Gas & Geopolitics: The Foreign Policy Implications of Energy Import Dependency

Sam Stone

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Advisor: Professor Coit Blacker

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ABSTRACT

In recent years, much attention has focused on the dangers of dependency on energy imports. Fears of energy import dependency are particularly acute in Eastern Europe, where most countries remain heavily dependent on Russian gas, but similarly dependent relationships exist across the globe. Most energy security research focuses on exporters; this thesis contributes to the study of energy security by exploring the effects of energy dependence on importers. It examines data from 167 dyadic oil and gas trade relationships (1990-2008) to answer two questions. First, does gas import dependency have a more profound effect on foreign policy creation than oil dependency? Structural factors predict it should and the study confirms this empirically. Second, what factors exacerbate or mitigate the foreign policy effects of gas import dependency? The study identifies three quantifiable factors that tend to increase the foreign policy affinity importers display towards their suppliers, and two quantifiable factors that tend to reduce the foreign policy affinity importers show towards their suppliers.

Three case studies (Japan/Indonesia, Argentina/Bolivia, and Poland/Russia) confirm the plausibility of these statistical findings. They also highlight how the ownership structure of gas production and distribution can mitigate, or exacerbate, the foreign policy effects of gas imports. This study is intended to be useful to policymakers gauging the impact of gas import dependency.

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LIST OF ABBREVIATIONS AND ACRONYMS

BC	Belarus Connector
b/d	barrels (of oil) per day
b/yr	barrels (of oil) per year
bcf/d	billion cubic feet per day
bcm	bilion cubic meters
BTC	Baku-Tbilisi-Ceyhan pipeline
Btu	British thermal unit
CMEA	Council for Mutual Economic Assistance (COMECON)
EBRD	European Bank for Reconstruction and Development
ECSC	European Coal and Steel Community
EU	European Union
FDI	Foreign Direct Investment
FSU	Former Soviet Union
Gasbol	Bolivia-Brazil gas pipeline
GCV	Gross Caloric Value
GdF	Gaz de France
GDP	gross domestic product
GECF	Gas Exporting Countries Forum
IEA	International Energy Agency
J-EXIM	Japanese Export-Import Bank
JILCO	Japan Indonesia LNG Company
LNG	Liquefied Natural Gas
mcm	thousand cubic meters
Mercosur	Southern Common Market
METI	Ministry of Economy, Trade, and Industry (Japan)
Mtoe	million tonnes of oil equivalent
mtpa	million tonnes per annum
OPEC	Organization of Petroleum Exporting Countries
PGNiG	Polish Oil and Gas Company
PSA	Production-sharing agreement
tcm	trillion cubic meters
UN	United Nations
UNGA	United Nations General Assembly
YPF	Yacimientos Petroliferos Federales (Argentina)
YPFB	Yacimientos Petroliferos Federalesde Bolivia

CHAPTER I: INTRODUCTION

Energy security has assumed newfound geopolitical importance at the outset of the twenty-first century. Diminishing fossil fuel supplies have led to fears of energy shortages, while rapid economic and population growth have fueled the demand for cheap, clean and secure sources of energy. The provision of reliable and affordable energy, once the domain of domestic policy, has emerged as a key concern of foreign policymakers. To ensure energy security, leaders must confront a complex set of economic, political, and environmental issues that transcend national boundaries. Should they fail to meet this challenge, energy is one of the few issues in today's international system with a distinct possibility to incite conflict between major powers.[1] At the same time, trade in energy resources has the potential to usurp pre-existing economic or cultural ties – and overcome deep-seated distrust - to create new geopolitical alignments and alliances.

Understanding contemporary energy security must begin with the main sources of energy. Fossil fuels – oil, natural gas, and coal – provide the bulk of the world's energy, accounting for over 85 percent of total primary energy consumption. Nuclear power and hydropower account for most of the rest, with alternative energy sources (including solar and wind power) growing rapidly, but still accounting for less than 5 percent of total energy consumption.[2] Non-fossil fuel energy sources have negligible geopolitical consequences compared to their fossil fuel cousins. Alternative energy sources are generally produced and consumed within national borders, limiting their influence on international relations. Coal also carries little geopolitical sensitivity, despite its widespread use and critical place in the global

[1] Moran, Daniel and James Russell, eds. Energy Security and Global Politics: The Militarization of Resource Management. New York: Routledge, 2008.
[2] British Petroleum, "Statistical Review of World Energy," 2009.

economy. International trade in coal has grown significantly over the past decade, but in 2009, it still accounted for less than 20 percent of all coal consumed.[3] Coal trade is limited by the high costs of transporting the heavy resource, and it appears the great majority of coal will continue to be consumed in the country where it is mined for the indefinite future.

Oil and gas, on the other hand, move across borders in large quantities. Most of the G8 economies depend on imports for the majority of their oil, gas, or both, and could face economic ruin if these sources were impaired for a long duration. Securing reliable and affordable oil and gas are key national interests of the modern nation-state, and because of the tremendous volume of oil and gas that must cross international borders to reach their end-user, they are direct concerns of foreign policymakers.

The different geopolitical ramifications of oil and gas dependency stem largely from the resources' different physical characteristics. For an equivalent volume, oil contains over one thousand times the energy of natural gas.[4] To deliver a given amount of energy, an amount of gas three orders of magnitude larger than that of oil is required. Nevertheless, gas has emerged as a convenient fuel for uses including heating, electricity generation, public transportation, and numerous industrial processes, which has made it an essential resource across the globe.

The procurement of reliable and affordable natural gas supplies requires the intervention of foreign policymakers for three reasons. First, gas trade requires a much higher degree of interconnectedness between supplier and consumer than oil trade. Because of its low energy density, gas must be transported via pipeline to be cost-efficient, although in recent years, plants and ships capable of refrigerating and liquefying gas (LNG) have introduced another mode of

[3] "The Coal Resource: A Comprehensive Overview of Coal," *World Coal Institute*, 2009. Available at <<www.worldcoal.org>>

[4] The energy density of natural gas is 0.0364 megajoules/liter, while that of standard Brent crude oil is 37.0 megajoules/liter. From *Common Properties of Commercial Fuels* (Table), Enerva Corporation, available at <<http://www.natural-gas.com.au/about/references>>

transportation. Pipelines impose severe limitations on the trade in gas, because, "by nature, pipelines are economic for trade over relatively small (although increasing) distances, and thus gas markets created by pipeline tend to be regional."[5] Construction of a transnational pipeline requires enormous infrastructure investment, which in turn requires accessible credit, transparent licensing requirements, a stable political climate, and often the support of transit states. Due to the challenges of pipeline construction, buyer and seller governments must be involved from the outset.

Since LNG trade avoids the complications of transit states, it is tempting to think of LNG as a fungible commodity more similar to oil than pipeline gas. Yet the up-front costs to build the infrastructure necessary to trade LNG are often even higher than to build a pipeline. LNG trade requires complex refrigeration and liquefaction plants near the well-head, specially-designed tankers with refrigerated holds, and regasification terminals that can convert LNG back to a gaseous state safely and efficiently. To date, producers have been unwilling and unable to secure the financing to export LNG without first signing long-term contracts with importers. The need for these long-term contracts has precluded the development of an LNG spot market to date. Thus, as LNG expert Mark Hayes argues, LNG should be thought of as a "floating pipeline," that carries geopolitical consequences similar to those of real pipeline connections.[6]

On the other hand, pipelines, tanker ships, and even railroads can transport oil economically. Furthermore, oil pipelines do not require the expensive compressor stations of gas pipelines, greatly reducing their cost to build and operate. Consequently, a smaller percentage of world oil trade requires the heavy infrastructure investment only governments can provide.

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[5] David Victor, Amy Jaffe, and Mark Hayes. Natural Gas and Geopolitics. Cambridge: Cambridge University Press, 2006. pp. 11.

[6] Mark Hayes, "Flexible LNG Supply and Gas Market Integration: A Simulation Approach for Valuing the Market Arbitrage Option," *Program on Energy and Sustainable Development (PESD) at Stanford University,* Working Paper, November 2007.

Second, natural gas is not a globally traded commodity and does not have a global price, unlike oil. Because transport is most economic over short distances, gas is traded regionally, and it is priced in the context of the neighborhood where it is sold. The wide range of gas prices creates an incentive for foreign policymakers to seek preferential prices. Oil, on the other hand, is a globally fungible commodity, leading to a global equilibrium price.[7] As long as states have access to the sea and are willing to pay world prices, they can buy oil on the spot or futures markets. This relieves governments of the need, and the opportunity, to negotiate preferential oil prices. Foreign policymakers still seek to keep oil prices down by protecting the global supply of oil, but there is little they can do to win specific bilateral price cuts, except in rare circumstances.

Third, natural gas storage is more difficult and expensive than oil storage. Natural gas can be stored in large quantities in three locations: depleted gas/oil reservoirs, salt caverns, and aquifers. All of these storage venues raise environmental concerns, and, unlike oil reserves, gas reserves must be withdrawn and recycled to avoid gas loss.[8] The inefficiency of relying on gas reserves puts a premium on ensuring a stable, continuous gas supply. This further incentivizes policymakers to intervene to ensure that gas imports flow smoothly.

Gas consumption is predicted to grow rapidly in the coming decades, rising over 50 percent in the next 20 years.[9] Consumption may grow even faster, as fears of global warming lead to calls for gas, a naturally clean-burning fuel, to replace oil. As a result, foreign policymakers will remain sensitive to the pressures of securing long-term gas supplies. Currently, this pressure is particularly acute in Europe, where the political consequences of the continent's gas dependency have emerged as divisive foreign policy issue.

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[7] Crude oil futures are actually traded on three different markets (NYMEX, Dated Brent, and Cushing), but their prices almost never differ by more than a percentage point or two.

[8] "Current State of and Issues Concerning Underground Natural Gas Storage," *Federal Energy Regulatory Commission*, Staff Report, September 2004.

[9] "World Energy Predictions," *Energy Information Agency*, 2008.

In 2009, the European Union received over a third of its gas from a single supplier, Russia. In 2006, Moscow laid claim to being the world's first 'energy superpower,' while simultaneously reasserting its right to influence events in its 'near abroad.'[10] Many European states, particularly those in Eastern Europe, retain bitter memories of Soviet domination and fear Russia's assertiveness and growing importance as an energy provider. Other states, led by gas-hungry Germany, remain eager to secure long-term gas contracts with Russia that will allow them to diversify away from Middle Eastern oil. The debate over what level of dependency on Russian gas is appropriate has created a political divide between members of the European Union. In Washington, Europe's dependency on Russian gas has stirred fears about the ability of the trans-Atlantic alliance to deal with Russia in a unified manner.

European states have two fears that stem from high levels of dependency on Russian gas: short-term shutoffs and long-term foreign policy distortion. East European states are afraid that Russia will shut off the gas flowing to them in the dead of winter, as has happened numerous times in recent years due to price disputes. But these states also fear that Western Europe's dependence on Russian gas will draw larger and richer states like Germany and France closer to Russia, leaving them less inclined to stand up for their Eastern European allies in the face of increasingly aggressive Kremlin.

The bulk of analysis on contemporary gas security and its geopolitical effects focuses on Europe's thirst for Russian gas. Nevertheless, the underlying issues are not unique to Europe – debates over pipeline routes, pricing schemes, and foreign involvement in energy transmission and production are common in many regions. This thesis explores the dangers of Europe's dependence on Russia, but also looks outside this region to show how its lessons apply (and sometimes fail to apply) across the globe.

[10] Peter Rutland, "Russia as an Energy Superpower," *New Political Economy*, Vol. 13, No. 2 (June 2008).

Most political analysis of energy security focuses on suppliers in an attempt to explain how export policies are determined. The literature about Russian gas policy, for example, explores whether the Kremlin uses gas exports to achieve political goals in its neighborhood, to maximize government revenues, or to enrich the actors personally involved in export operations.[11] The literature on importers tends to focus on the economics of energy dependency, and what such countries can do to avoid the first fear of energy dependency, short-term gas shut-offs.[12] Yet little attention has been paid to the second fear of energy dependency, foreign policy distortion in gas-dependent importers. This fear rests on the assumption that importers display preferential foreign policy treatment towards suppliers as dependency increases. For example, Eastern European states fear that Germany, out of the need to placate its largest energy provider, will acquiesce to Russian demands to resist NATO enlargement and hinder the installation of an American missile defense system in Europe.[13] Yet gas dependency also leads some importers to distance themselves from their suppliers. Over the past decade, it appears that Ukraine's gas dependency on Russia has served mainly to deepen its distrust of Moscow.*

The lack of clear-eyed analysis on the political effects of gas dependency hinders foreign policymakers seeking to judge an acceptable or appropriate level of dependency. To date, there has been no objective examination that compares the effects of gas and oil dependency, much less an empirical study of the different types of gas dependency. This thesis seeks to fill this gap.

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[11] See, for example, Jonathon Stern. The Future of Russian Gas and Gazprom. Oxford: Oxford University Press, 2005; Alexander Medvedev, "Gazprom and European Energy Security," *International Affairs,* Vol. 54, No. 3 (2008); or Nadejda Victor, "Gazprom: Gas Giant Under Strain," *Program on Energy and Sustainable Development (PESD) at Stanford University,* Working Paper, January 2008.

[12] See, for example, Daniel Yergin, "Ensuring Energy Security," *Foreign Affairs*, March/April 2006, or Richard Youngs, "Europe's External Energy Policy: Between Geopolitics and the Market," *Center for European Policy Studies*, November 2007.

[13] See Klaus Helge Donath, "NATO, Russia, and Enemy Wanted," *Die Tageszeitung,* April 6, 2008. Translation available at << http://www.robertamsterdam.com/2008/04/nato_russia_and_the_enemy_want.htm>>

* The signing of an agreement in April 2010, for 25 years of gas subsidies from Russia, in exchange for a new lease for the Russian naval base at Odessa, may signal a new direction in Ukrainian foreign policy towards Russia.

It uses an empirical model that differentiates between different types of gas trade to examine each type's effect on the foreign policy affinity of the importer towards a given gas (or oil) exporter. It then explores the plausibility of these quantitative findings through three real-world case studies, which also provide a variety of insights into the qualitative aspects of international gas trade.

CHAPTER II: LITERATURE REVIEW

As a rapidly growing, relatively clean, and widely available fuel, natural gas occupies a central place in today's energy security debate. Geopolitical analysis of natural gas trade most often focuses on suppliers, who reap tremendous profits from gas exports, as well as foreign policy clout. This thesis examines how gas dependency affects the foreign policy formation of buyer states, but such an investigation must begin by examining how buyer states perceive their suppliers. Buyer states worry about gas dependency for two major reasons. First, gas dependency requires buyers ensure that their supplier (or suppliers) provide a stable gas supply for the indefinite future. Aldo Spanjer lays out two requirements for 'security of supply': system security – the reliability of gas transportation and delivery systems – and quantity security – the ability of the supplier to produce amounts promised through contractual arrangements.[1] Second, states worry that gas dependency in their neighborhood leads dependent states to treat suppliers preferentially – the foreign policy bias of gas dependency.

These issues are most salient in the Europe-Russia gas relationship. The security of gas transit systems, the capacity of Russian gas production, and alleged European foreign policy bias are all the subject of debate. Because today's debate over natural gas and energy security focuses heavily on this relationship, this chapter uses Russian export policy as a prism through which the fears of gas dependency can be explored. This chapter is divided into three parts. First, it examines the literature on the security of supply – the first fear of gas dependence. Second, it shows the existence of a widespread belief in foreign policy bias due to gas dependency – the second fear of gas dependence – and examines the evidence that lends credence to this view.

[1] Aldo Spanjer, "Russian Gas Price Reform and the EU-Russia Gas Relationship: Incentives, Consequences, and European Security of Supply," *Energy Policy*, Vol. 35, No. 5 (2007).

Third, it explores fears of foreign policy bias that stem from energy dependency outside of the Europe-Russia gas relationship, including bias stemming from oil dependency.

Security of Supply: Competing Explanations for Russian Export Policy

Gas shortages felt across Europe in January 2006, January 2008, and again in January 2009 highlighted Europe's energy insecurity.[2] These shortages occurred when Russian gas giant Gazprom turned off gas flowing across Ukraine to Europe due to a pricing dispute with Ukrainian gas company Naftogaz. The incidents have spurred an abundance of analysis on Moscow's energy policy and the goals the Kremlin hopes to achieve through gas exports. With a monopoly on Russian gas exports, Gazprom's behavior is near synonymous with Russian energy policy. Three theories compete to explain Gazprom's behavior, and by extension, the security of Europe's gas supply from Russia:

- Neo-imperialist: gas exports are a tool used by the Kremlin to achieve political goals in its 'near abroad.'
- Rational corporatism: profitability remains the ultimate goal of gas exports.
- Bureaucratic bargaining: gas policy reflects domestic rent-seeking, rather than the rational pursuit of a unified goal.

Neo-Imperialism

The neo-imperialist theory of Gazprom's behavior has elicited the most attention in recent years, mainly because it inspires the most fear amongst buyer states. This theory rests on the assumption that the state controls Gazprom, an assumption supported by the government's

[2] For more on these crises, see, for example, Jonathon Stern, "The Russian-Ukrainian Gas Crisis of 2006," *Oxford Institute for Energy Studies*, Working Paper, January 2006.

50.1 percent ownership stake in Gazprom. Indeed, Gazprom heads the list of 'national champion' industries Vladimir Putin established during his presidency and Gazprom's importance led Putin to term Russia the world's first 'energy superpower.'[3] This phrase signals to many observers that gas exports have replaced military might as Russia's favored mode of exerting foreign policy influence in its near abroad. Privileged gas contracts offered to the states that acquiesce to Moscow's wishes and the looming specter of gas shutoffs facing those that do not have become the new carrots and sticks of Russian foreign policy.

Marshall Goldman was one of the first to point out that the surge in commodity prices that began in 2003 would profoundly change Russia's foreign policy. Goldman distinguishes between the economic benefits of high oil prices and the geopolitical benefits of high gas prices: "petroleum exports have generated the cash blizzard that has made Russia rich… but [Moscow's] monopoly control of gas pipelines … transformed Russia from an anemic and essentially bankrupt charity case into a robust energy superpower with restored political muscle."[4] Goldman argues the 2006 Ukraine-Russia gas feud was essentially political, Putin's way to test new Ukrainian President Victor Yushchenko's commitment to integrate with Europe.

Others argue Russia's use of gas as a foreign policy tool goes back even further. Keith Smith writes, "Moscow's deployment of the 'energy weapon' dates from 1990, when it cut energy supplies to the Baltic countries in a futile attempt to stifle their independence movements."[5] Russia continued to manipulate energy supplies throughout the 1990s, as former allies moved closer to the West, but Russia's own economic woes undermined these efforts. Moscow needed gas export revenues too badly for these shutoff threats to be taken seriously.

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[3] Andrei Denisov, "The Gains and Failures of the Energy Superpower," *Russia in Global Affairs,* Vol. 6, No. 2 (April/June 2008). Note that Putin played down the term 'energy superpower' at the 2006 Valdai Discussion, but by this point the term had already become firmly associated with his policies.
[4] Marshall Goldman. Petrostate: Putin, Power, and the New Russia. New York: Oxford University Press, 2008.
[5] Keith Smith, "Defuse Russia's Gas Weapon," *New York Times*, January 16, 2006.

When Vladimir Putin assumed the reins of power in 2000, he perceived a need to reassert government control over the gas industry, as part of a larger response to the disastrous privatization under Boris Yeltsin. Anders Åslund has called the reversal of privatization under Putin 'state capitalism,' arguing the real danger of state capitalism in the gas industry is not system security, but rather quantity security. "The problem is that Gazprom is not very good at producing gas. Three of Gazprom's four giant fields are past their peak and declining, while its fourth giant field is at its summit."[6] The centralization of control of Gazprom amongst Kremlin elites has made foreign involvement in Russian gas production less attractive, impeding Gazprom's ability to attract much-needed European and American technology and expertise, and endangering its ability to meet export contracts to Europe.

Prominent Russian experts share the view that Europe's energy security is threatened by Moscow's tight control over Gazprom. Andrei Illionarov, former chief economic advisor to Putin, resigned his post shortly before the first Ukraine-Russia gas feud in December 2005. Illionarov claimed he had been forced to give an economic rationale to a purely political action against Kiev. He went even further in an interview with Ekho Moskvy radio, declaring, "energy weapons are being used against neighbors… This move towards a policy of imperialism has a clear and high price that will be paid by the citizens of the nation that embarks upon this path."[7]

Rational Corporatism

While critics have sounded the alarm about Russia's political manipulation of gas exports, the Kremlin and Gazprom management both insist that like any well-run company, Gazprom's ultimate goal is to maximize profits. Examination of gas pricing illuminates an

[6] Anders Åslund, "Russia Energy and the European Union: Perspectives on Gazprom," *Speech before the European People's Party, European Parliament, Brussels*, May 15, 2008.
[7] "Ukraine Warms to Putin Gas Deal," *CNN Online News,* December 31, 2005.

underlying economic rationale for denying gas to the former Soviet republics, a rationale independent of any political calculus. Subscribing to this view, Jerome Guillet writes, "Gazprom is getting a bad rap. Rightly or wrongly, the management of the company is trying to do what businesses do: maximize income."[8] What at first appear to be heavy-handed business tactics laden with political overtones are actually rational corporate decisions.

Gazprom remains burdened with the legacy of the Soviet Union, as the former Soviet states continue to pay subsidized prices for Russian gas. In December 2005, before the first Ukraine-Russia gas feud, Ukraine paid $50 per thousand cubic meters of gas (tcm) from Gazprom, while Germany purchased the same gas for $250 per tcm.[9] (In the U.S., gas sold for $469 per tcm that month.) Compounding the problem that Gazprom was already losing out on profits because of this subsidization, Ukraine had fallen behind on its gas payments and appeared to have siphoned off 7.8 billion cubic meters of gas headed to Western Europe.[10] In light of these subsidies and Ukraine's behavior, the decision to raise prices to European levels appears to make economic sense, regardless of the political back-story.

Andreas Goldthau concludes, "Recent gas disputes appear to be about profits, not about politics. Indeed, they seem much less part of a geopolitical Kremlin game than the result of a rational strategic move by a company that has to compensate for a loss-generating home market."[11] Regulation that forces Gazprom to subsidize domestic gas consumption wins popular support for Kremlin politicians, but drives Gazprom's aggressive sales tactics abroad, where it recoups its losses by exporting gas at higher prices. According to Goldthau, internal politics and

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[8] Jerome Guillet, "Don't Blame Gazprom for Europe's Energy Crunch," *Foreign Policy,* February 2007.
[9] Nikolai Sokov, "An Alternative Interpretation of the Russian-Ukrainian Gas Crisis," *Monterey Institute of International Studies,* Policy Memo*,* January 2006.
[10] Jonathon Stern, "The Russian-Ukrainian gas crisis of January 2006," *Oxford Institute for Energy Studies*, January 16, 2006.
[11] Andeas Goldthau, "Resurgent Russia? Rethinking Energy Inc," *Hoover Review*, February/March 2008.

relations with Kremlin are actually Gazprom's largest obstacle.

Gazprom embarked upon a program of corporate renovation in 2001, becoming a publicly traded company, adopting Western business and accounting practices, and struggling to overcome a legacy of corruption and inefficiency. Its export revenues are vital to the Kremlin, accounting for over 10 percent of Russia's GDP, while the subsidized gas and jobs the company provides at home are key to maintaining support for the current political elite.[12] Thus rational corporatists, both in Moscow and outside of it, argue Russian policymakers have not and will not risk these economic and domestic political benefits for foreign policy gains in Russia's near abroad.

Bureaucratic Bargaining

The third view of energy policy posits that it is the product of individuals seeking to protect their own immediate interests through bureaucratic bargaining. Subscribers to this theory see rent-seeking, personal connections, and corruption as the key drivers behind a Russian gas export policy that often lacks a larger sense of cohesion.

Russian policymaking has seen many variants since the fall of communism. Yeltsin's fledgling democracy gave way to crony capitalism and powerful oligarchs during the privatization effort of the mid-nineties. Under Putin, the Kremlin reestablished its authority over regional governments and business interests, espousing a philosophy Presidential aide Vladimir Surkov termed 'sovereign democracy.' Lilia Shevtsova uses another term to describe Russia's contemporary power structure: bureaucrat-oligarchy.[13] In her view, power has not been wrested from the oligarchs by the Kremlin; instead, new oligarchs have emerged that have one foot in

[12] "Gazprom in Figures, 2004-2008 Factbook," *OAO Gazprom*, June 2009. Available at <<http://www.gazprom.com/f/posts/71/879403/3se.pdf>>
[13] Lilia Shevtsova. Putin's Russia. Washington D.C.: Carnegie Endowment for International Peace, 2005. p. 49.

industry and one foot in government. Dmitri Medvedev, who was both the First Deputy Prime Minister and the Chairman of Gazprom before assuming the Presidency, embodies this new breed of bureaucrat-oligarch.

The marriage of industry and politics under Putin's administration has fueled rampant corruption. In 2008, Transparency International ranked Russia as one of the world's most corrupt countries, placing it between Timor-Leste and the Central African Republic.[14] Such high levels of corruption have made European investors and European energy buyers increasingly skittish. Corruption is especially prevalent in the energy sector, where Clifford Gaddy and Barry Ickes argue rent-seeking exceeds the actual extraction and distribution costs.[15]

Gaddy and Ickes classify rents as excess physical costs, price subsidies, and informal taxes (i.e. bribes). They conclude that oil rents are larger than gas rents, but gas rents have been more stable and thus political actors often prefer gas rents over oil rents. Rent-seeking in the energy sector has not been eradicated "because gas producers lack secure *de facto* economic property rights to what they legally own and earn." Instead, "producers need friends and allies. Rents are a form of investing in what we call relational capital –political and personal goodwill with government officials."[16] As long as the government demands the majority share of energy revenues, rent-seeking will be pervasive.

In their seminal work on bureaucratic bargaining and policymaking, Graham Allison and Philip Zelikow, observe, "governmental action does not presuppose government intention."[17] Given that many of the actors that shape Russian energy policy hold multiple positions with

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[14] Transparency International. *Corruption Perceptions Index 2008*. Available at <<http://www.transparency.org/news_room/in_focus/2008/cpi2008/cpi_2008_table>>

[15] Clifford Gaddy and Barry Ickes, "Resource Rents and the Russian Economy," *Eurasian Geography and Economy*, November 2005.

[16] *Ibid*

[17] Graham Allison and Philip Zelikow. Essence of Decision: Explaining the Cuban Missile Crisis. 2nd ed. New York: Addison-Wesley Longman, 1999.

conflicting goals, policy is likely to reflect the interests' of individuals rather than the state. Policy decisions are more likely to reflect a broadly acceptable distribution of rents, rather than the protection of a national foreign policy interest or even the profitability of Gazprom as a whole. Other critics argue that any large organization cannot escape an inherently anarchical decision-making process. Under the 'Garbage Can Model', popularized by James March and Michael Cohen, "ambiguous organizational behaviors are the product of disconnected problems, solutions, and decision-makers."[18] In a large, complex organization like Gazprom, decision-makers address problems by selecting the most convenient solution from a 'garbage can' of available solutions (also known as standard operating procedures), often producing what appears to be an irrational decision to outside observers.

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These three views of Russian gas policy – neo-imperialist, rational corporatist, and bureaucratic bargaining – drive the policies of European buyers towards Russia. States that accept the neo-imperialist perspective perceive significant system insecurity, and attempt to diversify their supplies away from Russia for fear of having their supplies cut during a political dispute. States that subscribe to the rational corporatist perspective perceive less system security risk, but they may still worry about quantity security, given Gazprom's declining production. In this view, the greatest threat comes from transit states like Ukraine that are reluctant to abandon Soviet-era subsidies, not from Russia. Subscribers to the bureaucratic bargaining view fall somewhere in the middle, worrying about quantity and system security. Given the opacity of energy policymaking within the Kremlin, it is difficult to see which individual actors or bureaucracies will prevail in the struggle to set policy. These three theories of Russian energy

[18] James March and Johan Olsen. Ambiguity and Choice in Organizations. Bergen: Universitetsforlaget Publishing, 1979.

policy are not mutually exclusive and a deep understanding of Russia's energy policy requires using all three. However, they shed light on how European states perceive Russian energy exports and thus weigh the dangers associated with their own dependency.

Fears of Foreign Policy Bias Stemming From Gas Dependency

Europe's dependency on Russian gas has led to extensive exploration of Russian energy policymaking. There has been less exploration of the extent to which Europe's dependency affects its own policymaking, beyond the reaction to individual events like the Russia-Ukraine gas disputes. This sections shows that the fear of foreign policy bias is pervasive amongst the gas-dependent nations of Europe, despite the fact that the existing literature addresses this concern only obliquely.

This fear is held largely by Eastern European states about their larger and richer neighbors to the West. Eastern European states fear that gas dependency leads Western European states, in particular Germany and France, to treat Russia more amiably.[19] While Western European states import far more gas than their Eastern European counterparts, their dependency levels remain far lower. Consequently, Western European states are less concerned about dependency on Russian gas. Eastern European states, however, remain fearful of Western European bilateral efforts to lock up Russian supplies. With relatively small markets, the New Member States[*] of the EU recognize that they do not generate enough revenue to be major customers of Gazprom – and thus could have their taps turned off without major financial

[19] See Andrew Kramer, "Russia Gas Pipeline Heightens East Europe's Fears," *New York Times,* October 12, 2009; Roman Kupchinsky, "The Recurring Fear of Russian Gas Dependency," *Radio Free Europe*, May 11, 2006; or Ulrich Speck, "Another Wake-Up Call? Europe Remains Divided Over Energy Security Policy," *Radio Free Europe,* February 10, 2009.

[*] New Member States include Hungary, Poland, Slovakia, Latvia, Lithuania, Estonia, the Czech Republic, and Slovenia (entered the EU on May 1, 2004) and Romania and Bulgaria (entered the EU on May 1, 2007).

repercussions for Russia.

With populations that still harbor strong negative memories of Soviet control, the New Member States are especially sensitive to actions they believe appease Russia. French and German resistance to further NATO enlargement and Germany's reluctance to support Georgia during the Russo-Georgian War have sounded alarm bells in Eastern Europe.[20] Their greatest cause for concern, however, has been the construction of the Nord Stream gas pipeline, which will carry gas directly from Vyborg, Russia to Griefswald, Germany along the Baltic seabed. Nord Stream will allow Russia to send gas to higher-paying Western European customers while bypassing Poland and the Baltic States, and reducing its reliance on pipelines that run through Ukraine and feed Romania, Hungary, and Bulgaria.

The New Member States fear that Nord Stream will allow Russia to cut off gas flows to Eastern Europe without disrupting Western Europe. But they are even more afraid that the construction of Nord Stream signals Western European states are intent on developing friendlier bilateral relations with Russia that will leave their new Eastern European partners out in the cold. In 2006, Radek Sikorski, then Poland's defense minister, called the newly-announced Nord Stream pipeline a "throwback to the Molotov-Ribbentrop tradition," claiming Germany's pursuit of a special relationship with Russia undermined the EU's foreign and security policy.[21] Lithuanian President Valdas Adamkus agreed, "I believe I can understand the Russian position but I cannot understand Germany's position [to engage in Nord Stream]. As a member of the EU, they acted without even extending the courtesy of advising the Baltic States about their plans."[22] The leaders of the other Baltic States and most other New Member States expressed similar

[20] "NATO Expansion Defeat: France and Germany Thwart Bush's Plans," *Der Speigel Online Edition,* April 3, 2008.
[21] "Polish PM Likens Pipeline Deal to Nazi-Soviet Pact," *Radio Free Europe*, April 30, 2009.
[22] "Lithuanian President Criticized Russia and Germany Over Baltic Sea Pipeline," *MosNews,* May 7, 2006. Available at << http://www.latvians.com/en/Mailer/envelope.php?./issue-2006-05-07/2006_05_07.php>>

anger at Germany's willingness to relegate them to the periphery of the European energy security debate.

The fear that gas dependency will split Europe runs deep. In an open letter to President Obama in 2009, twenty-three former Central European leaders, including Lech Walesa and Vaclev Havel, made special reference to energy dependency. "Central and Eastern Europe is at a political crossroads and today there is a growing sense of nervousness in the region…Europe's dependence on Russian energy creates concern about the cohesion of the [NATO] Alliance."[23] Energy dependency appears to be a fundamental threat to NATO's ability to present a unified front to Russia.

This is not the first time that European dependency on Russian gas has confronted U.S. policymakers. Ever since the Soviet Union tapped giant West Siberian gas fields in the late 1970s, Western policymakers have worried that Russia's gas bounty would prove dangerously attractive to energy-hungry Europe. In 1982, the CIA issued a National Intelligence Estimate entitled "The Soviet Gas Pipeline In Perspective," a response to Soviet plans to build a gas pipeline from Urengoi in northwest Siberia through Ukraine to Western Europe.[24] The report warned, "the increased future dependence of the West Europeans on Soviet gas deliveries will make them more vulnerable to Soviet coercion and will become a permanent factor in their decision making on East-West issues… the Soviets believe successful pipeline deals will reduce European willingness to support future U.S. economic actions against the USSR."

Despite Washington's attempts to prevent Europe from importing Soviet gas, West Germany and France refused to shy away from the Soviet Union's lucrative gas offer. A similar

[23] "Open Letter To The Obama Administration From Central And Eastern Europe," *Gazeta Wyborcza*, July 16, 2009. Available at << http://wyborcza.pl/1,75477,6825987,An_Open_Letter_to_the_Obama_Administration_from_Central.html>>

[24] "The Soviet Gas Pipeline in Perspective," *National Intelligence Estimate 3-11-82,* September 21, 1982.

NIE issued in 1983 recognized that Europe's dependency on Soviet gas was likely to increase over the next two decades, if the pipeline under construction was successfully completed: "If Moscow lands contracts to supply even half of the West European gas demand gap now foreseen for the 1990s… dependence on Soviet gas could approach 50 percent of gas consumption for major West European countries, far in excess of the 30 percent share that we and some West European governments regard as a critical threshold for political risk."[25]

With construction imminent – and still considered unacceptable in Washington, the Reagan administration prohibited any American equipment or technology be used to build the Urengoi-Europe pipeline. Without American technology and components, the project could not succeed. European nations were outraged; the French foreign minister declared, "This day could well go down as the beginning of the end of the Atlantic Alliance."[26] In his analysis of the debacle, Antony Blinken writes, "A chorus of indignation echoed in Bonn, London, and Rome. In Moscow and other capitals of the Warsaw Pact nations, the Communist leadership delighted in the furious diplomatic brawl that divided its adversaries."[27] The pipeline was eventually built, although it was unable to supply the amounts of gas originally contracted without American technology.[**] But the bottom line is clear – fears of European over-reliance on Russian gas are nothing new. They have been around since the late seventies and appear in position to dominate the energy security debate for decades to come.

Yet, it is not clear that this fear is valid. For all of the polemics about the divisiveness of

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[25] "Soviet Energy Prospects into the 1990s," *National Intelligence Estimate 11-7-83*, December 8, 1983.
[26] Antony Blinken. Ally versus Ally: America, Europe, and the Siberian Pipeline Crisis. New York: Praeger Publishing, 1987. pp. 3
[27] *Ibid*
[**] When it became clear that sanctions were insufficient to prevent the pipeline's construction, the Reagan administration resorted to covert measures. It appears the CIA sold the Soviets pipeline software with hidden malfunctions, software that eventually triggered an enormous explosion. For more on CIA projects to sabotage Soviet pipelines, see the memoir of Thomas Reed, former Secretary of the Air Force, At the Abyss: An Insider's History of the Cold War. New York: Presidio Press, 2004.

gas dependency, there is little clear-eyed analysis of gas dependency's effect on foreign policymaking. Many critics assume that dependency leads buyer states to treat suppliers preferentially, but there are reasons to believe that this is not true. Gas dependency is a two-way street – as much as Europe needs Russian gas, Russia needs Europe's cash. European countries recognize this, especially the fact that it would cost Russia billions to develop distribution systems to reach alternative markets like China and India. Thus, European states are not afraid to take hard-line negotiating stances with Gazprom, secure in the knowledge Russia's resource-based economy would flounder without European revenues. As Goldthau points out, "The structural logic of the gas market is such that there is little possibility for Russia to use natural gas as a foreign policy instrument…without significantly and immediately affecting its own budget revenues."[28] Europe understands, "this does not look like an attractive move for a country whose largest share of federal budget income stems from hydrocarbon sales."

Pierre Noël examines whether gas dependency has shifted the foreign policy orientation of European buyers. He begins with an argument that runs counter to conventional wisdom, showing that EU dependency on Russian gas has not increased since 1990 and is unlikely to increase in the near future, as Russian production struggles to meet contracted volumes.[29] The aggregate European gas supply has diversified, due mostly to the larger Western European powers, while the New Member States remain the shrillest critics of Russia and also the most heavily dependent on its gas. Noël argues that gas dependence has prejudiced buyers against suppliers, citing the opposition of states including Poland, Ukraine, Bulgaria, and Hungary to closer ties with Russia. Where dependence is lower, in countries like Germany, France, and Italy, states view gas purchases as commercial decisions that should be free of political intervention.

[28] Goldthau, "Resurgent Russia? Rethinking Energy Inc."
[29] Pierre Noël, "A Market Between Us: Reducing the Political Cost of Europe's Dependence on Russian Gas," *Electricity Policy Research Group, University of Cambridge,* Working Paper, June 2009.

Margarita Balmaceda analyzes the effects of gas dependency on Ukrainian foreign policymaking. Ukraine is particularly interesting because it is both heavily dependent on Russian gas for its own consumption, but also plays a critical role in transporting Russian gas to European markets. Balmaceda argues that the existence of shadowy Ukrainian actors who profit from the gas trade with Russia have impaired Ukraine's ability to move closer to the West. "Ukraine's energy dependency on Russia has affected its relationship with the West… and contributed to Ukraine's foreign policy wavering between East and West for most of the post-independence period."[30]

Yet neither Noël nor Balmaceda explore the structural factors that influence state responses to gas dependency. Noël focuses on the supra-national (Europe), while Balmaceda focuses on the sub-national (Ukrainian domestic infighting). Both analyses measure gas dependency along one-dimension, the ratio of gas imported from Russia versus total gas consumed. Neither compares responses across states in an attempt to discern what systemic factors alleviate and exacerbate the foreign policy effects of gas dependency.

Beyond Europe & Russia, Beyond Gas

Geopolitical concerns over energy dependency extend beyond Europe's relationship with Russia. Numerous non-European countries remain heavily dependent on other countries for their gas. Outside gas, dependence on other resources carries clear geopolitical consequences – oil first and foremost.

The advent of trade in liquefied natural gas (LNG) has led to new geopolitical partnerships. In 2008, Spain bought 24 percent of its gas from Nigeria; South Korea bought 34

[30] Margarita Balmaceda. Energy dependency, Politics and Corruption in the Former Soviet Union: Russia's Power, Oligarchs' Profit, and Ukraine's Missing Energy Policy. New York: Routledge Press, 2008.

percent of its gas from Qatar; Japan bought 22 percent of its gas from Indonesia.[31] Such levels of dependency rival or exceed Europe's dependency on Russian gas, but they have received far less attention. There is a widespread assumption that without a history of antagonism or a pipeline connection, gas dependency does not pose a major risk of foreign policy bias.

Yet the same conventional wisdom does not hold for oil. Despite the fact that oil is more fungible that gas, even gas traded via LNG, the clamor over America's dependency on oil imports indicates a widespread belief that oil import dependency shapes American foreign policymaking in undesirable ways. In Washington, concerns over energy import dependency are far more acute for oil, of which the country imported 67 percent of its supply in 2008, than gas, of which the country imported only 13 percent of its supply.[32] Critics accuse America's thirst for foreign oil of leading to foreign policy debacles ranging from alliance with an unsavory Saudi regime to the 2003 invasion of Iraq.[33]

John Deutch and James Schlesinger provide a more objective evaluation of the impact of energy dependency on U.S. foreign policy, laying out five reasons oil dependence subverts U.S. foreign policy.[34] First, oil export revenues can embolden exporters to adopt policies that oppose U.S. interests and values. Oil revenues have enabled the Saudi monarchy to repress its own people, while also spreading a violent brand of Wahhabist Islam abroad. In South America, Venezuela has led a new wave of anti-Americanism, empowered in part by profits from oil exports to America.[35] Second, energy dependence fosters political realignments (similar to the second fear of gas dependency). In addition to Germany and France's pursuit of special

[31] BP Statistical Review of World Energy, 2008. Available at <<http://www.bp.com/sectiongeneric article.do?categoryId=9023783&contentId=7044475>>
[32] Ibid
[33] Rachel Bronson. Thicker Than Oil: America's Uneasy Alliance with Saudi Arabia. Oxford: Oxford University Press, 2006.
[34] John Deutch and James Schlesinger, eds. "The Consequences of U.S. Oil Dependency," *Council on Foreign Relations Task Force Report*, 2006.
[35] Steven Mufson, "Chavez Threatens to Halt Venezuela's Oil Sales to U.S.," *Washington Post*, February 11, 2008.

relationships with Russia, Deutch and Schlesinger point to China's increasingly close ties to Iran and Sudan as evidence that oil dependency can create partnerships hostile to U.S. interests. Third, high prices and seemingly scarce supplies create fears that free and open markets cannot ensure secure supply. The bundling of political incentives with oil and gas deals hinders U.S. efforts to promote free trade. Fourth, revenues from oil exports undermine local governance, a problem often been labeled 'the resource curse.' In her pioneering work on the problems of oil exports, Terry Karl writes, "Because of their resource wealth, such countries do not have to borrow money from multilateral lending agencies that insist on fiscal transparency and good budget practices," nor do they have to tax their own people to stay in power.[36] The result is that poor governance goes unchecked, promoting poverty, violence, and extremism – all of which run counter to long-term U.S. interests in freedom and stability. Fifth, interruptions in oil supplies have straightforward but serious negative economic consequences for the U.S. and the global economy (similar to the first fear of gas dependency).

At the same time, Deutch and Schlesinger conclude, "there is little [U.S.] dependence on natural gas from outside of North America, thus avoiding the political ramifications accompanying oil imports." Oil dependency is Washington's most salient energy security concern, but the issues that generate this concern are also relevant to concerns over gas dependency.

Fears that oil dependency was warping U.S. foreign policymaking reached a peak in 2003, in the run-up to the second U.S. invasion of Iraq, a war widely criticized as a 'war for oil.' Pierre Noël explores the concerns that U.S policy in the Middle East, including the war in Iraq,

[36] Terry Karl. "Understanding the Resource Curse." chapter in Covering Oil: A Reporter's Guide to Energy and Development. New York: Open Society Institute, 2005.

has been driven by energy security goals.[37] He argues that the shock of the 1973 Arab oil embargo pushed energy security to the forefront of Middle East policy. The need for stable oil prices led to the creation of the Rapid Deployment Force (later CENTCOM) and the strengthening of ties with Saudi Arabia. However, he concludes, "There is nothing in the national security strategy documents, speeches, or observed actions that would give credence to the claim that the broad political transformation of the Middle East the U.S. places at the center of its foreign policy is governed by energy-related considerations."[38] In the long-term, a free and democratic Iraq would be less likely to halt oil shipments for political reasons, and it would also produce oil more efficiently. But, in the short term, it was clear an invasion would impair supply, as evidenced by the torching of Kuwaiti oil fields in the first Gulf War. It appears implausible that the Bush Administration attached such high value to long-term benefits, while devaluing immediate supply problems, making it extremely unlikely the Iraq War was a 'war for oil.'

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There exists a plethora of writing about the geopolitical consequences of energy dependency. The bulk of this analysis focuses on suppliers, specifically on the decision-making processes that generate their energy export policies. This analysis seeks to explain whether a given supplier sets export policy in order to maximize political gains, revenues, or the profits flowing (often illegally) into the pockets of those involved in the energy sector.

There is less analysis of how energy import dependency affects importers, despite the fact that public statements by the leaders of many importers indicate a fear that foreign policymaking is dangerously affected by their dependency. The extant literature focuses on oil, despite strong reasons to believe gas dependency holds greater political implications. Ensuring gas supply

[37] Pierre Noël, "The New Middle East Policy and Energy Security Challenges," *International Journal*, Winter 2006-2007.
[38] *Ibid*

security appears to necessitate greater foreign policy involvement than oil, yet no empirical study attempts to test this notion.

The next chapter's study lays out an empirical model to test this notion, by measuring the affinity of energy importers for their suppliers. The study then examines six structural factors that shape the nature of states' gas dependency, including the mode of gas transportation, the primary use of imported gas, and the proximity of the trading partners. This study will help policymakers to analyze the behavior of energy importers and previous literature on this subject through a more rigorous framework.

CHAPTER III: AN EMPIRICAL ANALYSIS OF ENERGY DEPENDENCY AND FOREIGN POLICY BIAS

This study tests the prevailing belief energy import dependency skews foreign policymaking. Commonly accepted thinking posits a direct causal relationship between dependence on energy imports and foreign policy affinity importers show towards suppliers. From this perspective, Germany's increasingly friendly behavior towards Russia is at least partially driven by increasing dependence on Russian gas. Likewise, growing U.S. dependence on Saudi oil over the past half-century has deepened the ties between Washington and Riyadh in ways detrimental to other long-term U.S. interests.

At the same time, other dynamics suggest energy import dependence may lead states to demonstrate less affinity towards suppliers than they would absent an energy trade relationship. States seek to avoid dependence on foreign commodities, evidenced by the widespread nature of protectionist tariffs and quotas. Energy dependence can lead to especially volatile domestic backlash, evidenced by the anti-Arab sentiment aroused in the U.S. as a result of the 1973 OPEC oil embargo.[1] In Eastern Europe, rising dependency on Russian gas has led states to seek closer ties with the EU and the U.S., classical geopolitical balancing that has hindered relations with Russia. Ukraine is a prime example, where high dependency on Russian gas has impeded, rather than facilitated, bilateral relations since the dissolution of the Soviet Union.

Not all types of energy dependency are alike. Gas markets differ radically from oil markets, and gas is used for different purposes than oil. Thus there is reason to expect gas dependency to generate foreign policy effects different from those of oil dependency. A variety

[1] See Shelley Slade, "The Image of the Arab in America: Analysis of A Poll on American Attitudes," *Middle East Journal,* Vol. 35, No. 2 (1981).

of factors accentuate and mitigate the effects of energy dependency. These include, but are not limited to, the mode in which energy supplies are transported, an importer's status as an end buyer or transit state, and the total energy matrix of the importer's economy.

This study examines the effect of energy import dependency on states' foreign policy affinity towards their suppliers. It then examines six factors that are predicted to accentuate or mitigate the effects of energy dependency. A broad set of proxy variables are used to calculate foreign policy affinity, a quantitative score that reflects the thickness of ties between importer and exporter.

Hypotheses

General Hypothesis: Energy import dependence is directly correlated with the foreign policy affinity displayed by the importer towards the exporter.

Energy dependence should increase importers' foreign policy affinity towards suppliers for three reasons. First, importers worry that poor or hostile relations may lead supplier states to cut off energy supplies, leading to devastating economic and political consequences. They seek to allay this concern by maintaining friendly bilateral relations with their suppliers. As dependence increases, the need to insure the stability of energy imports increases and crowds out other determinants of the bilateral relationship.

Second, energy importers seek to win lower prices from suppliers through foreign policy concessions. As dependence increases, the value of preferential pricing rises, leading importers to be willing to make larger foreign policy concessions to achieve them.

Third, energy dependency is directly correlated with the level of dialogue and cooperation between the importer and the exporter, in both the public and private sector. To

successfully transport large volumes of fuels between two countries requires close cooperation. Increased cooperation has spillover effects; if two countries can successfully build and manage the infrastructure needed to trade gas or oil, then they are more likely to attempt similar undertakings outside the energy sector.

Hypothesis 1: Natural gas dependency has a greater direct correlation with foreign policy affinity than oil dependency.

Most gas is traded by pipeline, while a minority share of world oil trade occurs via pipeline.[2] Because of the centrality of pipelines to gas transport, gas is only economically traded on a regional market. This has two consequences. First, countries cannot turn to a global spot market to buy gas if a key supplier cuts exports. Thus fears of gas shutoffs are more acute for gas. Second, the regional pricing structure of gas markets makes it easier and more common for buyers to negotiate preferential prices from suppliers, because suppliers have limited export options.

Oil, on the other hand, remains a globally fungible commodity. Most of the international oil trade occurs by tanker. If an exporter cuts oil supplies, importers can turn to alternative suppliers to ensure import stability, provided they are willing to pay world market rates. As long as an oil embargo directed against a specific importer does not affect world market prices, the importer has little to fear. Moreover, the fungible nature of oil makes it difficult for buyers to negotiate preferential prices, as global price suppliers face a market price beneath which they have little incentive to charge.

[2] In 2007, 77.7 percent of intrastate oil trade occurred via tanker, but only 29.6 percent of gas trade occurred via LNG tanker. *BP Statistical Review of World Energy*.

Hypothesis 2: Pipeline dependent gas importers display a greater direct correlation between dependency and foreign policy affinity towards suppliers than do LNG importers.

Importers that receive gas via pipeline tend to view gas as a regionally traded commodity, subject to political considerations. They subscribe to the incentive structure outlined in Hypothesis 1. On the other hand, LNG importers view gas as a more fungible commodity, one more similar to oil. If an LNG exporter cuts off supplies, the importer has some degree of flexibility turn to another LNG exporter in the medium-term to maintain gas import stability. Thus the importer is likely to dedicate less foreign policy effort to securing LNG. That said, the monetary and domestic political costs of building LNG infrastructure presents a significant barrier to entering the market. There remain a limited number of LNG suppliers, and relatively small excess LNG production capacity. Thus LNG trade is not as fungible as oil trade.

Hypothesis 3: End buyers of natural gas display a greater direct correlation between dependency and foreign policy affinity towards suppliers than do transit states.[*]

End buyers of natural gas tend to have the incentives outlined in Hypothesis 1 that lead to a direct correlation between dependency and foreign policy affinity. However, transit states have an additional set of incentives that indicate an inverse correlation between dependency and foreign policy affinity. In addition to paying for the gas they consume domestically, transit states charge exporters fees for transporting gas to third-party end buyers. If the transit state consumes less than the other third-party buyers, or if the transit state is the only way for gas to reach those buyers, the transit state is likely to believe it has the leverage to negotiate generous transit fee

[*] End buyers are defined as those states that consume 90 percent or more of the gas they import from the specified supplier. Transit states are defined as those states that resell or export more than 10 percent of the gas they import from the specified buyer to a third party states.

terms. This may create tension between the exporter and the transit state, decreasing foreign policy affinity.

Transit states believe they have more negotiating power in the gas trade relationship with supplier states than do end-buyers. Thus, they are less likely to exhibit increased foreign policy affinity towards suppliers. Indeed, as dependency levels rise, it may only increase the perceived power balance in favor of the transit state. In this case, transit states will display an inverse correlation between dependency and foreign policy affinity.

Hypothesis 4: The industry-to-household ratio is the ratio of industrial gas consumption to household gas consumption. The industry-to-household ratio is directly correlated with foreign policy affinity importers show towards suppliers.

The domestic usage of gas should influence a state's decision whether to make gas stability a foreign policy concern. While there are many different consumer groups, the majority of gas imports go to one of two sectors: households or industry (which includes electricity production, for purposes of this study). The industrial sector tends to be organized and hierarchical, allowing it to overcome the collective action problem. Thus industrial actors lobby foreign policymakers to make gas supply stability and preferential pricing key priorities in bilateral relations with exporters.

On the other hand, foreign policymakers remained tied to the concerns of voters, as well as special interest groups. A gas shutoff in the middle of winter can cause thousands of homes to lose heat, which has devastating electoral consequences for the officials who allowed the shutoff to occur. In Ukraine, households left without gas in the middle of January helped to drive Viktor

Yushchenko out of power and elect a candidate friendlier to Russia in his place.[3] This phenomenon indicates industry-to-household ratio will also display an inverse effect on foreign policy affinity. For this to hold, however, foreign policymakers must face consequences from constituent dissatisfaction, i.e. there must be an electoral mechanism.

Hypothesis 5: Total primary energy dependence is directly correlated with the foreign policy affinity importers show towards their suppliers.

States traditionally measure dependence as the percentage of total gas consumption constituted by imports from a given supplier. This hypothesis examines dependency through a different prism, measuring dependency as a percentage of total primary energy consumption. Economies that differ radically in their total primary energy consumption matrix can have the same level of gas dependency according to the traditional definition, but the effects of this dependency will be radically different. For example, a state that gets little of its total primary energy from gas might be highly dependent on one supplier, because economies of scale inhibit diversification for small amounts of imports. Yet the low overall dependence on gas reduces the political ramifications of this relationship perceived by the importer.

Hypothesis 6: Importers that share a border with their supplier display a greater direct correlation between energy import dependency and foreign policy affinity than importers that are not contiguous with their supplier.

Geographic proximity exerts significant influence over foreign policy decision-making. All else equal, states tend to value regional relations most, in particular relations with neighboring

[3] Jeffrey Mankoff, "Ukraine's Orange Revolution Referendum," *Council On Foreign Relations,* Expert Brief, January 2010. Available at <<http://www.cfr.org/publication/21227/ukraines_orange_revolution_referendum.html>>

states. Neighbors are the most economical trading partners, hold the most potential for defense cooperation, and often share cultural and linguistic similarities. On the other hand, neighboring states can pose direct military threats (invasion, sanctions) and indirect threats (illegal immigrants, border closings).[4] All of this leads states to place additional value on friendly relations with neighbors. Thus contiguity should have a direct positive correlation with the foreign policy affinity energy importers display towards their suppliers.

Variable Methodology and Derivations

The unit of analysis in this study is the directed dyad-year. One observation represents data associated with the energy imported by an importer from an exporter in a given year. This study examines data from 1990 through 2008. The dataset includes all dyads for which average dependency over this period equaled or exceeded 5 percent for natural gas or oil and for which data was available.[**]

Three types of data were collected to test the above hypotheses. First, data on gas and oil trade flows and consumption were used to calculate the independent variable: energy import dependency. Second, five proxy variables were used to calculate a weighted aggregate measure of unidirectional foreign policy affinity, the dependent variable. These variables include UN voting records, total bilateral trade, militarized interstate disputes, episodes of sanctions, and formal defense alliances. Third, discrete or continuous variables pertaining to the importer were collected or self-coded to permit testing of the six accentuating factors. These accentuating factors include gas transport type, end buyer status, contiguity (or absence of contiguity), industrial-to-household consumption ratio, and the total primary energy matrix.

[4] Errol Henderson, "Culture or Contiguity: Ethnic Conflict, the Similarity of States, and the Onset of War," *The Journal of Conflict Resolution,* Vol. 41, No. 5 (1997).
[**] For a list of included and excluded dyads, see Appendix A.

Measuring Energy Dependency

Dependent variable calculation is relatively straightforward. With the exception of Hypothesis 5, gas import dependency represents the percentage of total gas consumption accounted for by imports from the specified exporter in the specified year. Oil dependency is calculated similarly. In Hypothesis 5, gas dependency is calculated as the percentage of total primary energy consumption accounted for by imports from the specified exporter in the specified year.[6]

Measuring Foreign Policy Affinity

Calculating the independent variable, foreign policy affinity, is more complex. Experts and policymakers disagree about the affinity one country expresses towards another in almost every case. Often their arguments focus on aspects of bilateral relations – rhetoric, diplomatic visits, cultural ties – that are difficult or impossible to measure quantitatively. For that reason, foreign policy affinity must be considered a latent variable that is impossible to measure directly.

Nevertheless, a variety of state behaviors correlated to the thickness of bilateral ties with another country can be quantified. When these behaviors are weighted, aggregated, and calculated over a number of years they provide a proxy for latent foreign policy affinity. While such an aggregate variable has limited usefulness as an absolute measure, it permits relative statements about differences in foreign policy affinity between countries and over time.

UNGA VOTING PROXIMITY: This proxy variable measures similarity in voting between importer and exporter in the United Nations General Assembly. UNGA voting records have been

[6] Data on oil and gas trade imports, total consumption, and total primary energy consumption are taken from Cedigaz, the British Petroleum Statistical Review of World Energy, and the International Energy Agency, in that order.

used extensively to measure foreign policy proximity, especially in the field of political economy. A number of studies have explored the relationship between UNGA voting records and the likelihood of receiving IMF or U.S. foreign aid.[7] This study adapts a similar methodology to that of Thacker (1996). For reach resolution, a positive point is assigned for a shared voting position (i.e. both countries vote yes or both vote no on a given vote) and a negative point is assigned for a disjoint voting position. The total point score is divided by the number of relevant resolutions and then normalized to the unit scale.[8]

Because UNGA resolutions address a wide variety of issues, they provide a good comparison of two countries' total foreign policy similarity or lack thereof. However, countries value the importance of resolutions differently. Countries are likely to feel strongly about a resolution directed at them or a key ally; for example, the U.S. strongly values voting in support of Israel. Thus, votes regarding Israel are given added weight by U.S. policymakers when examining a state's overall voting record.

The U.S. State Department publishes an annual list of key UNGA votes. Unfortunately, similar lists are not available for the large set of states included in this study. Thus, voting proximity includes all UNGA resolutions. Some political economists theorize that the UNGA voting space is so heavily dominated by the U.S. that bilateral affinity can be measured by simply comparing two countries' respective voting positions to that of the U.S.[9] This argument

[7] For more on the development of UNGA voting records as a Euclidean measure of dyadic foreign policy proximity, see Axel Dreher and Jan Egburt-Sturm, "Do IMF and World Bank Voting Influence Voting in the UN General Assembly?" *Swiss Federal Institute of Technology,* Working Paper (April 2006); Brian Tomlin, "Measurement Validation: Lessons from the Use and Misuse of UN General Assembly Roll-Call Votes," *International Organization,* Vol. 39, No. 1 (1985); Soo Yeon Kim and Bruce Russett, "The New Politics of Voting Alignments in the United Nations General Assembly," *International Organization*, Vol. 50, No. 4 (1996)

[8] UNGA Voting Records taken from Erik Voeten and Adis Merdzanovic, "United Nations General Assembly Voting Data," Database, available at << http://www9.georgetown.edu/faculty/ev42/UNVoting.htm>>

[9] Steven Holloway and Rodney Tomlinson, "The New World Order and the General Assembly: Bloc Realignment at the UN in the Post-Cold War World," *Canadian Journal of Political Science*, Vol. 28, No. 2 (1995); Leona Pallansch and Frank Zinni Jr., "Demise of Voting Blocs in the General Assembly of the UN? A Multidimensional

appears to have had some explanative power during the Cold War, where bipolarity led to distinct voting groups. However, the focus of this study on the post-Cold War period precludes the use of a model based on a bipolar system.

DIRECTED TRADE VALUE: Unlike UNGA Voting, bilateral trade is not explicitly determined by foreign policymakers. While it suffers from a degree of endogeneity, trade value remains directly correlated with foreign policy affinity. By lowering tariffs, granting most favored nations status, and signing free trade agreements, the foreign policy establishment can raise trade volume with a given partner. Moreover, the infrastructure required to support bilateral trade often requires political approval, if not direct political support in the form of government funding. Foreign policymakers can take opposite actions, retracting or denying concessions, to decrease trade volume with a given partner for geopolitical reasons.

Directed trade value represents the net value of bilateral trade between an energy importer and exporter in a given year, divided by the importer's GDP in that year. Dividing by the importer's GDP provides directionality in line with measuring importer foreign policy bias towards exporters, and not vice versa. This weighting places equal emphasis on imports and exports as expressions of foreign policy affinity.[10]

MILITARIZED INTERSTATE DISPUTES: Militarized interstate disputes are clear indicators of bilateral hostility, the result of a breakdown in normal foreign policymaking. According to the Correlates of War standards used in this study, militarized interstate disputes range from threats to displays of force to war. Fortunately, militarized interstate disputes are too

Scaling Analysis," *Paper presented at the annual meeting of the Southern Political Science Association*, Atlanta, 1996.

[10] Bilateral trade data taken from Katherine Barbieri, Omar Keshk, and Brian Pollins. *Correlates of War Project Trade Data Set*, Version 2.0, 2008. Available at <<http://correlatesofwar.org>>. GDP Data from the IMF, available at <<http://www.imf.org/external/pubs/ft/weo/2008/02/weodata/index.aspx>>

few and far between to provide insight into most dyadic relationships, but when they do occur they must be taken into account as evidence of unfriendly or extremely hostile relations.[11]

SANCTIONS: Like militarized interstate disputes, sanctions indicate significant bilateral hostility, but occur too infrequently to provide insight into most dyads. According to the coding used in this study, sanction types range from export and import restrictions to full embargoes.[12]

FORMAL ALLIANCES: Formal alliances indicate high foreign policy affinity between two countries, as well as the belief that affinity will remain high for the indefinite future. Formal alliances include defense pacts, non-aggression or neutrality pacts, and ententes, in order of decreasing foreign policy affinity significance.[13]

Accentuating Factors

Hypotheses 1-6 specify six factors that are predicted to accentuate the foreign policy bias of energy dependency. Some of these factors are discrete (i.e. gas vs. oil), while others are continuous (i.e. industrial-to-household consumption ratio). Discrete accentuating variables allow separation of the dyad-years into distinct sets, upon which regression analysis was performed separately. Continuous accentuating variables were treated as new independent variables, allowing a single regression to be performed on all the dataset.

The first accentuating factor is energy type: gas or oil. Energy type is clearly delineated by dyad-year in all databases used. The next five factors were applied only to gas dyads. The second accentuating factor is mode of transport: pipeline or LNG tanker. Mode of transport is

[11] Militarized interstate disputed taken from Faten Ghosn and Scott Bennett. 2003. Codebook for the Dyadic Militarized Interstate Incident Data, Version 3.10. Available at <<http://correlatesofwar.org.>> Data after 2003 self-coded.
[12] Sanctions data from Cliff Morgan, Valentin Krustev, Navin Bapat, "Threat and Imposition of Sanctions Dataset," Version 3.5, March 2009, available at <<http://www.unc.edu/~bapat/TIES.htm>>
[13] Alliance data from Douglas Gibler and Meredith Sarkees. 2004. "Measuring Alliances: The Correlates of War Formal Interstate Alliance Data set, 1816-2000." *Journal of Peace Research* 41(2): 211-222. Alliances after 2004 self-coded.

clearly delineated in all databases used. The third accentuating factor is buyer status: end-buyer or transit state. Buyer status was self-coded using gas pipeline networks and gas trade flow volumes. Where buyer status is unclear, it has been left blank. The fourth accentuating factor is industry-to-household gas consumption ratio. This was derived from IEA domestic consumption figures by sector. This data was available only for OECD countries. The fifth accentuating factor, total primary energy dependence was derived from IEA and BP reports, as described above. The sixth accentuating variable, contiguity, is derived from the direct contiguity database hosted by the Correlates of War project.[14] Note that states separated by twelve miles of water or less are classified as contiguous.

Statistical Methodology

Relative weights were assigned to the five proxy indicators of foreign policy affinity by principle component analysis. Principle component analysis transforms possibly correlated variables into uncorrelated vectors called principal components. Each principle component reflects an underlying latent variable, in which the coefficients – or loadings – reflect the relative explanatory power of the original variables.[15]

The first principal component accounts for as much of the variability in the data as possible, and each succeeding component accounts for as much of the remaining variability as possible. In this case, inspection shows that the signs of the first component loadings match the expected relationships with the proxy variables, indicating the first component predicts foreign policy affinity. Each variable is mean centered, to allow for comparison across variables.

[14] Correlates of War Project. *Direct Contiguity Data, 1816-2006*. Version 3.1. Online: http://correlatesofwar.org.
[15] For more a detailed description of principle component analysis, see Ian Jolliffe." Principle Component Analysis," chapter in Springer Series In Statistics, 2nd ed. New York: Springer Publishing, 2002, p. 28.

Table 3.1: Overview of proxy variables for foreign policy affinity

Variable	Observations	Mean	Standard Dev.	Minimum	Maximum
UNGA Voting Proximity	2017	.782	.150	.097	1.00
Directed Trade Value	2017	.032	.074	0	.468
Militarized Interstate Disputes	2017	.044	.390	0	4
Sanctions	2017	.032	.250	0	2
Alliance	2017	.627	1.21	0	3

Table 3.2: Variable Names

Name	Variable
Affinity	*A*
UNGA Voting Proximity	*VP*
Trade Value	*TV*
Militarized Interstate Disputes	*W*
Sanctions	*S*
Alliance	*AL*
Dependency	*D*
Constant term	*c*
Error	*e*

Table 3.3: Principle Component Analysis

Variable	Component 1 (loadings)
UNGA Voting Proximity	.0654
Trade Value	.6410
Militarized Interstate Disputes	-.0676
Sanctions	-.0181
Alliance	.1746

Mean centering (subtracting the mean and dividing by the standard deviation for all observations) gives the equation for affinity:

Affinity*: A*= .0433VP* + 8.662**TV* – .173**W* – .072**S* + .144**AL* + *c***

The standard linear regression equation follows:

Model 1: $A = B_0 + B_1 * D + e$

However, there is reason to believe a linear model may not accurately predict the relationship between energy import dependency and foreign policy bias. Indeed, it is unlikely states perceive dependence in purely linear terms. From the perspective of a policymaker, growing from 10 percent dependency to 20 percent dependency is much more significant than growing from 40 percent to 50 percent. The first change reflects a doubling of dependency on a given supplier, while the second represents only a 25 percent increase.

To account for this, this study also employs a log-linear model that predicts energy import dependency will have diminishing marginal effects on foreign policy affinity. The natural log of dependency is calculated as $ln(D+1)$; adding one to dependency corrects for the undefined values of the natural log of zero without skewing the distribution of observations:

Model 2: $A = B_0 + B_1 * ln(D+1) + e$

Panel linear regressions were then conducted on the data set to examine the various hypotheses. Panel data analysis corrects for the effects of temporal dependency amongst dyads, by analyzing dyads separately by dyad-year.

Results

Table 3.4: Statistical Findings

	Correlation with Foreign Policy Affinity - Model 1	Correlation with Foreign Policy Affinity - Model 2
General Hypothesis (all dyads)	.106*** (0.032)	.235*** (0.063)
Hypothesis 1: Fuel Type		
Gas dyads	.129** (0.053)	.195** (0.087)
Oil dyads	0.003 (0.012)	.041* (0.023)
Hypothesis 2: Mode of Gas Transportation		
Pipeline dyads	-.163** (0.069)	-.253** (0.113)
LNG dyads	.218** (0.095)	.240** (0.115)
Hypothesis 3: Transit State Status		
End Buyers	.624*** (0.103	.667*** (0.137)
Transit States	-0.08 (0.054)	-0.067 (0.101)
Hypothesis 4: Industrial-to-Household Consumption Ratio		
ITH ratio	-0.001 n/a	-0.001 n/a
Hypothesis 5: Total Primary Energy Dependence on Gas		
TPE dependence	.470* (0.244)	.546* (0.282)
Hypothesis 6: Contiguity		
Contiguous dyads	.132*** (0.053)	.212** (0.086)
Non-contiguous dyads	-1.01*** (-0.185)	-1.324*** (0.232)

** 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence. Standard deviation in parentheses. Regressions conducted using Stata 11.2 software.*

The results of both models confirm the original hypotheses, with the exception of Hypotheses 2 and 4. Specifically, the statistical findings carry the following implications:

General Finding: Energy import dependency is directly correlated with foreign policy affinity towards a given supplier state. In other words, as energy import dependency rises, importers tend to display more foreign policy affinity towards a given supplier.

Finding 1: Natural gas dependency has a greater direct correlation with foreign policy affinity than oil dependency.

Finding 2: Pipeline dependent gas importers display a greater absolute correlation between dependency and foreign policy affinity than do LNG importers. This is consistent with the expectation that LNG imports are perceived as less politically important. However, unlike Hypothesis 2, pipeline dependent states display an inverse correlation between gas dependency and foreign policy affinity. This indicates that the political backlash against pipeline dependency outweighs the desire to win preferential pricing and avoid gas shutoffs, resulting in less amiable relations as dependency increases.

Finding 3: End buyers of natural gas display greater positive foreign policy affinity towards suppliers than do transit states. Moreover, transit states display an inverse correlation between dependency and foreign policy affinity. This indicates that as larger volumes of gas are shipped through transit states, their foreign policy affinity towards exporters decreases. Presumably, this occurs because transit states are emboldened to take more demanding negotiating positions over transit fees, resulting in tenser relations.

Finding 4: The industry-to-household gas consumption ratio bears no significant correlation with foreign policy affinity towards supplier states. Thus, internal gas consumption patterns do not appear to have an effect on foreign policy attitudes. It appears that industrial actors and households may be equally adept at influencing foreign policy related to ensuring gas security.

Finding 5: Total primary energy dependency is directly correlated with the foreign policy affinity importers tend to display towards a given supplier.

Finding 6: States that share a border with a supplier display a greater direct correlation between gas import dependency and foreign policy affinity than states not contiguous with their supplier. Interestingly, states that are not contiguous with suppliers display an inverse correlation between gas dependency and foreign affinity. These results are summarized in the table below.

Table 3.5: Impact of Independent Variables

Variable	Expected Correlation with Foreign Policy Affinity	Actual Correlation (Model 1)	Actual Correlation (Model 2)
General energy dependence	+	+	+
H1: Gas dependency	+	+	+
H2: Pipeline dependency	+	-	-
H3: Transit state status	-	-	-
H4: Industrial-to-residential ratio	+	∅	∅
H5: Total primary energy dependency	+	+	+
H6: Contiguity	+	+	+

CHAPTER IV: CASE STUDIES OF GAS DEPENDENCY & FOREIGN POLICY BIAS

This chapter explores the explanatory power of the statistical model relating foreign policy bias to gas dependency through three case studies. Each case study investigates a dyadic gas trading relationship, describing the nature and history of the gas trade, and linking observed outcomes in the importer's foreign policy to gas dependency. The case studies address the quantitative variables laid out in the model, as well as qualitative factors including the structure of the importer's gas market, upstream and downstream production, and historical and cultural ties between the importer and exporter.

The case studies in this chapter do not get inside the 'black box' of foreign policy decision-making – doing so for numerous long-standing relationships in different regions is beyond the scope of this thesis. Thus, these cases are limited in their ability to provide direct evidence of causality. Nonetheless, they show strong correlations between gas dependency and foreign policy outcomes, that, when viewed in conjunction with the results of the previous chapter, provide evidence in support of causality. These case studies are plausibility probes, which political scientist Alexander George defines as "preliminary studies on relatively untested theories and hypotheses to determine whether more intensive and laborious testing is warranted."[1] Plausibility probes are intended "to uncover new or omitted variables, causal paths, or interactions, while strengthening or reducing support for a theory."[2] These case studies help contextualize the quantitative findings of the previous chapter, while exposing new and important qualitative factors.

[1] Alexander George and Andrew Bennett. Case Studies and Theory Development in the Social Sciences. Cambridge: Belfer Center for Science and International Affairs, 2004. pp. 75.
[2] *Ibid,* pp. 109.

Table 4.1: Major Gas Trade Movements

	Importer	Exporter	Transport Mode	Contiguity	Transit State	Availability of Data	Selected
1	Argentina	Bolivia	Pipeline	Contiguous	End-buyer	Adequate	Yes
2	Chile	Argentina	Pipeline	Contiguous	End-buyer	Adequate	Yes
3	France	Algeria	Pipeline	Non-contiguous	End-buyer	Adequate	No
4	Germany	Russia	Pipeline	Non-contiguous	End-buyer	Adequate	No
5	Great Britain	Norway	Pipeline	Non-contiguous	End-buyer	Adequate	No
6	Japan	Indonesia	LNG	Non-contiguous	End-buyer	Adequate	Yes
7	Japan	Australia	LNG	Non-contiguous	End-buyer	Adequate	No
8	Poland	Russia	Pipeline	Non-contiguous	Transit State	Adequate	Yes
9	South Korea	Qatar	LNG	Non-contiguous	End-buyer	Lacking	No
10	U.S.	Trinidad & Tobago	LNG	Non-contiguous	End-buyer	Lacking	No
11	U.S.	Canada	Pipeline	Contiguous	End-buyer	Adequate	No
12	Ukraine	Russia	Pipeline	Contiguous	Transit State	Lacking	No

Based on an aggregation of the most important gas trade relationships (Table 4.1), as identified by BP in its annual Statistical Review of World Energy, four dyads were selected for further examination (note that Argentina-Bolivia and Chile-Argentina are combined into one case study, as they are politically linked but distinct gas trade relationships). The dyads were selected to include transit states and end buyers, contiguous and non-contiguous trade partners, and pipeline and LNG relationships. The availability of reliable quantitative data was also a key factor. For example, Ukraine's gas trade relationship with Russia is particularly interesting, but there is little reliable data on trade volumes or pricing, due to the opacity of the actors involved and allegations of gas theft. Other gas trade relationships are too new for key information about their terms to have been made public.

Section 1: Japan & Indonesia

Japan's dependency on Indonesian natural gas is of particular interest for three reasons. First, the sheer volume of this bilateral gas trade is enormous. At its peak in 2000, Japan imported over 24 bcm of gas from Indonesia, more gas than Austria, the Czech Republic, and Slovakia consumed in total. Second, Japan and Indonesia pioneered the LNG trade, fostering its growth in Asia, and then across the globe. Third, the states have a complex political relationship, which still bears the mark of Japan's occupation of Indonesia during World War II. The bulk of Indonesia's gas exports are produced in the rebellious province of Aceh, where Japan has involved itself in Jakarta's battle against the Acehnese rebels and highlighted the importance of gas security in its actions overseas.

Japan is an end-buyer of gas, which it receives solely via LNG tankers. It does not share a border with Indonesia, and gas accounts for less of its total primary energy than the OECD average. According to the previous chapter's framework, these factors all predict Japan's dependence on Indonesian gas increases its foreign policy affinity for Indonesia. To test this prediction, this case study examines the history of Indonesia's energy trade with Japan since the mid-seventies, and then two important means through which Tokyo has exerted foreign policy influence in Indonesia: foreign aid and peace-building diplomacy. It finds that gas dependency has increased Japan's foreign policy affinity for Indonesia, expressed through high levels of foreign aid and unwavering support for the Indonesian government as it has attempted to suppress internal unrest.

Historically, Japan has depended on oil and coal much more heavily than gas. Gas consumption, as a percentage of total energy consumed, has risen steadily over the past forty years, but Japan still consumes relatively little gas for an economy its size. Japan has few natural

gas deposits, and it has not produced more than 5 percent of the gas it consumes in the past forty years.[3] As an island nation, the construction of pipelines to regional gas exporters remains prohibitively expensive. In the decades after World War II, the small amount of gas consumed was almost exclusively town gas, a type of gas manufactured from coal that is highly dangerous to produce and not very profitable to distribute.

Japan's rapid economic growth through the fifties and sixties forced it to look for new sources of energy. The 1971 discovery of the enormous Arun gas field in Aceh, Indonesia quickly caught the interest of Japanese industry and the Japanese government. American oil major Mobil discovered the field, but signed a production-sharing agreement that guaranteed most of the field's profit would go to Pertamina, the Indonesian state oil and gas monopoly. Mobil and Pertamina predicted Arun was capable of producing 21 bcm/year for twenty years, a find large enough to warrant the $3.5 billion construction of an LNG refrigeration and liquefaction plant.[4] At the time, LNG remained a new, unreliable, and more expensive mode of gas transportation than pipeline transport.

A consortium of large Japanese utilities, Japan Indonesia LNG Company (JILCO), moved quickly to secure the purchase rights to the majority of Arun's gas.[5] Japan's tender was encouraged by favorable conditions in both Tokyo and Jakarta. First, the removal of President Sukarno and the accession of Suharto to the presidency in 1967 opened up Indonesia to foreign investment. Suharto's "New Order" promised political stability and economic growth and attracted Japanese firms eager to secure a piece of Indonesia's vast natural wealth. Second,

[3] Energy Information Administration, "Country Analysis Brief: Japan." September 2008.
[4] Fred Von der Mehden and Steven Lewis, "Liquefied Natural Gas from Indonesia: The Arun Project," chapter in David Victor, et al. Natural Gas and Geopolitics. Cambridge: Cambridge University Press, 2006. pp 93.
[5] The initial Japanese buyers – Chubu Electric Power Company, Kansai Electric, Osaka Gas, Kyushu Electric, and Nippon Steel - along with Pertamina and Mobil, founded JILCO, the Japan Indonesia LNG Company to finance the project.

Japan's Ministry of International Trade and Industry (MITI) eased the consortium's financing, allowing it to pay in advance for enough LNG to support the development of the liquefaction infrastructure. Finally, it didn't hurt that JILCO was awarded the lucrative contract to build the refrigeration and liquefaction plant at Arun, although Mobil and Pertamina retained control of production.

Most importantly, however, the structure of Japan's domestic gas industry left distributors insensitive to the high price of LNG. Gas transmission networks in Japan were highly localized, as the country's mountainous terrain and the distribution of population centers across the nation's islands inhibited the construction of a national pipeline network. As a result, gas was distributed mainly by regional monopolies. "Because there was no domestic competition in gas transmission," gas utilities in the 1970s felt, "that the high cost of imported LNG could be passed easily to consumers. Competition between regions – especially Tokyo and Osaka – was focused on obtaining long-term overseas sources of LNG, even at high cost."[6] Japanese buyers were preoccupied with supply security, and price remained a secondary concern.

Despite JILCO's eagerness, Indonesia was initially reluctant to sell Arun's gas solely to Japan. Jakarta felt Japanese investors already controlled a large share of the Indonesian economy and remained wary of increasing Japan's clout. "This was an era of Southeast Asian suspicion of Japanese economic hegemony," marked in Indonesia by "political and popular opposition expressed through demonstrations, speeches, and editorials against Japan."[7] Consequently, Pertamina pursued other buyers for Arun. It was most eager to sell gas to Pacific Gas (later PG&E) in California, and even signed a contract to deliver 1.1 bcm/year in 1978, scheduled to

[6] Mehden and Lewis, pp. 99
[7] Mehden and Lewis, pp. 110

rise to 2.9 bcm/year, making it the single largest purchase of gas by a California utility.[8] However, grassroots environmental opposition derailed plans for a LNG receiving terminal near Santa Barbara, and Pacific Gas found its subsequent terminal proposals rejected by legislators. Acknowledging the lack of popular support for LNG imports in California, Pertamina released Pacific Gas from its contract in 1980.

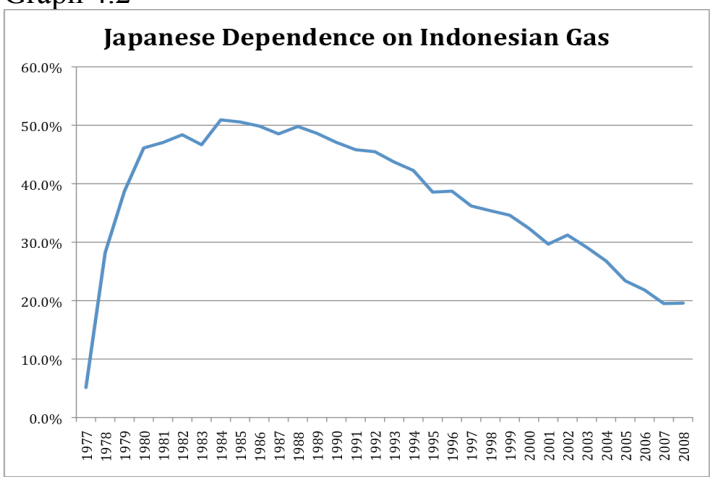
At the same time, Pertamina considered building a pipeline to Singapore. The city-state's economy was growing rapidly and Prime Minister Lee Kuan Yew personally supported the construction of such a link.[9] Yet Mobil opposed constructing a pipeline that would have to run across one of the busiest sea-lanes in the world and experts within Pertamina questioned whether Singapore would purchase enough gas to warrant the pipeline's expense. Ultimately, the project was abandoned. Finally, Pertamina explored the viability of selling Arun's gas domestically. Yet Arun lies far from Indonesia's population center in Java, and low domestic gas prices (far lower than what the Japanese were offering) had inhibited the development of a domestic gas transmission network. Selling gas domestically would have required a larger investment in transmission infrastructure than the Japan or Singapore alternatives, with a lower expected return. Consequently, when Arun began shipping LNG in 1977, Japan was the sole foreign buyer – although not without significant Indonesian reluctance.[10]

Other gas fields, including Bontang in Kalimantan and Arjuna off the coast of Java, would go on to ship Indonesian LNG to Japan in succeeding decades. However, Arun remains the largest and most profitable part of Japan's gas trade with Indonesia – it stands as "probably

[8] L. Howell and M. Morrow, "Natural Gas: the Invisible Gold Hunt," *Far Eastern Economic Review,* Vol. 82, No. 1 (1973), p. 39.
[9] *Straits Times*, September 10, 1982.
[10] A petrochemical complex built in Aceh consumes approximately 10 percent of Arun's gas.

the most lucrative LNG operation in the twentieth century."[11] Arun generated the rapid growth in Japanese dependency on Indonesian gas in the seventies and eighties (see Graph 4.2). Moreover, it laid the political and economic foundation to foster the development of the Bontang and Arjuna gas fields, and it significantly deepened the ties binding Japan and Indonesia. Yet any discussion of the role of energy dependency in Japanese foreign policy towards Indonesia must address two other factors: oil and sea-lanes.

Graph 4.2



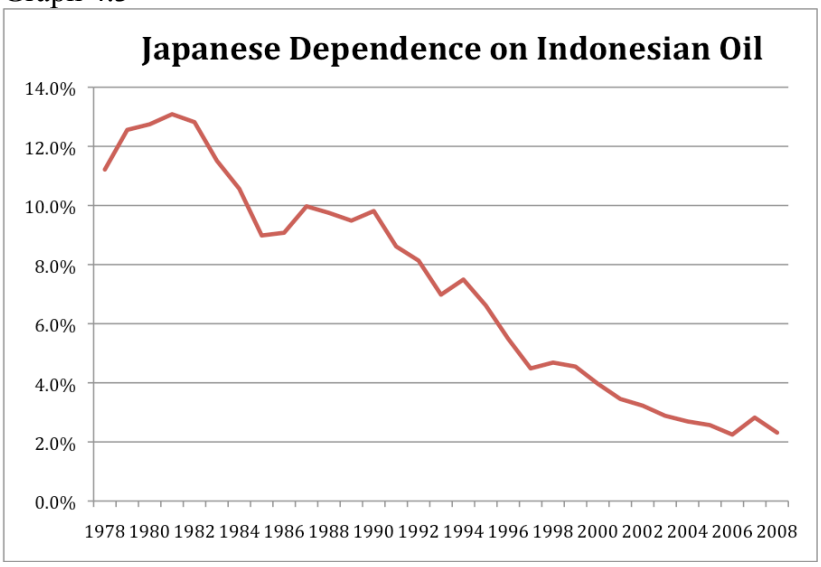
Source: Cedigaz

When Japan first began importing Indonesian gas in 1977, this trade was dwarfed by Japanese imports of Indonesian oil. Yet oil imports (as a percentage of total consumption) peaked in 1981, after which they steadily declined (see Graph 4.3). In the past decade, Japan imported only between 2-4 percent of its oil from Indonesia. The low level of Japanese dependence on Indonesian oil, as well as oil's fungibility and the abundance of other suppliers in the region, indicate oil imports have not been a dispositive factor in Japan's foreign policy towards Indonesia. But while Indonesia supplies relatively little oil to Japan, it borders the Straits of Malacca, through which 70 percent of Japan's oil imports pass (most come from the Middle

[11] Mehden and Lewis, pp. 91

East).[12] Thus, Japan has a strong strategic interest in ensuring freedom of passage through these notoriously pirate-infested waters, evidenced by Tokyo's recent efforts to convince Indonesia to deploy a greater naval presence in the area.[13]

Graph 4.3



Source: OECD Statistics Directorate, BP Statistical Review of World Energy

As Japanese dependence on Indonesian gas rose throughout the late seventies and early eighties, Tokyo began to look for ways to ensure the security of its most important gas source and win the friendliness of the government in Jakarta. It first pursued these goals through a massive program of Official Development Aid (ODA), under which Indonesia emerged as the largest recipient of Japanese aid (see Graph 4.4). ODA served as Tokyo's favorite foreign policy tool after World War II:

> Given its pacifist constitution, dovish public opinion, and the suspicions of its Chinese and Korean neighbors to the slightest hint of 'militarism', the Japanese government has always been reluctant to utilize military power as an instrument of foreign policy. As an alternative, Tokyo has always considered ODA as a pillar of its foreign policy. After all, wielding carrots (instead

[12] Adam Schwarz, "The Price of Security: Japan's Aid to Indonesia Reflects Strategic Concerns," *Far Eastern Economic Review*, September 27, 1990.
[13] "Indonesia and Japan Intensify Talks on Malacca Strait Security," *Indonesian National News Agency*, May 24, 2006; "Japan Understands Indonesia's Sensitivity in Malacca Strait," *AsiaPulse News,* August 15, 2007.

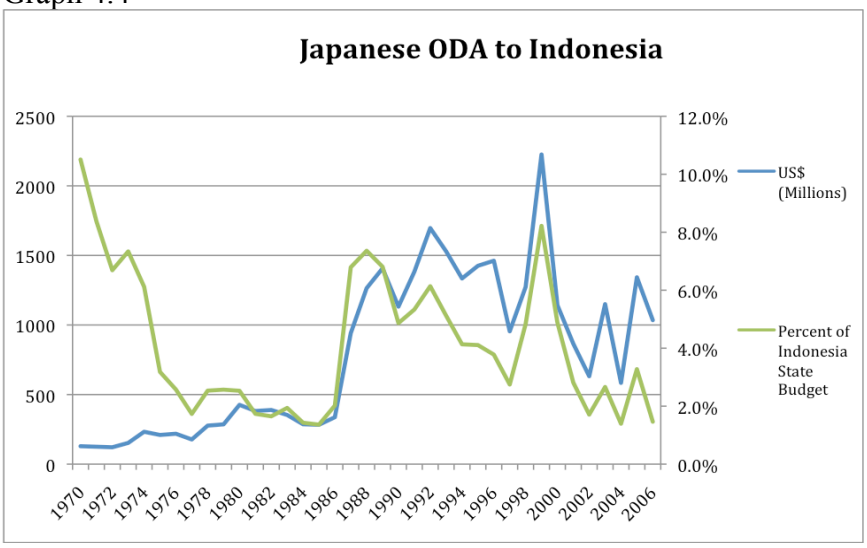
of sticks) is much more acceptable to Japanese public opinion, its neighbors, and recipient countries.[14]

After the removal of Sukarno from power in 1965, it became clear that Indonesia had accrued heavy debts it was unable to service, leaving the country on the verge of economic collapse. In 1967, twelve creditor nations met in Tokyo and agreed to form the Inter-Governmental Group on Indonesia (IGGI), to lighten Indonesia's burden and mount what was effectively a bailout. The Dutch initially led the group, but from the outset Indonesia preferred to deal with Japan. As the colonizers of Indonesia, there remains a strong negative stigma against the Dutch in Jakarta. Yet Japan's occupation of the country during World War II left an ambivalent legacy, as many Indonesians viewed it as liberation from the harsh Dutch rule.

In the seventies and eighties, Japan played a quiet but critical role in the IGGI. It became "first among equals, contributing nearly half the total IGGI commitment on a bilateral basis."[15] Tokyo's hesitance to take a more vocal role was driven by a wariness of appearing overly involved in the Indonesian economy. Indeed, when Prime Minister Tanaka visited Jakarta in 1974, rioters protesting against Japanese firms met him at the airport.[16] Yet Japan's generous contributions of ODA earned it the goodwill of the Suharto regime. In 1986, the collapse of world oil prices and the dramatic appreciation of the yen (which inflated Indonesia's debt service burden) once again drove Indonesia to the point of catastrophe. Japan responded with "an unprecedented Japanese government-sponsored debt rollover, implemented with uncharacteristic dispatch and with great immediate benefits for the Indonesian government."[17]

[14] Lam Peng-Er, "Japan's Peace-Building Diplomacy in Aceh," *Asian Ethnicity*, Vol. 5, No. 3 (2004).
[15] Jeff Kingston, "Bolstering the New Order: Japan's ODA Relationship with Indonesia," chapter in Bruce Koppel, et al, eds. Japan's Foreign Aid: Power and Policy in a New Era. Boulder: Westview Press, 1993. pp 46
[16] Kingston, pp. 45
[17] Kingston, pp. 54

Graph 4.4



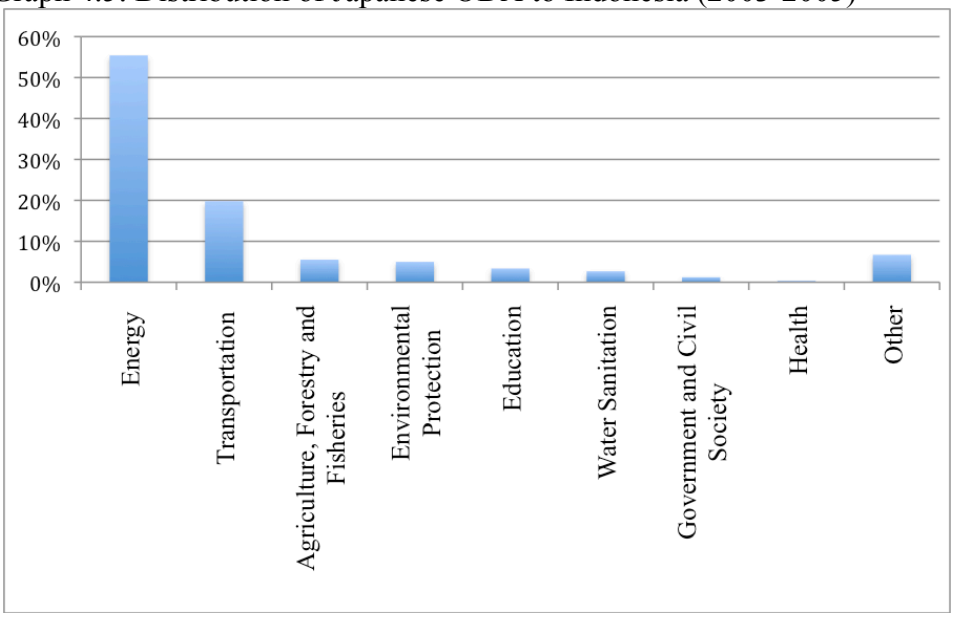
Source: Japanese Embassy in Indonesia, available at <http://www.id.emb-japan.go.jp/oda/en/datastat_01.htm>

At the same time, Japan's aid philosophy led it to refrain from public criticism of the Suharto regime, conveying displeasure or demands behind closed doors. In 1991, the massacre of pro-independence protestors in East Timor (which Indonesia had occupied since 1975) set off waves of international protest against Indonesia. The Dutch spoke out publicly, questioning the morality of supplying aid to the Suharto regime; the Japanese conveyed their displeasure through private channels. In March 1992, the Indonesian government decided dealing with the Dutch was more trouble than it was worth, and disbanded the IGGI. In its place, Indonesia created the Consultative Group for Indonesia (CGI), in which Japan accepted a more prominent role. Japan's leading role in the CGI stemmed, in part, from its refusal to publicly criticize Jakarta after the 1991 Dili massacre in East Timor.[18] When the Indonesian military attacked demonstrators in East Timor in 1999, Japan again refrained from criticizing this action.[19]

[18] Gen Kikkawa, "Japan and East Timor: Change and Development of Japan's Security Policy and the Road to East Timor," *Japanese Studies,* Vol. 27, No. 3 (2007).
[19] Norbert Palovics, "Quo Vadis Japanese ODA? New Developments in Japanese Aid Policies," *Asia-Europe Journal*, Vol. 4, No. 3 (September 2006).

Japanese ODA played a critical role in strengthening the ties between Tokyo and Jakarta. The majority of Japanese ODA has funded energy infrastructure projects, rather than transportation, telecommunications, education, or health services (see Graph 4.5). In other ASEAN countries, the majority of Japanese ODA has been directed towards economic development or education and health programs, not energy infrastructure.[20] This pattern of aid disbursements in Indonesia highlights the centrality of energy production to Japanese involvement in Indonesia. The high proportion of ODA directed towards energy infrastructure developments ensures that Indonesia will continue to meet its gas and oil export commitments, which are vital to Japan's economy.

Graph 4.5: Distribution of Japanese ODA to Indonesia (2003-2005)



Source: Japanese Embassy in Indonesia, available at <<http://www.id.emb-japan.go.jp/oda/en/datastat_01.htm>>

Japan's emergence as the dominant economy in Asia forced it to adopt a more proactive foreign policy, one that went beyond aid. This would shift Japan's relations with Indonesia in myriad ways. The new policy has its roots in 1991, when Japan contributed $13 billion to the

[20] Denis Trinidad, "Japan's ODA at the Crossroads: Disbursement Patterns of Japan's Development Assistance to Southeast Asia," *Asian Perspective*, Vol. 31, No. 2 (2007).

Gulf War coalition, only to find itself criticized for sending money, but not personnel. Critics labeled Japanese foreign policy 'reactive' and 'checkbook-diplomacy.'[21] The episode spurred the passage of the International Peace Cooperation Law, which enabled the deployment of the Japanese Self-Defense Forces for peacekeeping operations and signaled Japan would take a more direct role in mediating conflicts in East and Southeast Asia.

In Indonesia, Japan assumed the role of international mediator to help resolve the long-running conflict in Aceh, a conflict that threatened to spiral out of control and curtail gas production at Arun. Aceh has a long history of separatism, driven by differences between the Muslim Acehnese and the predominantly Christian Batak people who inhabit the rest of northern Sumatra. An Acehnese rebellion was put down in 1953, but by the early seventies – when gas was discovered at Arun – the area was generally peaceful. Mobil and Pertamina assured local leaders they would receive a fair share of the profits and jobs from the construction and operation of Arun, and the project's economic benefits helped mitigate tensions for the first two decades of operation.[22]

Fighting between the Free Aceh Movement (GAM) and the Indonesian military flared up again in 1999. The province's security situation continued to deteriorate, until Mobil (now ExxonMobil) announced the cessation of operations at Arun in March 2001 and removed its personnel. The Arun project was closed for four months, causing Pertamina to default on over forty contracted LNG shipments to Japan.[23] In January 2002, Japanese Prime Minister Koizumi announced Japan would promote peace-building in Aceh. Representatives of GAM and the Indonesian government met regularly in Tokyo for the next two years, as they tried to work out a deal.

[21] Palovics
[22] Mehden and Lewis, pp. 107
[23] "Gas Flows Again from ExxonMobil's Arun Fields," *The Jakarta Post*, July 19, 2001.

The reasons for Japan's intervention in the Aceh conflict were multifold. On a regional level, Japan hoped to counterbalance China's rising influence. From Jakarta's point of view, there were few acceptable mediators other than Japan; Indonesian public sentiment would not permit the U.S., Australia, or China to play such a role. But Japan's decision to intervene was also motivated by the need to preserve its gas supply security. The *Asahi Shimbun* praised Koizumi's decision, noting "Japan has a keen interest in achieving peace in Aceh. Almost all of the natural gas from the region is shipped to Japan. Turmoil in the region could present a serious threat to peace and stability, and send Japan scrambling for fuel supplies."[24] The *Japan Times* wrote, "Indonesia is Japan's largest supplier of natural gas, and Aceh is home to major gas plants...Stability in the region, therefore has a close bearing on Japan's national interests. It is only natural that the nation should take a positive role in building a permanent peace in the province."[25] Despite its role as a mediator, Japan condemned calls for Aceh's independence, a path likely to bring further turmoil and destabilize gas production.[26] Tokyo has affirmed an unwavering commitment to Indonesia's territorial integrity and refrained from public criticism of the Indonesian government.[*]

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Despite the fact that Japan and Indonesia trade gas exclusively via LNG and share no border, their gas trade has had profound foreign policy consequences. As predicted, Japan's dependency on Indonesia strengthened the ties between the countries. Gas dependency

[24] "Stop the Bloodshed in Aceh," *Asahi Shimbun*, May 21, 2003.
[25] "Aceh on the Brink of Peace," *Japan Times*, December 6, 2002.
[26] Peng-Er
[*] Japan has supported the independence of East Timor since 1999 and been an active advocate of peace-building. However, Japan only became involved after Indonesia appealed to the UN in September 1999 to send in a peace-keeping mission, and it was reluctant to do more than finance the mission (UNTAET) until it was clear that it would be successful. When East Timor was occupied by Indonesia from 1975-1999, Japan refrained from any involvement in what it considered an Indonesian domestic issue. For more, see Ian Martin. Self-Determination in East Timor: The United Nations, the Ballot, and International Intervention. Boulder: Lynne Rienner Publishers, 2001.

encouraged Japan to become Indonesia's largest donor, as Tokyo recognized its economic growth rested, in part, on the security and stability of Indonesian fuels. As Japanese foreign policy shed its passivity, Tokyo took an increasingly central role in promoting peace in Aceh, protecting gas flowing from the region while simultaneously mediating in a way favorable to the Indonesian government. In 2006, GAM and the Indonesian government signed a peace-accord to share power in the region, spurred to put their differences behind them as they struggled to overcome the damage of the 2004 tsunami disaster.

After 2010, the quantity of Indonesian gas contracted by Japan declines rapidly, falling to almost zero by 2014.[27] Large projects like Arun and Bontang are nearing the end of their production lives and Japanese buyers are turning to lower-cost gas suppliers in Australia, Malaysia, and Qatar. Japanese reliance on Indonesian energy, which has long driven Japan's accommodating and supportive policy towards Indonesia, will no longer be the dispositive factor it once was. Nonetheless, it is unlikely that even the complete cessation of gas trade will undermine Japanese-Indonesian relations, as Tokyo retains strong interests in preserving friendly relations with Jakarta. First, Indonesia still controls sea-lanes critical to Japan. Second, Japan feels strong pressure from the U.S. (*gaiatsu)* to participate in the war on terror, and Indonesia remains a willing partner in this fight, where Japan can build on its experience tempering Islamic extremism in Aceh.[28] Third, Japan's attempts to counter China's rising regional influence leave it a strong incentive to maintain close ties with Indonesia.

[27] Akira Miyamoto, "Natural Gas in Japan," in Jonathan Stern, ed. Natural Gas in Asia. Oxford: Oxford University Press, 2008. pp. 149

[28] David Leheny, "Securing Indonesia: The Use of Japanese ODA to Cope with Terrorism in Southeast Asia" *Paper presented at the annual meeting of the International Studies Association*, March 5, 2005.

Section 2: The Southern Cone – Argentina, Chile, and Bolivia

The southern cone of South America is a region endowed with rich natural gas resources and complex politics. The growth of regional gas trade over the past forty years has had significant geopolitical consequences for importers and exporters alike. Of particular interest are gas exports from Bolivia to Argentina and from Argentina to Chile. This chapter traces the rise of Bolivian gas exports to Argentina and its political ramifications, Argentina's transition from gas importer to gas exporter and back to importer, and Chile's troubled history importing Argentine gas. The gas pipelines built between these countries illustrate the geopolitical benefits and pitfalls of gas dependency. Initially, gas pipelines brought these countries closer together, only to lead to tensions that ultimately hindered regional integration.

South American nations began discussing trans-national gas pipelines in the 1950s, but it was not until 1972 that Bolivia and Argentina completed the continent's first international pipeline. The Yacimientos-Bolivian Gulf Pipeline (YABOG) changed the face of South American gas markets, but it would be another twenty years before another international pipeline would be completed. That YABOG remained the only international gas link in the region for two decades heightened it geopolitical importance.

Bolivia possesses South America's second-largest reserves of natural gas, trailing only Venezuela, but remains one of the continent's poorest countries.** In 2000, even after a decade of economic reform, per capita GDP measured one third of the regional average and per capita energy consumption less than one half the regional average.[29] With a small market for domestic

** Most of Venezuela's gas is associated gas, which means it is found in conjunction with oil; when oil prices drop, it often become unprofitable to produce associated gas. Bolivian gas, however, is mostly non-associated gas, meaning its production is not tied to oil production (or oil price fluctuations).

[29] Sylvie D'Apot. South American Gas: Daring to Tap the Bounty. Paris: International Energy Agency, 2003. pp. 128

gas consumption, most exploration and production has been driven by the prospect of exporting gas abroad. In 1958, in the first effort to attract foreign investment to its gas sector, Bolivia offered Brazil all gas from Bolivian fields developed by Brazilian investors. Brazil was intrigued by the prospect of securing these energy supplies for its burgeoning economy and, more importantly, winning geopolitical influence with its neighbor. However, Brazil was in the midst of a push to wean itself from hydrocarbon dependency, and it wavered over the large financial commitment necessary to build a cross-border pipeline.

In the meantime, Bolivia began to negotiate with Argentina, a smaller but much more developed gas market. Argentina was heavily reliant on gas, which accounted for almost 50 percent of total primary energy consumption, but domestic price caps impeded exploration and production. By the late 1960s, "both civilian politicians and military dictators feared the political fallout of gas shortages for middle class homes and industry… making Bolivian gas an attractive option for Argentina."[30] Moreover, Argentina was also eager to gain influence in Bolivia, as a territorial conflict with Chile in Patagonia encouraged Buenos Aires to line up regional allies in its dispute with Santiago.

As it became clear that Argentina was an interested buyer, Gulf Oil, Bolivia's largest private energy producer, and Yacimientos Petroliferos Fiscales de Bolivia (YPFB) jockeyed for the lucrative export contracts. When the competition between foreign-dominated Gulf Oil and Bolivian YPFB became public, it sparked popular protests against Gulf Oil.[31] These protests reflected an undercurrent of Bolivian resentment against foreign exploitation, perceived or real, that hinders gas export projects to this day. Nonetheless, Bolivian leader General Rene Barrientos negotiated a deal in which Gulf Oil and YPFB agreed to share ownership of the

[30] David Mares, "Natural Gas Pipelines in the Southern Cone," chapter in David Victor, et al. Natural Gas and Geopolitics. Cambridge: Cambridge University Press, 2006. pp. 173.
[31] Tristan Calvo Mirabal. Transnacionales Petroleras en Bolivia. La Paz: Impresiones La Amistad, 1996.

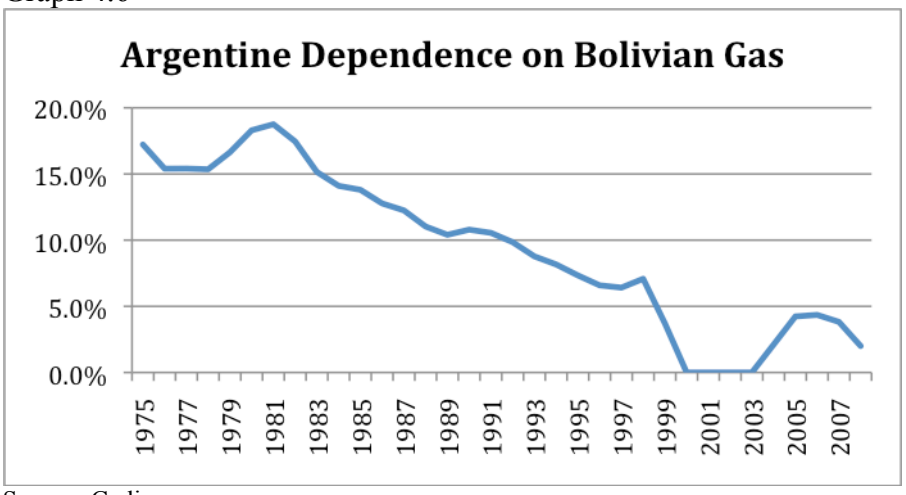
Bolivian half of the pipeline and Argentina agreed to pay higher royalties. A twenty-year contract was signed for 1.5-1.7 bcm/year and gas began flowing through the YABOG pipeline in 1972.

Upset that Argentina was emerging as the dominant player in Bolivia's energy sector, Brazil reopened negotiations with La Paz. In 1974, Bolivia and Brazil signed a contract where Bolivia agreed to sell Brazil 2.5 bcm/year of gas. The contract was increased to 4.1 bcm/year in 1978, but domestic opposition to the project erupted in Bolivia.[32] Bolivia's indigenous poor felt betrayed by YABOG, which had failed to deliver the development and jobs promised by its advocates; public opposition forced gas exports to Brazil to be abandoned. Once again, fears of foreign exploitation were fueled by populist leaders who argued gas exports would tighten the grip of the *criollo* (European-born) aristocracy over Bolivia's government.

Initially, YABOG was hailed as a boon to friendly relations between Argentina and Bolivia, but it quickly became a contentious topic as Argentine demand for gas imports dropped. The military regime that removed Isabel Peron from power in 1976 pursued a variety of neo-liberal policies to attract domestic and foreign investment; "private investment rushed in and by 1978 large new gas reserves were being developed."[33] An expansion of the Argentine gas transport and distribution system followed, and gas prices dropped below the price of Bolivian imports. By the mid-1980s, the contractual volumes of Bolivian gas were no longer competitive. Deliveries continued (the original contract was even extended seven years through 1999), but Argentina demanded and received a new and lower price, engendering resentment in La Paz. After 1980, Argentine dependence on Bolivian gas steadily declined (see Graph 4.6).

[32] Augusto Vargas Salguiero, "YPFB Entre Nacionalistas y Liberales*," Los Amigos del Libertad,* May 16, 1996.
[33] Mares, pp. 174.

Graph 4.6



Source: Cedigaz

Disagreements between Bolivia and Argentina left both countries looking to do business with new partners. Bolivia began to look for new export markets with increasing urgency throughout the 1990s, as it became clear that Argentina would not renew its contract again. It reopened negotiations with Brazil for the third time in 1993, but Brazil expressed doubts that Bolivia had sufficient production capacity to justify a pipeline.[34] To spur production, Bolivian President Gonzalo Sanchez de Lozada embarked upon a program of privatization in the gas sector. Privatization lured foreign investment and allayed Brazil's concerns, but led to massive public outcry when it became known that Sanchez had offered Enron 55 percent of YPFB's shares.[35] Nevertheless, YPFB began construction of the GasBol pipeline from Parana, Bolivia to Porto Alegra, Brazil in 1997, despite strong public opposition in Bolivia.[36]

After Argentina ceased importing Bolivian gas in 2000, revenues from Brazilian exports were insufficient to prop up Bolivia's sagging economy and President Jorge Quiroga's administration began to study exporting gas via LNG. Bolivia is a land-locked country, so LNG

[34] Mares, pp. 177.
[35] "Enron Still Haunts Bolivian Elections," *Latin American Energy News*, February 13, 2002.
[36] Peter DeShazo, "Nationalism and Hydrocarbons in Bolivia," *Center For Strategic and International Studies,* Working Paper, May 15, 2006.

exports would require the construction of a pipeline through Peru or Chile to the Pacific coast, where the gas could be liquefied and shipped to Asian or North American buyers. A pipeline through the shorter Chilean route was estimated to be $300-$600 million cheaper than one through Peru.[37] But Bolivia has a troubled history with Chile, stemming from the 1879 War of the Pacific, in which Chile seized the province of Atacama, Bolivia's only coastal territory. Chile's acquisition of Atacama was formalized by treaty in 1904, but regaining access to the ocean has remained a central focus of Bolivian foreign policy, souring relations with Chile ever since. Diplomatic relations between Chile and Bolivia have been severed for all but four years in the past century.

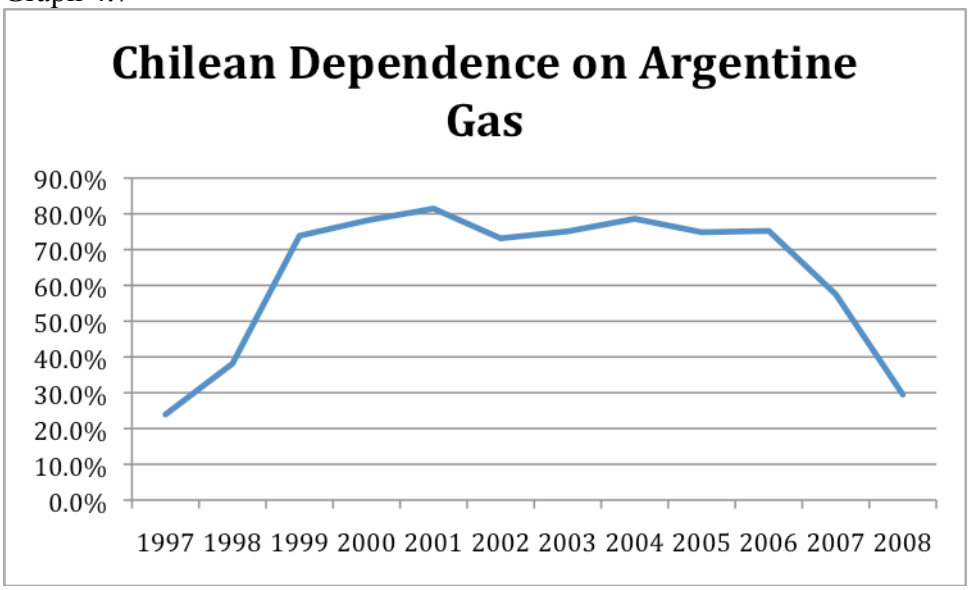
Quiroga put off deciding between the Chilean and Peruvian export pipelines, but when Sanchez became president again in 2002, he threw his support behind the Chilean option. He expected to encounter public opposition, but was caught off-guard by the size and violence of the protests against his decision. By late summer 2003, protestors had largely shut down La Paz.[38] The social conflict stemmed in part from long-standing tensions between Bolivia's indigenous majority and the ruling *criollos*, as well as government efforts to stamp out drug production. But the fact that the conflict was known as '*La Guerra Del Gas' (The War of Gas)* testifies to the central role of gas exports in the uproar.[39] Sanchez was forced to resign in October 2003, and his successor, Carlos Mesa, cancelled the LNG project and increased state control over the energy sector to placate the angry Bolivian public.

Disagreement over gas exports hindered relations between Bolivia and Argentina, but also relations between Argentina and Chile. After the end of the military junta, the reform of

[37] Mares, pp. 180.
[38] "Bolivia: Protests Against Chilean Port for Natural Gas Exports Turn Violent," *South American Political and Economic Affairs*, September 26, 2003.
[39] Thomas Perreault, "From the *Guerra Del Agua* to the *Guerra Del Gas*: Resource Governance, Neoliberalism, and Popular Protest in Bolivia," *Antipode*, Vol. 38, No. 1 (2008).

Argentina's energy sector continued, picking up pace as Argentina transitioned to democracy in the early 1990s. As a result, Argentina transitioned from being a net importer to a net exporter of gas, with Chile emerging as its primary export market. By 2001, Chile depended on Argentina for over 80 percent of its gas (see Table 4.7).

Graph 4.7



Source: Cedigaz

Relations between Argentina and Chile had frequently been tense in the latter half of the twentieth century. In the 1960s, Argentina claimed three islands in the Beagle Channel off Patagonia, despite the fact that in 1881 it signed a treaty designating them as Chilean territory. In 1978, mediation over the issue reached an impasse and Argentine troops massed at the border in preparation for an invasion; only the personal intervention of Pope John Paul II appears to have averted war.[40] However, relations improved dramatically in the 1980s and 1990s, as democratically-elected leaders replaced military juntas in Argentina and Chile.

In the early 1990s, Argentine president Carlos Menem and Chilean president Patricio Aylwin were eager for ways to secure domestic political support and limit the influence of the

[40] Mark Laudy, "The Vatican Mediation of the Beagle Channel Dispute: Crisis Intervention and Forum Building," chapter in Melanie Greenberg, ed. Words Over War: Mediation and Arbitration to Prevent Deadly Conflict. New York: The Carnegie Corporation, 2000.

powerful militaries in their respective countries. Improving relations with their neighbors was key, as the militaries in both countries fanned fears of foreign enemies to win support and threatened to do so again in the future. Building gas pipelines from gas-rich Argentina to gas-poor Chile, which share the world's third-longest border, made both economical and political sense. "Pipeline connections between the countries helped nascent democrats tone down rhetoric against the 'foreign enemy' that bolstered the military…The many cross-border gas pipelines and electricity transmission lines now linking the two countries are the best guarantee of continued good relations."[41] Between 1996 and 1999, five pipelines were built between Argentina and Chile, with the largest and most important of them, *GasAndes* and *Gasoducto del Pacifico*, supplying Chile's populous central and southern regions.

The economic viability of these pipelines was predicated upon the expansion in Argentine gas production that followed the 1992 privatization of the Argentine gas market. However, the private companies that moved into the Argentine gas sector (many of them newly-independent spinoffs from state monopoly YPF) increased production mainly by reappraising old fields. They used better drilling techniques to bring previously unprofitable gas to market, but they did not invest heavily in exploration, as privatization had increased the focus on short and medium-term profit. As a result, Argentina's proven reserves grew, but few new fields were actually discovered.

The gas sector's problems deepened in 1998, when recession hit Argentina. The recession worsened over time, and, by 2001, over 36 percent of Argentines were living below the poverty line. Many took to the streets, protesting against the shaky government of Fernando de la Rua. To placate an increasingly angry population, the administration passed a legislative package to

[41] Sylvie D'Apot. South American Gas: Daring to Tap the Bounty. Paris: International Energy Agency, 2003. pp. 99.

bring down the prices of basic goods, including gas. However, the imposition of a price ceiling on gas further decreased the incentive for private producers to invest in exploration, while simultaneously fueling increased consumption. The gap between the growth in Argentine gas consumption and production began to widen at an accelerating and alarming rate.[42]

In 2004, the country was hit by widely-predicted gas shortages. New president Nestor Kirchner, worried about maintaining the support of the fragile coalition that brought him to power, imposed restrictions on gas exports to Chile to ensure that domestic gas consumers' needs were met. Chileans were outraged, as Kirchner's decision violated the terms of the 1995 gas treaty that explicitly stated Chilean and Argentine consumers had the same right to gas provision and, in the case of a shortfall in gas production, cuts in supplies should be applied equally to both countries.[43] In 2004, Chile depended on Argentina for 78.6 percent of its gas. Between April and June of that year – in the midst of South America's winter - Argentina failed to deliver 40 to 50 percent of Chile's contracted gas imports. Chilean utilities were able to temporarily switch to coal for electricity production, and the remaining gas was sufficient to avoid residential or commercial rationing. Nevertheless, Chilean politicians seized upon the gas cuts as evidence of Argentine duplicity.

In early April 2004, Chile filed a formal complaint against Argentina – the first since the end of the Pinochet military regime in 1990 – and Chilean Foreign Minister Soledad Alvear labeled the gas issue "a serious setback in our relations [with Argentina]."[44] The mayor of Santiago called for Chilean President Ricardo Lagos to take an especially hard line against Argentina for contemptuously disregarding its international commitments and the *Santiago*

[42] Anouk Honore, "Argentina: 2004 Gas Crisis," *Oxford Institute for Energy Studies*, Working Paper, November 2004.
[43] Irene Caselli, "Chile Upset About Argentine-Bolivian Gas Agreement," *Santiago Times*, April 23, 2004
[44] *Ibid*

Times blamed Argentina for sparking the worst diplomatic dispute in decades.[45] The crisis worsened in late April, when, desperate for gas, Argentina signed a contract to resume imports from Bolivia. But with tensions between Chile and Bolivia still running high, Bolivia demanded and Argentina agreed not re-export "even one molecule of Bolivian gas to Chile."[46] This only solidified the view in Santiago that the Kirchner administration was all too eager to protect Argentine interests while disregarding its treaty commitments to neighbors.

After the 2004 gas crisis, Chile moved quickly to diversify away from Argentine gas. With poor relations precluding Bolivian imports, Chile turned instead to LNG, constructing an LNG receiving terminal near the city of Quintero that began operating in 2009.[47] Yet gas has continued to plague relations between Chile and Argentina. In 2006, a sharp increase in taxes on gas exports, led to a series of heated criticisms between Chilean President Michelle Bachelet and Argentine President Kirchner.[48] In 2007, Argentina again cut gas supplies to Chile for almost a week when an exceptionally cold winter led to higher-than-predicted domestic demand.[49]

*****

In the southern cone of South America, the connections between gas and politics run deep. Gas pipelines have brought nascent democracies closer together, and then driven them apart. At the same time, politics have also driven (and hindered) gas market integration. The desire to exert influence in La Paz led both Argentina and Brazil to pursue pipelines from Bolivia to their respective markets. On the other hand, the long-standing territorial dispute between

[45] Victor Mauricio Henriquez, "Argentina May Increase Natural Gas Exports to Chile," *Santiago Times,* May 10, 2004.
[46] Irene Caselli, "Chile Upset About Argentine-Bolivian Gas Agreement," *Santiago Times*, April 23, 2004.
[47] The first LNG terminal in South America, the Quintero facility receives gas from Trinidad & Tobago. See "Next July Chile begins to cut its Argentine Natural Gas Dependency," *Santiago Times*, June 2, 2009.
[48] "Gas Crisis Sours Chile-Argentina Relations," *Latin American Energy*, August 9, 2006.
[49] Bill Faries, "Argentina Rations Gas to Companies, Chile Amid Cold," *Bloomberg News Service*, May 29 2007.

Bolivia and Chile has forced Chile to import gas via LNG, despite the vast gas fields that lie just across its border with Bolivia.

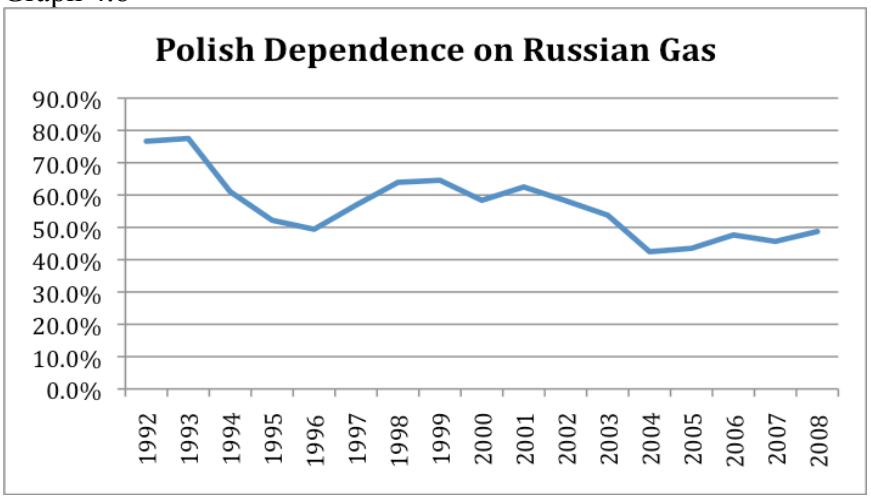
The rocky trajectory of regional gas trade in the southern cone supports two general conclusions. First, gas market privatization may attract capital and initially boost production, but it is a poor guarantor of long-term supply security. Leaders eager to assuage domestic constituents have an incentive to keep gas prices low, which can ultimately hinder the private sector's ability to meet international commitments and remain profitable. Second, even relatively short, apolitical supply cuts can have profound foreign policy consequences. Even when a supply cut does not cause a significant economic burden, its psychological impact can cause importers to diversify away from suppliers perceived to be unreliable.

Section 3: Poland & Russia

Poland and Russia share a complex and often troubled history. Russia has occupied Poland numerous times throughout the past three centuries. The most recent Russian occupation during World War II and the subsequent Soviet domination of Eastern Europe still loom large in the collective Polish consciousness. In Russia, the same is true; the national day of independence celebrates not the October Revolution nor the fall of the Soviet Union, but the expulsion of Polish occupiers from Moscow in 1612.* In the popular conscience, the feelings of the two nations for each other are deeply entrenched and highly charged.

Yet tense relations have not kept the two states from developing close economic ties. This is especially true in the gas sector, where Poland occupies a special place in Russia's energy export strategy; Poland is both a key transit state and a significant consumer of Russian gas. The gasification of the Polish economy occurred relatively late compared to the other members of the communist Council for Mutual Economic Assistance (CMEA), but even the lack of gas trade between the Soviet Union and Poland in the 1980s sheds light on Polish-Soviet relations.

Graph 4.8



Source: Cedigaz

* The federal holiday 'Day of Unity' was instituted on November 4, 2005. It was widely suspected that the Putin administration was trying to replace the anniversary of the October Revolution (November 7) while capitalizing on widespread anti-Polish sentiment.

Polish dependency on Russian gas has declined haphazardly from 76 percent in 1992 to 49 percent in 2008.** Despite its high level of dependency, other factors indicate that Poland's gas trade with Russia decreases Warsaw's affinity towards Moscow. Russian gas is transmitted to Poland via pipeline, Poland is a transit state, and the percentage of total primary energy derived from gas is low compared to the OECD average.*** The previous chapter's model predicts all of these factors decrease the foreign policy affinity of gas importers for their suppliers. This chapter examines the history of Polish dependency on Russian gas and confirms that gas trade has more often impeded, rather than fostered, bilateral relations. Moreover, Polish energy policy supports the hypothesis that gas dependency has greater political effects than oil.

Since the end of World War II, Poland's energy has come primarily from coal. Endowed with some of Europe's richest coal deposits, this inexpensive but pollution-intensive energy source continues to dominate Poland's energy sector, accounting for over 60 percent of total primary energy, and almost all electricity production. Poland has been slow to develop a mature gas market. When Khrushchev initiated the gasification of the Soviet Union and CMEA in the 1960s, the initiative never took root in Poland: "Unlike most other CMEA nations, Poland had not been part of the centrally mandated gasification in the 1960s to 1980s; coal retained a vastly dominant share of Polish primary energy supply, and very few gas import pipelines from Russia served Poland."[50]

** The Soviet Union ceased to exist on December 25, 1991. Thus, accurate figures for Russian gas – as opposed to Soviet gas – are only available for 1992 and after.

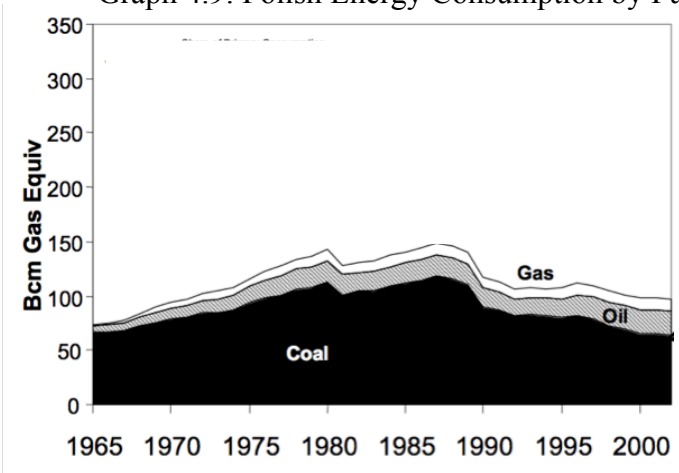
*** The other accentuating factor identified in Chapter 2 is contiguity. Poland and Russia are contiguous states, but only in the technical sense. The Russian province of Kaliningrad, lying in the middle of Europe, shares a border with Poland, but Poland does not share a border with Russia proper. This precludes contiguity from playing a major part in geopolitical or gas relations.

[50] Nadejda Victor and David Victor, "The Belarus Connection: Exporting Russian Gas to Germany and Poland," *Program on Energy and Sustainable Development, Stanford University,* Working Paper*,* May 2004.

The reasons for the delay in the development of Poland's gas market were three-fold. First, because Poland lacks large natural gas deposits, the development of the Polish gas sector required imports. Throughout the 1960s and 1970s, Moscow preferred to export its gas to higher-paying Western European countries rather than subsidize Polish consumption. In 1980, the second problem arose that further decreased Moscow's interest in sending gas to Poland: the Solidarity movement. After the institution of martial law failed to stamp out the movement, Poland became too politically risky to host the large east-west gas pipelines being designed by Soviet planners.[51] Large gas pipelines required Western financing and technology, and Western nations were unlikely to support projects that supported the military regime in Poland.

Finally, the preferences of Europe's largest consumer of Russian gas, West Germany, retarded the growth of Poland's gas market. Due to the poor relations between West and East Germany, Bonn refused to purchase any gas routed through East Germany. Consequently, Soviet planners designed southern pipeline routes that crossed Ukraine (then part of the Soviet Union) and Austria before approaching Germany from the southeast. Thus, the northern corridor, which would bring gas to Europe from Russia via Belarus and Poland, lay unused until the fall of the Soviet Union.

Graph 4.9: Polish Energy Consumption by Fuel Type



Source: British Petroleum 2003

[51] Victor and Victor, pp. 155.

The demise of the Soviet Union changed the strategic priorities of Poland and its neighbors to encourage the growth of Poland's small gas market. After the 1989 election of Solidarity, Poland embarked upon the path of European integration. With the reunification of Germany in 1990 and the end of the Soviet Union a year later, Polish hopes to become a full member of the European Community (later the European Union) became a real possibility. However, membership in the EU came with a number of requirements, many of them in the energy sector. Poland's heavy reliance on pollution-intensive coal needed to be reduced and government control over the energy sector had to be lowered.[52]

Thus the Polish gas sector was ripe for growth in the early 1990s, an opportunity regional actors quickly seized. In Germany, reunification fueled rapid economic growth and an increased demand for gas. The unification of the country also eliminated the political obstacle to importing gas via the northern corridor. German gas producer Wintershall was also eager to partner with Russian gas monopoly Gazprom to win market-share against the dominant German utility Ruhrgas (later E.On). To do so, it proposed a pipeline that would run from the Yamal gas fields in Russia, through Belarus and Poland, to Germany. The German state played little role in making this project happen; "it cautiously welcomed the competition but stood ready to intervene if these new entrants caused too much harm to the well-connected incumbent Ruhrgas."[53]

In Russia, newly created Gazprom (which had emerged from the Soviet Ministry of Gas) warmed up to a pipeline through the northern corridor. Now a private company, Gazprom needed to boost profits dramatically, as its predecessor had been hemorrhaging cash. The quickest way to do so was to increase exports and Wintershall offered a large market and easy credit. The

[52] "New EU Member States on Road to Energy Reform," *International Petroleum Finance,* July 1, 2003
[53] Victor and Victor, pp. 151.

Russian geopolitical perspective had also changed in favor of the northern corridor. After declaring its independence, relations between Ukraine and Russia became tense, with gas emerging as a central issue. Russia no longer wanted to subsidize gas exports to an increasingly unfriendly neighbor, but Ukraine threatened to meet any price hikes with transit tariff increases. Other problems compounded this dynamic, including "the accumulation of Ukrainian debts and non-payment; unsanctioned diversion of gas and alleged theft from the transit system; and Russian pressure on Ukraine to hand over infrastructure in return for debts."[54] In comparison, Belarus appeared to be a friendlier and more submissive neighbor, through which a new pipeline could be built on terms more favorable to Moscow.

In 1995, discussions between Wintershall, Gazprom, and the Polish Oil & Gas Company (PGNiG) commenced and in 1996 a deal was signed to build the Yamal-Europe pipeline.[55] PGNiG agreed to purchase between 6 and 7 bcm/year in a take-or-pay contract, with the rest of the pipeline's gas going to Germany. Poland remained wary of increasing its energy dependence on Russia, but the pipeline would increase its economic integration with Germany and reduce coal pollution, which boded well for EU membership.

Almost from the start, however, the pipeline project was plagued with problems. "As the project developed, Polish demand [for gas] did not grow as rapidly as expected, making it difficult to justify the expense of building the compressor stations [in Poland]."[56] PGNiG built only two of the five compressor stations called for by the original contract, despite protests from Gazprom and Wintershall. When the pipeline opened in 2000, its annual throughput was far less

[54] Simon Pirani, "Ukraine's Energy Sector," Oxford Institute for Energy Studies, June 2007
[55] Notwithstanding its name, the Yamal-Europe pipeline actually is supplied by the Yamburg fields south of the Yamal peninsula. The Yamal peninsula, which borders the Barents Sea, possesses enormous gas reserves – and enormous technical challenges to developing them. So far, Gazprom has not raised the necessary capital to tap them.
[56] Victor & Victor

than the original 33 bcm predicted. Overall, "the Polish market has been a disappointment for Gazprom…the bottleneck is not supply but demand."[57]

By 2000, Polish-Russian relations were in a tailspin for reasons that extended far beyond gas relations. In 1999, Poland joined NATO, a move that angered Russian President Boris Yeltsin, but who was in no position to stop it.[58] In 2003, Polish citizens voted to join the EU, and in 2004 Poland officially became a member state. What Warsaw saw as the logical culmination to its European integration, Moscow perceived as a dangerous and disrespectful affront. To join the EU, Poland agreed to reduce its dependence on Russian gas, which Brussels felt was dangerously high, further straining relations with Moscow.

Yet even more egregious, in Moscow's view, were subsequent Polish actions in Ukraine. In December 2004 and January 2005, the Orange Revolution led to massive demonstrations after pro-Western candidate Viktor Yushchenko claimed the presidential election had been rigged against him. Russia supported Viktor Yanukovych, who hailed from Russian-speaking eastern Ukraine and wanted to orient Ukraine towards Russia, rather than Europe. Poland played a leading role in the international supervision of the run-off election that brought Yushchenko to power.[59] When Lech Kaczyński was elected President of Poland in 2005 on a distinctly anti-Russian, anti-communist platform, he threw Poland's support behind Ukraine's attempts to join NATO and the EU. Moscow was furious; not only had Poland spurned Russia, but it was encouraging other nations in Russia's sphere of influence to do so as well.

The deterioration in Russia's relation with Poland, Ukraine and Belarus had profound ramifications for the gas sector. A series of pricing disputes led Gazprom to cut gas flowing to

[57] Ibid
[58] Oksana Antonenka, "Russia, NATO and European security after Kosovo," *Survival,* Vol. 41, No. 4 (1999).
[59] Tatiana Silina, "The Orange Revolution was Full of Dignity: Interview with Polish President Alexander Kwasniewsky," *Zerkalo Nedeli*, April 1, 2005.

Ukraine (in 2006, 2008, and 2009) and Belarus (in 2004 and 2007), when those countries resisted Moscow's attempts to reduce gas subsidies. Gazprom appears to have concluded that it no longer had reliable transit routes to higher-paying Western European customers, leading to a two-fold strategic response. First, Gazprom has pursued an underwater pipeline connecting Russia directly to Germany via the Baltic Sea. The Nord Stream pipeline will allow Russia to bypass Belarus and Poland and sell gas directly to Germany, thus reducing the cost to Russia and Western Europe of a gas feud with Belarus or Ukraine. Like all international infrastructure projects, Nord Stream is a long-term commitment. The basic agreement was signed between Gazprom, Wintershall, and E.On in 2005, construction of the undersea pipeline segment began in 2010, and the pipeline is not expected to begin supplying significant quantities of gas until 2016.[60]

In the meantime, Gazprom has pushed to acquire large shares of the downstream gas distribution and transmission networks in transit countries. By controlling the infrastructure, as well as gas supply, Gazprom can resist the tariff hikes and gas theft that plague its dealings in transit countries. Efforts to move into Poland's downstream gas market have been fostered by EU-mandated energy market liberalization.

Poland has resisted both these efforts and gas has emerged over the past five years as the most important and problematic issue in its relations with Russia. The Nord Stream pipeline has particularly incensed Polish leaders – former President Lech Kaczyński and Prime Minister Donald Tusk labeled it a modern day equivalent of the Molotov-Ribbentrop Pact.[61] Polish objections to Nord Stream range from concerns over its ecological impact to criticism that it wastes EU funds. However, the core objection is geopolitical. By reducing Poland's importance

[60] The undersea section of the pipeline is expected to be completed in 2011, but the 900-km feeder pipeline from the Shtokman gas field will not be finished by then. See Christine Smith, "Nord Stream gas pipeline construction begins," *Oil & Gas Journal*, April 9, 2010.
[61] Vadim Trukhachev, "Nordstream Pipeline Conquers Europe," *Pravda*, April 9, 2010

as a transit state, Nord Stream allows Russia to take a hard line against Poland in gas price negotiations – risking or even causing a gas shutoff – without affecting the gas flowing to lucrative Western European buyers. The project was bitterly criticized by Polish politicians, "who accused Germany of going behind the backs of its Eastern European neighbors by forging a closer energy alliance with Russia."[62] Nord Stream has driven a wedge between Poland and Russia, but also between Poland and other European countries that support its construction, including Germany.

Similarly, Polish resistance to EU-mandated energy market liberalization has caused tension with both Moscow and Brussels. Since 2003, Gazprom has attempted to acquire gas infrastructure throughout Eastern Europe, taking advantage of EU legislation intended to reduce government control, foster competition, and allow foreign companies access to energy infrastructure. Poland has been especially sensitive to attempts by Gazprom to move into the downstream gas sector. Warsaw argues that until Russia allows Polish firms reciprocal rights to enter the Russian market, it should not allow Gazprom the same privilege in Poland.[63] Piotr Naimski, Polish Minister of Economy, argues:

> "The Russian Federation, through state-controlled companies like Gazprom, runs a clearly defined strategy aimed at acquisition and control of the oil and gas market in Europe….The remedy to this is clear. We must protect our national interest and our energy industry from

[62] Judy Dempsey, "Construction of Contentious Nord Stream Gas Line to Begin," *New York Times*, April 8, 2010.
[63] Warsaw points to Polish PKN Orlen's acquisition of the Lithuanian oil refinery at Mazeiku, which Russian Rosneft also desired, as evidence of Russia's energy manipulation. Russian Transneft cut crude oil flowing to the refinery, citing technical problems. After supply was finally resumed, a massive fire - widely speculated to have been caused by Russian sabotage - destroyed much of the plant. See Jan Cienski, "Baltic Lessons for EU in Dealing with a Resurgent Russia," *Financial Times*, November 24, 2006.

such hostile takeovers. The word protectionism might long be gone from the political lexicon, but it still seems to hold relevance when policy-making is concerned."[64]

While Poland has clung to its status as a crucial transit state for Russian gas, it has also attempted to diversify its own supplies. Warsaw has opened negotiations with Norway about importing Norwegian gas through a North-South Baltic Pipeline, and it has announced plans to build an LNG receiving terminal. However, both alternatives would be more costly than imported gas from Russia and it remains unclear if Poland will actually follow through with these plans: "For Poland, the key to keeping Russia in line is the potential for alternative supplies through interconnections with the West, rather than the actual contracting of those supplies." [65]

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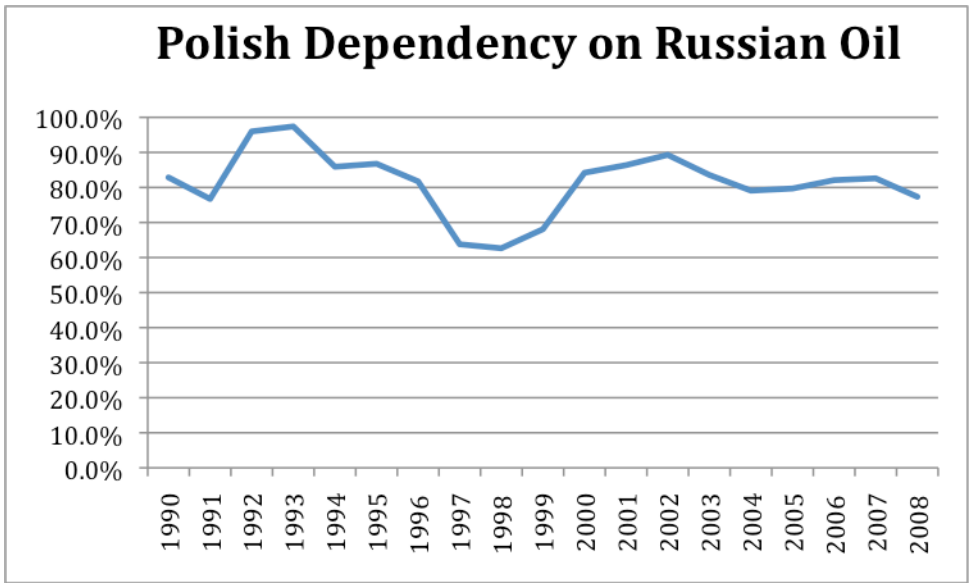
Analysis of Poland's energy trade with Russia exposes a few themes. First, as outlined below, it is clear that gas dependency has been more politically potent than oil dependency. For the past twenty years, Polish dependence on Russian oil has been much higher than dependence on Russian gas (see Graph 4.10). But oil is not as politically sensitive because it is fungible. Poland has one port capable of receiving large oil tankers (Naftoport), which can receive 34 million tones of oil/year. But Poland consumed fewer than 20 million tones of oil in 2008, ensuring that it has significant excess import capacity for years to come. Should Russia demand higher prices for the oil it sends to Poland via pipeline – or reduce these supplies abruptly - Poland can buy oil off the spot market. Since Poland is not a large consumer of oil (compared to other OECD countries), it can raise its spot consumption without affecting world oil prices significantly. This does not mean that Warsaw ignores its dependence on Russian oil. Poland has led the movement to build an Odessa-Brody-Plock oil pipeline precisely because it would lessen

[64] Piotr Naimski, "Energy Diversification for Poland," *East Central European Center at Columbia University,* Working Paper*,* September 2007
[65] Victor and Victor, pp. 157.

the country's reliance on Russian oil.[66] But it gas dependency appears to have a more profound effect on Poland's foreign policy, as gas dependency figures prominently in the anti-Russian rhetoric espoused by Poland's leaders, while concerns over oil dependency are cited much less frequently.

Graph 4.10



Source: OECD, BP

Second, the relationship shows that gauging gas dependence remains more complex than simply measuring gas shipment volumes. Polish energy security concerns are motivated not only by the amount of gas the country receives from Russia, but also by Gazprom's attempts to acquire downstream gas distribution infrastructure in Poland. Poland worries that if Gazprom becomes a player in its downstream distribution sector, it will lose the leverage it has as a transit state. Poland's worries illustrate that absolute dependency can be exacerbated by the acquisition or attempted acquisition of downstream distribution infrastructure by the supplier state.

Third and finally, Warsaw believes that transit state status is a crucial hedge against the dangerous implications of its dependence on Russian gas. It perceives energy security in the

[66] *Ibid*

region as a zero-sum game, where divergence from the status quo bolsters its security by increasing the volume of gas transiting Poland or reduces security by bypassing Poland. Even the discussion of projects that reduce Poland's importance as a transit state have aroused cries of foul play, as Nord Stream evidences. The implication is that once a state becomes a major transit point, it will not relinquish transit status without a fight, especially when the transit state mistrusts the supplier as much as Poland mistrusts Russia.

CHAPTER V: CONCLUDING THOUGHTS & THE FUTURE OF INTERNATIONAL GAS TRADE

Natural gas dependency is a complex phenomenon, with no one-size-fits-all framework to predict the foreign policy implications of dependency. Likewise, there is no formula for what is an acceptable level of gas (or oil) dependency. Myriad factors shape the policies of import dependent states towards their energy suppliers, some drawing them closer and some driving them apart. These factors can change slowly, over a number of years or decades, or almost overnight, as was the case when Russia and Ukraine emerged out of the ruins of the Soviet Union. Most major gas trade relationships coexist with significant economic, cultural, or military ties, making it even more difficult to isolate the effects of gas dependency on foreign policymaking.

Nonetheless, the factors that shape gas dependency can provide policymakers useful insights into how gas dependency influences intrastate behavior, signaling when dependency may be worrisome and when it is not. Policymakers should note that gas dependency has a more pronounced direct correlation with foreign policy affinity than oil. In other words, empirical analysis supports the assertion that gas is a more politically-charged commodity than oil. This stems from the fact that gas tends to be traded regionally, while oil is traded on a global market. Since oil is a globally fungible commodity, governments do not often see the need to intervene to procure oil for their state – they have few options that are not available to the private sector. On the other hand, ensuring stable and secure gas supplies often requires government intervention, as many import-dependent states have few suppliers from which to choose.

Four variables predict that gas dependency will lead importers to display increased foreign policy affinity towards a supplier. First, end-buyers of gas display a direct correlation

between levels of dependency and foreign policy affinity towards suppliers. In other words, as the level of gas dependency rises, so does the level of foreign policy affinity the importer shows towards the exporter. Second, LNG importers display a direct correlation between levels of dependency and foreign policy affinity towards suppliers. LNG is more fungible than gas traded by pipeline, reducing importers' fears of shutoffs or price hikes (although LNG remains less fungible than oil, due to the high costs of LNG infrastructure). Third, importers that share borders with their suppliers tend to display a direct correlation between levels of dependency and foreign policy affinity towards such suppliers. Fourth, there exists a direct relation between a state's total primary energy dependency on a given gas supplier, and the state's foreign policy affinity towards that supplier. This confirms that regardless of whether states view gas dependency as a percentage of total gas consumed, or total energy consumed, the geopolitical effects run in the same direction.

On the other hand, two variables predict that gas dependency will lead importers to display less foreign policy affinity towards their suppliers. First, transit states tend to display an inverse correlation between levels of gas dependency and foreign policy affinity towards a given supplier. In other words, as the level of gas dependency increases, the level of foreign policy affinity the transit state shows towards its supplier decreases. Transit states exert more leverage over their suppliers than do end-buyers, which tends to complicate the trade relationship and may lead to gas feuds between the parties. Second, states that receive their gas via pipeline also tend to display less foreign policy affinity towards their suppliers. Because of the enormous investment required to construct and operate a pipeline, and the difficulties inherent to altering a pipeline route, disputes arise between supplier and consumer when both parties believe they have more bargaining power (a dynamic similar to the one that plagues transit and supplier states).

Other factors, less easily quantified, also shape importers' responses to gas dependency. States are sensitive to the presence of foreign energy firms operating in their downstream distribution and transmission sectors, especially when they are the same firms that control upstream production. For example, the tension that gas dependency has generated between Russia and Hungary, Romania, and Bulgaria has been exacerbated by Gazprom's attempts to acquire the distribution and transmission networks in these countries, attempts that have fueled strong protectionist reactions.[1] At the same time, countries are often unable to resist exporters moving into their downstream sectors; importers fall into arrears on gas payments and need to trade equity for credit, they may be forced to open up their markets by trade organizations (i.e. the WTO or EU), or foreign firms may simply be able to offer cheaper gas to consumers than domestic firms.

Conversely, importers' concerns over gas import dependency can be allayed when domestic firms have a stake in the upstream sector in the exporter state. When the importer's firms control or influence production or upstream gas transportation, it makes it more difficult for an exporter to cut supplies unilaterally. Wintershall's joint venture with Gazprom, Wingas, has helped convince German policymakers that Russia is a reliable energy partner, one from which increased gas imports are desirable.[2] Similarly, the involvement of JILCO in the development of the Arun project was key to Tokyo's willingness to extend Indonesia the large amounts of credit needed to build the LNG plants. At the extreme, however, upstream involvement can backfire. Exporters that feel they are losing control over their own resources can lash out, stoking public sentiments against importers. In 2003, Argentina's involvement in

[1] Neil Barnett, "From Poland to Hungary, Gazprom Takes Stealth Route to Domination," *The Independent*, January 8, 2006

[2] "OAO Gazprom and Wintershall AG Establish Joint Venture - Leading The Way in Russian-German Economic Relations," *Press Release*, available at << http://www.wintershall.com/334.html>>

Bolivian gas production triggered *La Guerra del Gas*, leading to a popular revolt and curtailing the prospects for further gas projects connecting La Paz and Buenos Aires.

Policymakers must also be wary of exporters that subsidize domestic gas consumption by capping gas prices. Domestic prices ceilings are politically tempting (and in some cases, eliminating or raising price ceilings can be politically disastrous), but doing so ultimately leads to production shortages. Subsidies encourage over-consumption of gas; because consumers do not face the true price of gas, they tend to be wasteful and inefficient in their consumption. At the same time, producers profit little or lose money on sales to domestic consumers, forcing them to recoup their losses through exports. This can lead to aggressive export tactics, accompanied by geopolitical arm-twisting to raise export prices. Critics allege Gazprom incurs a loss with every cubic meter of gas it sells in Russia, forcing it to do everything within its power to ensure Europe remains dependent on its exports.[3]

These factors must be compared on a case-by-case basis to judge whether gas dependency is likely to increase or decrease an importer's foreign policy affinity towards a supplier. For some importers, like Japan, where all the variables align to indicate a direct relationship between gas dependence and affinity towards Indonesia, it appears safe to assume that gas trade has benefited the bilateral relationship. For others, including Poland, all the variables align to indicate an inverse relationship between dependency and foreign policy affinity towards Russia. Here, it appears the gas trade will be a problem both countries will struggle to manage for the indefinite future. Yet, in most of the world's most important gas relationships, the variables point both ways. Understanding these gas relations must be done in the context of the countries' broader bilateral relationship; it is to be hoped that the framework provided by this thesis serves as a useful starting point.

[3] Nadejda Victor, "Russia's Gas Crunch," *Washington Post*, April 6, 2006.

Looking Ahead

Today's international gas trade is rapidly changing, with regional markets expanding and entirely new markets forming. In northern Europe, Nord Stream is poised to create an entirely new European energy security dynamic, one that threatens to divide the European Union – or ushers Russia into the club of responsible, reliable energy exporters. Russia and the U.S. are also sponsoring competing pipeline projects, South Stream and Nabucco, to bring Caspian and Central Asian gas to southern Europe. The ability of American-backed Nabucco to provide Caspian and Central Asian gas producers an export route to Europe that skirts Russian control is key to reducing Russian influence in the region.[4] In East Asia, China's rapid economic growth has fueled a search for new energy sources. In 2009, the East Siberian-Pacific Ocean (ESPO) pipeline began sending Russian oil to China for the first time and its successful construction has spurred a tentative agreement to construct a parallel gas pipeline. The opening of an alternative Asian market for Russian gas could revolutionize Moscow's relationship with Europe, allowing the Kremlin to play European buyers off against Asian ones.[5]

But there are forces on the horizon that have even more potential to change the face of international gas trade. The first one is already here: shale gas production. While drilling gas trapped in shale is not new (shale gas has been produced in Appalachia for over 100 years), the introduction of new hydraulic fracturing techniques and horizontal drilling technology over the past decade has made shale gas vastly more cost-effective to produce. Consequently, its production has skyrocketed. In the U.S., shale gas has grown from 1 percent of production in 2001 to 20 percent of scheduled production in 2010.[6] In Europe, shale gas reserves are currently being explored in Austria, Germany, Hungary, Poland, Sweden, and Great Britain. A study from

[4] John Vinocur, "Russian Gas: Black Hats and White Hats in a World of Gray," *New York Times*, July 13, 2009.
[5] Chris Buckley, "China, Russia Bolster Ties with Gas, Trade Deals," *Reuters*, October 13, 2009.
[6] Jack Smith, "U.S. Set to Depend More on Shale Gas, Study Says," *Star-Telegram*, March 10, 2010.

the Baker Institute for Public Policy argues, "Shale gas has the potential to neutralize the Russian energy threat to Europe," by dramatically lowering or even curtailing the European need for Russian gas imports.[7] Nor is shale constrained to North America and Europe; fields are being explored in countries ranging from India to Libya to China. "Shale gas is a breakout play that is going to identify gigantic resources around the world," contends energy expert Amy Jaffe, "It will change the geopolitics of natural gas."[8]

At the same time that shale gas and new technology may vastly expand global gas production, the creation of a gas exporters' cartel threatens to curtail these gains. The Gas Exporting Countries Forum (GECF) was established in 2001 and includes Algeria, Bolivia, Egypt, Equatorial Guinea, Iran, Libya, Nigeria, Qatar, Russia, Trinidad and Tobago, and Venezuela. (Norway and Kazakhstan hold observer status.) The formation of the GECF has triggered fears of a 'gas-OPEC' that will restrict production to increase prices –and to achieve political gains. GECF members control over 70 percent of the world's proven gas reserves, generate 38 percent of its pipeline trade and 85 percent of LNG production. When Vladimir Putin declared at the GECF's ninth ministerial meeting in 2009 that "the era of cheap gas is coming to an end," gas price jumped in response, signaling widespread fears about GECF's intentions.[9]

Yet the GECF has shown little ability to set prices amongst its members, much less restrict production. Hadi Hallouche, of the Oxford Institute for Energy Research, argues, "The GECF is today far from being a cartel and there is no persuasive evidence that it will become one. That it will develop as a 'Gas OPEC', therefore, is improbable, albeit not impossible,

[7] "Russia and the Caspian States in the Global Energy Balance," *James A. Baker III Institute for Public Policy,* May 6, 2009.
[8] Clifford Krauss, "New Way to Tap Gas May Expand Global Supplies," *New York Times*, October 9, 2009.
[9] Marcel Dietsch, "The Next Global Energy Cartel," *Forbes*, December 10, 2009.

particularly in a situation of over-supply in the future."[10] The success of OPEC at dictating oil prices is spotty at best, and OPEC has a fundamental advantage over the GECF; OPEC members tend to be politically and culturally similar, while GECF members are not. Of the twelve OPEC members, nine have predominantly Muslim populations and six are members of the Arab League. No such cultural or political similarity exists among the GECF membership, where the countries with the largest reserves – Russia, Qatar, and Iran – have vastly different cultures and political systems. It remains unlikely that the GECF will dictate international gas trade in the coming decades.

Finally, climate change holds the potential to revolutionize natural gas trade. In the short term, efforts to alleviate climate change focus on increasing the consumption of natural gas to reduce dependence on dirtier fuels like oil and coal. But in the long term, an effective response to climate change will likely reduce consumption of natural gas dramatically. Ultimately, consumption of natural gas will decline, as finite reserves are exhausted. But how soon this day arrives hinges on factors ranging from technological improvements to the international political will to reduce fossil fuel dependence. Until then, policymakers will continue to face the fear that gas dependency influences foreign policymaking in subtle and unpredictable ways.

[10] Hadi Hallouche, "The Gas Exporting Countries Forum: Is It Really A Gas OPEC?" *Oxford Institute for Energy Studies,* Working Paper, June 2006.

APPENDIX: DYADS INCLUDED IN STUDY

Gas Trade Dyads

	Importer	Exporter		Importer	Exporter
1	Argentina	Bolivia	39	Italy	Libya
2	Austria	Germany	40	Italy	Nigeria
3	Austria	Norway	41	Japan	U.S.
4	Austria	Russia	42	Japan	Oman
5	Belgium	Netherlands	43	Japan	Qatar
6	Belgium	Norway	44	Japan	UAE
7	Belgium	United Kingdom	45	Japan	Australia
8	Belgium	Algeria	46	Japan	Brunei
9	Brazil	Bolivia	47	Japan	Indonesia
10	Bulgaria	Russia	48	Japan	Malaysia
11	Canada	U.S.	49	Jordan	Egypt
12	Croatia	Russia	50	Latvia	Russia
13	Czech Republic	Norway	51	Lithuania	Russia
14	Czech Republic	Russia	52	Luxembourg	Belgium
15	Dominican Republic	Trinidad & Tobago	53	Luxembourg	Germany
16	Estonia	Russia	54	Mexico	U.S.
17	Finland	Russia	55	Netherlands	Germany
18	France	Germany	56	Netherlands	Norway
19	France	Netherlands	57	Netherlands	Russia
20	France	Norway	58	Poland	Germany
21	France	Russia	59	Poland	Russia
22	France	Algeria	60	Portugal	Algeria
23	France	Nigeria	61	Portugal	Nigeria
24	Germany	Netherlands	62	Romania	Russia
25	Germany	Norway	63	Serbia	Russia
26	Germany	United Kingdom	64	Singapore	Indonesia
27	Germany	Russia	65	Singapore	Malaysia
28	Greece	Russia	66	Slovakia	Russia
29	Hungary	Germany	67	Slovenia	Russia
30	Hungary	Russia	68	South Korea	Oman
31	India	Qatar	69	South Korea	Qatar
32	Iran	Turkmenistan	70	South Korea	Brunei
33	Ireland	United Kingdom	71	South Korea	Indonesia
34	Italy	Germany	72	South Korea	Malaysia
35	Italy	Netherlands	73	Spain	Norway
36	Italy	Norway	74	Spain	Algeria
37	Italy	Russia	75	Spain	Qatar
38	Italy	Algeria	76	Spain	Libya

	Importer	Exporter
77	Spain	Nigeria
78	Switzerland	Germany
79	Switzerland	Russia
80	Taiwan	Indonesia
81	Taiwan	Malaysia
82	Thailand	Myanmar
83	Tunisia	Algeria
84	Turkey	Russia
85	Turkey	Iran
86	Turkey	Algeria
87	U.S.	Canada
88	U.S.	Mexico
89	U.S.	Trinidad & Tobago
90	U.S.	Algeria
91	Ukraine	Russia
92	United Arab Emirates	Qatar
93	United Kingdom	Netherlands
94	United Kingdom	Norway

Oil Trade Dyads

	Importer	Exporter
1	Austria	Iran
2	Austria	Iraq
3	Austria	Kuwait
4	Austria	Oman
5	Austria	Qatar
6	Austria	Saudi Arabia
7	Austria	UAE
8	Austria	Indonesia
9	Austria	Venezuela
10	Austria	Kazakhstan
11	Austria	Russia
12	Austria	Egypt
13	Austria	Libya
14	Austria	Nigeria
15	Finland	Denmark
16	Finland	Norway
17	Finland	United Kingdom
18	Finland	Kazakhstan
19	Finland	Russia
20	Germany	Norway
21	Germany	United Kingdom
22	Germany	Venezuela
23	Germany	Russia
24	Germany	Algeria
25	Germany	Libya
26	Germany	Saudi Arabia
27	Hungary	Russia
28	Japan	Mexico
29	Japan	Iran
30	Japan	Iraq
31	Japan	Kuwait
32	Japan	Oman
33	Japan	Qatar
34	Japan	Saudi Arabia
35	Japan	UAE
36	Japan	Indonesia
37	Japan	China
38	Netherlands	Norway
39	Netherlands	United Kingdom
40	Netherlands	Russia
41	Netherlands	Nigeria

	Importer	Exporter
42	Netherlands	Iran
43	Netherlands	Iraq
44	Netherlands	Kuwait
45	Netherlands	Saudi Arabia
46	Slovakia	Russia
47	South Korea	Iran
48	South Korea	Iraq
49	South Korea	Kuwait
50	South Korea	Oman
51	South Korea	Qatar
52	South Korea	Saudi Arabia
53	South Korea	UAE
54	South Korea	Indonesia
55	Turkey	Russia
56	Turkey	Algeria
57	Turkey	Libya
58	Turkey	Iran
59	Turkey	Iraq
60	Turkey	Saudi Arabia
61	Turkey	UAE
62	U.S.	Canada
63	U.S.	Mexico
64	U.S.	Norway
65	U.S.	United Kingdom
66	U.S.	Colombia
67	U.S.	Venezuela
68	U.S.	Russia
69	U.S.	Angola
70	U.S.	Nigeria
71	U.S.	Iraq
72	U.S.	Kuwait
73	U.S.	Saudi Arabia

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