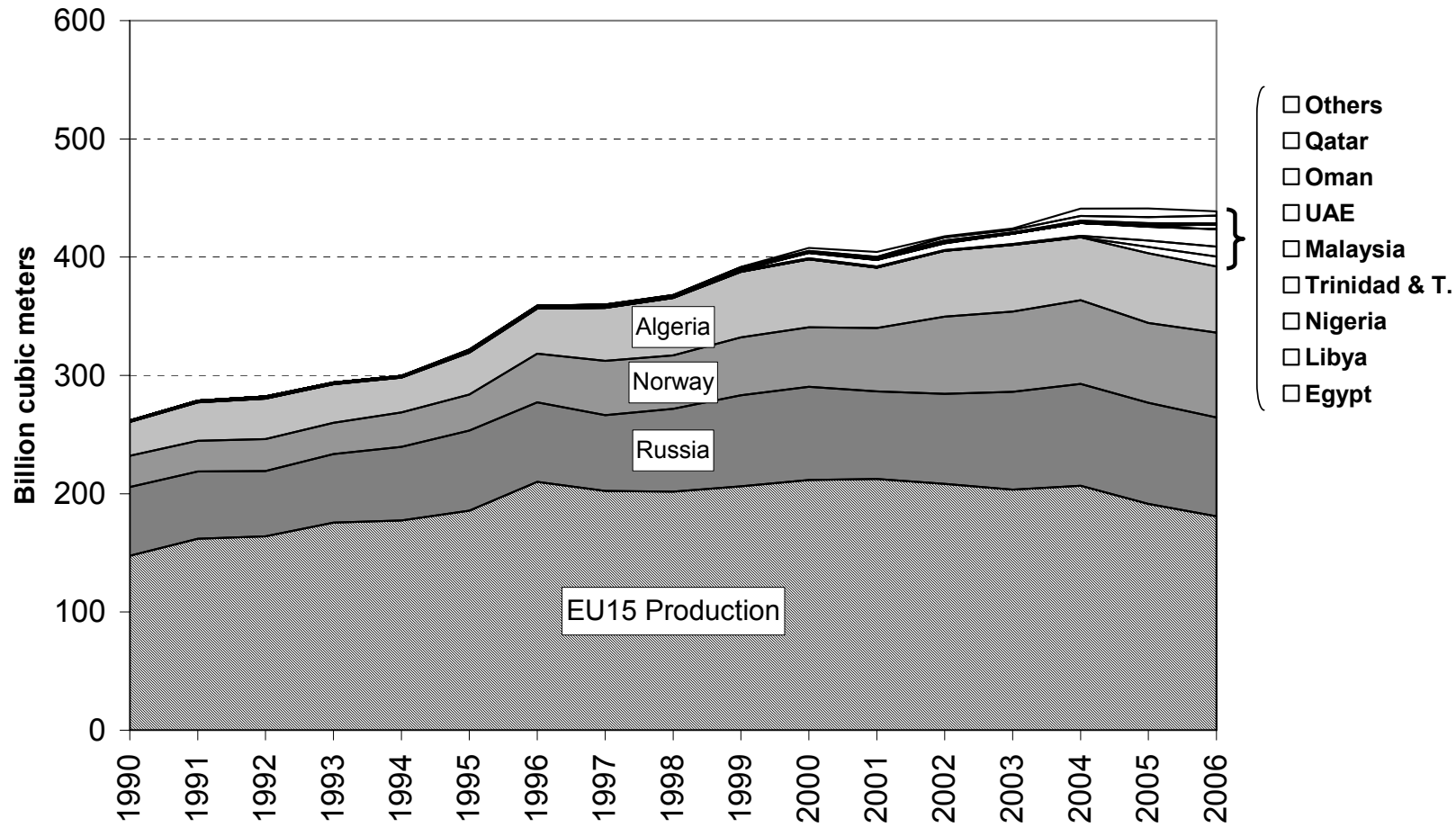
Note: This graph shows a conservative view of global LNG liquefaction capacity expansion, only taking into account the committed projects.

Figure 8. Natural gas consumption in the EU (2006)



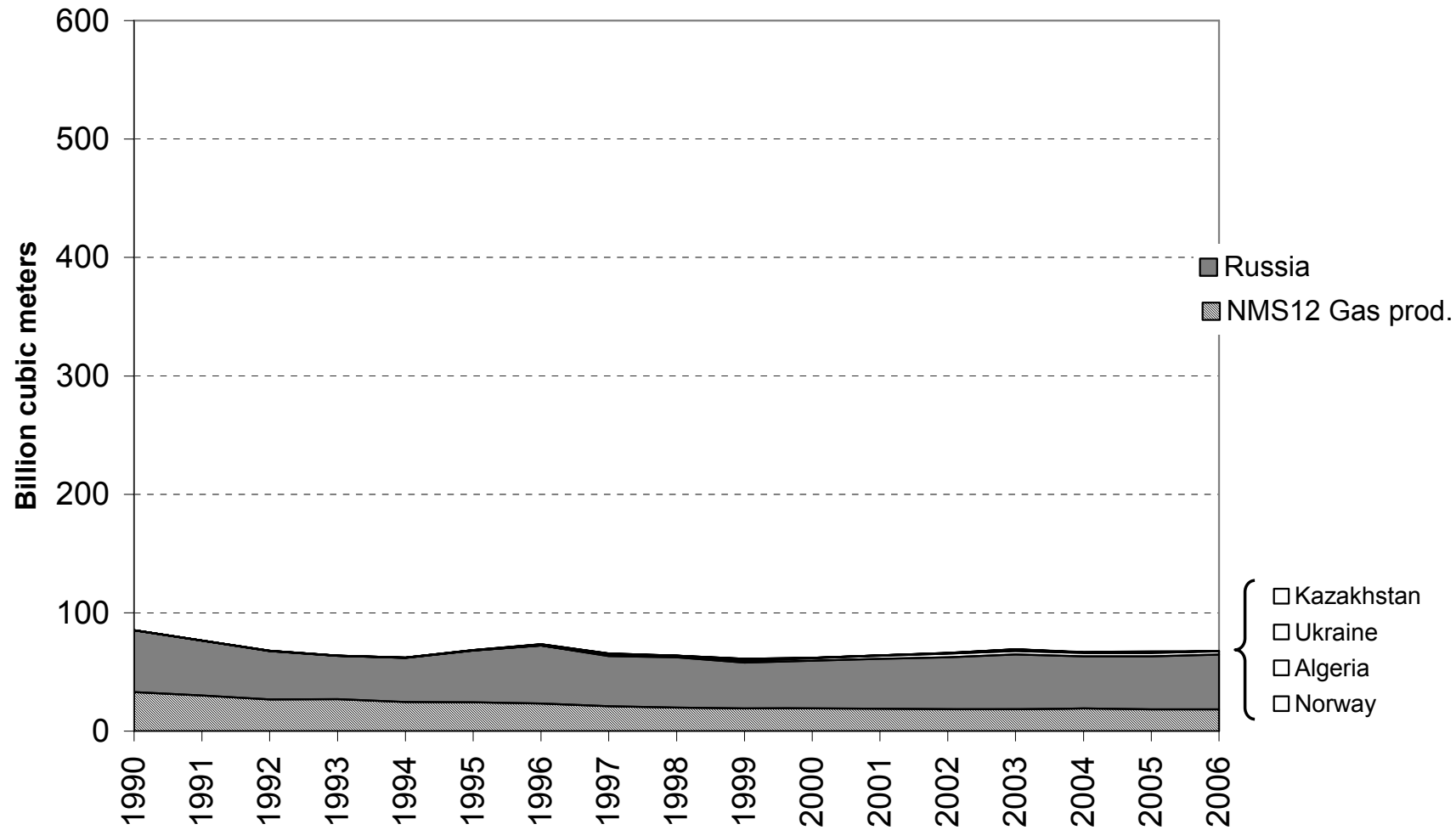
Sources: BP Statistical Review; Eurostat

Figure 9. EU15 Natural Gas Supply, 1990-2006



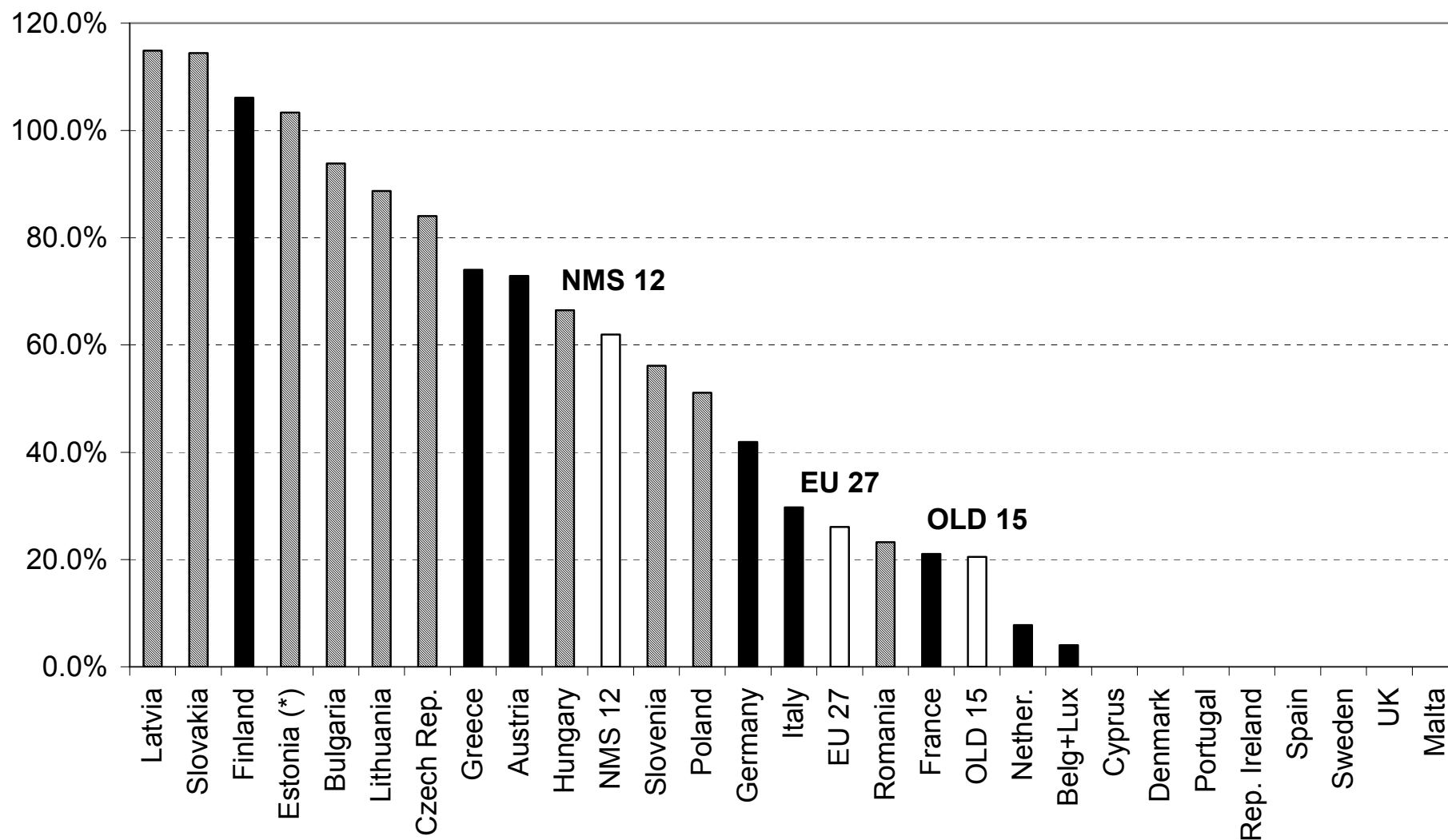
Source: Eurostat

Figure 10. NMS12 Natural Gas Supply, 1990-2006



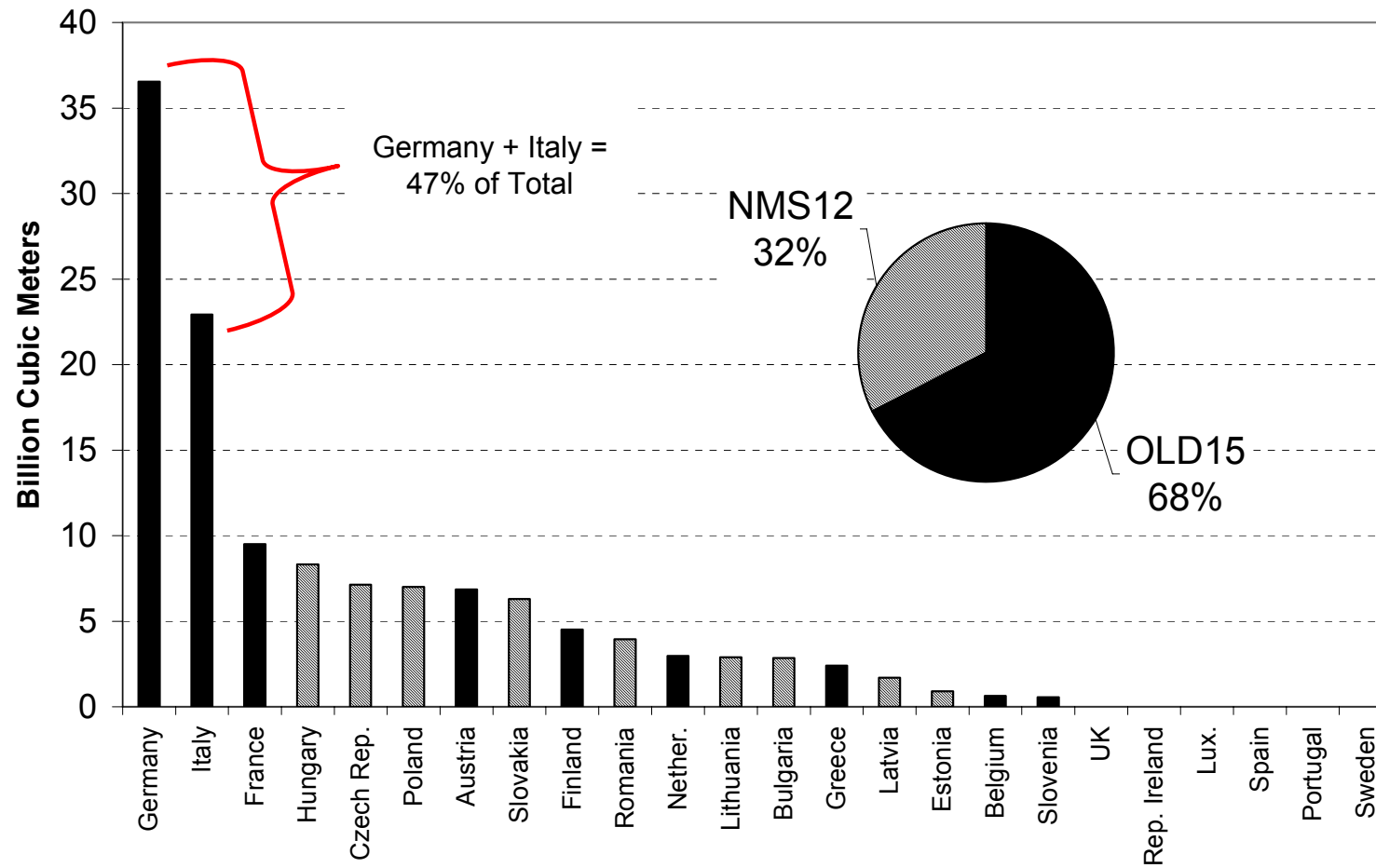
Source: Eurostat

Figure 11. Russian Gas as a Share of Primary Gas Supply (2006)



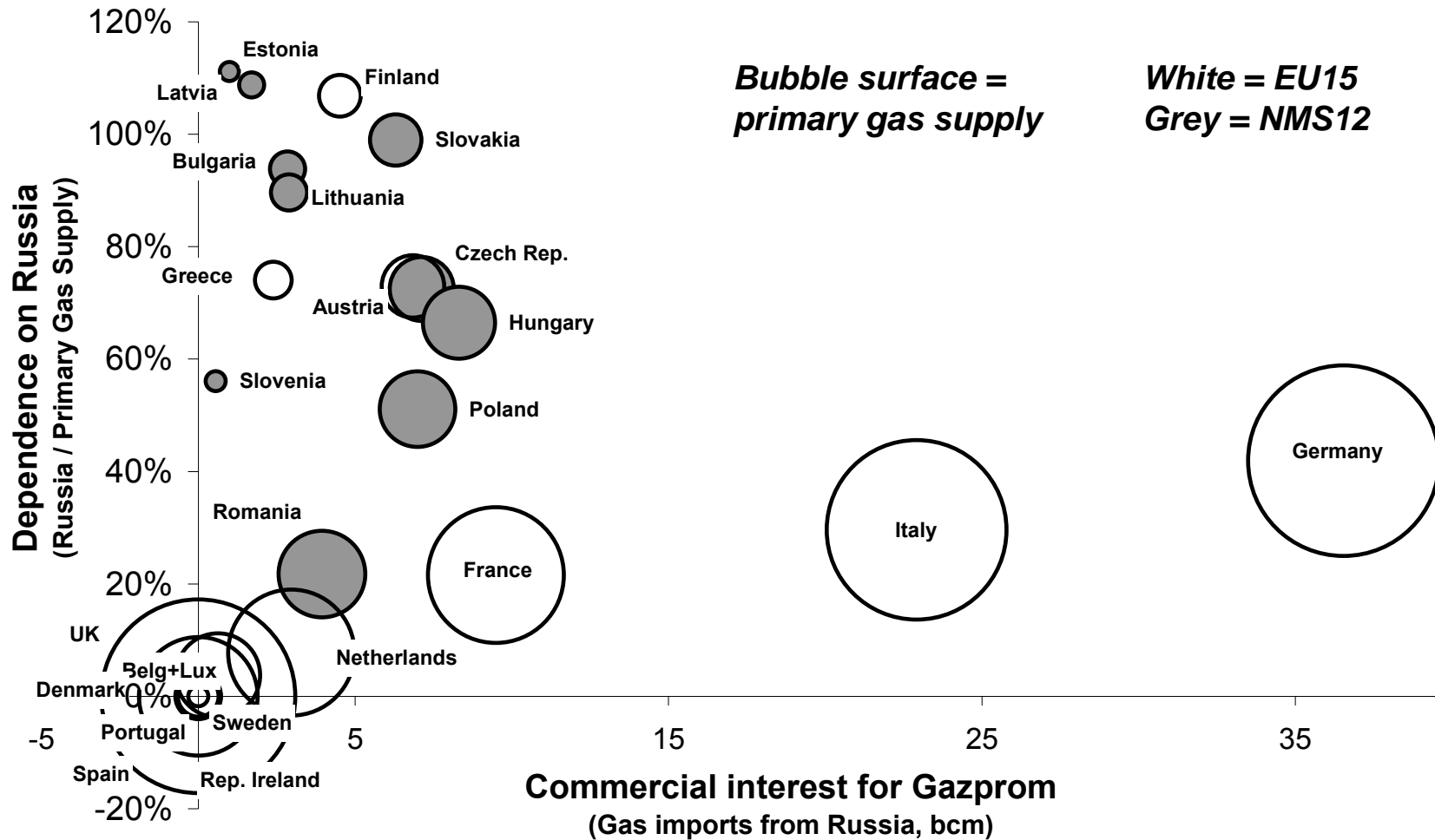
Sources: BP Statistical Review; Eurostat

Figure 12. Imports of Russian gas (2006)



Sources: BP Statistical Review; Eurostat

Figure 13. Imports of Russian gas, rate of “dependence” on Russia and size of the gas market (2006)



Source: BP Statistical Review; Eurostat

Table 1. EU countries' foreign policy attitude towards Russia (source: ECFR) and position on 'ownership unbundling'

Foreign policy attitude towards Russia (ECFR)	Oppose 'ownership unbundling'	Support 'ownership unbundling'
<i>Trojan horses</i>		
Cyprus	•	
Greece	•	
<i>Strategic partners</i>		
France	• (leader)	
Germany	• (leader)	
Italy		
Spain		•
<i>Friendly pragmatists</i>		
Austria	•	
Belgium		•
Bulgaria	•	
Finland		•
Hungary		
Luxembourg	•	
Malta		
Portugal		
Slovakia	•	
Slovenia		•
<i>Frosty pragmatists</i>		
Czech Republic		
Denmark		•
Estonia		
Ireland		
Latvia	•	
Netherlands		• (leader)
Romania		•
Sweden		• (leader)
United Kingdom		• (leader)
<i>New cold warriors</i>		
Lithuania		
Poland		

Source: Categorising of EU countries according to their foreign policy towards Russia, from: Mark Leonard and Nicu Popescu, *A Power Audit of EU-Russia Relations*, London: European Council on Foreign Relations, 2007, p. 26-50. Position towards ownership unbundling of gas transmission from supply activities, from: Letter from the Ministers in charge of energy of eight EU member states to Angelika Niebler, Chairwoman of the ITRE Committee, European Parliament, dated 29 January 2008; "Third Option' mooted on energy liberalisation", Euractiv.com, 27 November 2007.

Table 2. EU countries' foreign policy attitude towards Russia (source: Izvestia.ru) and position on 'ownership unbundling'

Foreign policy attitude towards Russia (Izvestia)	Oppose 'ownership unbundling'	Support 'ownership unbundling'
<i>Russia's Lobbyists</i>		
Belgium		•
Cyprus	•	
France	• (leader)	
Germany	• (leader)	
Greece	•	
Italy		
Luxemburg	•	
<i>Pragmatics, Centrists, Neutrals</i>		
Austria	•	
Bulgaria	•	
Finland		•
Ireland		
Malta		
Netherlands		• (leader)
Portugal		
Slovakia	•	
Slovenia		•
Spain		•
<i>Moderate Critics</i>		
Czech Republic		
Denmark		•
Hungary		
Romania		•
<i>Russophobes</i>		
Estonia		
Latvia	•	
Lithuania		
Poland		
Sweden		• (leader)
UK		• (leader)

Source: Categorising of EU countries according to their foreign policy towards Russia, from: Izvestia, "Русский вопрос" расколел Европу ("Russkii vopros" raskalol Evropu), <http://www.izvestia.ru/politic/article3120068/> (2 Sept 2008). Position towards ownership unbundling of gas transmission from supply activities, from: Letter from the Ministers in charge of energy of eight EU member states to Angelika Niebler, Chairwoman of the ITRE Committee, European Parliament, dated 29 January 2008; "Third Option' mooted on energy liberalisation", Euractiv.com, 27 November 2007.

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