Bolivian Natural Gas:

Between a Rock and a Hard Place

Why Exporting Natural Gas to Chile is Both Possible and Necessary

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Table of Contents

I. Introduction

Bolivia, one of the poorest countries in the Western Hemisphere, sits on the third largest reserves of natural gas in the region. With over 48.7 trillion cubic feet of certified proven and probable reserves,[1] Bolivia has the stock to be a major player in an increasingly gasified world.

However, despite this apparent stroke of fortune, Bolivia finds itself in an unenviable position regarding its hydrocarbon sector. A backlash to privatized gas in the early 2000s erupted into violence in 2003. The Gas Wars (as the 2003 Bolivian protests are now known) led to the sacking of two presidents, and the eventual ascension of resource nationalist Evo Morales to the presidency. Investment in the Bolivian gas sector has since tumbled, and Morales' government has remained obstinate against negotiating a gas export deal to Chile that would not involve territory in return. This series of events has led many to conclude that Bolivian gas exports to Chile is politically unviable, and that any attempt to do so would be tantamount to political suicide.

This paper contends that it is an oversimplification to suggest that lingering animosity held by Bolivians against Chileans precludes a mutually beneficial economic relationship. The paper begins by suggesting that the Gas Wars were not solely against exporting Bolivian gas to Chile. Rather, a confluence of circumstances aggravated the complex Bolivian disposition towards natural resources.

This disposition, or psyche, has been forged over centuries of resource exploitation, nationalism and reliance. Furthermore, the Bolivian gas sector got caught in the thrust of violent jolts to the right, via the Washington Consensus-styled New Economic Policy, and back to the left, via resource nationalism. The first half of the paper argues that the plan to export gas to Chile in 2003 was simply the straw that broke the camel's back. A popular, nationalist government not only *could* export hydrocarbon to Chile, but, in fact, in the course of Bolivian history, already has.

While the first half of the paper argues that Bolivia *could* export to Chile, the second half argues that, if Bolivia wants to take advantage of its natural gas treasure, it might have to. I begin this section by analyzing Bolivian gas trade relationships with Brazil and Argentina, two countries that receive roughly 88% of Bolivian gas exports.[2] In each case, I analyze how newly found reserves could generate an energy independence that would render demand for Bolivian gas obsolete. The paper concludes by considering energy starved Chile as a logical, practical and profitable importer of Bolivian gas.

II. Bolivian Disposition to Natural Gas

Energy specialists base decisions to export hydrocarbons on statistics such as confirmed reserves, cubic meters per day, market prices and (if we are lucky) carbon footprint. To specialists unfamiliar with Latin America, it may seem bizarre that conflicts such as The War of the Pacific, which concluded 130 years ago, might influence Bolivia's decision to join a modern supply chain to move Liquefied Natural Gas to North America through Chilean ports. However, the intricacies and implications of Bolivian natural gas touch upon several raw nerve endings of Bolivian development.

In order to understand Bolivia's approach to natural gas reserves, one must consider the following historical factors: **(A)** Resource exploitation, resource nationalism and resource reliance have plagued Bolivia since 1546 when the Spanish began mining the bosom of Potosi for silver. **(B)** Like certain other Latin American countries, Bolivia's economy experienced a violent jolt towards the Washington consensus, and a subsequent, equally violent swing back towards statist protectionism. In the case of Bolivia, natural gas was caught in the epicenter of this world wind. **(C)** Finally, while perhaps overemphasized in cursory evaluations of Bolivian energy policy, bitter defeats in the War of the Pacific (1879-1883) and The War of the Chaco (1932-1935) have solidified a nationalistic narrative in which neighboring countries have stifled Bolivian development while privatized energy firms plundered Bolivian hydrocarbons. I proceed to discuss these crucial background issues to Bolivian natural gas individually.

A. Resource Exploitation, Nationalism and Reliance: Spanish lust for silver once rendered Potosí of Upper Peru a globally relevant destination. Potosi briefly enjoyed the distinction as the largest city in the New World, and its silver produced roughly USD$6bn in 2012 dollars.[3] Little of this treasure stayed in Bolivia, and most appears to have been repatriated back to Spain.[4]

By the 1890s, not only had tin production become quite profitable in Oruro and Potosí, but resource extraction had fully seeped into Bolivian politics. Conservatives, who ruled Bolivia from 1880 to 1899, represented traditional power holders: the silver mining elites, while the liberals, representing tin-mining entrepreneurs overthrew the conservatives in 1899.[5] Thus, even before the start of the 20th century, resource control was established as a defining political issue.

The resource reliance led to periods of booms and busts that would scar the Bolivian psyche. By year 1700, bullion production in Bolivia had fallen sharply, as did the fortunes of cities such as Potosí. Centuries later, during the Great Depression, global tin prices bottomed out, and by 1932, fiscal revenues fell to 17% of 1929 receipts[6].

Furthermore, these centuries established the role of the indigenous Bolivian as a beast of burden whose purpose on the Earth was to ravish his motherland to recover her resources. As far back as 1560, silver production plummeted as forced indigenous laborers proved unable to withstand European germs.[7] Indigenous communities would be removed from communal lands to make way for miners; others migrated to the mines where they worked long hours under unforgiving conditions. Strikes and 'Indian rebellions' led to repression and executions.[8]

Thus, centuries of resource extraction ingrained a national psyche in which a) politics was deeply intertwined with resource control, b) said resources were responsible for exhilarating booms and deflating busts, and c) the indigenous masses were systemically coerced to recover the commodities. It is thus little wonder that, with the advent of Bolivian populism, resource nationalism would become a fundamental aspect of political dialogue.

In 1952, the populist *Movimiento Nacionalista Revolucionario* (MNR) won control of of La Paz thanks to crucial intervention from armed miners who blocked loyalist troops from entering the city.[9] Resultant political reforms included an electoral law and agrarian reform, and, most pertinent to our narrative, the Act of Bolivia's Economic Independence which created the state-owned *Corporación Minera de Bolivia* (COMIBOL) which transferred 85% of the country's tin production and 95% of foreign exchange receipts from private to national control.[10] The MNR thus solidified the association of resource nationalization with popular reclamation of power.

B. Bolivian Hydrocarbons – Privatization & Nationalization: Ironically, the advent of MNR power *reopened* Bolivian hydrocarbons to international investment, as President David Toro (1936-1937) had nationalized Standard Oil properties in 1937. At the time of this initial nationalization, politician, writer and future MNR leader Carlos Montenegro reflected the popular opinion when he stated,

> Diez y seis años en que el pueblo boliviano solamente recibió beneficio de un solo centavo por la entrega de sus enormes riquezas petrolíferos a la todo poderosa ***compañía***, sino que sufrió pérdidas de dinero en sumas realmente incontables, y perdió algo más que todo el dinero no recibido, o sea el valor del progreso y el bienestar que la honrada utilización del petróleo en servicio del Estado, pudo conseguir para la patria.[11]

Thus, even prior to the famed nationalizations of 1952, Bolivians seemed to view private ownership of hydrocarbons as an explanation for ills, and to view the nationalization of these resources as a potential silver bullet. To this day, this silver bullet theory remains a powerful sentiment among the Bolivian populous.

These formative years of Bolivian hydrocarbon do teach us that a popular government can take steps that seem impossible at other times. Paz Estenssoro's populist 1952 revolution quietly

reopened the oil fields to foreign investment. This investment led to new finds by Gulf Oil, which proceeded to ship oil via pipeline through Chile, of all places, without incident.[12] Yet another lesson, however, is that the 'oil card' never disappears. General Alfredo Ovando Candia, Bolivian military dictator from 1969 – 1970, re-nationalized hydrocarbons in 1969, turning to a reliably popular political maneuver to solidify his tenuous position.

Hydrocarbons & The New Economic Policy: The politics of hydrocarbons prior to the 1980s tended to focus on Bolivian oil, with natural gas something of an afterthought. However a Washington Consensus – styled New Economic Policy (NEP) of the mid-1980s generated private investment that led to the discovery of massive gas reserves. Owing to this correlation, natural gas was not only viewed as the new panacea, but it became associated with the economic liberalism of the New Economic Policy. When such liberalism fell from popularity, reclaiming one of its monumental achievements – ownership of natural gas – became the natural demand. In order to understand natural gas in Bolivia, one must understand how the commodity became entangled in overall trends, first towards economic liberalism, and then back towards protective nationalism.

In 1985, Paz Estenssoro, who had championed nationalistic reforms in 1952, won a presidential election with the Bolivian economy is disarray and suffering hyperinflation. Within weeks, he announced a New Economic Policy based on privatization, free trade, and open markets.

The Estenssoro years (1985-1989) focused on currency stabilization, import-export tariff reductions, and achieving international legitimacy in the eyes of the International Monetary Fund (IMF), and other western-oriented institutions.[13] By the time his ally, Gonzalo Sánchez de Lozardo, achieved the Presidency in 1993, the focus had become capitalization, or privatization of state owned industries, such as that of hydrocarbon.

Under intense pressure from the United States and the International Financing Institutions, the Law of Capitalization was signed in March of 1994, authorizing the sale of government oil and gas companies. The resultant laws created regulatory conditions particularly favorable to private hydrocarbon investment, and by years 2000, international investors had poured nearly USD$2bn into Bolivian hydrocarbons.[14] The association between private capital and Bolivian hydrocarbons was stark: 25% of new investment provoked by the NEP went into the oil and gas sector.[15]

This investment paid off. In the 1990s, private firms discovered natural gas deposits amounting to 27.6 trillion cubic feet. Gas finds accelerated in the 2000s, with proven and probable reserves increasing over 500% from 8.6 TFC in 1999 to 52.4 in 2004.[16] These finds rendered Bolivia the home of the largest reserves in South America after Venezuela.

Water & Gas Wars: However, as natural gas became an increasingly valuable private commodity, the neo liberal policies that engendered its rise became increasingly unpopular. While natural gas generated riches for some, the masses remained marred in poverty, only now without the option of state jobs that had been eliminated by neoliberal reform.[17] In a telling case that effected public perception, railroad Cruz Blanca slashed labor from 5,424 employees to 855 while simultaneously increasing tonnage shipped.[18]

An oft-sited turning point in Bolivian popular opinion of neoliberalism is the Cochabamban Water War 2000. Once again under pressure from a Western IFI, this time the World Bank, Bolivia attempted to privatize water services in the city of Cochabamba. When a US-based translational consortium purchased the grant and proceeded to hike prices 200%, mass protests turned violent, and eventually forced the government to once again assume control of water services.[19] From this point on, renationalization became the battle cry of those disillusioned by neoliberal reform.

Given the impressive finds of private natural gas firms and the inability of the state to match lost hydrocarbon income with increased taxing,[20] it seemed only a matter of time until the sentiments that erupted into the Water Wars reached the gas sector. After all, the privatization itself stemmed from intense pressure from the West: The IMF continued to make gas privatization a requirement for stand by loans up through the ascension to power of Evo Morales (2006 -). Furthermore, while private international firms such as BP Amoco and Repsol YPF enjoyed "the world's lowest operating costs for oil and gas exploration and production,"[21] popular opinion began to coalesce around the notion that nationalized gas could be a panacea, or a silver bullet that would cure Bolivia's retarded development. For example, a fanciful 2005 report issued at the Public University of El Alto concluded that "the government could make USD$7.5bn per year – then equal to about three-quarters of GDP – if the country were to fully nationalize and industrialize" natural gas.[22]

Given the confluence of short term and long term sentiments and trends, it would take but a spark to ignite the Bolivian Gas Wars. That spark would come in form of plans to develop an internationally owned, private Pacific Liquefied Natural Gas Consortium. Firms such as Repsol and British Gas would invest to build a pipeline to move Bolivian gas to Chilean ports where it would be condensed and shipped to North America. The project was estimated to cost USD$6bn, and had an annual earning potential of USD$1bn per year. Running the pipeline through Peru, and thus avoiding historic hostilities, would have cost an extra USD$600mn, a sum determined to be unfeasible.[23]

In an astute reading of public temperament, Evo Morales and his *Movimiento al Socialismo* (MAS) unleashed a string of protests and blockades that paralyzed parts of Bolivia. The notion that neoliberals sought to "sell gas to Chile,"[24] certainly stoked the initial public outcry, but as the government repressed protesters by increasingly violent means, the message broadened. After the military killed over 20 people in El Alto on October 12th, 2003, the *No al Gas* movement came to represent a rejection of neoliberal policies that would see two presidents chased from power and a third, Evo Morales, risk a great deal of international political capital to renationalize the hydrocarbon industry.

C. War Scars: Two wars in Bolivian history play lingering roles influencing modern Bolivian perception of hydrocarbon exploitation. Space limitations prevent in depth analysis of these conflicts, yet no summary of the Bolivian psyche can be complete without at least cursory acknowledgment of their effects. The War of the Pacific (1879-1883) pitted Bolivia and Peru against Chile in a border dispute. The campaign proved disastrous for Bolivia, and defeats in the Atacama Desert and in the Battle of Tacna rendered Bolivia landlocked. To this day, Bolivians cling to the notion that their stunted national development stems from the lack of port access which limited trading opportunities, and to the lost natural resources that fell into Chilean hands. These sentiments informed part of the objections expressed in the Gas Wars (2003) over exporting Bolivian gas to Chile. These sentiments also inform the popular opinion that Bolivia cannot export gas to Chile in the future unless the landlocked nation received a sliver of beach in return. This paper ultimately rejects this notion.

The second war, The Chaco War (1932-1935) appears to have solidified suspicion of private, international hydrocarbon firms in the Bolivian psyche. Fought between Paraguay and Bolivia, the Chaco War stemmed from border disputes on Bolivia's sparsely inhabited southeast. Speculation had it that the area might be rich with oil. If perhaps unsubstantiated, a widely circulated interpretation held that the conflict was a proxy war instigated by Standard Oil (US) and Royal Dutch Shell (British) to establish control over these potential reserves.[25] For example, Standard Oil, which already had wells in Bolivia, had delivered oil secretly to Paraguay through Argentina during the war.[26] The following quote from Bolivian writer Mirko Orgáz Garcia neatly expresses how the conflict has informed Bolivian popular opinion towards private hydrocarbons.

> Se ha dicho con mucha pertinencia que los hidrocarburos expresan lo esencial de la lucha entre la nación boliviana y el imperialismo a lo largo del siglo XX. La cuestión de los hidrocarburos está vinculada a los grandes acontecimientos de nuestra historia. Basta recordar que fue la causa central de la Guerra del Chaco, y el punto de partida del desarrollo de la conciencia nacional que provocó importantes transformaciones en 1952.[27]

D. Conclusion: This background suggests a Bolivia in which recourse control equals power, and where private investment means booms, busts, and exploitation. It also suggests a nation that considered a pipeline to Chile at precisely the moment that Bolivians rebelled against the Washington consensus. The backlash against neoliberalism seemed destined to generate a backlash against neoliberalism's biggest success in Bolivia: natural gas. As Bolivian scholar Mirko Orgáz García writes, "con la riqueza del gas, Bolivia se convirtió nuevamente en una pieza del engranaje del desarrollo del capitalismo mundial como con la plata y el estaño."[28]

Thus, I submit that the stunning backlash to the proposed Pacific Liquid Natural Gas scheme was really an expression of rejection to fast paced, sloppy neoliberal reforms – a backlash not particular to Bolivia, but one that was also observed in Venezuela and Argentina among others. Certainly, the fact that the gas would pass though Chile stung a sensitive nerve, but Bolivia had exported hydrocarbons to Chile in the past without incident. Furthermore, as Perreault describes in detail, the public opposition to the plan quickly morphed from objection over exports to Chile into "*no al gas,"* and more generally, no to the neoliberal reforms. Perreault writes,

> At the heart of these struggles was an overriding sense of the ways in which the structural inequalities that have marked Bolivian society throughout its history were being reproduced by plans to allow foreign firms to export what was widely viewed as national patrimony.[29]

If the true backlash was against foreign capital owners extracting Bolivian gas and shipping it abroad without reinvesting much in Bolivia, perhaps the conventional wisdom that gas exports to Chile would be politically untenable is overstated. In fact, pro-nationalization Bolivian literature does not appear to harp on the Chilean angle. García does not even mention Chile by name in his laudatory account of the Gas Wars. Rather he views the root of the conflict in reestablishing Bolivian control over gas, writing, "La insurrección de masas de octubre de 2003 inició el enfrentamiento entre la nación boliviana y el imperialismo por el excedente de la riqueza del gas."[30]

Perhaps if a popular government controlling a nationalized hydrocarbon industry sought to develop a gas pipeline to Chile, this would not aggravate all of the historic psychological scares outlined in the first half of this paper. Perhaps, as this paper proceeds to argue in Part II, if major hydrocarbon finds in Brazil and Argentina render demand for Bolivian gas obsolete, Bolivia will have no choice.

III. Brazil: Regional Trading Partner, Emerging Energy Giant

A) Brazil & Bolivian Hydrocarbons: In the late 1980s and early 1990s, Brazil sought to increase the role of natural gas in its energy mix just as Bolivia prepared to liberalize its economic approach to natural gas fields. With sprawling Brazilian metropolitan centers pushing demand, the government issued a study calling for an increase in the use of natural gas from 2% to 6% of natural consumption. President Fernando Henrique Cardoso subsequently doubled this to 12% during his administration.[31]

At the time, the massive Bolivian natural gas reserves had yet to be discovered, but the Bolivian gas that was available was cheaper for Brazil than that from Argentina. Furthermore, given the waves of macroeconomic disarray that plagued Argentina prior to the Convertibility Plan, international financing firms such as the World Bank and the Inter American Development Bank were more comfortable investing in Bolivian-Brazil pipelines over Argentine-Brazil pipelines.[32]

Apparently positioning to take advantage of Bolivian capitalization of YPFB, Brazil and Petrobras opened offices in Bolivia in 1995, one year before privatization would inject the capital that would discover Bolivia's globally relevant store of natural gas.[33] A series of dialogues and agreements led finally to the 1999 opening of a 2,000 mile long pipeline stretching from Santa Cruz to Sao Paulo and Porto Alegre. Heralded as the biggest and most important energy infrastructure project in the Americas, the system had a maximum capacity of 1.1Bcf/d.[34] A second pipeline opened in 2002, fueling a Brazilian thermal power plant in Cuiabá with natural gas from San Miguel, 391 miles away in Bolivia.[35]

For the next decade, through political turmoil, unfinished presidential terms and energy sector nationalization in Bolivia, Brazil remained a stalwart customer, and a primary destination for Bolivian gas. Working with a 20 year contract signed in 1999, Bolivia supplied Brazil with at least 30.08 million cubic meters per day at a price computed quarterly. These numbers translated to 70% of Bolivian natural gas output,[36] with the value of overall gas exports increasing from USD$35.5mn in 1999 to USD$266mn in 2002.

However, the Bolivian government clearly grew beholden to this relationship – in 1999, only 9.7% of total Bolivian exports were natural gas. This number jumped to nearly 30% by 2004, a year in which 30% of Bolivian government tax-intake stemmed from natural gas exports.[37] By 2007, natural gas exports to Brazil comprised roughly 20% of Bolivian GDP.[38] These statistics underscore the crucial role gas exports to Brazil play not only in the Bolivian energy sector, but in

the Bolivian economy *et large*. Unfortunately, recent developments appear to threaten Brazilian demand for Bolivian natural gas.

B) Brazil Approaches Energy Independence: Evo Morales' nationalization laws rendered Bolivian gas unreliable for Brazil, a nation that began putting a premium on reliability as it attempts to remove 'blackout' from the national lexicon.[39] In Bolivia, declining international investment "had a detrimental impact on total proven and probable reserves" as companies proved unwilling to drill exploratory wells, leaving recoverable reserves to fall drastically (from 54.8 TFC in 2002 to 17.5 TFC in 2007) as they have not been replenished by new finds.[40] As a result, Bolivia struggled to meet existing contractual agreements, let alone satisfy increasing Brazilian demand."[41]

Faced with this increasing insecurity, Brazil moved forward with exploration for domestic natural gas, leading to jack-pot finds in the Santos Basin. By end 2006, confirmed Brazilian natural gas reserves topped out at 11.5TCF – up from 7.8TCF in 2002.[42] A subsequent 2009 gas find in Maranhao (North East Brazil) is forecasted to alone provide 15mn cmd – roughly half the natural gas Brazil currently imports from Bolivia.[43] Underscoring a strategy to exploit this domestic cache, Petrobras invested USD$6.5bn from 2007 to 2010 towards infrastructure and pipelines to deliver Brazilian gas that will come on stream in the near future.[44]

As if the tremendous gas finds in Brazil were not enough to challenge Brazilian demand for Bolivian gas, Brazil has proceeded to build three Liquid Natural Gas regasification terminals that will allow the country to import gas from all over the world. With Pecém and Guanabara Bay terminals already operational and the Bahia Regasification Terminal expected to go online by August 13th,[45] Bolivian gas is increasingly uncompetitive. LNG is traditionally associated with higher costs, but one study found that Brazilians pay up to USD$7/MMbtu for LNG, and a similar USD$6.2/MMbtu for Bolivian gas, "with the significant difference that LNG is reliable."[46] Brazil has subsequently used its LNG capability as a bargaining tool in negotiations over Bolivian gas prices.

C) Declining Demand for Bolivian Gas: The effects of Brazilian gas diversification on Bolivian gas exports to Brazil have been swift. In the early weeks of 2009, Brazil slashed imports by one third, down to 19mn cmd, generating losses of USD$600mn for Bolivia.[47] These cuts do not reflect a protest against the Bolivian government, or any form of embargo. "We wouldn't do anything to intentionally hurt Bolivia," said Brazilian Energy Minister Edison Lobao in 2009, "but if we don't need the gas, we can't harm Brazil by paying for something we don't need."[48]

The U.S. Department of State clearly believes that Brazil will not need Bolivian gas. In a secret cable released by WikiLeaks dated 11/25/2009, insiders stressed that, should Brazil

successfully develop the requisite technology to exploit pre-salt gas fields, domestic natural gas could comprise 95% of Brazilian demand by 2020.[49] Ominously for Bolivia, some forecast Brazil to be fully exploiting its natural gas exactly one year after Brazilian contractual obligations to Bolivia expire in 2019.

Thus, it seems unrealistic to expect Bolivia to remain a major gas exporter to Brazil past 2020. In the mid-term, the relationship might well continue, for practical and geopolitical reasons. Brazil needs a buffer period to develop its infrastructure, and in January of 2012, Brazilian ambassador to Bolivia Marcel Biato stated that, "Brazil will maintain its purchases of gas from Bolivia…due to a political commitment between the two peoples, rather than economic."[50] But in the long term, it appears that if Bolivia continues to rely on Brazil, the best case scenario would be that political friendships between La Paz and Brasilia lead to altruistic purchases – hardly a prescription for long term economic development.

IV. Argentina & Bolivia: A Peculiar Arraignment

A. Argentina & Bolivian Hydrocarbons: Bolivia has a long history of exporting natural gas to Argentina. Unfortunately, the most productive periods of this history owed more to Argentine inefficiency and peculiarity than to the two being natural trading partners. While one might be tempted to assume that Argentina will never correct their chronic inefficiencies, a review of the trade relationship suggests that for Argentina, the need for Bolivian gas may become obsolete.

Argentina was originally the lead purchaser of Bolivian natural gas. By the 1950s, Argentina had already committed to natural gas infrastructure, but did not have the confirmed reserves to meet expanding demand. Following fruitless negotiations with Brazil, Bolivia agreed to its first natural gas export contract with Argentina in 1967.

The resultant 20 year contract called for a 1.7 bcm a year to be transited from Santa Cruz to Salta.[51] The project went online in 1972, and by its expiration in 1992, it had generated USD$4bn – a key source of income for the Bolivians throughout a tumultuous era. [52]

Nevertheless, throughout the maturation of this 20-year contract, Argentina continued to discover domestic reserves of natural gas, and the Argentines used these finds to bid down the price of imported Bolivian gas. Just as neo-liberal policies would induce investment that led to major gas finds in Bolivia in the 1990s, the Argentine military government's (1976-1983) neoliberal policies attracted the investment that led to major gas finds in Argentina.[53] By the mid 1980s, Argentina was producing domestic gas at notably cheaper cost than that of imported Bolivian gas.[54] The writing

should have been on the wall for the end of this trading relationship, especially in 1999, when a series of short term deals that the two countries had signed since 1992 were not renewed.

However, the Argentine government's quirky response to a 2001 economic meltdown would unnaturally prolong its gas trade relationship with Bolivia. After years of attempting to defend peso-dollar convertibility despite an Argentine recession, a devalued Brazilian real and a strong American dollar, Argentina disbanded the currency board, and the peso quickly lost over 2/3 of its value.

With international commodities such as gas priced in dollars, this devaluation meant that without intervening legislation, basic necessities would at least triple in price. Thus, in January of 2002, the Argentine Congress passed economic emergency laws that pegged end-user charges for electricity at a one to one parity with the dollar, while freezing rates that transmission and distribution companies could charge.[55]

This legislation destroyed the incentive for Argentine gas firms to produce and supply domestically. Furthermore, the laws limited incentive for Argentine firms to increase domestic capacity, while the artificially low price did generate a rise in demand.[56] Artificial prices incentivized Argentine gas exports to Chile, an energy hungry nation with a more market based pricing structure. To quantify these trends, consider that Argentina gas demand rose 18% year-on-year in the first quarter of 2004, while gas exports rose 20% in the same period.[57] *La Casa Rosada* sought to limit these exports particularly in 2004 when Argentine supply restrictions held exports to Chile to 66% of the normal amount,[58] but Argentine gas continued to flow across the Andes at a time that domestic production was not meeting domestic demand.

Thus, since 1999 Argentina has had the confirmed reserves to be independent with regards to natural gas, but economic and political peculiarities opened the door for the return of Bolivian imports. Following acute shortages in the hot summers and cold winters of 2004, Argentina negotiated a second 20-year contract with Bolivia that went into effect in October, 2006. The deal, scheduled to deliver 7.7mn cmd, was quoted as worth USD$17bn to the Bolivian economy. The deal also featured improved terms of trade for the Bolivians. Argentina agreed to pay US$5 per btu, representing a 50% increase over what they had previously been paying.[59]

B. Argentine Potential for Energy Independence: Bolivia should not count on this Argentine demand to persist because the price freeze on Argentine gas is not sustainable in the long term, and when it is removed, there will be incentive to harvest the extensive gas reserves to serve domestic demand. Argentina appears to be on the verge of a shale gas revolution. According to the U.S. Energy Information Administration, Argentina has 774 trillion cubic feet of technically

recoverable shale gas reserves, placing it third globally behind China and the U.S.[60] Neuquen Governor Jorge Sapag (optimistically) argued in 2011 that with a USD$2bn investment and two or three years, his province could "obviate the need for…imports."[61] However, who will invest in the fields if gas from Neuquen remains at its current price: 1/7 the price of Bolivian gas?[62]

The Kirchner government appears keen on exploiting these massive reserves, but shale gas requires significant investment to extract. To attract such investment, Argentina will need to either lift gas price freezes, or renationalize the industry and produce the gas themselves at a tremendous cost to the state. Either way, such actions would remove the quirky circumstances that generate demand for Bolivian gas.

Change appears to be in the works. In 2008, the Argentine government began a Gas Plus program that allowed unconventional gas (i.e. shale gas) to be billed at closer to market prices then frozen conventional gas prices. A 2012 report suggests that these laws would allow the sale of Neuquen natural gas for USD$4-5/MM btu, around three dollars less than Bolivian imported gas, yet still potentially profitable for the extracting firm.[63]

The Gas Plus laws have attracted international investment (no small feat for Argentina). In September 2011, Exxon Mobil announced a USD$120mn investments for gas exploration in Neuquen, with France's Total SA and Apache Corp hot on their heels.[64]

Much wrangling still needs to be done, with Haliburton Chief Executive David Lesar recently stating, "Shale gas could develop very quickly in Argentina, but only at the right price, and we are not there yet."[65] But the project seems to have too much potential to not assume it will eventually come online. In fact, it is perfectly reasonable to hypothesis that Argentine shale gas will hit its stride towards the end of the decade, precisely at the point that Brazil may no longer need Bolivian gas, either.

Celebrating the Exxon Mobil deal in 2011, Argentine Planning Minister Julio De Vido stated, "We, together with Bolivia are going to become a gigantic source of gas in South America, with opportunities for industrialization."[66] Mr. De Vido did not specify who Bolivia would sell their gas too, if both of their major costumers became energy independent.

V. Chile: A Potential Partner?

A. A Gas Thirsty Nation: While the future of Brazilian and Argentine demand for Bolivian gas is by no means guaranteed, Bolivia happens to border another country that is experiencing persistent growth that requires energy expansion. This country happens to have very little natural

energy resources, and this country happens to have geared its energy matrix specifically to capitalize off imported natural gas. In short, Chile, the Bolivian boogieman since 1879, appears to be a strong candidate to replace Brazilian and Argentina demand for gas that could deteriorate in the next decade.

Beginning roughly in 1997, following the tremendous gas finds in Bolivia, Chile began to lean heaver on natural gas. For example, gas consumption in the industry and mining sector jumped from 13 million m^3 in 1996 to 310 million m^3.[67] 2004 estimates predicted that between 2003 and 2012, natural gas consumption would grow in Chile by 133%,[68] while current estimates hold that Chile will see annual electricity gains of 26% from gas-fired supply between 2011 and 2015.[69]

However, Chile cannot match its spiking demand for natural gas with domestic supply. Chile has produced some natural gas since 1950, but production has fallen from 5,079 million m^3 in 1981 to 2,543 million m^3 in 2002.[70] A 2004 National Energy Commission report suggested that the difference would be supplied by Argentina. However, as previously discussed, legislation has attempted to minimize Argentina gas exports to Chile.

As such, Chile has entered a tumultuous period with regards to energy security, and the lack thereof reflects a key obstacle preventing Chile from establishing itself as Latin America's first fully developed country. Public backlash to Chilean President Sebastián Piñera's plan to build five hydroelectric plants in pristine Patagonian rivers helped generate his dismal 29% approval rating, as well as delays to the project. Given shortages of Argentine supply, in September 2011, over 50% of the nation experienced power outages "which paralyzed the country's copper mines and brought Santiago grinding to a halt."[71]

Like Argentina and Brazil, Chile has invested in Liquefied Natural Gas facilities, but, while LNG may be used for the Santiago metropolitan area or the mining north, analysts have concluded that this would not obviate the need for pipeline gas imports.[72] Furthermore, LNG imports are expensive. 2011 spot prices from around the globe were routinely over USD$13.50 per MMBtu, well over the exorbitant fee Bolivia charges Argentina for pipeline gas.[73]

B. Worst Enemy a Best Friend? For these reasons, Chile has reached out to Bolivia in the years following the so-called gas war to see if cooler heads might be able to strike what appears to be a mutually beneficial deal. In November of 2010, Gas Atamaca, a private Chilean electric company, petitioned Bolivian President Evo Morales to export 5 million cubic meters per day of Bolivian gas to Chile.[74] However, Morales stuck to his 2007 declaration that he would not engage in gas-to-Chile dialogues unless *gas-por-mar was* on the table; a price too hefty for Chile to pay.[75]

This is a mistake. As former Bolivian Hydrocarbon Minister Álvaro Ríos (held position in 2003) stated in 2010, "Exporting to Chile is the best scenario for Bolivia. Chile needs energy, and will always need it. It is also the closest market to Bolivia, and it is a serious country that respects contracts."[76] Not only would Chile be a consistent and reliable costumer, but a pipeline to Chile would also give Bolivia access to Chilean LNG facilities, and Bolivia could export LNG to Pacific basin nations, as well as to North America. Such promising ventures might attract the investment that has been sorely lacking in Bolivian gas.

VI. Conclusion

The first portion of this paper argued that deeply held Bolivian dispositions to natural resources and economic policies generated the backlash to the proposed pipeline to Chile. Conventional wisdom holds that Chile's inclusion was the fundamental instigator of the fury, and, as such, a pipeline to Chile would be more than unpopular – it would be political suicide. However, my analysis suggests that at the particular moment that the pipeline was proposed, a world wind of other factors rendered the project offensive to Bolivian public opinion.

The idea of moving gas to Chile in particular may simply have been the straw that broke the camel's back. As Part II of this essay argued, Bolivia has long been plundered for natural resources, the control of which is deeply associated with power in the country. The New Economic Policy may have stifled hyperinflation, but it also created an atmosphere in which foreign, private energy firms could develop lucrative projects in which little capital was reinvested in-country. Thus, just as in 1937 when private oil was nationalized, and 1952 when private mines were nationalized, Evo Morales' 2003 movement emphasized the reassertion of Bolivian control over the Bolivian economy. This reaction to the Washington Consensus occurred throughout Latin America. It just so happens that in Bolivia, a key theater for the blowback was natural gas.

Since assuming power, Morales has been reluctant to revisit pipeline discussions that do not include *Mar-Para-Bolivia* concessions. This may stem from the fact that the Gas Wars helped propel him to power. Why flip-flop on a popular stance? However the 1952 revolutionary, nationalistic, populist government was able to export oil to Chile. Perhaps the real fury in 2003 was towards privatized gas being shipped around the world without much coming back to Bolivia, just as silver was five centuries earlier. Morales may not currently enjoy the popularity he once held, but my analysis suggests that a popular government with partially nationalized gas, backed by a clear policy to use the funds for economic development, might be able to export gas to Chile without enraging public sentiment.

Russia exports natural gas to Germany. Mexico, which lost far more territory in war than has Bolivia, trades extensively with the United States. It would be condescending to assume that Bolivia is politically unable to export gas to Chile. In fact, such trade agreements are more likely to achieve Bolivia's goal of at least preferential coastal access than is persistent animosity, just as the Schengen Zone has softened borders between historic enemies in Europe.

The second portion of my paper argued that developing such a relationships with Chile might be necessary if Bolivia wishes to reap the potential benefits for its natural gas reserves. There is no guarantee that either Brazil or Argentina (Bolivia's current gas costumers) will be able to achieve their potential for energy independence. In fact, just as experts seem inclined to dismiss indigenous Bolivians as too hard headed to realize the benefits of exporting gas to Chile, the conventional wisdom is that Argentina is too inept to ever efficiently exploit its natural gas reserves. Maybe these experts are right. But there are enough potential profits in play both in Argentina and Brazil that it would be dangerous for Bolivia to assume that these two countries will not become energy independent within the next fifteen years.

Given that Brazilian and Argentine demand for Bolivian gas might soon become obsolete, the potential for a trade relationship with Chile becomes all the more important. Chile is a rapidly developing country with serious energy security concerns. Major Chilean investments in LNG technology suggest that natural gas will continue to be a notable factor in their energy portfolio. Bolivia can export gas to Chile for cheaper than most LNG prices. Furthermore, just as the original Pacific Liquefied Natural Gas Consortium plan suggested, exports to Chilean LNG infrastructure could give Bolivia the opportunity to service overseas customers. The ability to sell to an energy thirsty country like Chile, and to access international markets could instigate precisely the kind of investment that Bolivia needs in its hydrocarbons.

In closing, it would be foolish to overlook the difficulties associated with executing such a pipeline. While it is possible, there is no doubt Bolivian leaders would face domestic scrutiny (having themselves drummed up anti-Chile sentiment for the last ten years). But further delays to negotiations could also prove damaging. If Argentina successfully builds the infrastructure required to access its shale gas, it could well be the country that enters into long-term export contracts to Chile, and Bolivia would once again be the odd country out. For the time being, Bolivia has a window of opportunity to develop a positive gas relationship with Chile. If it does not, Bolivia can add another antagonist to its list of retardants of Bolivian progress along with Chileans and international capitalists: Themselves.

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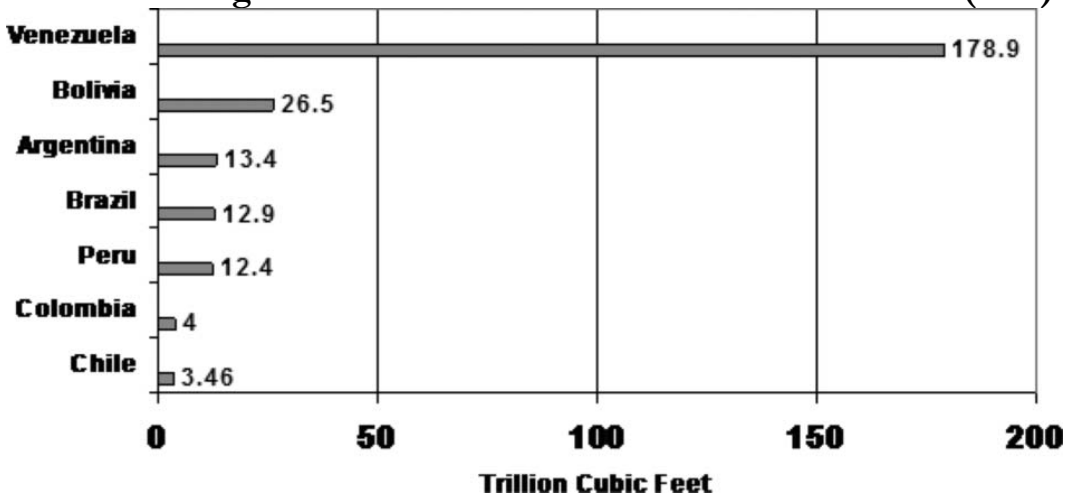
VII. APPENDIX

Figure 1: Gas Pipelines in South America

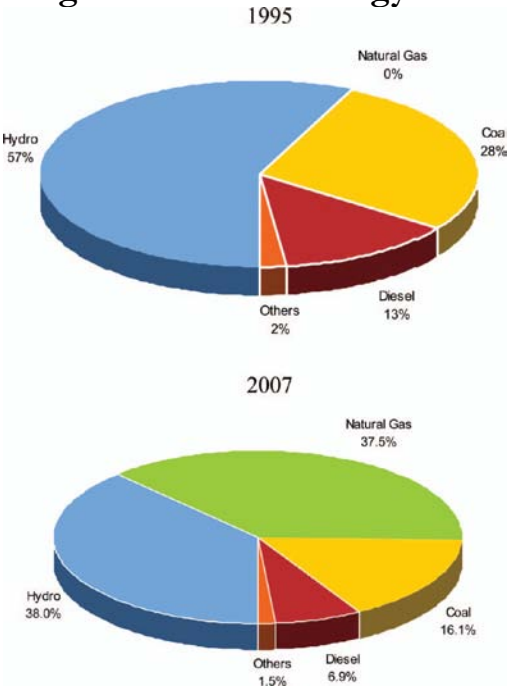
Bolivia – Chile Pipeline: A missing link?
Source: Mares & Martin

Figure 2: South American Natural Gas Reserves (2011)



Some sources suggest that Bolivia has the second largest natural gas reserves on the continent, others suggest it has the third. By anyone's numbers, it has a lot.
Source: US Energy Information Administration

Figure 3: Chile's Energy Mix



Chile has demonstrated an increasing thirst for natural gas. Bolivia would be wise to satiate it.
Source. Mares & Martin

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