

An Economic Analysis of the Oil Trade between Mexico and the United States

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OIL TRADE BETWEEN MEXICO AND THE UNITED STATES

Abstract

Oil trade relations between the United States and Mexico originated over two centuries ago and although at times the relationship has been extremely volatile, it remains an important relationship. In order to understand the evolution of the crude oil and petroleum trade, one must return to the beginning and track the history of trade policy between the two countries. The economic and national relationship between Mexico and the United States is important simply due to logistics and the great amount of trade that takes place. The oil sector in Mexico accounts for the majority of the country's national income and beyond that, produces a picture of the future, specifically the development of the world's energy reserves and future oil dependence. One concern that remains for potential investors and partners is the uncertainty that surrounds the political environment in Mexico. Along with the uncertainty surrounding the future of the oil industry comes ambiguity in the future of relations between Mexico and the United States, which could come full-circle and affect the oil industry again. Through this paper, I attempt to trace the history of trade relations between the United States and Mexico in order to paint a picture of what the future may be in regards to oil and trade between the two countries.

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OIL TRADE BETWEEN MEXICO AND THE UNITED STATES

1. Introduction

Oil trade relations between the United States and Mexico originated over two centuries ago and although at times the relationship has been extremely volatile, it remains an important relationship. In order to understand the evolution of the crude oil and petroleum trade, one must return to the beginning and track the history of trade policy between the two countries.

In 1918, the Adams-Onís Treaty was signed, defining the border between land owned by Spain and that owned by the United States. This treaty represents one of the first interactions between the United States and the Mexican territory. As more and more Mexicans immigrated to the United States over the years, Americans began to view Mexicans as competition in the job force and a repatriation program of Mexicans and Mexican-Americans took form. This oppression did not last long; in 1933, President Franklin Roosevelt announced the commencement of the Good Neighbor Policy in an effort to amend relations with Mexico. Nevertheless, tensions continued; in 1938, Mexican President Lázaro Cárdenas nationalized the oil industry, threatening the investments of American oil companies (“Timeline: U.S.-Mexico Relations”).

In 1976, substantial oil reserves were unearthed in the Gulf of Mexico by Mexico, eventually discovered to be one of the largest reserves in the world (Timeline: U.S.-Mexico Relations). This led to significant profits for the state because oil resources were owned by the state and managed as a nationalized industry. Mexican President José López Portillo used the profits to sponsor economic expansion and social welfare. Mexico soon reduced its trade barriers, further paving the way for the North American Free Trade Agreement (NAFTA), which was signed with a pledge to eradicate tariffs over fifteen years between the United States, Canada, and Mexico (“Timeline: U.S.-Mexico Relations”). Many studies indicate the overall effect of NAFTA on both Mexico and the U.S. has been helpful, virtually tripling trade figures since ratification. U.S. exports to Mexico increased rapidly as a result of NAFTA, from \$41.6 billion in 1993 to \$240.3 billion in 2014, an increase of 478% (Villarreal). Trade between the two countries takes the form of bilateral trade in which both countries manufacture goods together, creating a vertical supply chain in which intermediate goods flow into Mexico from the United States and are subsequently exported back as finished products. The three countries engaged in NAFTA account for one-third of the world’s gross domestic product (GDP) together. In 2016, Mexico’s GDP reached \$1 trillion, roughly six percent of the U.S. GDP of \$18.69 trillion (Villarreal). Similarly, the value of exports to the United States totaled 38% of Mexico’s GDP in the same year and approximately 80% of Mexico’s exports are bound for the U.S. (Villarreal). However, these numbers only reflect current values of the U.S. dollar. In real terms, this growth amounts to very little (*Figure 2*).

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* *Figure 1:* Although on a steady upward trend, Mexico's GDP has recently decreased. Enormous growth can be observed beginning in the 1990s, when NAFTA took effect.

SOURCE: <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=MX>



* *Figure 2:* In real 2011 numbers, the GDP of Mexico has not grown that much. This is reflected in low refining processes in Mexico.

SOURCE: <https://fred.stlouisfed.org/series/RGDPNAMXA666NRUG>

The economic and national relationship between Mexico and the United States is important simply due to logistics and the great amount of trade that takes place. Mexico is the United States' third-

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largest trading partner. More specifically, Mexico is ranked third in imports to the U.S. and second in exports. Conversely, the United States is Mexico's principal trading partner by far as well as the largest source of foreign direct investment (FDI). FDI into Mexico increased from \$17.0 billion in 1994 to \$104.4 billion in 2012, while Mexican FDI into the U.S. has also spiked since NAFTA, totaling \$16.6 billion in 2015. Until the 1980s, Mexico restricted FDI in order to encourage domestic growth, but with the presence of NAFTA, many investors gained a new confidence in the country and increased the size of their investments (Villarreal).

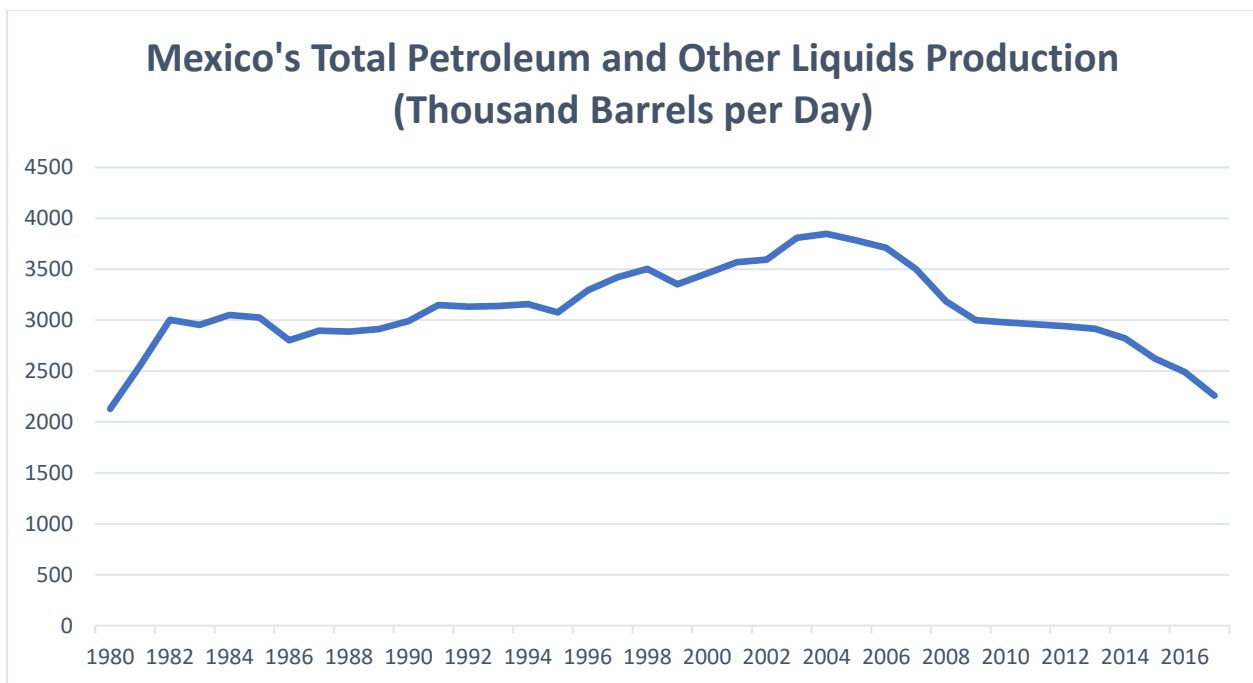
2. History of Mexico's Oil Industry

In Mexico, oil was discovered at the onset of the nineteenth century, even though the first petroleum well was drilled in 1869. In 1911, the country began to export oil for the first time. According to the constitution of 1917, the government was entitled to all subsoil resources, leading to a plethora of issues between the government and oil companies across the world. Further, in 1923, the Bucareli Agreements were signed between Mexico and the United States asserting that titles held by foreign oil companies were simply concessions by the Mexican government. President Plutarco Elías Calles claimed that these foreign companies must register their titles and limit them to a period of no more than 50 years. The oil industry was later nationalized in the late 1920s and *Petróleos Mexicanos (PEMEX)* was subsequently created as the sole oil operator in the country. Because of the constant disagreement between the United States and Mexico, at the onset of nationalization, United States oil companies put pressure on the government to enact embargos on all imports from Mexico (Merrill & Miró). These companies include Standard Oil Company of New Jersey (now ExxonMobil) and Royal Dutch Shell (Zborowski). Embargos would also deter other countries from nationalizing their industries. Although initially these embargos were sanctioned, upon President Roosevelt's Good Neighbor Policy, American oil companies were forced to accept the nationalization in Mexico. As compensation for fields in which U.S. oil companies had already invested in, the Mexican government paid out \$24 million. Overall, this nationalization held back the Mexican oil industry because it was deprived from foreign capital and expertise for almost 20 years. During these 20 years, the oil output rose an average of 6 percent annually and total production rose from 44 million barrels in 1938 to 78 million barrels in 1951. Output rose to 177 million barrels in 1971 as more and more oil was being discovered as well as exported (Merrill & Miró).

In 1976, President López Portillo used the growing amount of discovered oil reserves as insurance for large loans from other countries, eventually making up 37 percent of Mexico's foreign debt (Merrill & Miró). Most of the money went to PEMEX in order to further the oil industry, constructing and operating offshore drilling platforms, building onshore production facilities, enlarging refineries, and engaging in continued exploration. This investment allowed the country to reach 1.1 billion barrels of output by 1982 (Merrill & Miró). As a result of both increased domestic demand for petroleum and the

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decline in oil prices in the early 1990s, the oil sector's share of export revenue declined. In 1995, Mexico took the spot of sixth-largest producer of crude oil, with the oil sector generating over 10% of the nation's income (Merrill & Miró). During this time, PEMEX operated seven oil refineries, with a total capacity of producing enough to be the eleventh-largest in the world. The government continued to invest in its most profitable industry, but in the early 1990s, financial hardships prevented PEMEX from being able to keep up with increasing demand, and Mexico was forced to consume more of the crude destined for export. Mexico was also required to import oil. Also, in 1993, Mexico possessed the eighth-largest proved reserves of crude oil, about 5% of the world's total (Merrill & Miró). Most of the reserves are concentrated in the Gulf of Mexico region, containing approximately 56% of Mexico's proven reserves (Merrill & Miró). Since nationalization in 1938, the government of Mexico endured PEMEX's waste and inefficiency in production of oil because the company was responsible for so much of the country's income. Additional complications arose due to PEMEX's poor administration, low productivity, overstaffing, and corruption. The oil industry was in need of great reform, mostly because of the oil workers' union that had forced the hiring of tens of thousands of unnecessary workers (Merrill & Miró).



**Figure 3: Mexico's total petroleum and other liquids production has been on the decline recently due to Mexican refineries not functioning at full-capacity and lack of technological advancements and knowledge.*

SOURCE: <https://www.eia.gov/beta/international/rankings/#?iso=MEX&cy=1980>

In 1992, PEMEX was split into four divisions: PEMEX-Exploration and Production, PEMEX-Refining, PEMEX-Gas and Basic Petrochemicals, and PEMEX-Petrochemicals. Each subsidiary became

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a semiautonomous profit center, in control of its own budget, planning, and other business functions and dealing with the other subsidiaries in formal contracts. After these reforms took force, the company was able to save over \$300 million, in part due to reducing the labor force by almost half. The United States was allowed to drill under contract in Mexico several years later and although the Mexican government promised not to denationalize the industry in 1992, most believed this marked a step in the direction of exactly that (Merrill & Miró). Eventually in December of 2013 this promise was broken as the oil industry was officially privatized, open to private investment. PEMEX remained state-owned, and is to this day, but the company has continued to gain more autonomy throughout the process of privatization (“Country Analysis Brief: Mexico”).

Most Mexicans were still strongly against any form of privatization; nevertheless, the government achieved this conversion through rewriting the nation’s constitution, approved in 2014 by congress (Zborowski). In 2013, the EIA’s International Energy Outlook projected Mexico’s production to continue to decline, as it had been. Revised numbers in 2014, however, predicted a 75% increase, rising to 3.7 million barrels in 2040 (Cantu). The overall goal of privatization is attracting billions of dollars in investment, eventually returning production rates to 2004 levels in the next 10 years. However, in the early days of privatization, the outlook did not look good (Zborowski). During this time, virtually all upstream projects paused, with PEMEX focusing completely on complying with reforms. Luckily, Mexico was not the first country in South America to open its oil industry to private investment as Argentina and Venezuela both opened their industries in the early 1990s, followed by Bolivia in 1996 and Brazil in 1997 (Cantu). The first auction for offshore drilling licenses attracted few bidders, with only two of the five contacts winning bids. This poor turnout was credited to bad timing, with oil companies around the world scrambling to consolidate in light of historically low oil prices in 2014 and high expectations from the Mexican government on the nature of the contracts. Still the country did not give up, with President Nieto claiming: “PEMEX will have to focus on cutting expenses and reaching greater efficiencies...to take advantage of the opportunities for new partnerships.” Within the last year, interest in the region has increased and bids have gained considerably more attention. In December of 2016, eight of the ten blocks offered in the auctioning of the deep-water licenses were bid on by companies such as Total, ExxonMobil, and China Offshore Oil Corp, with bids offering up to 29.99% additional royalties (Zborowski). In the newly-competitive oil market PEMEX has found itself in, the company has truly shown its ability to adapt. The first discovery by anyone outside of PEMEX in Mexican waters took place in July of 2017 when partners Sierra Oil and Gas (of Mexico), Talos Energy (of Texas), and Premier Oil (of Britain) publicized the discovery of a reservoir comprising of up to two billion barrels of oil (Zborowski). This discovery, along with the interest and investment the discovery has brought to the region proves that the gamble to privatize the oil industry is paying off, improving the future of Mexican

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oil and gas production. Riverstone Holdings, a private equity firm based in the United States, own 45% of Talos Energy and 43% of Sierra Oil and Gas (Reed). The Mexican government has been conversing with Texas regulators as well as the Norwegian government as to their regulations in order to gain a better understanding of what the best practice is for these reforms, proving Mexico's commitment to the reforms. One question regarding the reforms, however, remains unanswered due to the lack of qualified individuals to regulate the activity (Cantu). Continuous enactment of the reforms and subsequent processes remain key to Mexico's achievement in this industry.

3. The Importance of Mexico's Oil Industry to Mexico

The oil sector in Mexico accounts for the majority of the country's national income, making up approximately one-third of the country's budget, and beyond that, produces a picture of the future, specifically the development of the world's energy reserves and future oil dependence. Most of the known reserves in Mexico are located offshore in two fields, KMZ and Cantarell. Once named the largest oil producing field in the world, Cantarell encountered difficulties in the 1990s, but recovered to reach its peak in 2004, producing around 2.1 million barrels per day (Engvall & Stojanoska). However, since then, the Energy Information Administration (EIA) has reported Mexico's crude oil production has been on the decline (Paraskova). After reaching its peak, Cantarell consistently reduced its output, producing 400,000 barrels per day less in 2012 (Engvall & Stojanoska). On the other hand, the production present in the other field, KMZ, has been on the rise since 2006 (Williams). The production from this field has displaced some of the loss met with Cantarell, except KMZ peaked at 867,000 barrels per day at the end of 2012, nowhere near Cantarell's peak of 2.1 million barrels per day only eight years earlier (Engvall & Stojanoska). The predictions do not predict confidence for the upcoming years, as in April of 2017, Mexico's oil and gas regulator alleged the country's proved hydrocarbon reserves (natural gas, crude oil, petroleum and petrochemicals combined) will have drop by 10.6 percent before April of 2018. If this trend continues, it is expected that Mexico will be out of reserves completely before the next decade comes to a close. As previously mentioned, the energy reform instigated by President Nieto in 2013 that allowed foreign companies to capitalize on the former monopoly PEMEX ought to prevent the industry from going completely under (Paraskova). Given this increased investment activity, the county is projected to generate up to 3.4 million barrels a day by 2040 according to a report issued by the International Energy Agency (Williams). The EIA claims that Mexico holds the largest amount of unexplored reserves outside of the Arctic Circle, but due to lack of technology, modernization, and funds, the untapped potential will remain unknown. PEMEX and the Mexico Institute of Petroleum signed a technology collaboration agreement in 2014, but the agreement has yet to display measurable results (Engvall & Stojanoska).

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4. Mexican Crude Oil Exploration and Production

Upon nationalization in 1938, Petróleos Mexicanos (PEMEX) grew to become one of the largest oil companies in the world and the largest in Mexico. PEMEX held and still holds a substantial amount of power (“Country Analysis Brief: Mexico”). However, in December of 2013, when the Mexican government rewrote the nation’s constitution, allowing for a more deregulated energy sector, strict control over the oil and gas industry ended and opened the door for greater foreign direct investment (Clemente). Whereas previously foreign companies were only allowed to partake in service contracts, not sharing in any profit earned, beginning in 2013, new contract models for operation were created. These models include those for licenses, production-sharing, and profit-sharing in addition to service contracts (“Country Analysis Brief: Mexico”). Formerly relying on PEMEX for 40% of the federal budget, the Mexican government has lowered its reliance to under 20% (Clemente). Further, the country’s export earnings from crude oil was previously 30%, falling to 6% by the end of 2015 (“Country Analysis Brief: Mexico”). Accordingly, PEMEX has recently been given the ability to re-invest this 20% difference in reliance into new petroleum development (Clemente). With PEMEX’s more free-reign with budgetary and administrative decisions that accompanied the privatization plan, the company now vies with other companies for bids on new projects. PEMEX is given the right of first refusal, though, on developing Mexican resources before the private bidding begins. Two years later, in 2015, the Mexican government held an auction in which onshore and offshore plots were presented to private investors for production and exploration purposes. This auction, carried out in three phases, was less than profitable, most likely due to low crude oil prices and the newness of deregulation in Mexico (“Country Analysis Brief: Mexico”). Nevertheless, with a history of monopoly control and nationalization, progress towards reform has been slow. Further, recent sunken oil prices have hindered advancement. The hope for the future is that with the re-investment and increased foreign direct investment in the oil sector, the country will be able to climb back up the ladder to one of the top crude oil producers in the world (Clemente). In 2017, a large offshore discovery was uncovered by private companies and a large onshore discovery was unearthed by PEMEX. Mexico ranked in the top three of countries in terms of largest volume of oil discovery despite global discoveries reaching an all-time low last year (Paraskova). The potential is immense as more and more midstream companies are beginning to target Mexico because of supportive local and federal governments and the relative absence of environmental opposition (Clemente).

Although potential is high, Mexico’s refineries need help, as most operate at only 66% capacity (Clemente). In 2016, PEMEX’s refinery production was at an all-time low since 1995, when the collection of data began. This is due to the natural disasters that have plagued Mexico recently in addition to the political instability and lack of leadership and technology that PEMEX has experienced since the begging of time. Low production rates are further proven by the fact that Mexico is forced to participate

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in maquiladora-style trade in which Mexico exports its own crude to the U.S. and then imports it again once the crude has been refined. Ironically, the United States has 2.5 times more people than Mexico, but 25 times the refineries (Clemente). There exist six refineries in Mexico, all operated by PEMEX. These six refineries carry a combined refining capacity of 1.54 million barrels per day, but output remains around 1.27 million barrels per day (Clemente). PEMEX controls a large system of petroleum pipeline that spans 3,000 miles and connects major production centers and domestic refineries across the country. One problem with this network, however, is the theft of oil that often results in environmental damage and in some instances, explosions. In 2014, according to PEMEX, 4,125 illegal fuel taps occurred. In the future, Mexico desires to reduce net imports of refined products by improving the refining capacity and thefts, even if it may not achieve the same level of competitive advantage that other countries experience (“Country Analysis Brief: Mexico”).

5. History of Oil and Gas Trade between Mexico and the U.S.

In the oil and gas industry, imports from Mexico have decreased since 2011, from \$39.6 billion in 2011 to \$7.6 billion in 2016, due to both the decrease in oil production and the overall drop in oil prices around the world. Mexican officials have suggested that the country will also seek to either expand NAFTA or otherwise withdrawal if negotiations between the United States and Mexico are not auspicious. When the price of oil falls, the lower revenues from export-related activities prompt foreign-exchange market volatility, devaluating the Mexican peso. Similarly, because oil revenues from PEMEX constitute one-third of Mexico’s budget, the government therefore becomes limited in gaining from economic growth. President Nieto’s administration has put energy reform at the top of Mexico’s agenda in order to invite more foreign direct investment (FDI) and produce more jobs (Villarreal).

In 2017, relations between the two countries have been somewhat in limbo while becoming more relevant than ever in light of the current tension between President Trump of the United States and President Nieto in regards to NAFTA. Beginning with Ronald Reagan in 1980, every new President of the United States has met with the correlating Mexican leader following his election win and regardless of his notorious hostility towards this neighboring country, President Trump had planned to keep this tradition alive. However, due to Trump’s calling for “the immediate construction of a physical wall on the southern border” and increased deportations in January of 2017, the relationship between the two countries suffered and the meeting was later cancelled by Mexican President Peña Nieto (Sarukhan). In May of 2017, at a symposium concerning U.S.-Mexico relations at Brookings, Gerónimo Gutiérrez, ambassador of Mexico to the United States asked questions regarding renegotiating NAFTA in a way that would be of assistance to all three parties involved while continuing to encourage security and law enforcement collaboration (Miller & Kornbluth). The Trump Administration has also discussed revisiting the agreement, proposing to either renegotiate it or withdrawal from it completely (Villarreal).

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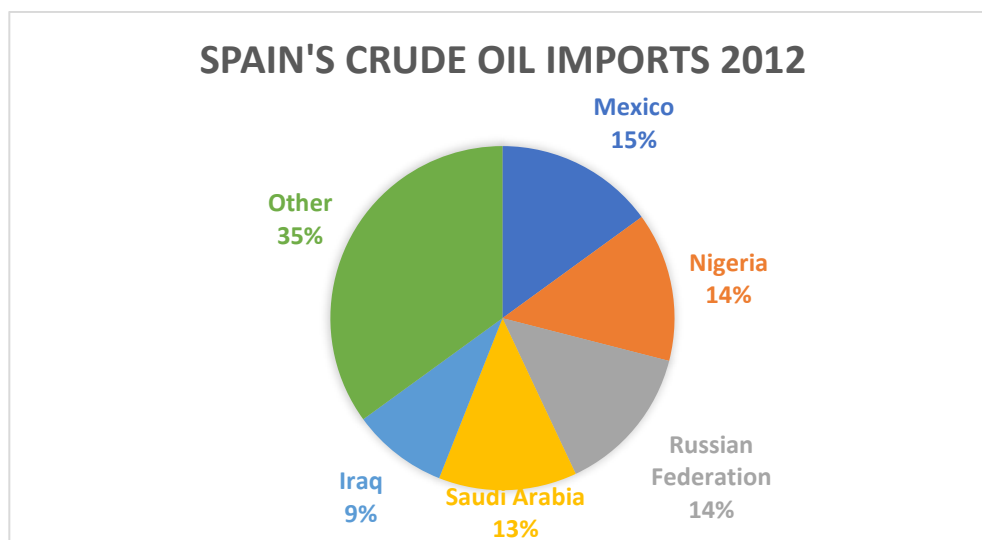
In addition to NAFTA, the United States, Mexico, and Canada have made additional efforts to increase collaboration among the countries by engaging in North American Leaders' Summits (NALS), with the goal of improving trade, facilitating innovation and developing solutions for combating climate change and clean energy, optimally cutting methane emissions from the oil and gas industry by 40-45% by 2025 (Villarreal). This could have significant consequences for the industry, as potential environmental regulations bring about increased hardship in conducting business. Overall, both the United States and Mexico heavily rely on each other for large volumes of importing and exporting. In order to maintain a prosperous relationship between the two countries, diplomacy must be agreeable. Observing the chronicle of trade dealings overtime permits us to gain better insights, paving the way to dive deeper into the oil industry and the trade that takes place.

As previously stated, Mexico is one of the United States' most important trading partners, ranking second in the export market and third in total trade (imports plus exports). Since NAFTA took effect in 1994, trade between the two countries and Canada has more than tripled, forming one of the world's largest free trade areas. The three countries combined make up about one-third of the world's total GDP. With a population of 129 million people, Mexico is the most populous Spanish speaking country in the world and the third most populous country in the Western Hemisphere. Mexico also has the second-largest economy in Latin America. In 2016, Mexico's GDP was about \$1.0 trillion, a mere 6% of U.S. GDP. Although considerably lower than that of the United States, Mexico's per capita GDP ranks high in global standards, falling within the World Bank's upper-middle income category. Because of proximity and ease of trade due to NAFTA, the Mexican economy has come to rely greatly on the United States as an outlet for exports. In 2016, 38% of Mexico's GDP consisted of exports, of which 80% were bound for the United States (Villarreal). Leading these imports are motor vehicles, motor vehicle parts, communications equipment, and oil and gas products. The key to trade between the United States and Mexico lies in the balance between Mexico's crude oil exports and subsequent imports of petroleum products. Mexican exports of crude oil to the United States increased steadily through the 1980s and 1990s, eventually peaking in 2004 at 1.6 million barrels per day ("Country Analysis Brief: Mexico"). The majority of these exports are of the heavy type, with most of the lighter crude reserved for domestic consumption (Engvall & Stojanoska). According to Mexican authorities, the country exported 1.17 million total barrels per day of crude oil in 2015 ("Country Analysis Brief: Mexico"). 688,000 of these barrels were exported to the U.S., proving that the number of barrels per day has been on the decline for the last decade ("Country Analysis Brief: Mexico"). This diminution in exports reflects Mexico's decline in production and climbing domestic fuel demand as well as rising U.S. production. Regardless of the large number of exports that Mexico continues to yield in crude oil, the country remains a net importer of petroleum products, importing 740,000 barrels per day in 2015 ("Country Analysis Brief: Mexico"). That

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same year, Mexico only exported 195,000 barrels per day of refined petroleum products, with the United States purchasing 70,000 units (“Country Analysis Brief: Mexico”). Recently, there has been growing interest in the possibility of exporting U.S. crude oil to Mexico, effectively reversing the maquiladora-style of trade conducted in the past. This idea has been triggered by reforms taking place in Mexico that allow Mexican refineries to import and process non-Mexican crude oil for the first time in decades. The expansion of exports of crude oil from the United States to Mexico could enhance relations, but Mexico’s refineries need reconfiguration before this process can commence. One study from Colombia University suggests that the blending and optimization of major crude streams should be a part of the overall plan for optimization in the refining industry (Lajous). The idea is essentially to restore the oil sector in the country, reversing the decline present in recent years (Engvall & Stojanoska).

The Mexican crude sector is not averse to considering other markets as the destination for crude oil exports. With the recent decline in exports to the United States, Asia and Europe have become viable options. Mexico has initiated a number of shipments to these countries, specifically Spain, India, Japan, and South Korea. The latter of these possessing an immense market, as South Korea imports as much as 80% of the oil it consumes. Similarly, India could also become a major source for exports with its continuous growing oil demand. Currently, India is Mexico’s third largest export market, with much potential for advancement, especially with the possibility of a collaboration between the two countries in exploration and production in the future. Lastly, there is China, who has been heavily investing in Mexico and other Latin American countries as of late (Slav).

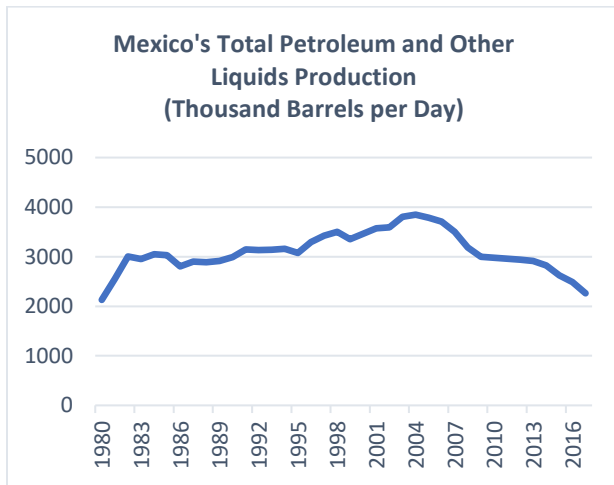


*Figure 4: Due to the United States recently cutting back in importing crude oil from Mexico, the country has been looking to other destinations in which to export Mexican crude oil. Spain is one of these countries, with Mexico accounting for 15% of total crude oil imports.

SOURCE: https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_Spain.pdf

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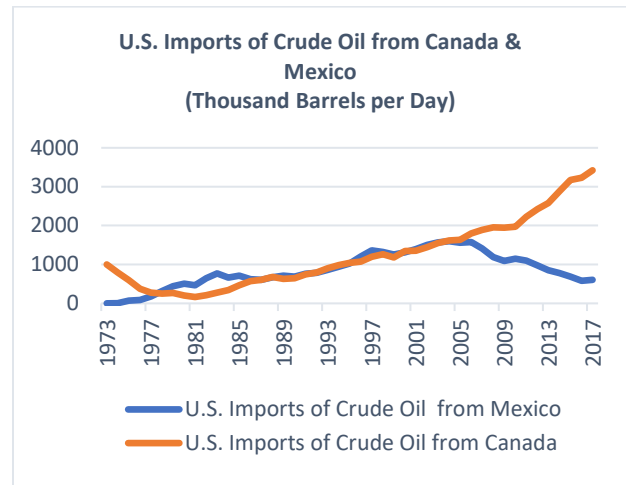
6. Economic Analysis of U.S./Mexico Crude and Petroleum Trade



*Figure 5: Mexico's total petroleum and other liquids production has been on the decline recently due to Mexican refineries not functioning at full-capacity and lack of technological advancements and knowledge.

SOURCE:

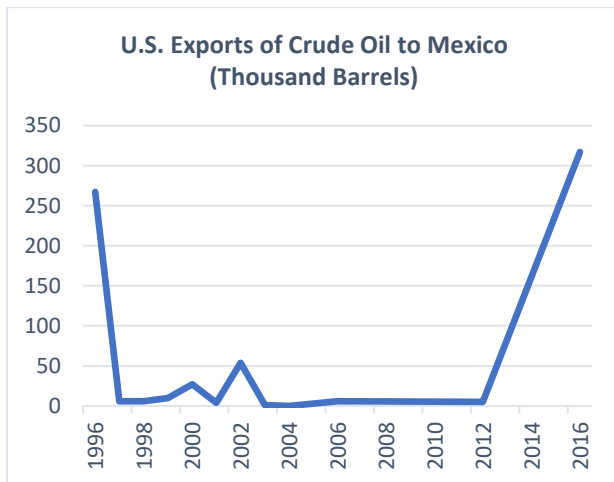
<https://www.eia.gov/beta/international/rankings/#?iso=MEX&cy=1980>



*Figure 6: This graph demonstrates U.S. imports of crude oil from Mexico and Canada together. United States' imports of crude oil from Canada have increased and imports of crude oil from Mexico have decreased.

SOURCE:

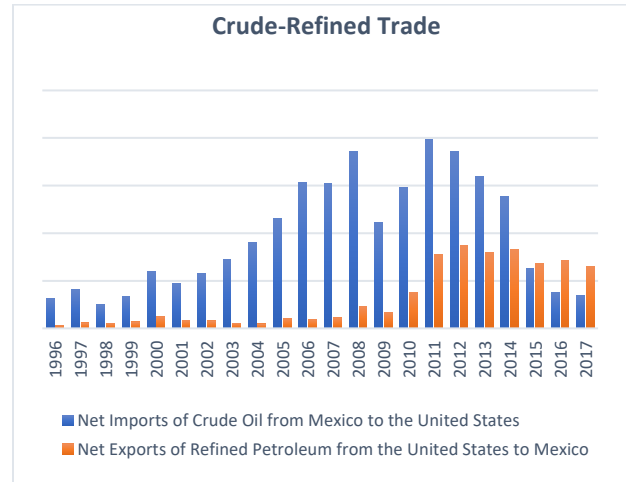
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<https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MCRIMUSMX2&f=A>



*Figure 7: The crude oil trade between the United States and Mexico has been largely one-sided, with Mexico exporting crude to the U.S. With more investment and knowledge in technology, Mexico may keep up this upward trend, providing bilateral trade in crude.

SOURCE:

<https://tonto.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MCREXMX1&f=A>



*Figure 8: Net imports of crude oil from Mexico to the United States are significantly more than the net exports of refined oil products from the U.S. to Mexico.

SOURCE:

<https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MCRIMUSMX2&f=A>

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As can be seen in *Figure 8*, the oil and petroleum trade between US and Mexico mainly assumes the pattern of the United States importing crude oil from Mexico, refining it, and exporting some of the refined petroleum back to Mexico while exporting the rest to other trade partners. Initially the value of crude imported from Mexico exceeded the value of petroleum exported to Mexico, nonetheless the magnitudes have reversed in recent years. The United States banned crude oil exports in 1975, two years after an oil embargo by OPEC banned oil sales to the U.S. (Egan). 40 years later in 2016, and with booming oil production from the United States, American crude oil can be exported to Mexico and other countries. (*Figure 5*). Even subsequent to NAFTA, the production stayed the same. Hence, the decline in the usual pattern of trade is due to three main causes. First, in recent years, Mexico has upped the refining process and has begun refining its own crude; therefore, decreasing the amount of exports of crude to the United States and subsequently decreasing the amount of imports of crude that the U.S. is receiving from Mexico (*Figure 7*). In light of this shift in trade, the United States has begun looking to other countries for crude oil imports, as the refining capabilities of the U.S. is high. Second, because NAFTA is a significant factor in trade, the United States has started looking to Canada to fill this gap (*Figure 7*). Similarly, Mexico has begun looking to other destinations to export their refined petroleum, including Spain, India, and other high-population countries. And lastly, the United States itself has started exporting crude to Mexico (*Figure 6*). So, oil and petroleum trade between the U.S. and Mexico have a more complex pattern compared to what it used to be. Looking to the future, any renegotiation in NAFTA should carefully balance the gains and losses in order to reflect the changing times and technology. Dropping out of NAFTA would have detrimental effects for not only the crude and refined oil trade, but also for every other commodity traded between the three countries of Canada, Mexico, and the United States.

7. Future of Overall Trade Balance

Based on the data and history of trade between the United States and Mexico, the future remains uncertain. Since the presidential campaign of 2016 and subsequent pledge by Donald Trump to revise NAFTA, the relationship has been strained. Further declaring the potential for withdrawal from NAFTA because of the loss of manufacturing jobs of Americans and an increased trade deficit, Trump seems to discount the complexity of the trade relationship. Another source of conflict arises from the House Republicans' proposal to tax imports into the U.S. at a rate of 20% (Domm). According to a *Forbes* article, any strain on this relationship could negatively affect not only NAFTA, but also other sectors that have nothing to do with the agreement, such as the energy sector of the United States (Institute). Maintaining a stable relationship with Mexico is of great importance. Both countries make up a significant share of the other's import and export markets, and the destruction of this balance would have lasting repercussions. For example, Mexico is emerging as one of the largest export markets for U.S. natural gas and without NAFTA that market could crumble. Pipeline capacity between Mexico and the

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United States has doubled in the last five years and is expected to increase by the same amount by the end of this year (Villarreal). In addition, more than a fourth of Mexico's electricity is powered by American energy (Krauss & Ahmed). Either way, oil and gasoline prices will be driven up, even if the alleged sharp rise in the value of the U.S. dollar mitigates some of the effects (Domm). Because of this and billions of dollars at stake, many American energy companies are crying out to Trump and his cabinet to halt the withdrawal talks, with some suggesting that Trump should work to expand it. In the end, the current agreement works for the oil and gas industry. According to Carlos Pascual, the former American ambassador to Mexico and a senior vice president for HIS Global Energy, President Trump's threats have worried Mexico and they have begun exploring other options. The chief executive of PEMEX, José Antonio González, however, is remaining optimistic about the future of trade with the United States, saying he felt confident that the trade policies would not interrupt the delicate flow between the two countries (Krauss & Ahmed).

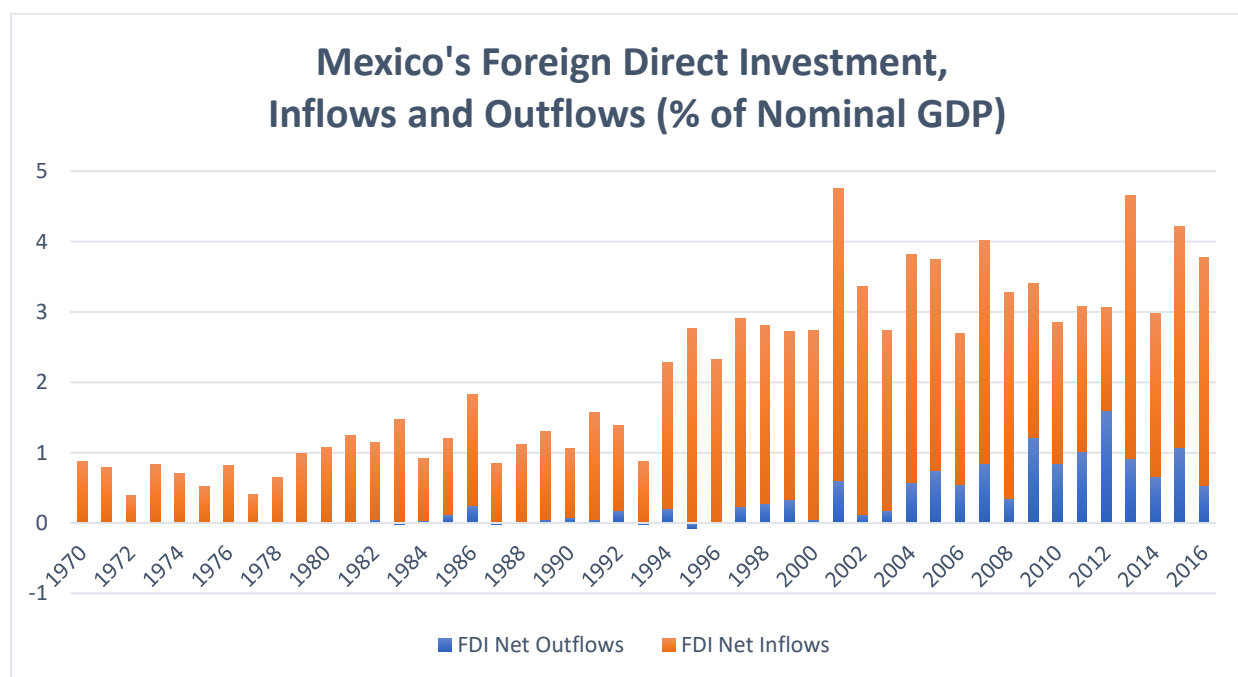
8. *Foreign Direct Investment in Mexico*

Another topic that must be discussed when speaking of the oil industry in Mexico is foreign direct investment (FDI), or lack thereof. Foreign direct investment is expressed as the transfer of assets from one country to another in order to produce additional wealth for the owner of the assets. FDI is somewhat a double-edged sword, as it is beneficial in helping underdeveloped nations modernize their structure and present new forms of technology, growing the economy and providing a larger tax base (Miranda). FDI accounts for huge growth in developing countries, and generally reduces corruption as there exist more people invested in the project that the FDI is used to create. Although FDI reached \$22.6 billion in 2014, when compared to FDI in Brazil or any other Latin American country, this number is relatively small. Since 2011, Brazil managed to obtain \$60 billion annually in FDI (Aguilera). Similarly, Chile, though boasting only a fifth of the economy of Mexico, gained \$23.3 billion in 2014 (Aguilera). Comparatively, FDI in Mexico amounts to only 1.8% of GDP, the lowest in Latin American countries that are not ostracized by the world, such as Venezuela (Aguilera). One explanation for this shockingly low amount of investment lies in the fact that Mexico has a small number of commodities that are attractive to investors. For example, investment in the mining industry in Chile amounts to 40% of FDI in Chile, while only reaching 10% in Mexico (Aguilera). Oil is the only major exporting commodity found in Mexico, and this industry, as previously explained, is only now opening up to investment. Other sectors that have potential for investment include the telecommunications industry, a tight duopoly, the retail industry, already dominated by Walmart, and banking, which is already almost completely owned by foreign investors, one of which recently divested some of its investments in 2012 to help raise capital for some of its struggling Spanish companies. After this, FDI relative to GDP reached record-low numbers, even

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below those recognized before NAFTA. Manufacturing, therefore, represents 57% of FDI in Mexico, accounting for \$12.9 billion in 2014 (Aguilera).

Reforms in the transportation and telecommunications industries have failed and the outlook for the future, even with the oil reforms, remains questionable. In transportation, the Mexican government considered building a bullet train to run between Mexico City and Queretaro, which would have been the first of such trains in Latin America. However, the bullet train received only one bid for construction from China Railway Construction Corp in cooperation with local firms. The bid was subsequently recalled due to ties between the local partner, Grupo Higa, and the Mexican president, Enrique Peña Nieto. The company has been entangled in multiple scandals involving the President's wife and finance minister. Similarly, it was hoped for that foreign television networks would contribute to reforms in the telecommunications industry in which the existing duopoly would be challenged. However, none did. Instead, two bids were received from local firms, of which one failed to raise the necessary capital to go forward. The main reason for these failures is claimed to be the liberal and open economic policies that could not make up for the lack of competition in the domestic market. In Brazil, the growth of the middle class coupled with a reduction in poverty and discrimination have been credited to the massive amount of FDI in the country. Meanwhile, Mexico's social fronts have not improved, with 45.5% of country's population living in poverty in 2012 (Aguilera).



* Figure 9: As exhibited through the graph, the level of FDI into Mexico far exceeds the amount of investment out of Mexico.

SOURCE: <https://data.worldbank.org/indicator/BM.KLT.DINV.WD.GD.ZS?locations=MX> & <https://data.worldbank.org/indicator/BX.KLT.DINV.WD.GD.ZS?locations=MX>

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According to Mexico's National Statistics Institute, in 2016, FDI from the U.S. to Mexico totaled 10.4% of total U.S. FDI in other countries ("Mexico - Foreign Investment"). The majority of this investment is received by the automotive and aerospace sectors in the northern states where most of the maquiladoras are located. The 1993 Foreign Investment Law that administers investment in Mexico is consistent with the foreign investment section of NAFTA and delivers national management, eradicates certain performance requirements for investment projects, and loosens standards for automatic approval of foreign investment. Further, the law stipulates which of the Mexican industries are available for FDI as well as which ones are not. Through ProMexico, the country's investment promotion firm, the Mexican government is attempting to better standardize programs and policies in order to support globalization. In addition, there exist many government agencies and private groups that attempt to facilitate investment ("Mexico - Foreign Investment").

ProMexico also facilitates and promotes Mexican investment outflow, providing assistance to Mexican companies participating in various business ventures abroad, such as establishing joint ventures and franchise operations. FDI outflow is not subject to any restrictions ("Mexico - Foreign Investment"). With regards to FDI into PEMEX, investment is crucial to the success of the company. This depends on Mexico's ability to extract crude from the Gulf of Mexico, which cannot transpire without the help and experience of other countries that are more developed in the oil industry.

As previously mentioned, limits exist on the sectors in the country that are eligible for foreign direct investment. These include the national electric system, coinage and printing of money, control and development of banks, and formerly, the nation's petroleum and other hydrocarbons industries ("Mexico - Foreign Investment"). Sequestering foreign companies without sufficient compensation is the biggest risk for those wishing to invest in a foreign country, to which the United States responds by establishing bilateral and even multilateral investment treaties to safeguard their investments. These treaties provide a degree of certainty to the investments and give the investor the right to enforce contractual elements should a disagreement occur. Chapter 11 of NAFTA establishes the legal framework of treatment of investors from other NAFTA countries and further declares that countries may not expropriate investments unless due process of law occurs and it is for a public purpose with just compensation (Miranda). Essentially, under NAFTA, U.S. and Canadian investors receive favored treatment ("Mexico - Foreign Investment").

One concern that remains for potential investors and partners is the uncertainty that surrounds the political environment in Mexico. President Enrique Nieto, who implemented these monumental reforms, is currently in his last term in office. The forerunner for the upcoming election this year is Andres Manuel Lopez Obrador, who has pledged to organize a survey on the energy reform and review oil contracts with international firms. Although unlikely that the reforms will be repealed, the possibility of change has a

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negative effect on possible foreign investors (Paraskova). However, with FDI continuing to be put into Mexico, the potential remains immense.

9. Analysis of the future of US-Mexico Oil and Petroleum Trade

Overall, the Mexican oil industry has been in decline in recent years due to various causes. This includes the fall in oil prices, the slump in productivity of Mexican refineries, and the harsh weather conditions that have plagued the Gulf in the last year. Similarly, with the mounting U.S. interest in the Canadian crude oil industry, Mexico has been left in the dust, so to speak. Naturally, the Mexican government as well as PEMEX must seek other markets. Bloomberg has noted the likely alternatives of Asia and Europe, as the country has recently increased exports to these sites, specifically Spain, India, Japan, and South Korea. Because South Korea must import close to 80% of the oil it needs, this market could be especially fruitful. Similarly, due to India's consistent growth in oil demand and agreeable relations with Mexico, this country could also be a major destination for oil exports (Slav).

Along with the uncertainty surrounding the future of the oil industry comes ambiguity in the future of relations between Mexico and the United States, which could come full-circle and affect the oil industry again. Throughout President Trump's campaign and into his term as president, he has campaigned for a boarder wall between the two countries, tariffs, and a revision in NAFTA, all of which took Mexican officials and citizens alike by surprise. Stripping away the politics surrounding the latest events lies an extremely important relationship, in fact, a \$400 billion relationship. This is true for both countries, as they both benefit each other. Although U.S. investment in Mexico gains considerably more attention, it is important to note that Mexican companies employ more than 123,000 people in the United States. Needless to say, it is true that NAFTA needs to be revisited in light of the developments that have taken place in the two decades since the agreement came about. That is to say, a regression to a time when NAFTA did not exist would cause a tremendous amount of difficulty. Therefore, the agreement should simply be modified in order to reflect the current time period.

Similar fears of a potential trade war between Mexico and the U.S. is not doing either country any favors, although a trade war would hurt Mexico significantly more than the U.S. According to Yale professor Jeffery Sonnenfeld, who recently assembled a group of political and business leaders from both countries, one-third of the population of Mexico is extremely bothered about this enough to send the value of the peso plummeting. This in turn causes goods entering the U.S. from Mexico to become even cheaper, only worsening the problem (Sonnenfeld).

Because oil is such a highly-regarded asset, it is imperative that the handling of such an asset be careful and well thought-out. Therefore, many foreign firms that have investments in Mexico's oil industry have an incentive to make sure that this industry succeeds. Although initial investment is high and economics of scale is needed to sustain the investment, the potential for profit is huge, especially in

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the Mexican market. Similarly, global demand remains high as every country requires oil products for some essential or strategic raw material use. Price fluctuations and scarcities of oil can relentlessly affect a country's economy, which is the source of oil's importance. The geographical concentration of oil reserves is the main explanation for why Mexico will be able to attract investment from other countries, specifically the United States and Canada. However, if the trading countries do not share information and technology in addition to financial support, the Mexican oil industry may not reap the necessary benefits from foreign collaboration (Slav). In the end, both Mexico and foreign firms wishing to enter into business have a lot to gain by entering into collaborations with each other.

10. Conclusion

Finally, the nature of the oil industry in itself cultivates environmental, social and political challenges while simultaneously offering considerable economic expansion possibilities. The partnership between Mexico and foreign firms in the industry will undoubtedly face all of these challenges and opportunities, placing considerable pressure on the management of such incidents. The first threat that firms and countries will face is the potentially damaging outcomes on the environment that exploration for oil produces, including pollution and climate change, and the possibility of oil leakage. Social challenges include basic human rights and safety for the employees of both countries. Another risk is the lack of social unity as oil revenues continue to be distributed unevenly around the world. The Mexican government may be less susceptible to this threat as the influx in FDI will lessen reliance on workers; however, as more and more investment occurs, the government may adopt policies that provide less transparency and accountability. Political challenges in the oil industry come simply from the significance of oil, which explains the nationalization of Mexico's oil industry in the past. This industry is a source of national pride and the relinquishment of nationalization signifies a loss in pride (Slav). However, Mexico is ready to be developed by foreign companies and finally benefit from FDI through transfer of technology and information as well as exposure to more advanced production methods (Sonnenfeld). All of these may even allow Mexico to export its excess petroleum production in the near future, translating into a vast economic expansions and growths.

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References

- Aguilera, Rodrigo. "Mexico's Foreign Investment Problem." *The Huffington Post*, TheHuffingtonPost.com, 7 Dec. 2017, www.huffingtonpost.com/rodrigo-aguilera/mexicos-foreign-investmen_b_7285512.html.
- Cantu, Chris. "Drilling Potential Abounds in Mexico, but so Does Uncertainty." *Drilling Contractor*, 5 Nov. 2014, www.drillingcontractor.org/drilling-potential-abounds-in-mexico-but-so-does-uncertainty-31358.
- Clemente, Jude. "Mexico's Emerging Oil Opportunities Are Great." *Forbes*, Forbes Magazine, 18 June 2017, www.forbes.com/sites/judeclemente/2017/06/18/mexicos-emerging-oil-opportunities-are-great/#77e5fbd16aa3.
- "Country Analysis Brief: Mexico." *U.S. Energy Information Administration*, 8 Dec. 2016, www.eia.gov/beta/international/analysis_includes/countries_long/Mexico/mexico.pdf.
- Domm, Patti. "North American Cross-Border Energy Trade Is Powerful despite Uncertainty of NAFTA." *CNBC*, CNBC, 8 Mar. 2017, www.cnbc.com/2017/03/06/north-american-trade-powerful-in-energy-despite-uncertainty-of-nafta.html.
- Egan, M. (2016, January 29). After 40-year ban, U.S. starts exporting crude oil. Retrieved May 8, 2018, from <http://money.cnn.com/2016/01/29/investing/us-oil-exports-begin/index.html>
- Engvall, Linn, and Alexandra Stojanoska. *Mexico's Oil Industry: A Paradigm Shift in the Making?* pp. 1–62, *Mexico's Oil Industry: A Paradigm Shift in the Making?*
- Institute, Baker. "NAFTA Negotiations: What's In It For The U.S.-Mexico Energy Trade?" *Forbes*, Forbes Magazine, 17 Nov. 2017, www.forbes.com/sites/thebakersinstitute/2017/11/17/nafta-negotiations-whats-in-it-for-the-u-s-mexico-energy-trade/#691c075e3b24.
- Krauss, Clifford, and Azam Ahmed. "Trump's Anti-Nafta Stance Is on a Collision Course with Natural Gas." *The New York Times*, The New York Times, 26 June 2017, www.nytimes.com/2017/06/26/world/americas/rick-perry-mexico-gas-energy-industry-electricity-natural-gas.html.
- Lajous, Adrian. "ISSUE BRIEF: US CRUDE OIL EXCHANGES WITH MEXICO." *Colombia | SIPA*, Center on Global Energy Policy, Feb. 2015, energypolicy.columbia.edu/sites/default/files/Issue_Brief_US_Crude_Oil_Exchanges_with_Mexico_February_2015.pdf.
- Merrill, Tim L., and Ramón Miró. "Mexico: A Country Study." *U.S. Library of Congress*, 1996, countrystudies.us/mexico/78.htm.
- "Mexico - Foreign Investment." *Mexico Country Commercial Guide*, Export.gov, 19 Sept. 2017, www.export.gov/article?id=Mexico-Openness-to-and-Restriction-on-Foreign-Investment.

OIL TRADE BETWEEN MEXICO AND THE UNITED STATES

- Miller, Ashley, and Jesse Kornbluth. "Renegotiating the U.S.-Mexico Relationship in 2017." *Brookings*, Brookings, 1 June 2017, www.brookings.edu/blog/order-from-chaos/2017/06/01/renegotiating-the-u-s-mexico-relationship-in-2017/.
- Miranda, Martin. *The Legal Obstacles to Foreign Direct Investment in Mexico's Oil Sector*. 1st ed., vol. 33, Fordham International Law Journal, 2009, pp. 206–242, *The Legal Obstacles to Foreign Direct Investment in Mexico's Oil Sector*.
- Paraskova, Tsvetana. "Are Mexico's Oil Reserves Almost Depleted?" *OilPrice.com*, 4 Apr. 2017, oilprice.com/Energy/Crude-Oil/Are-Mexicos-Oil-Reserves-Almost-Depleted.html.
- Paraskova, Tsvetana. "The Revival Of Mexico's Oil Industry." *OilPrice.com*, 25 Jan. 2018, oilprice.com/Energy/Crude-Oil/The-Revival-Of-Mexicos-Oil-Industry.html.
- Reed, S. (2017, July 12). Oil Discoveries Suggest Mexico's Bet to Open Energy Sector Is Paying Off. Retrieved from <https://www.nytimes.com/2017/07/12/business/energy-environment/mexico-energy-gas-oil.html>
- Sarukhan, Arturo. "Opinion | The U.S.-Mexico Relationship Is Dangerously on the Edge." *The Washington Post*, WP Company, 31 Jan. 2017, www.washingtonpost.com/news/global-opinions/wp/2017/01/31/the-u-s-mexico-relationship-is-dangerously-on-the-edge/?utm_term.
- Slav, Irina. "Mexico Looks Overseas For New Oil Export Destinations." *OilPrice.com*, 25 Apr. 2017, oilprice.com/Energy/Crude-Oil/Mexico-Looks-Overseas-for-New-Oil-Export-Destinations.html.
- "Timeline: U.S.-Mexico Relations." *Council on Foreign Relations*, Council on Foreign Relations, www.cfr.org/timeline/us-mexico-relations.
- Villarreal, M. Angeles. *U.S.-Mexico Economic Relations: Trends, Issues, and Implications*. pp. 1–33, *U.S.-Mexico Economic Relations: Trends, Issues, and Implications*, fas.org/sgp/crs/row/RL32934.pdf.
- Williams, Adam. "Down 10%, Mexico Oil Reserves Gone in 9 Years Without New Finds." *Bloomberg.com*, Bloomberg, 31 Mar. 2017, www.bloomberg.com/news/articles/2017-03-31/down-10-mexico-oil-reserves-gone-in-9-years-without-new-finds.
- Zborowski, Matt. "Local Firms Dominate Mexico's Onshore Third-Phase Round 1." *Oil & Gas Journal*, 16 Dec. 2015, www.ogj.com/articles/2015/12/local-firms-dominate-mexico-s-onshore-third-phase-round-1.html.