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THE MEXICAN OIL INDUSTRY: GOVERNANCE, RESOURCE AND SOCIAL CONCERNS

by

Stephen P. Sloboda

Civilian

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Contents

Abstract

Mexico was one of the world's largest oil producers in 2004. Since then, oil production has declined dramatically. There are many factors that influenced the oil industry and its decline, both natural and man-made. This paper focuses on the key influencing factors under the control of the Government of Mexico, such as governance and resource investment. Primarily, the policies that regulate the Mexican oil industry are overly restrictive which limit exploration and production, and without change will result in a significant reduction to public spending in Mexico. Lastly, the paper draws some conclusions regarding these policies and provides recommendations for long term stability and growth.

INTRODUCTION

Oil serves as a very important symbol of nationalism for Mexico and is a significant source of revenue for its government. "The oil is ours!" That was the cheer when Mexican President Lazaro Cardenas expropriated the oil industry from foreign companies in 1938.[1] A civic holiday on March 18th celebrates the historic event. Mexican leaders still use the same slogan to defend the state owned oil monopoly against foreign investment.[2]

In the following years since, the oil industry grew enormously to make Mexico the third largest producer of crude oil in the world in 2004.[3] However, beginning in 2005, oil production in Mexico began a long and steady decline.[4] Based on 2010 data, total production has dropped approximately 25% by volume measured in Barrels per Day (b/d).[5] At the current rate of decline in oil production, compounded by increasing domestic demand, Mexico could become a net oil importer within ten years.[6] Ironically, many of the factors contributing to this decline are self imposed as a result of the 1938 nationalization of the oil industry. The policies that regulate the Mexican oil industry are overly restrictive which limit exploration and production, and without change will result in a significant reduction to public spending in Mexico.

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[1] Ioan Grillo, "Opening Up Mexico's Oil to Foreigners: A First Step", TimeWorld, Oct 31, 2008, http://www.time.com/time/world/article/0,8599,1855621,00.html, (Accessed October 16, 2011)
[2] Ibid
[3] Ignacio Quesada Morales, "Pemex Business Strategy", March 2011, http://contratos.pemex.com/portal/files/content/20110308iq.pdf (Accessed October 22, 2011), 5.
[4] Ibid
[5] "Baker Institute: Mexico could become oil importer by 2020", Oil & Gas Journal ,May 16, 2011, http://www.ogj.com/articles/print/volume-109/issue-20/general-interest/baker-institute-mexico-could-become-oil-importer.html (Accessed September 16, 2011)
[6] Ibid

BACKGROUND

Oil was first discovered in Mexico in the early 1900's. During the early years of oil exploration and production, the industry was dominated by foreign companies, primarily from the United States.[7] These companies bought as much Mexican land as possible in hopes of increasing their oil production capabilities.

As a result of the Mexican Revolution, the Constitution of 1857 was re-written in 1917, incorporating many of the reforms fought for by the revolutionists. Among the key reforms was to provide greater land ownership by the population. However, Article 27 of the 1917 constitution also allowed the government to retain the "permanent and inalienable right to all subsoil resources."[8] This meant that the foreign oil companies no longer owned the rights to the oil they were producing. Although the Mexican government issued oil concessions for fifty years, this did not satisfy the foreign companies and a protracted dispute lasted for approximately 20 years.[9] In 1938, the government under President Lazaro Cardenas expropriated all oil and nationalized the industry giving Mexico a monopoly of the oil exploration, production, refining, etc.[10] That same year, Petroleos Mexicanos, or Pemex, the state owned oil company was created.[11] In 1940, a constitutional amendment banned the previously issued oil concessions thereby removing all foreign companies from the oil industry in Mexico. [12]

[7] "Mexico", Library of Congress Country Studies, http://lcweb2.loc.gov/cgi-bin/query/r?frd/cstdy:@field(DOCID+mx0072), (Accessed September 23, 2011)
[8] Ibid.
[9] Ibid.
[10] Ibid.
[11] Ibid.
[12] Ibid.

OIL EXPLORATION AND PRODUCTION

Between the 1930's and early 1970's oil production steadily increased at an average rate of 6% per year.[13] Through the 1970's various new oil discoveries across Mexico further increased production, but none compared with the reserve found in the Gulf of Mexico in 1971. Mexican fisherman Rudesindo Cantarell accidentally discovered the field named after him, in just 180 feet of water in the Bay of Campeche, approximately 50 miles off the southeastern coast of the Mexico.[14] Full scale production of this oil field began in 1979. The field had three characteristics that made oil extraction relatively easy; first the oil was located at shallow depths. The wells in this field were drilled to a depth of less than 300 feet deep, while the industry for offshore wells can be miles deep[15]; second, the oil was under unusually high pressure[16]; and third, the field was concentrated in an area of approximately 70 square miles[17]. The Cantarell oil field proved to be the third largest oil field in the world.[18] The Cantarell Oil Field produced approximately 63% of Mexico's total oil production in 2004.[19]

Unfortunately, oil production at the Cantarell Oil Field peaked at 2.14 million b/d in 2004 and has since dropped sharply.[20] In 2010, production fell to 558,000 b/d, a nearly 74%

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[13] Ibid.
[14] Jim Jubak, "The oil squeeze has just begun", MSN Money, July 17, 2007, http://articles.moneycentral.msn.com/Investing/JubaksJournal/TheOilSqueezeHasJustBegun.aspx?page=2 (Accessed October 14, 2011)
[15] Jesse Bogan, "With Easy Oil Gone, Pemex Sobers Up", Forbes, May 7, 2009, http://www.forbes.com/2009/05/07/pemex-petrobras-mexico-business-energy-oil.html (Accessed September 23, 2011)
[16] David Luhnow, "Mexico Tries to Save Big, Fading Oil Field", Rigzone, April 5, 2007, http://www.rigzone.com/news/article.asp?a_id=43560 http://www.rigzone.com/news/article.asp?a_id=43560 (Accessed October 14, 2011)
[17] Ibid
[18] Jeremy Martin "Oil in Mexico & United States Energy Security: A Tale of Symbiosis", IAGS Journal of Energy Security, 12 January, 2010, http://www.ensec.org/index.php?option=com_content&view=article&id=224:oil-mexico-us-energy-security&catid=102:issuecontent&Itemid=355 (Accessed October 14, 2011)
[19] "Mexico", U.S. Energy Information Administration, http://205.254.135.24/countries/cab/cfm?fips=MX (Accessed September 23, 2011), 3.
[20] "Mexico", U.S. Energy Information Administration, 3.

drop.[21] Production problems are not limited to the Cantarell Field, as 23 of Mexico's 32 biggest oil fields were in decline in 2009.[22] The Ku-Maloob-Zaap (KMZ) oil field is currently a large producer of oil in the Gulf of Mexico, yielding approximately 840,000 b/d in 2010.[23] However, this field requires pumping of nitrogen into the reservoir to maintain pressures sufficient for oil extraction. It is unknown how long this field will continue to produce before it begins to decline as did the Cantarell Field. At the onshore Chicontepec Field, northeast of Mexico City, there are an estimated 9 billion barrels of oil.[24] However, this oil has proved to be difficult to extract as the oil is very heavy crude in a low pressure, fractured reservoir resulting in low recovery rates.[25] The original forecast for this field was 100,000 b/d[26], but after an investment of $11B, Chicontepec has yielded just 30,000 b/d.[27]

Mexican oil production peaked at 3.9 million b/d in 2004 but, has dropped to 2.98 million b/d in 2010. [28] In 2010, Mexico dropped to the seventh largest oil producer in the world.[29] At the current rate of decline, Mexico could become a "net oil importer" within ten years without significant new oil discovery according to industry expert forecasts.[30] On the positive side, "Pemex estimates nearly 30 billion barrels of oil equivalent are waiting to be discovered in the Mexican section of the Gulf's deep waters."[31] However, even discoveries

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[21] Ibid
[22] "How Many Mexicans does it take to drill an oil well", The Economist, Oct 1, 2009, http://www.economist.com/node/14548839 (Accessed September 24, 2011)
[23] "Mexico", U.S. Energy Information Administration, 4.
[24] Andrew Smolksi, "Pemex and the long road to privatization", OilPrice.com, July 20, 2011, http://oilprice.com/Energy/Energy-General/PEMEX-and-the-long-road-to-privatization.html (Accessed September 23, 2011)
[25] "Mexico", U.S. Energy Information Administration, July 2011, 5.
[26] Manik Talwani, "The Future of Oil in Mexico, Oil and Gas in Mexico: Geology, Production Rates and Reserves", James A. Baker III Institute for Public Policy, Rice University, April 29, 2011, 20.
[27] Ibid
[28] "Baker Institute: Mexico could become oil importer by 2020", Oil & Gas Journal
[29] "Mexico", U.S. Energy Information Administration, July 2011, 1
[30] "Baker Institute: Mexico could become oil importer by 2010", Oil & Gas Journal
[31] "Mexico unveils new deepwater drilling regulations", energy-pedia news, 12 Jan 2011, http://www.energy-pedia.com/article.aspx?articleid=143683 (Accessed September 16, 2011)

made today with on-going geophysical surveys will take at least 3 to 5 years before the production of oil is realized. [32]

GOVERNANCE, RESOURCE AND SOCIAL CONCERNS

Governance Concerns:

The Constitution of 1917 does not allow foreign investment in, or any ownership of, Mexican oil. Pemex holds a constitutional monopoly for all oil exploration and production.[33] In addition, there are restrictions to granting risk type contracts, "...in which the investor gets to share the profits based on their contribution to oil discovery and production."[34] This is because when the investors share in the risk and the reward of oil discoveries, they own part of the oil, which is prohibited by the constitution. However, these are the preferred type of contracts by major oil companies, especially when oil prices are high, as the investors receive a share of the higher profits. In addition, even as part owners of the oil, the companies get to add the reserves to their books which are important for their financial statements.[35] Unlike Pemex, the national oil companies (NOCs) of other countries including Brazil, China, Cuba, Russia and Venezuela routinely enter into these types of contracts with foreign investors, either oil companies or other NOCs.[36] The constitution does allow service type contracts where foreign companies could assist Pemex in oil production for a flat fee. However, these types of contracts historically received very little interest from the foreign companies, as they

[32] Talwani, Manik. "The Future of Oil in Mexico, Oil and Gas in Mexico: Geology, Production Rates and Reserves", 9.
[33] "Mexico", Library of Congress Country Studies
[34] Sidney Weintraub, *Unequal Partners, The United States and Mexico,* (Pittsburgh: University of Pittsburgh Press, 2010), 82.
[35] Cyrus Sanati, "Mexican oil may not be worth it", CNNMoney.com, December 9, 2010 http://money.cnn.com/2010/12/09/news/international/Mexico_oil.fortune/index.htm (Accessed September 23, 2011)
[36] Weintraub, *Unequal Partners,* 83.

offered no incentives increased efficiency or production rates. Reforms are needed, but the Mexican oil policy is a very sensitive political issue.[37]

The oil reforms that were proposed by President Calderon in early 2008 met fierce opposition with months of political debate, protesters in the streets, and even lawmakers camped out in the Mexican Congress.[38] The legislation that was ultimately passed in October of that year was watered down without any major constitutional changes that would allow foreigners a share of Mexican oil.[39] The new legislation did allow Pemex to subcontract to foreign companies for limited exploration and production and pay them based on their performance.[40] Incentive fees still could not be paid nor was there any ownership of the oil.

Implementing these reforms has been very slow. A lengthy delay of almost two years resulted from a constitutional challenge by members of the Mexican Congress regarding the performance compensation reform in the legislation.[41] Crafting acceptable contract language and the bidding process by Pemex added further delays. Nearly three years after the legislation was passed, Pemex awarded its first-ever private oil field operating contracts in August 2011. Interest was high as nearly 30 companies submitted bids. Two companies, British firm Petrofac and Mexico's Administradora en Proyectos de Campos (APC), won the right to operate two and one mature oil fields respectively.[42] Instead of a paying a flat fee for

[37] Weintraub, *Unequal Partners*, 87.
[38] Ioan Grillo, "Opening Up Mexico's Oil to Foreigners: A First Step"
[39] Ibid
[40] Ibid
[41] Valera, Jose, L. and Stanger, Andrew, J., "New oil contracts not likely to help Mexico's declining oil production" , Oil and Gas Finance Journal, Jan 1, 2011, http://www.ogfj.com/index/article-display.articles.oil-gas-financial-journal.e-__p.new-oil-contracts-not-likely-to-help-mexico-s.QP129867.dcmp=rss.page=1.html
[42] Mica Rosenberg and Luis Manuel Lopez, "Update 2-Mexico's Pemex awards historic private oil contracts", Aug 18, 2011, http://us.mobile.reuters.com/article/companyNews/idUSN1E77H17R20110818?irpc=932 (Accessed October 16, 2011)

operating the oil fields, these contracts are incentive based, whereby the companies are paid a set fee for each barrel of oil produced based on their proposal to Pemex. The more barrels of oil produced from these mature wells, the more companies are paid. It's too early to determine the success of these new contracts for either the operators or Pemex, as they were just awarded two months ago. Outside interest is high and additional incentive based contracts are expected from Pemex. However, the next Mexican presidential election may determine the level of outside involvement in Mexican oil.

The Mexican presidential election will be held in 2012. The issue of the nationalized oil industry will very likely be a key partisan issue for debate. President Calderon's National Action Party (PAN) will likely continue to favor reforms to the oil policy. Unfortunately, at the present time there appears to be a great deal of dissatisfaction with the PAN, due to lack of progress in social reforms for the poor, as well as the increasing presence and violence of the drug cartels. Both the Institutional Revolutionary Party (PRI) and the Party of the Democratic Republic (PRD) opposed Calderon's proposed oil reforms. The most vocal, the PRI, appears to be gaining popular support from the Mexican people. How the election will affect the current oil policy, or potentially impact a constitutional amendment is unknown.

Resource Concerns:

Greater capital investment in Pemex is needed to fund new oil exploration and production and improvements to existing infrastructure to reverse the decline in oil production. Historically, Pemex and the Mexican government appeared content with generating easy oil export revenues from their existing reserves and ignored any long term strategy for the exploration of new fields. Capital expenditures in Pemex were limited to what was required to maintain the current levels of oil production and exports. At its peak in

oil production in 2004, Pemex's total capital expenditure budget was $10.9B, of which $2.1B, or approximately 19.3%, was directed to exploration and production (E+P).[43] Over the next few years, total capital investments increased by a little more than 40%, but the amount of E+P investment actually decreased to as low as 9% ($1.4B) in 2007 while oil production had already started to decline.[44] Pemex and the Mexican government recognized the need for greater capital expenditure and increased its total and E+P budgets during 2008-2009 to an average of $18.3B and $2.4B (13.1% of total), respectively.[45] Surprisingly, the E+P budget increased to just slight more than the 2004 budget amount. As oil production continued to fall, Pemex and the Mexican government finally recognized the magnitude of the investment required to reverse the decline and shifted its allocation strategy. In 2010 and 2011, total investment budgets increased to $20.8B and $22.2B, while the E+P budgets jumped dramatically to $17.4B (83.7% of total) and $18.8B (84.7%) respectively.[46]

President Calderon proposed a fiscal year 2012 investment budget for Pemex of $24.1B, an increase of 5 percent from 2011, but still 13 percent lower than the $27.7B budget requested in Pemex's 2012-2016 investment plans.[47] As the exploration and production of new oil reserves is the obvious priority, the reduction in the proposed budget will likely affect needed infrastructure (e.g. refineries and pipelines) improvements. Unfortunately, "Pemex's oil pipelines are famous leakers, with about a third of the network more than 30 years old and some pumping equipment is so antiquated that the company cannot find spare

[43] Ignacio Quesada Morales, "Pemex Business Strategy", March 2011, 6, http://contratos.pemex.com/portal/files/content/20110308iq.pdf (Accessed October 22, 2011)
[44] Ibid., 15.
[45] Ibid.
[46] Ibid., 22
[47] "Mexico's Pemex 2012 budget lower than hoped", Sep 8, 2011, http://af.reuters.com/article/commoditiesNews/idAFN1E78727E20110908(Accessed September 16, 2011)

parts."[48] Offsetting infrastructure improvements for oil exploration is a case of "robbing Peter to pay Paul" that Pemex can ill afford. The 2012 proposal must still be approved by the Mexican Congress and is scheduled for vote no later than November 15, 2011.[49]

Despite these increases, the Mexican government needs to continue to increase investment spending in Pemex. Pemex is suffering the effects of too many years of low levels of investment in infrastructure, oil exploration and production. At issue is whether or not the government and its partisan politics will be willing to allocate more money to Pemex. The government has limited revenue, and multiple demands for public financing such as education, health care, law enforcement and the military. The 2012 budget already represents an amount equal to approximately 45% of the 2010 (last year data is available) oil revenues generated for Mexico. However, providing increased investment for both oil exploration and production and infrastructure improvements is the overall viable long term solution for Pemex.

In addition to more money, Pemex needs a greater say in the selection of their investment projects, independent of Mexican politics. Although it has its own Board of Directors, it does not "operate autonomously from the Mexican government."[50] On the contrary, it is very much controlled by the government as the Board members are also various ministry members. The Chairman of the Board is also the Secretary of Energy, and the board membership includes the Secretary of Finance and Public Credit, Undersecretary of Finance and Public Credit, Secretary of Economy, Secretary of Public Function and the Head

[48] Ognen Stojanovski, "The Void of Governance: An Assessment of Pemex's Performance and Strategy", The Program on Energy and Sustainable Development, Stanford University, April 12, 2008, 29. http://pesd.stanford.edu/publications/the_void_of_governance_an_assessment_of_pemexs_performance_and_strategy (Accessed October 22, 2011)

[49] Carlos Manuel Rodriguez, "Pemex seeks $30 Billion Investment Budget for 2012, CEO Says", , http://www.bloomberg.com/news/2011-07-07/pemex-seeks-30-billion-investment-budget-for-2012-ceo-suarez-coppel-says.html (Accessed September 23, 2011)

[50] Ognen Stojanovski, "The Void of Governance: An Assessment of Pemex's Performance and Strategy", 29.

of the President´s Office. The government, through these board members and their respective ministries' policies, essentially controls Pemex. Their belief is that the federal budget is simply too dependent on short-term oil revenues to give Pemex total autonomy. [51] The result is that Pemex management lacks the authority and ability to make decisions independent of the government. Pemex operations are in the hands of bureaucrats who appear to be more interested in short term revenues than long term investment strategies. However, only a long term view of the oil industry, coupled with technical knowledge based decision making, will best serve Pemex and Mexico.

The lack of autonomy of Pemex is most obvious when considering the capital expenditure (CAPEX) budget process. Pemex's annually proposed CAPEX budget first must be reviewed by the Energy Ministry. If approved, the proposal is passed to the Finance and Credit Ministry for their review. Once again, if approved it's included in the annual budget and sent to the Mexican Congress for vote. Following Congressional approval of the overall budget, individual projects are again reviewed by the Finance and Credit Ministry for final approval.[52] Unfortunately, with the possible exception of the Energy Ministry, most involved in this process know little about investments in oil exploration and production and the need to include such investments in their long term risk management strategy.[53]

Occasionally political motivations dictate Pemex's investment strategies. A prime example, as highlighted in a recent James A. Baker III Institute for Public Policy study, is the $9 Billion (US) investment project to build a new oil refinery in Tula, Hidalgo in response to

[51] Ibid., 8.
[52] Ibid., 35.
[53] Ibid., 7.

the increasing domestic demand for gasoline.[54] The study examined the pros and cons of building this refinery, as well as the influence of politics on the decision making process. Although, the idea of building a new refinery was first discussed in the early 1990's it was not included in either President Calderon's National Development Plan or the Energy Program for 2007-2012.[55] However, the new refinery became a partisan topic when President Calderon proposed his oil reforms legislation in 2008. From all appearances, the refinery was used as a political bargaining chip to gain support to pass the legislation.[56] Among other things, the study concluded that the decision making process was flawed and building the new refinery was not the best use of investment dollars. This conclusion is supported most strongly by the ramifications of the declining Mexican oil production. Without additional long term oil reserves the new refinery is simply not needed. This realization may have become apparent to Mexico as this refinery is not even mentioned in the Pemex Business Strategy of March 2011.

Understandably, with its' short term focus on immediate revenue, Mexico exploited the easy to obtain shallow oil of the Cantarell Field. However, this over-reliance on the quick and easy solution had the unintended consequence of stunting Pemex's development of expertise and technology to explore and develop deep water wells. The result is that while Pemex needs to locate new reserves in these challenging locations, they find themselves largely incapable of meeting the requirement. Pemex has drilled less than a dozen deep water wells and "is still on a steep learning curve."[57] Pemex engineers and geologists lack

[54] Carlos Dominguez, "The Future of Oil in Mexico, Beyond Efficiency: The Politics of Investment Policies in the Oil Industry", The James Baker III Institute for Public Policy, Rice University April 29, 2011, 10.
[55] [55] Carlos Dominguez, "The Future of Oil in Mexico, Beyond Efficiency: The Politics of Investment Policies in the Oil Industry", 17.
[56] Ibid
[57] "Mexico unveils new deepwater drilling regulations", energy-pedia news

the technical capability and experience to drill deep water wells.[58] According to industry experts, "Pemex is some 20 years away from being a contender in deep waters."[59]

Pemex has not benefitted from working with foreign companies, which could have provided much needed petroleum engineering expertise and technology. For example, BP (formerly known as British Petroleum) is one of the most experienced companies with drilling deep water wells in the world.[60] This type of assistance is needed if Pemex hopes to discover new reserves, especially in difficult locations like the deep waters of the Gulf of Mexico. In contrast, BP has partnered with Petrobras, Brazil's national oil company, and ConocoPhillips to explore and develop their Tiber Prospect in 2009.[61]

Rather than directly partnering with another firm to gain deep water expertise and technology, Pemex chose another less direct route. In August 2011, Pemex doubled its stake to almost 10% in the Spanish oil company Repsol. Pemex hopes this alliance will provide them access to Repsol's deep water oil exploration technology. However, it's not clear whether this reverse foreign investment will result in any meaningful technology transfer.[62]

Social Concerns:

Oil accounts for approximately 10% of all exports.[63] It also accounts for approximately 27% of Mexican government revenue in 2010, down from a high of 43% in 2005.[64] So, the decline in oil production previously discussed not only affects Mexico's

[58] Weintraub, *Unequal Partners*, 85.
[59] Jesse Bogan, "With Easy Oil Gone, Pemex Sobers Up"
[60] "Mexico unveils new deepwater drilling regulations", energy-pedia news
[61] Jeremy Martin "Oil in Mexico & United States Energy Security: A Tale of Symbiosis
[62] Robert Campbell, "The strange case of Pemex and Repsol", Reuters, Sep12, 2011, http://www.reuters.com/article/2011/09/12/column-oil-repsol-idUSN1E75N0I620110912 (Accessed September 24, 2011)
[63] "Sentinel Central America and Caribbean", Jane's Sentinel Country Risk Assessment, Issue No. 28-2011, 500.
[64] Jaime Rios, "The Future of Oil In Mexico, The Macroeconomic Consequences of Falling Oil Revenue in Mexico: A Looming Crisis or a Mixed Blessing?", The James Baker III Institute for Public Policy, Rice University April 29, 2011

exports but, their public finances and expenditures as well. [65] The loss of oil revenues, if not replaced, will result in a decrease in government expenditures, i.e. public spending. Mexico's fiscal policy has a balanced-budget rule which requires matching swings in revenues with parallel swings in public spending. [66] As government revenue goes up the level of public spending also rises. Conversely, as revenue goes down, by fiscal policy public spending must also decrease.

According to Dr. Paul Segal, a researcher for the James Baker III Institute, government expenditures are comprised of four categories. The largest is government consumption which includes good, services, subsidies and programs such as social security, health and education. The second is cash transfers via social assistance to reduce poverty and to encourage regular school attendance and health check-ups. The third is liabilities, including debt payments. The forth is gross capital formation for future investment purposes. These categories accounted for 55%, 24% 12% and 9% respectively of the public spending in 2005. [67]

The expenditures most vulnerable to decreases are the consumption and cash transfer categories. However, the government of Mexico has worked hard to improve education and health care, and to develop infrastructure, such as electrical power and roads, in the rural regions of the country. The gains made to date to reduce poverty and improve the standard of living would likely reverse without adequate funding. In addition, one would assume the citizens of Mexico now have expectations that these improvements will continue. Any

[65] "Sentinel Central America and Caribbean", Jane's Sentinel Country Risk Assessment
[66] "Economic Survey of Mexico, 2009", Policy Brief, Organisation for Economic Co-operation and Development, July 2009, http://www.oecd.org/dataoecd/23/28/43371045.pdf 6.
[67] Paul Segal, "The Future of Mexico, El petroleo es nuestro: The Distribution of Oil Reserves in Mexico", The James A. Baker III Institute of Public Policy, Rice University, April 29, 2011, 13.

reversal in government spending, especially in the above areas, would likely be met with pronounced public dissatisfaction.

COUNTERARGUMENT

A counterargument is that oil exploration and production in Mexico are not limited by their oil policies, nor will public spending be impacted within the next ten years. For simplicity, each one is addressed separately in the counterargument.

Oil production is not being limited by Mexico's oil policies. Oil production could increase while the existing policies based on the 1917 Mexican Constitution remain in place, without foreign investment. This is possible due to the recent significant increases in Pemex's exploration and production investment budgets. Today, there is a much greater likelihood that Pemex will discover new reserves of oil than just two years ago. As previously reported, Pemex believes there are still large oil reserves in the deep waters of the Gulf. The larger investment budgets help Pemex obtain the requisite advanced technology and expertise for deep water drilling. In addition, performance based contracts, like those just awarded due to the recent oil reforms, are ideal to incentivize increased production at existing lower yield oil fields. Sub-performing fields, such as Chicontepec and KMZ in the Gulf, are prime candidates for the next round of contract bidding. The discoveries of one or two reserves, and a boost in mature oil field production, have the potential to replace the declining production at the Cantarell Oil Field and return the exports to that or near the 2004 levels.

A second counterargument is that public spending will not be limited by the current Mexican oil policies. Obviously, if oil production stabilizes or increases as argued above,

then there would be no decrease in public spending. Conversely, assuming production continues to decline, Mexico can take actions to mitigate, or perhaps negate, the negative impact on direct public spending, especially for social programs such as social security, health care and education. Examples include; 1) gradually phasing out the government subsidies for electricity and gasoline. 2) On a short term, reduce the government's 9% expenditure on gross capital formation. 3) Replace lost oil revenue through other means, such as increased taxation.

The above counterarguments provide some solutions to the issues and concerns with the oil industry and public spending. However, they are not viable solutions for long term industry stabilization and Mexico's economic growth as they do not correct the underlying cause, Mexico's oil policies. Pemex needs money, advanced technologies and expertise for deep water oil exploration which is available through foreign investment, but prohibited by their oil policies and constitution. Without permanent changes to the policies that limit the industry, Mexico is just "band-aiding" the problem.

CONCLUSIONS AND RECOMMENDATIONS

The policies that regulate the oil industry need changes if Mexico is to achieve a long lasting reversal to the drastic decline in oil production. Mexico needs to reevaluate its longstanding ultra-nationalistic view of their oil industry. In the long term, an amendment to the constitution is needed to ensure foreign investment is allowed, no matter what political party is in power and despite public nationalistic views. However, in the absence of an amendment, Mexico should consider operating like the national oil companies (NOCs) of Brazil and Venezuela, who allow risk type and profit sharing contracts, currently prohibited

in Mexico. Mexico should consider adopting Venezuela's use of "contracts of public interest", considered legal in spite of their own constitutional prohibition on foreign investment.[68] These risk based oil exploration contracts were allowed by the Venezuelan Supreme Court because they specifically served the best interests of the all the nation's people. NOCs of other countries also routinely enter into these types of contracts with foreign investors, either oil companies or other NOCs.[69] Specifically, Brazil's Petrobras, appears to be rather successful in exploring for and developing oil reserves, especially in deep waters. Perhaps the Mexican government would be more willing to accept foreign investment if it were from another Latin American NOC, rather than from the United States due to past oil history. To facilitate Mexico's acceptance of these changes, a strategic communication campaign from the Mexican government is recommended. The campaign should provide direct and honest communication as to why change is in the long term best interests of the Mexican people and the country's objective for economic growth.

Pemex is suffering the effects of too many years of low levels of investment in both infrastructure and oil exploration and production. The Mexican government needs to continue to increase investment spending in Pemex to acquire the advanced technology and expertise to conduct the deep water oil exploration and development that is desperately needed. In addition, Pemex must be allowed to choose the investment projects that will most help reverse the decline in oil production, without undue political meddling. This means Pemex must focus on upstream projects such as exploration and development of oil reserves instead of downstream projects such as new refineries.

[68] David Mares, "The Future of Oil in Mexico, Oil Policy in Resource Nationalist States: Lessons for Mexico", James A. Baker III Institute for Public Policy, Rice University, April 29, 2011, 41.
[69] Weintraub, *Unequal Partners*, 83.

Mexico is one of the top three importers of oil into the United States.[70] As such, it's in the national interest of the U.S. to help the Mexican oil industry regain production. The U.S. should be ready to offer help, through the Department of Energy, to assist Mexico obtain the advanced technologies and expertise needed to explore deep water wells in the Gulf of Mexico.

Lastly, the Mexican government needs to consider less reliance on oil revenues to finance public spending. Given the uncertainty of future oil production and revenue, prudence dictates that Mexico start the process of discussing alternate sources of income. The obvious choices are increasing non-oil exports or raising taxes. As the Mexican economy continues to improve, especially in the non-traditional higher skilled industries, perhaps greater income from exports will be possible. However, it is likely not possible to ignore the fact that taxes could be raised as a percentage of GDP to bolster government revenues. Mexican taxes as a percentage of GDP are relatively low at just over 20%.[71] This compares favorably to that of the U.S. at just over 27% and with the average of 36% for the 30 members of the Organization for Economic Co-operation and Development.[72] Increased taxation, although unpopular, could provide an alternative to oil income without a decrease in public spending. Although, it's beyond the scope of this paper to determine the amount of increase, it's something that should be considered to offset future oil revenue decreases.

[70] Weintraub, *Unequal Partners*, 88.
[71] "The Numbers: How do U.S. taxes compare internationally", Tax Policy Center, Urban Institute and Brookings Institution, http://www.taxpolicycenter.org/briefing-book/background/numbers/international.cfm
[72] Ibid.

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