

Bolivia, South Korea, and the Development of Lithium Reserves: Understanding the Benefits and Costs of a Newly Demanded Commodity

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Ripley, Charles G. and Patrick Roe (2012) "Bolivia, South Korea, and the Development of Lithium Reserves: Understanding the Benefits and Costs of a Newly Demanded Commodity"

ABSTRACT

Lithium is becoming an important resource in the world economy. An increasing number of products require the metal, ranging from laptops to hybrid vehicles. While a number of countries contain deposits, Bolivia has over 50% of the world's reserves. As international interest grows, so are economic incentives to export the commodity. Although this subject has attracted scant scholarly research, the development of lithium reserves raises fundamental research questions that are both academically important and policy relevant. First, lacking the capacity to develop the reserves, the Bolivian government has actually bypassed U.S. corporations, its traditional partners, to seek assistance from South Korea. Although most research has focused on China's inroads into Latin America, what does this new source of foreign direct investment mean for the country's development? Second, there has been a growing body of literature questioning the positive externalities of export-led growth. Will Bolivia be able to benefit from the exportation of lithium? In addition to addressing these questions, this paper aims to: 1) Discuss the specific challenges an impoverished country like Bolivia faces; 2) analyze previous failures with the export-led development model; and 3) advance policies on how Bolivia will be able to benefit from the development and exportation of its lithium reserves.

Key Words: Bolivia, lithium, South Korea, investment

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INTRODUCTION

Lithium is quickly becoming an important resource in the world economy. While a number of countries such as Chile and China contain deposits, Bolivia has the largest reserves. With over 50% of the world's deposits, the country has been called, according to one governmental study, "The Saudi Arabia of lithium" (Ríos Roca 2009). As international interest in lithium grows, so too will the desire to mine and export the resource. In fact, lithium is required to produce the electric car, which is pivotal in decreasing the world's dependency on fossil fuels. As more companies produce these vehicles, and as their popularity grows, the demand for lithium, the key component in the car batteries, will as well. Currently, lithium is already utilized in numerous products, primarily consumer electronics such as laptops and mobile phones. The amounts used for these devices, however, are comparatively small, while the amount of lithium required for a car battery can reach to thirty kilos (Haddock 2010). Nonetheless, the recent demand for lithium has increased the price of the commodity tremendously. As of March 2010, the price of lithium stood at approximately \$3,000 a ton, up from \$350 per ton five years before (Ibid).

As a result, the study of lithium needs to be explored. There has been little scholarly research, however, on this topic. Even a recent World Bank (2009) country study on Bolivia's export competitiveness failed to mention the pivotal economic role of lithium. The development of lithium reserves, however, raises important questions related to Bolivia's ability to both secure crucial foreign direct investment (FDI) and benefit from the export-led growth model as a developmental strategy. These questions have value for both academic and policy research. The first question relates to Bolivia's own recognition that the country lacks both the infrastructural and investment capacity to develop and then export lithium deposits. Recognizing the necessity of investment, Bolivia has already decided to bypass the United States, its traditional source of foreign investment, and has successfully courted funding from an unusual player: South Korea. How will this new source of investment benefit Bolivia's ambitious lithium development plans? Second, there is a growing body of influential literature that questions the positive externalities of export-led growth. Will Bolivia even be able to benefit from the resource? In addition to addressing these pressing questions, this paper aims to: 1) Discuss the individual challenges Bolivia faces as an impoverished nation-state; 2) analyze previous failures with export-led development; and, most

importantly, 3) advance concrete policies on how the country can best extract benefits from its vast lithium reserves.

METHODOLOGY

This paper is an exploratory study. Relying on a single case study approach, its aim is to create a research framework to understand the conditions under which Bolivia may or may not benefit from the development and exportation of lithium reserves, as well as the new pivotal role Asian investment aims to play. Although social scientists often question the value of single case studies and inductive exploratory research, a number of scholars have begun to observe the importance of in-depth case studies. They can serve as a useful methodological tool for offering insight into outlier cases, exploring causal inferences, and being research generating. John Gerring, upon whose methodological work we build, stresses the vital, yet often overlooked value of case studies. Gerring (2004) points out that exploratory and inductive research is instrumental for theory development and “path-breaking” findings; it is not merely for confirmation and falsification (349). The type of exploratory study Gerring describes relies on an in-depth analysis of a particular case, but draws upon periphery cases for comparative insight. In the particular research here, we focus on Bolivia, but draw upon lessons of resource extraction from a diversity of cases, including Chile, Venezuela, and even Alaska.

More importantly, analyzing a specific contextual environment has become valuable in developmental economics. Recognizing the failure of one-size-fits-all economic policies, influential economists such as Dani Rodrik (1999; 2007a; 2007b) and Joseph Stiglitz (2002) have stressed the need for country-based recommendations. Although Rodrik (2007a) observes that large-*n* studies still offer valuable insight into developmental policies, he concedes, “growth-promoting policies tend to be context specific” (15). What is more, stressing the importance of the contextual environment is not limited to economic growth strategies. Rodrik (2007a) continues to point out that economic and political institutions are often context-specific, depending on the culture and historical contingencies of particular nations.

BRIEF OVERVIEW OF BOLIVIA

An exploratory case study suites Bolivia due to the country's differences it has with other Latin American nation-states. Being the only landlocked country besides Paraguay in the Americas, Bolivia depends on the whim of its neighbors for access to ports. For exports, most of the country's commodities go through Chilean ports, the same country to which Bolivia lost its sea access as a result of the War of the Pacific (1879-1884). This poses a particular challenge for not only Bolivia's development, but also certain constraints for the development of lithium reserves. Although precise measurements are difficult, studies suggest that the lack of the efficient use of ports significantly decreases a country's economic indicators and increases transportation costs often resulting, in the case of Bolivia, in similar high costs for international and intraregional trade (*World Development Report* 2009).

Bolivia also faces a number of other challenges. The country remains an extremely impoverished nation relative to its neighbors. According to the World Bank (2011), its annual gross domestic product (GDP) continues to be roughly \$24 billion, far below the other Andean states. Ecuador, Peru, Venezuela, and Colombia enjoy GDPs at \$66 billion, \$177 billion, \$317 billion, and \$332 billion, respectively (World Bank 2011). Although Bolivia has experienced recent booms in commodity exportation, the country's exports have an extremely low added value, relying principally on primary goods. A World Bank study suggests that Bolivia had one of the world's lowest manufactured and high-technological percentages of overall exports, standing at 7% and 4% respectively (*World Development Report* 2009, 358). What is more, even in times of export booms, the country's economy, dependent on primary products, is vulnerable to severe busts. For example, after significant economic growth throughout the current decade, exportation value plummeted in 2009 by 23.2%, equaling \$5.3 billion ("Bolivia Overview" 2009). This boom-bust cycle has been pernicious and well-documented in countries such as Bolivia, which experienced a tin bust, the country's most important commodity, in 1985.¹ Land concentration, as in other Latin American countries, is also a problem. A study by the Catholic Church in Bolivia revealed that 50,000 families owned roughly 90% of the country's productive land (Kahya 2006). Finally, the country ranks poorly in areas of transparency and corruption.

1 For an in-depth understanding of Bolivia's commodity curse, see Schultz and Draper (2008).

Transparency International's Corruption Index (2010) gave Bolivia 2.5 out of a 10 point score, the lowest transparency in the region only after Paraguay, which received 2.2.²

Moreover, the lithium reserves are not located in an accessible area of the country. The deposits are concentrated in Salar de Uyuni, the southwestern part of the country. Currently, Bolivia's sole extraction project is reachable only by dirt road two hours from the nearest town. Additionally, the climate in the area is extremely inhospitable, making extraction more difficult. The reality of being an impoverished landlocked country also compounds the problems of not only mining the soft metal, but actually processing and exporting it.

It is also important to note that Bolivia has a sizable indigenous population. Up to 62.5% of the 8 million Bolivians are indigenous. Quechua is the largest group at 32% of the indigenous population followed by Aymaras at 25% (Van Cott 2008). Bolivia's indigenous population is important because many face prejudices, social and economic barriers, linguistic exclusion, and geographical isolation. As a result, even after the election of Bolivia's first indigenous president, Evo Morales (2006–present), many remain mired in poverty and participate in social unrest in order to voice their needs. As we suggest later, lithium reserves could address not only indigenous discrimination, but also a number of the issues mentioned above.

The current government, however, has made efforts to address some of these concerns. Although an in-depth analysis of President Evo Morales' leftist politics, which is often an ideologically contentious subject, is outside the scope of this paper, the government has made successful attempts to improve the country's indicators. For example, albeit still low, economic growth has improved. The country's gross national product (GDP) has doubled during this decade (World Bank 2011). The economic increase has, to a certain extent, trickled down to the vast population living in poverty; there have been significant decreases in the percentages of Bolivians living under the poverty line. According to the United Nations (2010), the percentage went from 65.2% in 2002 to 37.7% in 2007. The government has also decreased its external debt from \$4.568 billion in 2005 to \$2.544 billion in 2009 ("External Debt Shocks" 2011). In fact, the reduction of debt took place while there was a twofold increase in GDP growth between 2000 and 2009 (World Bank 2011).

The specific policies aimed at improving the country's indicators have

2 For transparency International, 10 is the "cleanest", whereas as 0 is highly corrupt. See "Corruptions Perceptions Index 2010 Results" for more information.

been different from the president's predecessors and, at times, quite creative. In order to reduce poverty, for example, the government floated bonds, *la Renta Dignidad* and *el Bono Juancito Pinto*, in order to assist school children and retirees. Public investment has also increased by roughly 70% compared to the first half of this decade ("La pobreza es aún es alta" 2009). Additionally, the Morales Administration has also outlined and implemented policies to assist exporters who might have difficulty exporting to countries due to lack of capital or high entry barriers. One policy actually helps pay the tariffs exporters face to countries such as the United States ("Tres Decretos" 2009). The government has also diversified the country's options for exportation and foreign direct investment (FDI) by bypassing traditional partners in the United States and Europe and making relations with countries as diverse as Venezuela, Cuba, Iran, China, and South Korea. This type of economic diversification and policies, albeit discouraged by more traditional economists and policy makers, most of whom are from the United States, may help the country benefit from its lithium reserves.

BOLIVIA, THE NATIONALIZATION OF RESOURCES, AND SOUTH KOREAN FDI

With export-led growth in doubt, one central question emerges: Will Bolivia benefit from the commodity? To rely on economist Charles Kindleberger's famous answer, "it depends". The first challenge is attracting foreign direct investment. The Bolivian government has conceded that FDI is instrumental for developing lithium reserves. In 2006, however, Morales carried out a large number of nationalizations that upset a number of private corporations from origins ranging from Brazil and Argentina to France and Spain. The nationalizations initially focused on the operation and production of Bolivian hydrocarbons, reversing the years of privatization, or what the Bolivians call "capitalization". Capitalization was carried out by previous president Gonzalo Sánchez de Lozada in 1994 with the Capitalization Law and 1996 with the Hydrocarbons Law (Vargas 2007). These laws essentially allowed private investment to purchase the operations of the gas resources with the state earning a percentage of the royalties. Although the wave of privatization was supported by the international community, particularly the United States, it proved unpopular in the country, predominantly with marginalized indigenous groups, galvanizing a backlash that led to a 2004 referendum favoring a nationalization of Yacimientos Petrolíferos Fiscales Bolivianos (YPFB)

(Ibid). When Morales became president in 2006, he supported and carried out the nationalization of not only YPFB, but other privatized entities such as ENTEL, the Bolivian Telecommunications Company. The wave of nationalizations sparked protests from not only European and North American companies, but South American businesses as well, including those from Peru, Argentina, and Brazil (“CLHB será YPFB” 2006; “Petrobras Amenaza” 2006). In fact, Bolivia is the only country to have formerly withdrawn from the World Bank’s International Centre for the Settlement of Investment Disputes (ICSID).

Morales has made clear, however, that it does not need to depend on U.S., European, or even South American capital for investment opportunities. As other developing countries, Bolivia has recently looked toward Asia for such opportunities. This new move for developing countries to find capital from Asian investors has attracted a large body of academic and policy literature. Most of the focus, however, has naturally become dominated by the pivotal role of China (Hearn and León Manríquez 2011; Gallagher and Porzecanski 2010; Santiso 2007). China’s involvement in Latin American countries (LAC) has increased significantly. By 2010, China had become a more prominent investor loaner in LAC than the World Bank, totaling up to \$37 billion (Gallagher, Irwin, and Koleski 2012). Foreign direct investment has increased significantly as well. According to a study by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC), investment from China has reached over \$113 billion when less than a decade ago the amount stood at less than \$5 billion (*Foreign direct Investment* 2011).

China’s inroads into developing countries have inevitably pushed scholars to weigh the benefits and costs these nations will face. On the one hand, a number of researchers have found negative trends with China-Latin America relations, emphasizing the nature of the investment. Gallagher and Porzecanski (2010), for example, fear that China’s focus on natural resources will further create dependency on specific raw commodities and hinder the region’s ability to diversify its economy. Others, however, have noted China’s role for fueling economic growth and avoiding recession. Former Brazilian President Lula de Silva praised China’s initiatives, noting that Brazil, where China has funneled the bulk of its investment, has become an instrumental economic partner (Ferchen 2012).

Unlike other Latin American countries, however, Bolivia has attracted investment interests not from China, but South Korea to fuel lithium development. Bolivia has recently entered into a number of agreements with the government to not only develop the reserves, but the infrastructure

surrounding the sites as well. Mutual interest between South Korea and Latin America is relatively new. “Until very recently”, Juan Felipe López (2012) points out, “there was little public attention on Korea in Latin America” (3). Although China has significantly increased its presence in the region, South Korea’s share of trade in Latin America and the Caribbean stands at only 2.5% (Mesquita Moreira 2011). What is more, Korea has channeled more than half its investment into Brazil, particularly due to the investment of Hyundai Motor Company, Korea’s largest auto manufacturer, which has invested up to \$600 million in new automaker plants (Ibid).

South Korea’s investment initiatives in Bolivia’s lithium projects, however, are significant. Bolivia’s Comibol and the Korea Resources Corporation (Kores), both state enterprises, initially entered into agreements that stressed both the extraction and processing of lithium metals (Eun-Joo 2010). This initial joint venture has led to a consortium of investors in which POSCO, the largest steelmaker in Korea, and a number of smaller Korean companies have invested in the lithium project (Dyson 2012). Under the agreement, which concentrates on the vast lithium reserves in Salar de Uyuni, Comibol will have a 50% stake in the project while the Korean consortium will own the other half (Ibid). Both countries will contribute \$1.5 million each for the initial investment necessary for the start-up project. The overall objective of the joint venture between the two countries is to process and produce up to five hundred tons of the finished products annually (Imaña 2012). According to Luis Alberto Echazú, a key Bolivian figure who is managing the lithium extraction for Comibol, the finished products, which will take place in the third “phase” of investment and production, will consist of lithium-ion batteries, cathodes, and electrolytes (Dyson 2012). Cathodes can be particularly lucrative on the international market. Vehicles that rely upon electric rechargeable batteries depend on them (“S. Korea, Bolivia, set up” 2012). South Korea further advanced concrete agreements to finance infrastructural projects such as bridges with low-interest loans (“Cuatro puentes” 2010). This finance is of great importance since the geographical areas that contain lithium deposits have little infrastructural development.

In addition to an investment consortium, South Korea aims to assist Bolivia in both technological and scientific development. This type of development is as crucial as foreign investment and loans. Bolivia has very little experience extracting and processing lithium metals. Although Korean representatives have stressed their faith in Bolivia’s contribution to lithium extraction, on-the-ground experts recognize Bolivia’s lack of

knowledge and technical skills in the complex process. Juan Carlos Zulate, Bolivian economist and expert in lithium, has publically conceded that the government has almost no experience with exploring, extracting, and processing lithium, particularly in Salar de Uyuni, which has harsh climate conditions (cited in Dyson 2012). As a result, Korean technicians, engineers, and mining experts have begun working with their Bolivian counterparts on technological development. In fact, a group of Korean experts recognized that conventional extracting and processing techniques commonly employed in Bolivia would not be appropriate for the difficult conditions in Salar de Uyuni. The researchers, two of whom work for Korea Resources Corp, recently published their results on a more sophisticated hydrometallurgical process that would recover Bolivian lithium from brine extracted from Salar de Uyuni. According to the study, high levels of sulphate and magnesium in the brine render conventional techniques inappropriate; the researchers have, therefore, developed a technical plan to produce a high purity of lithium carbonate (see Woong An et al. 2012).

EXPORT-LED GROWTH: THE OPTIMAL DEVELOPMENT MODEL?

Despite extensive foreign assistance and enthusiasm for lithium development, however, the export-led growth model for developing countries has come under attack in recent years. Even if Bolivia is able to attract stable and consistent FDI from South Korea, as well as technological development, the country's ability to benefit from lithium could be severely limited. One of the most prominent critics of the export-led model is Harvard economist Dani Rodrik. Rodrik has challenged global trade enthusiasts such as Jeffrey Sachs, who has touted the benefits of export trade. Rodrik (1999) observes that this "export fetish" in developmental policy decision making often fails to create not only sustainable growth, but also positive economic externalities for the particular country implementing export-led strategies. Although space constraints do not allow an in-depth analysis of this crucial debate, Rodrik (1999) stresses that increased exportation does not necessarily: 1) serve as the catalyst and causation behind more productive, efficient, and technological industries; 2) lead to spin off industries and more technologically advanced jobs; and 3) create greater export diversity. In fact, Rodrik (2007b) continues to point out that many policy makers are inattentive to the potential problems, often known as the "natural resource curse", with the exportation

of natural resources (2). Potential problems can range from primary product dependency and “Dutch disease” to even the deterioration of democratic institutions. With lithium being a natural reserve for exportation, there are inevitable challenges for the Bolivian economy.

POTENTIAL PITFALLS: DUTCH DISEASE

Although this is not a comprehensive list, there are three very possible negative externalities that can accompany lithium extraction: Dutch disease, primary commodity dependency, and the temptation to utilize the concomitant lithium revenues to undermine democratic rule. The first negative externality, Dutch disease, is a common economic phenomenon that Bolivian policy makers will have to address. In economic theory, Dutch disease is related to Tadeusz Rybczynski’s path-breaking work on uneven growth. Although space constraints do not allow an in-depth review of the Rybczynski Theorem and its relation with the Heckscher-Ohlin Model, a brief overview of the causes behind Dutch disease is warranted.³

Economists predict that with the opening of trade, countries will produce and export the products for which they have factor abundance and import those for which they have factor scarcity. On opening up to foreign trade, China, for instance, would be inclined to export labor-intensive products and import, due to country’s scarcity in arable land, agricultural and mineral goods. Economists observe that this is exactly the path on which China has developed (Pugel 2004). In fact, not only has China exported labor-intensive products, but the country’s insatiable importation of agricultural and mineral products has fueled the export boom in a number of Latin American countries (see Gallagher and Porzecanski 2010). On the other hand, the United States has become a primary exporter of skilled labor-intensive products attributable to the country’s large pool of highly skilled labor. However, Rybczynski (1955) observed that under certain conditions, the development of one product can retard the growth of another, leading to uneven development. When the Dutch, after whom Dutch disease is named, discovered large natural gas reserves in the in the North Sea in 1959, Holland experienced a significant production decrease in its manufacturing sector. Drilling and exporting the resource caused varying degrees of positive and negative consequences. As the Economist

3 For a substantial discussion on international trade, factor production, and the Heckscher-Ohlin Model see Baldwin (2008).

noticed, the country experienced “external health and internal ailment”: the current account remained with a surplus, but the productive domestic sectors suffered (“The Dutch Disease” 1977). Economists building upon Rybczynski’s research found that the factors of production went from being invested in the manufacturing sector to being funneled into the lucrative production of natural gas (Kapler 2006). This factor of production movement began to lead to the de-industrialization of the Netherlands.

In addition to the movement of the factors of production, a country’s currency plays a pivotal role in potential Dutch disease. A country’s value, as with that of any commodity on the open market, is susceptible to appreciations and depreciations depending on its international demand. When a country exports a commodity in high demand, such as oil or natural gas, the country’s currency inevitably becomes in demand. This often leads to an overly appreciated currency, causing the country’s other internationally traded products such as textiles and manufactured goods to be overpriced and, thus, not competitive. What is more, and overvalued currency also leads to higher inflation, something that many large oil producers such as Venezuela and Nigeria have historically suffered.

Dutch disease is a serious threat for Bolivia. First, albeit Bolivia is initially counting on direct foreign investment (FDI), governmental and domestic investment is essential for the development and exportation of the resource. President Morales sees a pivotal role for the state in the development and exportation of the country’s natural reserves. Therefore, considerable public and private Bolivian resources will be funneled into the project. Bolivian policy makers must make sure that the movement of production factors does not significantly decrease the production of competing economic sectors.

More importantly, if lithium becomes a highly demanded commodity as the international business community predicts, the Bolivian government must be prepared to address the inevitable problem of currency overvaluation. The concomitant appreciation of the boliviano can have serious negative repercussions throughout the economy. First, it can lead to inflation. The current government has managed to keep inflation low relative to the world domestic economies. At the end of 2010, the country closed the year with % inflation according to the Central Bank of Bolivia. However, the international demand of lithium can undermine Bolivia’s success and push inflation upward, hurting the poorest in the nation. Venezuela, the world’s fifth largest exporter of oil, closed 2010 with one of the highest levels of inflation, which many trade economists would predict.

An overvalued exchange rate can also severely undermine other export sectors. As mentioned earlier, a highly valued currency renders exports less competitive by making them more expensive relative to competing exports from countries that do not have overvalued currencies. Although lithium turns into a successful exportation, its demand can push up the boliviano's value. An overvalued exchange rate has proved to have disastrous effects. During the final years of the convertibility (1991 to 2002), which entailed a one-on-one one-way peg of the Argentine peso with the US dollar, Argentina suffered severe economic problems in the form of high unemployment, weak export-led growth, and imbalances in the country's current account, leading to dire economic consequences (Ripley 2010b).

DEPENDENCY

Another caveat is dependency. With the inevitable exportation of lithium, the Bolivian economy risks dependency on the resource. Scholars have written extensively on the inevitable economic problems of mono-agricultural and mineral production. El Salvador's dependency on the exportation of indigo, a blue dye, is an often-cited example (Montgomery 1982; Burns 1984). After a synthetic dye was created in Germany, the crop was no longer exportable or, therefore, profitable. This type of dependency is particularly important for current Bolivian policy makers to avoid. The country's economy previously suffered from dependency on tin and other resources. Throughout Bolivia's history, it has experienced booms and busts in commodity prices. The Bolivian economy was heavily dependent on its prime commodity, tin. For decades in the last century, tin revenues were responsible for roughly 70% of Bolivia's exports ("Tin Soldiers" 1999). However, when the world price of tin halved overnight, the economy went virtually bankrupt. By May of 1986, the price fell from \$8,000 per ton to \$3,400 (Ibid).

Although one would think we have learned our lessons on commodity dependency, a large number of world economies remain dependent on primary commodities. Venezuela, another Andean country, still remains heavily dependent on oil revenues despite efforts to diversify the economy. Oil is still responsible for 80% of Venezuela's export revenue, one third of its gross domestic product (GDP), and nearly half the investment of the central government (Alvarez and Hanson 2009). If Bolivia aims to be the "Saudi Arabia" of lithium, it runs the real risk of continuing its commodity dependency.

DEMOCRACY

Finally, in addition to dependency, the resource curse could undermine democratic rule. Essentially, the inflow of capital from the exportation of natural resources can be used to buy off governmental bureaucrats and chip away at democratic institutions. The resource curse has been applied to explain the sustenance of some of the world's most brutal dictators such as Nigerian dictator General Sani Abacha, who was able to maintain power through authoritarian rule, but also embezzle roughly \$3 billion from public coffers ("National Integrity" 2004). However, the resource curse, studies have found, can be controlled and turned into benefits. Robinson et al. (2006) find that the key to avoiding this curse lies in strong institutions. They find that countries with institutions that create political competence, efficiency, and accountability are more likely to benefit from resource exportation than those countries that do not.

This point is of particular relevance not only for the above mentioned emphasis on institutional building, but also the rising Latin American left. Bolivian President Evo Morales could increase his popularity with the benefits from lithium, helping the pink revolutions that are taking place in the hemisphere. However, since Bolivia does not rely on strong institutions, defined as promoting transparency, accountability, and competence, there could be a temptation to use the influx of new capital to undermine democratic rule. Latin America has suffered from this tendency recently, with a number of leftist governments, specifically Daniel Ortega in Nicaragua and Hugo Chavez in Venezuela, changing the national constitutions and running indefinitely in future elections, reversing the one-only-term laws. Although analyzing the elections and popularity of these leftist leaders is beyond the scope of this paper, the tendency of leaders in developing and impoverished countries to take on a messianic leadership role and becoming "president for life" still remains a potential problem. Scholars need to further explore this political phenomenon in the future.

BENEFITTING FROM LITHIUM DEVELOPMENT: INSTITUTIONS

Despite the caveats related to lithium development, with the right policies, Bolivia can benefit. To begin with, the government can draw upon lessons

from other Latin American countries. The first lesson concerns domestic institutions. The Bolivian federal government needs to strengthen its institutional capacity. Studies on developing countries suggest that weak institutional oversight can lead to increased corruption and decreased efficiency (Vertucio and Lalunio 2001; Ripley 2010a). After creating the Commission on Audit, however, the Philippines government improved its oversight over financial transactions, increasing efficiency and decreasing corruption (Gonzalez and Mendoza 2004). Under the Cooper Department, neighboring Chile also invested in regulatory oversight to monitor the flow of investment and copper in order to discourage corruption. Bolivia needs to increase its institutional capacity in order to monitor the flow of capital into lithium production. Studies do suggest that YPFB has suffered from various forms of corruption, before as well as after nationalization (“Ex titular de YPFB” 2009). In fact, corruption and the lack of oversight was a principle reason President Morales pushed for nationalization in the first place. Not addressing institutional capacity will create a vicious cycle of FDI corruption.

POSITIVE EXTERNALITIES

Moreover, there must be an emphasis on investing in secondary operations in order to generate positive externalities. Positive externalities refer to the spin-off benefits of economic activities. For example, technological development has potential positive externalities: spin-off industries; investment in higher education and technological skills; complementary production; and increased purchasing power due to the higher salaries high-tech jobs generate. With the exportation of cooper, Chile invested in spin-off industries such as electrolytic refining. This is important because refineries create jobs, require educated workers, and rely on research and development (R&D). Positive externalities that stem from refineries and other related industries, it is imperative to note, cannot not be underestimated. A small refinery, named Coryton, in Essex, Great Britain, for instance, creates over one thousand direct positions, not including indirect employment. What is more, many positions require well-paying skilled labor, such as chemical engineers (“Inside an Industry” 2006).

The lack of positive externalities, on the other hand, can have disastrous economic and social effects. Nigeria epitomizes this problem. Being the largest oil-producing country in Africa, one would think Nigeria would benefit economically. Ironically the country has not. Due to a lack of

refinery capabilities and oil-related infrastructure, Nigeria is doomed to export only crude oil. This means that it not only has to import the expensive processed oil, but the country does not benefit from high-paying jobs, spin-off industries, among other positive externalities. “Lack of refining capacity is a major obstacle to lowering fuel prices”, writes Dino Mahtani, “something that many in oil-rich Nigeria find objectionable”. In fact, in addition to having to subsidize gas for domestic consumers, Nigeria found itself in a state of chaos when oil prices began to increase in 2003, causing long lines at gas stations throughout the country (Peel 2003).

Bolivia does not want to go in this direction. With natural gas, Bolivia has not reaped many positive externalities. The development of lithium, however, could be different. This is recognized by Alvaro Ríos Roca, former Bolivian Minister of Hydrocarbons. “In contrast with natural gas, if Bolivia plans its objectives well, it will be possible to develop a chain of added valor”, Roca (2009) stressed in an interview with Nicaragua’s principal economic journal *El Observador*, “that allows us to not only extract lithium as a primary material, but also generate a chain of value that designs and produces car batteries, cellular phones, etc., etc. en Bolivian soil”. With the aforementioned technological support by South Korean experts, Bolivia can develop a chain of added valor. In fact, the National Bureau of Evaporative Resources (GNRE), a Bolivian agency created to facilitate the infrastructural and processing development of the country’s mineral wealth, is strongly involved in overseeing not only the education of the country’s engineers, chemists, and technicians, but also the local industrial development to process the raw materials within Bolivia.⁴ Although this is a step in the right direction, in order to extract the most benefit from lithium, the country must resist any temptations or incentives to process raw materials in second or third countries that already have the educational, infrastructural, and technological capacities.

SOVEREIGN WEALTH FUNDS

Moreover, the Bolivian government needs to create an efficient Sovereign Wealth Fund (SWF). A SWF is essentially a governmental fund that manages foreign exchange earnings that are independent from foreign reserves.

4 For the GNRE’s projects and involvement, see its website at: http://www.evaporiticos.gob.bo/?page_id=124.

They have grown in capital, market influence, geographical scope, and use in the last decades. With portfolios worth trillions of dollars, the International Monetary Fund (2008) estimates that by 2013, SWF⁵ capital could reach anywhere between \$6 and \$10 trillion. Governments can funnel this capital, the IMF (2008) further points out, into five different types of funds: Pension reserves, developmental funds, reserve investment corporations, savings funds, and stabilization funds. Regardless of their specific use, SWFs have become an instrumental source of revenue and policy upon which governments in developing countries have relied. “[T]he growth of SWFs reflects a dramatic redistribution of international wealth from traditional industrial countries like the United States”, points out Edwin Truman (2008), economist for the Peterson Institute for International Economics, “to countries that historically have not been major players in international finance” (3).

For the specific case of Bolivia and Latin America in general, it is important to stress that a SWF has a particular strategy, usually related to long-term planning and growth. Chile, for example, counts on the Copper Stabilization Fund for counter-cyclical policies. Created in 1985, the goal of the fund is to implement Keynesian economic policies by injecting the economy with capital in order to compensate for market failures or a decrease in international commodity prices. Chile also relies on the Pension Reserve Fund, which was created in 2006 for retirees.⁵ Venezuela has recently created the National Development Fund for development projects and even Alaska relies on the Alaska Permanent Fund, which was created as far back as 1976. The fund has become so instrumental for the state’s economy that politicians wrote it into the state constitution.

Although Bolivia has no such entity currently, a SWF could be a vital policy tool for the government. A SWF can assist governments in a number of creative ways, depending on the specific need of the time. Albeit with the growth of SWFs economists have tried to measure their successes and efficiencies (see Truman 2008), policies are contingent on particular needs given a country’s specific domestic issues of a particular time. For example, a country with low inflation yet high unemployment and underemployment would want an expansionary policy whereas a country suffering from hyperinflation would not. For Bolivia, addressing the uneven

5 It is important to note that the Cooper Stabilization Fund was replaced with the Economic and Social Responsibility Fund in 2007. For more, see “Pension Reserve and Social and Economic Stabilization Fund” (2009) at http://www.hacienda.gov.cl/english/fondos_soberanos/fondo_de_estabilizacion_economica_y_social.php.

development between the rich Bolivians in the provincial capitals, particularly Santa Cruz, and the impoverished areas, most of which are populated by Bolivians of indigenous descent, would be a consideration. Unlike other countries with SWFs, Bolivia has a significant, often marginalized, population of indigenous citizens. A SWF could address the historical economic and social disparities they endure by investing in education, infrastructure, and local production. In fact, a SWF could be utilized as a low-income development bank for local businesses. Based on the model laid out by the Grameen Bank, a SWF could offer technological support and micro financing to those who have historically been isolated from the Bolivian social and economic power structures.⁶ A SWF can also help the country to achieve more economic independence from international economic institutions such as the IMF and World Bank, on which many developing countries rely for external funding.

Most importantly, a SWF can help undermine the effects that stem from Dutch disease. If the foreign and local investment end up funneled into lithium production, the SWF can rely upon revenues from the exportation of lithium-related products to support alternative industries and economic development strategies. There would be revenue for, say, agricultural production in the rural countryside and small-business development in the urban areas throughout the country. By supporting economic sectors outside of lithium development, this policy could also help resist the risk of dependency by diversifying the economy. What is more, a SWF can help decrease the value of the Bolivian currency in case lithium exportation causes distorted exchange rates in the form of currency appreciation. Hard local currency can be used to sterilize the economy by expanding the nation's money supply. This helps to devalue the local currency by decreasing its demand. Although many of the sovereign wealth fund policies mentioned above can have both positive and negative affects (for example, expanding the money supply can lead to inflation), SWFs will increase the amount of economic developmental tools Bolivian policy makers have at their disposal. These policy tools will help extract the optimal benefits from the vast lithium reserves.

NEGOTIATING LEVERAGE

The ability to benefit from lithium also depends on the government's

6 For an in-depth understanding of the Grameen Bank, see <http://www.grameenfoundation.org/what-we-do>.

leverage in negotiating favorable contracts. Bolivia does have certain advantages. First, the government has the opportunity to create competition among firms, which it may use as leverage to secure more favorable terms, as suggested by Jagdish Bhagwati (2007). There are signs that this may be the case in the government's decision to enter agreements with South Korea. The Korean government has already offered low-interest 40-year loans to the country at 0.1% interest with a 5-year grace period ("Cuatro puentes" 2010). These conditions are much more favorable than those offered in the international capital markets. More importantly, Bolivia appears to have a significant advantage in the negotiating process that is not emphasized in traditional or two-tier bargaining theory literature. The former emphasizes certain variables and potential benefits involved in the negotiation of a multinational corporation's (MNC) entry into a developing country, such as technological transference, job creation, and even the confidence of U.S.-educated elites in negotiating better deals with MNCs, whereas the latter stresses the role and regulation of outside entities such as the IMF and World Trade Organization (WTO) (Ramamurti 2001). These models, however, are inattentive to resource scarcity and the relatively new demands of center-left governments, such as the one in Bolivia, to earn more royalties from their precious resources. Lithium is not only a scarce and demanded resource, but Bolivia also contains more than half the world's deposits. This means the country should use this leverage over MNCs and other interested parties.

One significant and beneficial way to utilize the country's leverage is reversing the repatriation of funds and free flow of capital. Trade agreements such as the Central American Free Trade Agreement (CAFTA) and North American Free Trade Agreement (NAFTA) include these provisions, which stipulate that a multi-national corporation can repatriate profits back to the country of origin without investing in the host country. Although pro-globalization enthusiasts such as Jagdish Bagwhati and John Williamsons, the latter who coined the term "Washington Consensus", have protested against the free flow of capital, these policies have become prevalent in North-South economic relations. Center-left governments, however, have leveraged their resources to negotiate more favorable deals. The Venezuelan government has successfully negotiated a deal with Vancouver-based mining company Rusoro for the exploitation of gold and diamonds in the state of Bolivar. Not only does the government gain a sizable share at 50%, but the company is required to invest in the local communities and projects.⁷

CONCLUSION

The goal of this paper was to offer an exploratory study into the development and exportation of Bolivian lithium reserves. Although it is too early to offer predictions, this paper provides an overview of important areas that need exploration. More specifically, it endeavors to address: 1) the specific challenges Bolivia as an individual faces; 2) the potential pitfalls lithium development can cause in the country's economic and political institutions; and, most importantly, 3) specific policies Bolivia can undertake in order to successfully meet these challenges and avoid the potential problems lithium development may incur. The contribution here, therefore, is to offer prescriptive guidelines future academic and policy research can focus upon and measure once large-scale production gets underway. Moreover, this study aims to initiate a dialogue not only with students of Latin American studies, but also policy makers in both Bolivia and South Korea. Bolivia can benefit from its natural resources and Korean investment just as easily as it could incur irreparable harm and damage. The main points laid out above in this paper are crucial for initiating concrete developmental plans for the future use of one of the most potentially sought after resources in the world.

7 For updated information, see the Rusoro website which is dedicated to mining in Venezuela.
<http://www.rusoro.com/s/Home.asp>

REFERENCES

- Alvarez, C.J. and S. Hanson(2009), "Venezuela's Oil-based Economy," *Council on Foreign Relations*, [accessed June 7, 2011], http://www.cfr.org/economics/venezuelas-oil-based-economy/p120_89
- Baldwin, R.E.(2008), *The Development and Testing of Heckscher-Ohlin Trade Models: A Review*, Cambridge, MA: MIT Press.
- Bhagwati, J.(2007), "Why Multinationals Help Reduce Poverty," *The World Economy*, Vol. 30, No. 2, pp. 211-228.
- Burns, B.(1984), "The Modernization of Underdevelopment: El Salvador, 1858-1931," *The Journal of Developing Areas*, Vol. 18, No. 3, pp. 293-316.
- Dyson, J.(2012), "Bolivian Lithium Production Moves Forward on South Korea jv," *Industrial Minerals*, 26 July, [accessed September 30, 2012], <http://www.indmin.com/Article/3066997/Bolivian-lithium-production-moves-forward-on-South-Korea-jv.html?ArticleID=3066997>
- ECLAC(2011), *Foreign direct Investment in Latin America and the Caribbean 2010*, The United Nations ECLAC, Santiago, Chile: Unidad de Distribución de la CEPAL.
- Eun-joo, L.(2010), "Korea and Bolivia Sign Deal on Precious Lithium," *Joongang Daily*, 27 August, [accessed March 4, 2011], <http://www.seriworld.org/06/wldNewsV.html?mn=D&mncd=0406&key=20100827000007§no=>
- Ferchen, M.(2012), "China's Latin American Interests," *Carnegie Endowment for International Peace*, April 6, <http://carnegieendowment.org/2012/04/06/china-s-latin-american-interests/a7a#4>
- Gallagher, K.P., A. Irwin, and K. Koleski(2012), "The New Banks in Town: Chinese Finance in Latin America," *Inter-American Dialogue*, [accessed November 6, 2011], <http://ase.tufts.edu/gdae/Pubs/rp/GallagherChineseFinanceLatinAmericaBrief.pdf>
- Gallagher, K.P. and R. Porzecanski(2010), *The Dragon in the Room: China and the Future of Latin American Industrialization*, Stanford, California: Stanford University Press.
- Gerring, J.(2004), "What Is a Case Study and What Is It Good for?," *The American Political Science Review*, Vol. 98, No. 2, pp. 341-354.
- Gonzalez, E.T. and M.L. Mendoza(2004), "Anticorruption Initiatives in the Philippines: Breakthroughs, Limits, and Challenges," in V. Bhargava and E. Bolongaita(eds.), *Challenging Corruption in Asia: Case Studies and a Framework for Action*, Washington, DC: The World Bank, pp. 77-134.
- Haddock, E.(2010), "Salt 'n Power: A First Look at the Lithium Flats of Bolivia [Slide Show]," *Scientific American*, 18 March.
- Hearn, A.H. and J.L. León Manríquez(eds.)(2011), *China Engages Latin America: Tracing the Trajectory*, Boulder, Co: Lynne Rienner Publishers.
- Humphreys, M., J. Sachs and J. Stiglitz(eds.)(2007), *Escaping the Resource Curse*, New York: Columbia University Press.

- Imaña, G.(2012), “Procesarán 500 toneladas de litio por año,” *La Prensa* [Bolivia], 28 March, [accessed March 29, 2012], http://www.laprensa.com.bo/diario/actualidad/economia/20120328/procesaran-500-toneladas-de-litio-por-ano_22181_35543.html
- Kahya, D.(2006), “Struggle for Land in Bolivia,” *BBC News*, 14 September, [accessed March 12, 2010], <http://news.bbc.co.uk/2/hi/americas/5303280.stm>
- Kapler, J.(2006), Course Lecture *ECON*335 International Finance*, Boston, Mass.: University of Mass/Boston.
- López, J.F.(2012), “Korea’s Engagement in Latin America,” *Korea Economic Institute*, March, Washington D.C., pp. 1-4.
- Mesquita Moreira, M.(2011), “Korea: Breaking the Mold of the Asia-Latin America Relationship,” Inter-American Development Bank, Washington, D.C.
- Montgomery, T.S.(1982), *Revolution in El Salvador: Origins and Evolutions*, Boulder, Co: Westview.
- Peel, M.(2003), “Petrol Queues in Nigeria as Prices Set to Rise,” *Financial Times*, [Section: Middle East and Africa], October 1, p. 10.
- Pugel, T.A.(2004), *International Economics*, 12th ed, New York, NY: McGraw Hill/Irwin.
- Ramamurti, R.(2001), “The Obsolescing Bargaining Model? MNC-Host Developing Country Relations Revisited,” *Journal of International Business Studies*, Vol. 32, No. 1, pp. 23-39.
- Ríos R.A.(2009), “Litio boliviano: Un mar de oportunidades,” *El Observador Económico*, 23 January, [accessed January 30, 2009], <http://www.elobservadoreconomico.com/articulo/709>
- Ripley, C.(2010a), “The Privatization of Nicaragua’s Energy Sector: Market Imperfections and Popular Discontent,” *Latin American Policy*, Vol. 1, No. 1, pp. 114-132.
- _____(2010b), “Exchange Rate Policy Options for South America: Making the Case for Flexibility,” *Latin America Policy*, Vol. 1, No. 2, pp. 244-263.
- Robinson, J.A., R. Torvik, and T. Verdier(2006), “Political Foundations of the Resource Curse,” *Journal of Development Economics*, Vol. 79, No. 2, pp. 447-468.
- Rodrik, D.(1999), *The New Global Economy and Developing Countries: Making Openness Work*, Policy Essay No. 24, Baltimore, Maryland: John Hopkins University Press.
- _____(2007a), *One Economics Many Recipes: Globalization, Institutions, and Economic Growth*, New Jersey: Princeton University Press.
- _____(2007b), “Industrial Development: Some Stylized Facts and Policy Directions,” *Industrial Development for the 21st Century: Sustainable Development Perspectives*, New York: The United Nations, pp. 7-28.
- Rybczynski, T.M.(1955), “Factor Endowments and Relative Commodity Prices,” *Economica*, Vol. 22, pp. 336-341.
- Santiso, J.(2007), *The Visible Hand of China in Latin America*, Paris, France: OECD.

- Shultz, J. and M. Draper(eds.)(2008), *Dignity and Defiance: Stories from Bolivia's Challenge to Globalization*, Berkeley: University of California Press.
- Stiglitz, J.E.(2002), *Globalization and Its Discontents*, New York, NY: W.W. Norton and Company, Inc.
- Transparency International(2004), "Transparency International National Integrity Systems Country Study Report Nigeria," p. 13, [accessed January 3, 2010], <http://www.transparency.org/content/download/1685/8494/file/nigeria.pdf>
- Truman, E.M.(2008), "A Blueprint for Sovereign Wealth Fund Best Practices," *Peterson Institute for International Economics*, April, pp. 1-21.
- Van Cott, D.L.(2008), *Radical Democracy in the Andes*, Cambridge, UK: Cambridge University Press.
- Vargas, M.V.(2007), "Bolivia's New Contract Terms," *Oil, Gas & Energy Law Intelligence*, October, pp. 1-9.
- Virtucio, M.A.G. and M.P. Lalunio(2001), "Tender Mercies: Contracts, Concessions and Privatization," *Public Policy*, Vol. 5, No. 1, pp. 73-107.
- Woong An, J. et al.(2012), "Recovery of Lithium from Uyuni Salar Brine," *Hydrometallurgy*, Vol. 117-118, pp. 64-70.
- World Bank(2009a), *A World Bank Country Study: Strengthening Bolivian Competitiveness: Export Diversification and Inclusive Growth*, Washington DC: The World Bank.
- _____(2009b), *World Development Report 2009: Reshaping Economic Geography*, Washington, DC: World Bank.
- _____(2011), *World Bank Country at a Glance: Bolivia*, Washington, DC: World Bank, [accessed 3 March 2011], <http://www.worldbank.org/en/country/bolivia>
- "Bolivia Overview"(2009), UN Comtrade, [accessed April 5, 2010], <http://comtrade.un.org/pb/CountryPagesNew.aspx?y=2009>
- "CLHB será YPFB Logística S.A. y Perú pide una compensación"(2008), *La Prensa*, 6 May, [accessed May 6, 2008], http://www.laprensa.com.bo/noticias/06-05-08/06_05_08_nego1.php
- "Corruption Perceptions Index 2010 Results"(2010), *Transparency International*, [accessed February 10, 2011], http://www.transparency.org/policy_research/surveys_indices/cpi/2010/results
- "Cuatro puentes se construirán con financiamiento coreano"(2010), *La Prensa*, 29 August, [accessed August 29, 2010], http://www.laprensa.com.bo/noticias/29-8-2010/noticias/29-08-2010_31_26.php
- "External Debt Shocks, Public and Publically Guaranteed (PPG)"(2011), *The World Bank*, Washington D.C.: The World Bank, [accessed March 2, 2011], http://data.worldbank.org/in_dicator/DT.DOD.DPPG.CD
- "Ex titular de YPFB Transporte dice que firma prevé déficit de US\$10,1 millones"(2009), *La Prensa*, 8 July, [accessed July 8, 2009], http://www.laprensa.com.bo/noticias/08-0709/noticias.php?nota=08_07_

09_nego2.php

- “IMF Intensifies Work on Sovereign Wealth Funds”(2008), *IMF Survey Magazine: Policy*, 8 May, [accessed June 9, 2010], <http://www.imf.org/external/pubs/ft/survey/so/2008/pol03408a.html>
- “Inside an Industry: Coryton Oil Refinery”(2006), *Institute of Petroleum*, [accessed March 5, 2006], <http://www.energyinst.org.uk/education/coryton/notes.html>
- “La pobreza aún es alta a pesar de Renta Dignidad y Juancito Pinto”(2011), *La Prensa*, January 1, [accessed January 1, 2011], http://www.laprensa.com.bo/noticias/01-01-09/01_01_09_nego_4.php
- “Pension Reserve and Social and Economic Stabilization Fund”(2009), Ministerio de Hacienda Gobierno de Chile, [accessed June 26, 2010], <http://www.swfinstitute.org/fund/chile.php>
- “Petrobras amenaza con medidas por las refinerías”(2006), *La Prensa*, 14 September, p. 1.
- “Population Below National Poverty Line, Total, Percentage”(2010), *United Nations: Millennium Development Goals Database*, [accessed January 14, 2011], <http://data.un.org/Data.aspx?d=MDG&f=seriesRowID%3A581#MDG>
- “The Dutch Disease”(1977), *The Economist* [London], November 26.
- “Tin Soldiers”(1999), *The Economist* [London], January 9, p. 32.
- “Tres decretos que favorecen a la exportación boliviana”(2009), *La Prensa*, 7 August, [accessed August 7, 2009], http://www.laprensa.com.bo/noticias/08-07-09/ultimas.php?n_a_c=economia_080709_222822.inc&seccion=3&titulo=Tres_decretos_que_favorecen_a_la_exportación_boliviana

Article Received: 2012. 08. 13
Revised: 2012. 10. 29
Accepted: 2012. 11. 16