An Evaluation of Brain Drain in the Case of the Venezuela's Petroleum Company, Petroleos de Venezuela S. A. (PDVSA)

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AN EVALUATION OF BRAIN DRAIN IN THE CASE OF VENEZUELA’S PETROLEUM COMPANY, PETRÓLEOS DE VENEZUELA, S.A. (PDVSA)

By

Gonzalo E. Vázquez

A THESIS

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AN EVALUATION OF BRAIN DRAIN IN THE CASE OF VENEZUELA’S PETROLEUM COMPANY, PETRÓLEOS DE VENEZUELA, S.A. (PDVSA)

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This case study focuses on the emigration of skilled workers and professionals from the Venezuelan, government-owned oil company, Petróleos de Venezuela, S.A. (PDVSA) and the resulting brain drain. Brain drain is first defined then relevant historical, political and economic information about Venezuela and PDVSA and data on migration are presented. Greatest attention is paid to the time from 1999, when Hugo Chávez assumed the presidency, to the present (most recent data available). The policies and actions of the Chávez regime, especially in reaction to the general strike of 2002-2003, are reviewed and their effects on the skilled workers and professionals at PDVSA and how those factors may have precipitated the migration of former PDVSA employees are considered. Causes of the unprecedented situation at PDVSA are grouped into factors that may have “pushed” former workers to migrate (e.g., loss of job opportunity, political instability) and those that may have “pulled” them (e.g., international demand in the oil industry for skilled workers).

The topic is particularly intriguing because by 2003 the price of oil had started to rise sharply, crossing over $100/barrel in 2008, and it has (other than during the financial crisis of late 2008 and 2009) generally maintained high levels, bringing an inflow of
revenues with no precedent in Venezuela’s history. Therefore salaries were presumably high when the migrations were also high. This scenario is not what some of the most well accepted theories on international migration (notably, Neoclassical) would predict, and the case study data is considered against several prevalent theories (Neoclassical, New Economics of Migration, Network, Cumulative Causation). Finally, the effects on PDVSA and Venezuela are reviewed and information indicating the current status of the skilled workers is presented.
To my supportive wife Maria Leticia and my three lovely kids:

Gonzalo, Leticia and Juan Ernesto.
Acknowledgments

I would like to express my deepest gratitude to my thesis committee for giving me the support and encouragement needed to drive through the challenges encountered during the writing of the thesis.

I am very thankful to Dr. Bruce Bagley for giving me such a valuable opportunity to prove myself with this special project, especially given the time constraint and obstacles I faced from the start and during the process of completing the thesis.

My thanks and appreciation also go to Dr. Margarita Rodríguez, who provided me with valuable information on the subject and demanded that I think more abstractly and provide stronger theoretical support for my analysis.
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Introduction

The objective of this paper is to examine, using qualitative analysis within a case study, the brain drain from the Venezuelan government-owned oil company, Petróleos de Venezuela, S.A. (PDVSA). This investigation focuses on four general areas, which form the chapters of the paper: the first chapter includes a definition of brain drain and reviews historical information on the economic, social and political environments in Venezuela and at PDVSA; the second chapter covers the motivating factors for the brain drain from PDVSA; in the third chapter, these factors are compared with prevailing theories on international migration to see how well they support such theories; and the fourth chapter examines the effects of the brain drain on Venezuela, PDVSA and its skilled workers that emigrated.

In chapter one, a working definition of brain drain and basic information on migration are presented. Data for migration was sourced from the U.S. Census Bureau, Department of Homeland Security, Citizenship and Immigration Canada, and other published studies, narrowing the focus from Latin America to Venezuela then to PDVSA. A picture of PDVSA as a company and, as PDVSA represents such a large portion of the country’s revenues, a picture of the Venezuelan economy, are included. As part of the analysis, an effort is made to identify overt bias (for example, in current PDVSA official reports).

In the second chapter, the factors that may have “pushed” workers to leave are examined by looking at the political, social and financial environment in Venezuela and how it changed after Hugo Chávez came to power and as he implemented his “Bolivarian” policies. It also includes the conditions outside Venezuela that may have “pulled” skilled
workers away from their country. Economic data and emigration figures include, for PDVSA; financial, oil price and production information, and size of the labor force and for Venezuela; figures on inflation and unemployment rates and emigration reports. Data are considered relative to the timeframe before and after Hugo Chávez came to power, including the advancement of his Bolivarian polices and the subsequent actions of his administration, to trace the effects of the Chávez regime, particularly in reaction to the general strike of 2002-2003. The global market for oil and the demand for skilled workers (pull factors) are estimated using published data from Venezuela, the United States, Canada and Colombia that measure migration, education, opportunities for employment, income, and the economic effects of governmental policies.

The third chapter, the applicability of migration theories, draws on published information that incorporates the opinions of individuals who have migrated or are otherwise involved with them (e.g., employers).

The fourth chapter explores the restructuring of PDVSA by President Hugo Chávez, its effects on the skilled workers and the effects that their emigration has had on PDVSA and Venezuela. Where available, changes in the information presented in previous chapters and published comments are used to document the migration.
Chapter One: Defining Brain Drain and Examining Its Prevalence

An Operational Definition of Brain Drain

Though people have moved from country to country throughout history, it was the post World War II migration of scientists from Europe to the United States that brought scholarly attention to such losses of intellectuals and skilled workers. The Spokesmen of the Royal Society, England’s prestigious fellowship of scientists, was among the first to analyze this loss of talent and is generally credited with coining the term “brain drain.”

The operational definition for brain drain used in this paper is taken from Docquier and Rapoport, who “define a ‘high-skill immigrant’ as a foreign-born individual, aged 25 or more, holding an academic or professional degree beyond high-school (i.e., a ‘college graduate’) at the census or survey date” (2011, 4). Brain drain also refers to the shifts in human capital associated with migration, which various researchers have attempted to quantify (See especially Docquier and Rapoport 2011; Gibson and McKenzie 2010).

Issues around the measurement and understanding of brain drain are quite different from those around the migration of unskilled workers. Net immigration figures reflect a composite of both types of migration and underneath the numbers a more complex picture emerges. Unlike unskilled migration, countries typically view the emigration of skilled workers as a loss of the investment made in their education and training and a drain on the country’s assets. A country’s population of skilled workers and its opportunities for development are intertwined. “Although developing countries contain more than 80 percent of the world’s population, they account for just half of its higher education students, and for a far smaller proportion of those with access to high-
quality higher education. [...] The vitality of higher education is a fundamental—and increasingly important—determinant of a nation’s position in the world economy” (Ahmad and Bloom 2000, 91-92).

Developing countries are the main source of migration (World Bank 2011) and while 43% of migrants from developing countries go to other developing countries, even more (57%) emigrate to high-income countries, especially the OECD (Organization for Economic Cooperation and Development) countries (Figure 1).

**Figure 1: Source Country and Destination for Migrants, by Country Type: Developing, High-Income OECD (Organization for Economic Cooperation and Development) or High-Income Non-OECD**

<table>
<thead>
<tr>
<th>Migrants from (millions):</th>
<th>Migrants living in:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Developing</td>
</tr>
<tr>
<td>Developing</td>
<td>74.0</td>
</tr>
<tr>
<td>High-income OECD</td>
<td>5.1</td>
</tr>
<tr>
<td>High-income non-OECD</td>
<td>1.4</td>
</tr>
<tr>
<td>Total</td>
<td>80.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Migrants from (percentage shares):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developing</td>
</tr>
<tr>
<td>High-income OECD</td>
</tr>
<tr>
<td>High-income non-OECD</td>
</tr>
</tbody>
</table>


For the “Latin America and Caribbean” region, an overwhelming 85% of global migrants go to high-income OECD countries (Figure 2).
Funds are required to provide schools, materials and staff and people must have the means and the freedom for their children to attend such schools for a population of skilled workers to be developed. One dilemma that developing countries face is finding the means to train their people in the home country or assisting them in receiving such schooling abroad with the realization that they may not return and that, regardless of the source of their education, there are many reasons they might be lured away.

**The Prevalence of Brain Drain**

Many countries have immigration laws and programs that encourage the immigration of skilled migrants. The United States established its Immigration and Nationality Act (INA) in 1952, which included a preference system for skilled workers and families of U.S. citizens and residents. Amendments to the INA in 1965 included favored immigration status for professionals, scientists, and artists of exceptional talent
(Section 203 [3]) and skilled and unskilled workers not of a temporary or seasonal nature where “a shortage of employable and willing persons exists” (Section 203 [6]).

Migration through such special visa programs is reported and annual reports show the numbers of persons who are granted residence by the type and class of their admission. In 2010, legal residence status for employment-based preferences was granted to approximately 148,000 persons by the United States (Office of Immigration Statistics 2011). Another example of the magnitude of brain drain comes from a study sponsored by the Kansas City-based Ewing Marion Kauffman Foundation released in August 2007, which shows that one million skilled immigrant workers are competing for 120,000 U.S. permanent visas each year. In a 1990 *Wall Street Journal* article, George Borjas writes that the United States should be more proactive in encouraging the immigration of skilled workers, noting: “In both Canada and Australia, visas are now allocated through a point system, which grades visa applicants in terms of educational attainment, age and occupational background” (A18).

On their website, Citizenship and Immigration Canada lists twenty-nine skilled positions—among them supervisors for oil and gas drilling and service—eligible for a Federal Skilled Worker\(^2\) visa as of July 1, 2011. A maximum of 10,000 Federal Skilled Worker visas are granted within a twelve-month period and by March 2012 fourteen of the categories had reached their annual cap for the 2011-2012 period (Citizenship and Immigration Canada).

Colombia offers eighteen different visas, including a business visa and a temporary employment visa. After decades of being an undesirable location, now that the

---

1 This figure includes spouses and children and an adjustment for 2,042 "needed unskilled workers."

2 A similar program exists at the provincial level (i.e., Quebec).
political situation in Colombia is stable, the violence is ameliorated, the economy is performing well and there is an emphasis on increasing Colombia's oil production, the country is welcoming record foreign investment and many skilled immigrants.

**Brain Drain to and from Venezuela**

The period from 1950 to 1959 was a time of great immigration for Venezuela as was 1970 to 1979, but in 1983 economic problems and shrinking opportunities for workers increased emigration and restored more typical rates of net immigration (De la Vega 2010). Over time, the country’s net immigration rate has been positive and a clear peak reflects Venezuela’s increased attractiveness as a destination during the oil boom (Figure 3).

**Figure 3: Net Migration for Venezuela, 1960-2010**

![Chart Source: The World Bank, World Development Indicators.](image)

There has historically been some migration from Venezuela. Because net immigration and total immigration numbers do not reflect the qualities, such as education level or income, of immigrants and emigrants, these data do not show that “Venezuela is
in the throes of an immigration puzzle. While large numbers of the middle class head for the exits, hundreds of thousands of foreign merchants and laborers have put down stakes here in recent years, complicating the portrait of how a brain drain unfolds” (Romero 2010). Data for the emigration of the skilled ex-workers from PDVSA show that almost 30% of them have come to the United States, however these workers are spread around the globe (Figure 4).

**Figure 4: General Distribution by Country of Ex-workers of the Venezuelan Oil Sector, Shown as a Percent of Total**

![Chart](image)

Chart source: Niebrzydowski and De la Vega (2010), 138.

Although ex-PDVSA workers are located around the world, this study is focused on emigration to the United States, Canada and Colombia. The United States is an obvious choice given the overall number of migrants. Canada has received a significant percent of the migrants and the similarity between extraction techniques for the heavy oil
in Venezuela (the Orinoco belt) and Canada (the Alberta tar sands) is well documented. While increases in migration to Colombia are more recent, the country is included because its volume of Venezuelan immigrants has shown a marked increase and because key executives from PDVSA are known to have relocated there and are participating in a renewal of Colombia's oil industry.

The annual number of immigrants into the United States is large and relative to the total the number of Venezuelans admitted is low, but it has increased significantly for the post-strike period (Figure 5).

**Figure 5: Number of Venezuelans Admitted into the United States as Immigrants from 1970-2005**

![Graph showing US Admissions of Venezuelans as Immigrants from 1970 to 2005.](chart)


The number of Venezuelans who received Green Card or Legal Permanent Resident (LPR) status also rose significantly during this time (Figure 6).
Figure 6: Number of Venezuelans Who Received Legal Permanent Resident (LPR) or Green Card Status in the United States from 1996-2006


For the same period, the increase in immigration to Canada from the “Caribbean, Central and South America” region has also been significant (Figure 7).

Figure 7: Foreign Born Persons in Canada, by Region of Origin

<table>
<thead>
<tr>
<th>Place of birth of immigrants, Canada, before 1981, and 2001-2006 (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before 1981</td>
</tr>
<tr>
<td>United States</td>
</tr>
<tr>
<td>Europe</td>
</tr>
<tr>
<td>Asia</td>
</tr>
<tr>
<td>Africa</td>
</tr>
<tr>
<td>Caribbean, Central and South America</td>
</tr>
<tr>
<td>2001-2006</td>
</tr>
<tr>
<td>United States</td>
</tr>
<tr>
<td>Europe</td>
</tr>
<tr>
<td>Asia</td>
</tr>
<tr>
<td>Africa</td>
</tr>
<tr>
<td>Caribbean, Central and South America</td>
</tr>
<tr>
<td>Oceania and other countries</td>
</tr>
</tbody>
</table>


On June 4, 2011 Semana reported that whereas in 2004 Colombia was issuing identity cards to two Venezuelans every two weeks, in 2010 the average was one hundred and sixty-two cards per week. For 2011 to date, the total was two hundred and thirty per week (forty-six per day). Evidence that the PDVSA workers that Chávez fired are among the Venezuelans who have emigrated to Colombia will be presented.

Brain drain was an issue of concern to the Venezuelan government long before Chávez came to power however, as evidenced by the formation of the Fundación Gran Mariscal de Ayacucho (FGMA) by President Carlos Andrés Pérez in 1975. The FGMA gives scholarships to Venezuelan students for study within the country and at universities throughout the world in exchange for their commitment to return and work in Venezuela.

The intent of the FGMA was to retain the skills of educated professionals in Venezuela by offering these scholarships with the caveat that the graduates would return to employment in the oil, gas or steel industries in Venezuela. While the government did sponsor many students, primarily in the sciences, upon their return to Venezuela there was no assistance given to them to support their search for jobs within the country. According to StateUniversity.com, “This resulted in a massive brain drain of much needed professional personnel.”

In Claudio Bifano’s “Breves consideraciones sobre el tema y presentación del programa José María Vargas” [Brief considerations on the topic and presentation of the José María Vargas program], which prefaces La Diaspora del Conocimiento [The
Diaspora of Knowledge], he describes the situation of the young people who traveled abroad to study. Prior to the 1990s, he says, many of such them returned to Venezuela to work in important state-owned companies such as PDVSA or Empresas de la Corporación Venezolana de Guayana (CVG). The recipients of scholarships from the FGMA and other programs to enable study abroad came back to Venezuela after finishing their studies for two reasons, he says: Venezuelans did not have a tradition of emigrating and they had opportunities in their own country. It was in the 1990s, Bifano notes, that such students stayed abroad. During the first years of the new millennium, despite the high price of oil that increased income to Venezuela, the emigration of professionals grew dramatically and for the first time, the country became a net exporter of talent (skilled workers). He provides the following example: in a country where half the population is under twenty years in age, 61% of the researchers accredited by the Observatorio Nacional de Ciencia, Tecnología e Innovación (ONCIT) are between forty and fifty-nine years of age and only 3.2% are under thirty years of age (ibid. 2010).

Another reason may be that while the Fundación Gran Mariscal de Ayacucho (FGMA) literature refers to “scholarships,” StateUniversity.com reports that the monies are now handled as loans although FGMA does write off loans for some students based on their GPA. By contrast, Jorge Arreaza (FGMA’s president) announced that: “between 1999 and 2008 the Bolivarian Revolution has granted 226,651 scholarships; while between 1975 and 1998, this program only benefited 54,535 students.” Regardless, the benefits to Venezuela and to the students remain unclear.

During the past oil boom years the growth of PDVSA created opportunities for these young professionals and was a vehicle for retaining many educated youths. In spite
of this, Venezuela—as have many countries with a large youth population—found itself with what Portes (1976) calls a “superávit” (surplus) of skilled persons and many left the country. Another example that when oil is not “booming” the problem remains a concern is *Fuga de Cerebros en Venezuela* [The Flight of Brains from Venezuela] by Héctor Valecillos, published in 1993. However, Valecillos also noted that in addition to job opportunity and income, young people were tempted to leave the country in search of better life conditions.
Chapter Two: An Historical View; the Factors Leading to Emigration

An Overview of Venezuela’s Political History

The Political Climate That Opened the Door for Chávez

During the years after Venezuela returned to democracy and before Hugo Chávez came to power there were three main political parties: Accion Democrática (AD), Comité de Organización Política Electoral Independiente (COPEI) and Unión Republicana Democrática (URD). All of them were oriented to center-left, but none were considered radical. These three parties had a power sharing alliance, the Pacto de Punto Fijo, which survived for half a century. For the next thirty-nine years (1959-1998) AD and COPEI, the two main parties, governed within a democratic framework that allowed for a free press. While during this period, under some of the administrations, there were attempts at central planning (which was popular in Latin America at the time) and some attempts at agrarian reforms, these administrations were not considered adversaries by the business community. Some of the democratically elected presidents were guilty of overspending and some were denounced for corruption, but all of their administrations became vulnerable to the price fluctuations of oil because the period was characterized by the country's increasing dependence on oil revenues. It is also relevant that, during this period, the military did not interfere with politics.

Romulo Betancourt, who governed from 1959 to 1964, was from the AD party and during his term the country's oil revenues grew. “In addition to increased government services for the poor, Betancourt hoped to help the poverty-stricken by engineering his economic policies to achieve a more equitable income distribution […] and he] devalued the bolivar and implemented price and rent controls” (Harmel 2010, 30). Betancourt was
(on behalf of Venezuela) one of the founding members of the Organization of Petroleum Exporting Countries (OPEC) and he also created a government-owned oil company, Corporación Venezolana de Petróleo (CVP). The constitution did not permit reelection of the president, however after Betancourt’s term another member of AD, Raúl Leoni, won the presidency. Leoni governed on a left-of-center platform that allowed, during his tenure, for the labor movements to become stronger. Looking to lessen imports and foster import substitution, he also promoted programs that favored tariffs.

Rafael Caldera (COPEI) followed Leoni and was president from 1969 to 1974, a period of economic stability characterized by low inflation. Caldera's administration was notable for, as was popular at the time in South America and particularly among the Andean Countries, placing restrictions on foreign investment.

Carlos Andrés Pérez (AD) was president from 1974 to 1979 and his administration benefitted from a rapidly rising price of oil, which increasingly provided a significant percentage of the Gross National Product (GNP). With the higher revenues from oil, Pérez embarked on educational reforms such as scholarships for the poor and founding FGMA. He embarked on ambitious domestic industrial programs and increased Venezuela’s international profile with large contributions to international organizations such as the World Bank, which led him to be accused of overspending. Pérez consolidated the oil industry under PDVSA and, as shown by his policies, he was not reluctant to use the power of the presidency to carry out some expropriations. However, he compensated the oil companies that the government took over and maintained what was generally considered a friendly investment environment.
The next president, Luis Herrera Campins (COPEI), took office in 1979 and immediately accused Pérez of corruption. Although oil prices were very high in 1979 and 1980, the country went into debt and suffered from capital flight, exchange controls and devaluation, and unemployment stayed high during his term in office.

Campins was followed by Jaime Lusinchi (AD), who presided over an administration fraught with corruption and an economy with runaway inflation and no growth, which helped Carlos Andrés Pérez return to the presidency (1989-1993). During this term Pérez faced a considerable drop in oil prices and a country with a heavy debt burden. Following a neo-liberal approach, he introduced austerity measures. As the economic and social situation worsened the currency was devalued, government subsidies on local gas prices were eliminated, inflation and interest rates reached historic, high levels, and many social programs were canceled. Discontent built, leading to infamous riots and, in 1989, a general strike.

Some historians and political analysts believe that, in coordination with Hugo Chávez, Fidel Castro stoked those riots. Either way, Hugo Chávez built on the unrest and led a coup d'état on February 4, 1992. The coup failed, but after being detained Chávez was given an opportunity to speak to the nation so that he could ask his followers to surrender. In his speech, Chávez said that the revolution had failed “por ahora” (for now). “Por ahora” became his slogan and Chávez began to gain a following. Pérez's presidency survived a second coup in November, but in 1993 he was impeached and imprisoned, having been accused and convicted of channeling funds to Mrs. Chamorro, a presidential candidate in Nicaragua.
Rafael Caldera was then reelected and he pardoned Chávez, who was becoming an icon. Faced with lower oil prices, a financial crisis, and social upheaval, Caldera was unable to restore the country's economic and social health.

The Advent of Chávez

In their case study of Venezuela's petroleum industry, Niebrzydowski and De la Vega offer this description of how the stage was set for Hugo Chávez:

Many an analyst refers to the last years of the last century and the first years of this century as the meltdown of the traditional political parties in Venezuela. According to this point of view the structure of the political parties collapsed in 1998. This collapse of the parties that had ruled Venezuela for half a century helped Chávez fill the vacuum and gain popularity by advocating a change and appealing to the poor classes that had been practically excluded from society. Ever since his arrival Chávez was seeking to transform the Venezuelan society and the country’s governance, including such changes as a new constitution, lengthening the presidential term, introducing referendums as a tool of governing, and basically increasing the power of the state and the president (2010, 102; author trans.).

While Chávez is undoubtedly an advocate of wielding the power of the state to direct the economy and distribute wealth, he started his first term with a low-key populist approach and little revolutionary rhetoric. The sweeping structural changes he has introduced into Venezuelan governance and society began along with the new constitution he advanced that was approved on December 15, 1999, which gave the president sweeping powers. With a majority of the members of Venezuela’s National Assembly supporting him, Chávez was also able to get an “enabling law” passed that further increased his power. This in turn helped Chávez get numerous other laws, from taxing bank withdrawals to agrarian reforms, passed. He even attempted an educational reform, Resolution 259, which would have changed the history in textbooks to support his revolutionary approach.
Since its inception, highly trained professionals had managed PDVSA and despite government ownership it was autonomous operationally, but it was not long before Chávez acted to change that. He wanted the revenues generated by PDVSA to fund social programs such as his “Misiones Bolivarianas,” established to provide health care, education, and the distribution of expropriated land. The defenders of the misiones claim that Chávez is helping the poor, while opponents of his regime maintain that the misiones offer services only to those loyal to Chávez and are a form of clientelism, providing another example of the polarization of the Venezuelan population.

PDVSA was among the first, but Chávez has nationalized and expropriated numerous companies, domestic and foreign-owned, and the list of such companies continues to grow. These expropriations, notably the takeover of television stations, the sweeping powers that Chávez has had granted to himself and his apparent control of the courts, combined with his vitriolic speeches, have led numerous Venezuelans of any means to become fearful. International organizations such as Human Rights Watch and Amnesty International criticize Chavez’s autocratic rule and warn of human and civil rights violations and even conservative groups have criticized his interference with the freedom of the press.

After 2000, in addition to his revolutionary program at home, Chávez began to export his ideology and to identify with world leaders such as Saddam Hussein and Fidel Castro, joining them in taking a strident anti-U.S. approach. Chávez supports such allies generously with oil supplies and subsidies. Venezuela receives benefits in exchange, such as Cuban medical personnel to serve in “el programa Barrio Adentro” (a program to provide health care to city slums and rural communities), but the assistance given to other
countries is often resented by Venezuelan citizens, particularly those still in need of basic services.

As mentioned, one result of these various policies and actions by Chávez was (and is) the polarization of Venezuelan society. During the early part of the twenty-first century, citizens from the middle and upper classes began to stage mass demonstrations against the regime, while the government helped to mobilize the poor in pro-Chávez counterdemonstrations. One anti-Chávez demonstration that was estimated to include over one million people reached the presidential palace. After many demonstrators were shot the military refused to fire on the crowd, choosing instead to remove Chávez from office. Chávez was out of power for several days, but with the help of loyal military followers he resumed the presidency on April 14, 2002.

The Venezuelan Oil Industry and PDVSA

The Venezuelan economy has been heavily dependent on revenue from oil production since the 1920s. The price of oil was relatively low during the late 1980s and the 1990s. As NYSE.TV reports, using data from the New York Mercantile Exchange (2011), oil prices rose from just over $60/barrel in December 2005 to over $90/barrel in October 2007, first crossing the $100/barrel mark in February 2008 and peaking around $145 that July. During October 2008, worries over the worldwide financial crisis caused prices to start to plunge, sinking as low as $36/barrel but reaching over $60/barrel again by the end of May 2009. Prices crossed back over $100/barrel in May 2011 and have remained high (roughly, over $80/barrel) since. Such high prices bring a windfall to PDVSA and the Venezuelan government. (Figure 8, Figure 9).
Figure 8: Nominal and Real Oil Prices from 1861-2006, in 2008 U.S. Dollars

Data Source: Energy Information Administration.

Figure 9: Crude Oil Prices from 1970-2011, in 2010 U.S. Dollars, Showing PDVSA Strike and Major Events That Affected Oil Prices

Chart Source: WTRG Economics. Used with Permission.

According to the CIA World Factbook, oil generates about 80% of Venezuela’s total export revenue and half of the central government’s income and is responsible for
about one-third of the country’s gross domestic product (GDP). As of July 5, 2011, oil accounted for 95% of Venezuela’s export earnings and 55% of its total budget. The opportunity for continued oil revenues appears virtually unlimited, given Venezuela's potential to supply oil to the market, although estimates of the country’s proven oil reserves vary. According to an announcement made by (as he is referred to on the PDVSA website) “Commander President Hugo Chávez” on July 22, 2011, “Venezuela has become the first [in] global oil reserves, we have 20% of the petroleum in the world.” He further stated that the Organization of Petroleum Exporting Countries (OPEC) recognized that this gives Venezuela “the world’s largest reserve of oil,” at a stated figure of 296,500,000 barrels. Even with lower estimates of 100 billion barrels of oil and over 100 trillion cubic feet of natural gas, the Venezuelan reserves are undeniably among the top ten in the world (Alvarex and Hanson 2009).

In their description of PDVSA, Mares and Altamirano (2007) include the following information: PDVSA has widespread downstream activities, with facilities in Venezuela, the United States, the Caribbean, Germany, Sweden and the United Kingdom, and a total refining capacity of 3.1 million barrels a day. Notably, PDVSA owns 100% of CITGO, which remains headquartered in Houston, Texas. PDVSA produced 2.5 to 2.8 million barrels of oil per day (b/d) in 2006 and was the world’s fifth-largest integrated oil firm and its fourth-largest producer, while generating revenues of U.S. $85.7 billion in 2005 (Figure 10). More recent data are considered less reliable, but even if production has declined the increase in oil prices would result in similar revenues.
As a multinational corporation, PDVSA needs a range of employees that includes highly skilled workers, managers and executives, with expertise in production and in disciplines such as accounting and finance and in the specifics of the oil sector. As Mares and Altamirano describe PDVSA: “In the 1980s-90s, it was shining example of how a state-owned enterprise could be run efficiently and be a reliable partner for international oil companies (IOCs) and consumers” (2007, 1-2). Yet an article on the PDVSA website derides prior management: “PDVSA strengthened its control over the country’s energy resources, growing in autonomy and independence, it became almost comparable to the state itself, to the detriment of its fiscal contribution and against the primary interests of the Venezuelan people” (PDVSA 2005).
When Hugo Chávez became president in 1999, as described earlier, he made clear that he had a different view of PDVSA’s role and that its primary function would become to provide revenue for his Bolivarian programs of social change (Luhnow and Millard 2006). The confrontation over such policies came to a head in April of 2002 with a coup attempt against Chávez that culminated in a strike by the Venezuelan Workers' Union known as CTV (Confederación de Trabajadores de Venezuela) that lasted sixty-four days.

A Chronology of the Conflict Between PDVSA and the Chávez Administration

In February 2002, the head of PDVSA’s board of directors criticized the government’s energy policies and Chávez retaliated by appointing a new board (Hoag 2002). In protest, trade unions and Venezuela’s largest association of businesses declared a general strike on April 9, 2002 (CBC News 2004). Two days later, pro-Chávez gunmen opened fire on the thousands of protestors, wounding more than two hundred people and killing fourteen (ibid.).

Over several months a series of events played out: Chávez resigned under pressure, was replaced, and then stepped back into power (CNN World 2002). Venezuela’s Supreme Court decided against a referendum on Chávez’s rule, which led opposition leaders to call for a nationwide strike (CBC News 2004). On December 2, 2002 employees at PDVSA joined millions of other workers and walked off the job. Within days, oil exports had nearly stopped and on December 19, 2002 oil executives defied an order by the Venezuelan Supreme Court to return to work.

Chávez vowed to break the strike. He imported talent from countries sympathetic to him and, using the workers remaining at PDVSA, the strike was broken after sixty-three days (ibid.). The data available for production during this period vary, but the effect was undeniably major. GlobalSecurity.org reported that oil production reached a low of
200,000 barrels per day (b/d) and was about 1,000,000 b/d by the end of January 2003—about one-third of previous production (Figure 11).

**Figure 11: Venezuela's Oil Production (Crude + Condensed + Liquid) for 1990-2004 in Millions of Barrels per Day**

As Freites describes the strike's effects on PDVSA:

The second critical period was the quasi-general strike led by the workers of PDVSA that came when the top executives of the company were fired because they had opposed the directives from the government, which considered the meritocracy culture a barrier to naming new directors and the new policies that the government was going to put in place. The strike ended in the first months of 2002. Then the new executives of PDVSA [named by the government] simply fired all personnel that were not loyal to the position of the government, which led to the massive firing of […] entire departments, and] totaled at least 18,000 people (2010, 89; author trans.).

Freites also mentions the referendum to recall Chávez, which was lost by the opposition.

This led to retaliation by Chávez against all who signed the petition against him or
otherwise opposed him, which in turn coincided with migration to the U.S going from 4,000 in 2001 to 12,000 in 2005. There was also a marked increase in the number of Venezuelans seeking asylum in the United States (Figure 12).

**Figure 12: Persons Granted Asylum in the U.S. by Country of Origin, for Selected Countries, Fiscal Years 2003-2010 (Listed by Number of Asylees for 2010)**

<table>
<thead>
<tr>
<th>Country</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>China, PR</td>
<td>5,999</td>
<td>4,302</td>
<td>5,225</td>
<td>5,575</td>
<td>6,361</td>
<td>5,462</td>
<td>6,118</td>
<td>6,683</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>808</td>
<td>1,010</td>
<td>728</td>
<td>775</td>
<td>848</td>
<td>900</td>
<td>1,109</td>
<td>1,093</td>
</tr>
<tr>
<td>Haiti</td>
<td>1,728</td>
<td>2,319</td>
<td>2,962</td>
<td>2,998</td>
<td>1,660</td>
<td>1,237</td>
<td>1,000</td>
<td>832</td>
</tr>
<tr>
<td>Venezuela</td>
<td>350</td>
<td>1,255</td>
<td>1,114</td>
<td>1,363</td>
<td>1,170</td>
<td>1,050</td>
<td>584</td>
<td>660</td>
</tr>
<tr>
<td>Colombia</td>
<td>4,561</td>
<td>4,368</td>
<td>3,375</td>
<td>2,968</td>
<td>2,180</td>
<td>1,646</td>
<td>993</td>
<td>591</td>
</tr>
</tbody>
</table>


**Consequences for the PDVSA Workers**

In 2004 the Immigration and Refugee Board of Canada, as part of their consideration whether former PDVSA employees might be eligible for asylum or refugee status, documented the following events from the aftermath of the strike: On August 11, 2003 Venezuela’s main newspaper, *El Universal*, reported that PDVSA’s new president had announced that fired workers would not lose any of their benefits, however the former employees were to vacate housing properties belonging to PDVSA. For undisclosed reasons, only a few days later the paper reported the fired workers' benefits would be cancelled. The new oil minister accused the strikers of destroying equipment and warrants for the arrest of several (former) PDVSA managers were issued. A list of

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3 Industry reports typically attributed the problems to difficulties normally associated with the idling of production, with techniques for extraction of Venezuela's heavy oil making its wells particularly sensitive to shutdowns.
the dismissed employees’ names was published in the national newspapers and posted on the Internet.

**After the Conflict and Further Actions by the Chávez Administration**

The new management philosophy and role in Venezuela are described this way on the present PDVSA site: “The fact that the new PDVSA (born after the damaging national strike instigated by forces opposed to the elected government), is a testament to the new spirit of public accountability, represents a milestone in the development of the nation’s right to full control of oil sovereignty. This company has developed ever closer links with the Venezuelan State that will allow a coherent connection with the present national project guidelines, set down by the Ministry of Energy and Petroleum (MEP)” (2012).

As Alvarez and Hanson (2009) write, Chávez required in 2002 that PDVSA spend at least ten percent of its annual investment budget on social programs. This money is funneled through the National Development Fund, also known as Fonden, an investment fund (established in 2005) that is not included in the government’s budget. In a statement dated August 29, 2007 Venezuelan Oil Minister Raphael Ramírez announced:

PDVSA will become a booster of industrial and agricultural development in domestic sectors connected with our oil activity and additional, supplementary areas for our nation’s development. The following subsidiaries will be organized: PDVSA Services, PDVSA Industrial, PDVSA Popular Gas, PDVSA Naval, PDVSA Agricultural, PDVSA Naval Urban Development and PDVSA Engineering and Building (PDVSA 2007).

*International Oil Daily*, citing Alvarez and Hanson (2009), reported that PDVSA spent $6.9 billion on social programs in 2005 and $14.4 billion in 2007. Such deflections of revenues made it clear that PDVSA’s expenditures for research, development, and other reinvestment would need to be curtailed (Figure 13).
Figure 13: PDVSA’s Investment in Millions of U.S. Dollars, Compared with Investment Tendency (Trend), 1990-2004 (in 2004 Dollars)

The government’s desire to control the oil industry did not stop at PDVSA. For example, in 2007 CNN Money reported: “Some major oil companies have rejected Venezuela's terms for the takeover of their multi-billion dollar projects and can leave the OPEC nation, President Hugo Chavez said [...] Exxon Mobil, ConocoPhillips, Chevron Corp., Norway's Statoil, Britain's BP Pic and France's Total are the targeted companies in projects, valued above $30 billion and capable of producing 600,000 barrels per day.”

In further support of his declaration to build “a socialism for the twenty-first century,” Chávez has also been expropriating businesses in other industries. These include large, critical operations: CANTV (telecommunications), Electricidad de Caracas, CMS Energy and the top manufacturer of refrigeration equipment. The
Venezuelan operations of three large international cement companies, Cemex (Mexico), Holcim (Switzerland) and LaFarge (France) were taken over, as was SIDOR (steel). Many banks, foreign-owned and domestic; cattle ranches, including those of the British company Agroflora; and companies in the food and beverage industry (some belonging to Cargill and some to a French multinational) were swallowed up. Foreign owners have been pushed aside, leaving them shut out of the ventures they had invested in while being paid less than market value for their assets. This has led to numerous large lawsuits and international arbitration cases against Venezuela, but that has not deterred Chávez. These takeovers, combined with the confiscation of property under an agrarian reform law, have created a business environment that is uncertain at best and one that offers questionable opportunity for skilled workers and professionals, especially those not willing to swear allegiance to the regime.

The Perfect Storm: Discrimination Against the Strikers, the Government’s Grip on the Oil Sector and Venezuela’s Faltering Economy

After the events of 2002-2003, there was little opportunity for the skilled PDVSA workers to find employment in Venezuela commensurate with their skills and prior level of pay. The PDVSA engineers, attorneys and other professionals had been ostracized from the sector with which they were familiar and where most of the jobs were controlled by a one company, PDVSA, which was owned by a government that was now hostile to them. In addition, many large companies were being nationalized (and would acquire the same bias against the PDVSA workers). Further, the fact that the names of the strikers had been published made it less likely that they could find jobs of any kind in Venezuela.

The Central Bank estimates that Venezuela’s oil income has been more than U.S. $700 billion in the last twelve years (Oppenheimer 2011), but as Paiva reports:
The recent economic expansion has been impressive, with real gross domestic product (GDP) growing at an average rate of about 8 percent in the last 4 years. Nonetheless, the long run performance of the Venezuelan economy has been considerably more modest: per capita GDP remains below levels observed during the 1970s; real growth has lagged that of other oil exporters and developing countries, and has become more volatile [...while] real exchange rate uncertainty and inflation volatility [have] had a negative impact on productivity (2009, 2).

Another important motivator of migration is the autocratic way that Chávez governs, which some skilled workers cite as a reason that they were “pushed” to leave their country. As reported by Margolis (2009) in Newsweek: “Venezuelans hoped that Hugo Chávez would be a healer. Instead, they got a tyrant who seizes private companies and farms, crushes labor unions, and harasses political opponents. Now, after a decade of the so-called Bolivarian revolution, tens of thousands of disillusioned Venezuelan professionals have had enough.” Such political instability, violence and government ineffectiveness, corruption and interference in the public sector (whose civil servants are no longer independent), provided important push factors (Doquier and Rapoport 2011) and contributed to the migration from PDVSA. The political situation was increasingly unacceptable to many skilled and educated professionals who believed that Chávez, by exhorting the masses, nationalizing private enterprises, and governing in an authoritarian manner, was promoting confrontation between the classes. Such professionals were also becoming more concerned about the president’s intolerance of any opposition, his interference with the press, and his penchant for accusing of wrongdoing, without any due process, anyone who hindered his agenda (Margolis 2009). Thus, for many former PDVSA employees, there were also political reasons that fueled their migration, which is supported by the determination of several countries that the PDVSA workers (and other targeted Venezuelan business people) were eligible for asylum.
Possible Causes of Brain Drain from PDVSA

Conditions Inside Venezuela That Influenced PDVSA Workers (Push Factors):

New information compiled in Venezuela reinforces previous statements about the conditions in the country. In her 2010 “Pobreza y migraciones” [Poverty and migrations], Maritza Izaguirre lists common push factors, as they exist in Venezuela:

- Lack of opportunity: A hostile environment for business and entrepreneurs as exemplified by the thousands that have closed down and the many that have been expropriated. Limited work opportunities for those not loyal to the regime.

- Discrimination: A polarized environment under a government that promotes class warfare. Government critics are attacked, tried, and/or vilified.

- Deterioration of the quality of life: A lack of security in Venezuela, documented by soaring statistics for violent crimes (e.g., homicides have tripled). Chávez’s educational policies and his rabid anti-American posture combined with his close relationship with the governments of Cuba, Iran and Nicaragua, have scared many professionals and others in the middle class.

- Political instability: The concentration of power in a volatile president and no independence of the judiciary.

Freites also cites Chávez’s speeches as a factor because they contain virulent rhetoric against professionals that have attained some financial security, whom he often refers to as “oligarchs; a privileged class; dirty, despicable ones [esqualidos]; and traitors that do
not care for the poor or for the country” (2010, 88; author trans.). As Izaguirre summarizes: “Now the highly qualified Venezuelans leave primarily to developed countries, looking for opportunities and social, political and economic stability” (2010, 79; author trans.)

Conditions Outside Venezuela That Influenced PDVSA Workers (Pull Factors)

Izaguirre (ibid.) lists globalization, better opportunity in another country and having the skills and knowledge for which there is demand in the global market as pull factors. There was clearly a pull from the global marketplace for the PDVSA workers’ skills and experience. For example, Oil Jobs 411 describes the need for workers to extract oil from the tar sands in Alberta, Canada: “Workers looking to find oilfield careers in this part of the world will find as much work as they can handle for a very long time.”

In a 2009 Newsweek article, Mac Margolis reported that one million Venezuelans were estimated to have moved abroad in the decade since Chávez took over and that nine thousand of those were scientists from Venezuela who had emigrated to the United States, while by comparison six thousand remained in the country. However Freites (2010, 95; author trans.) writes:

Not all the Venezuelans that migrated went to the U.S., even though it continues to be the principal destination. Niebrzydowski, when examining the destination of the migrants expelled from PDVSA, showed how these professionals in particular have been attracted by countries for which oil is a very important variable. In this case, the experience of the migrant is an asset that the company that is hiring him or the society places value on and that is the case, as in Canada, Mexico, the Middle East and Trinidad.

This is corroborated by Millman (2007), who notes that PDVSA workers were welcomed with generous compensation to work in the oil industry in other countries. Millman describes how the communities in Canada developed as the first professionals who settled outside Venezuela communicated with the ones left behind and helped bring family and
friends to their new country of residence. Venezuelans in Alberta, Canada work not only in the oil industry, but have opened restaurants and teach salsa dancing (ibid.). Gouveia (2009) notes that other concentrations of Venezuelans are found in oil-centric Texas and in Omaha, Nebraska (which has large reserves of natural gas).

PDVSA Interviews: Findings of Sirius Niebrzydowski and Iván De la Vega

Sirius Niebrzydowski and Iván De la Vega (2010) performed a qualitative study of PDVSA, including interviews. The authors spoke with people from three populations: those who stayed in PDVSA and were in favor of the government, those who participated in the strike and were fired, and those who were hired to replace the fired workers. Both men and women were selected. The authors readily admit that many ex-employees refused the opportunity to be interviewed due to their fear of political repercussions.

Niebrzydowski and De la Vega determined that the major push factors for migration were violence and political instability. Pull factors included the welcome that the workers received, either because of their qualifications and/or as exiles seeking political asylum, and the opportunity for good jobs. While acknowledging that they cannot be sure the results of their interviews represent the whole of the PDVSA workers, Niebrzydowski and De la Vega reported:

Politics was a major factor contributing to the migration after the events of 2002-2003. The adversarial tone of the politics was a factor in their decision to leave the country. Politics also influenced those that were hired to take the place of the PDVSA fired workers. [...] The Minister of Energy of Petroleum of Venezuela, Rafael Ramírez, made that very clear in several pronouncements in which he said: “No manager, no employee, no minister, nobody on the payroll, nobody in our military forces, nobody in the reserves, nobody who is here in the new PDVSA should have an iota of a doubt that the new PDVSA is with president Chávez. The new PDVSA is red, all red, from top to bottom.” The minister later said that he would fire from the industry all of those who infiltrate from the esquálidos [despicable ones] (El Nacional November 05, 2006). The necessity of finding new jobs was another motivator, together with the existence of
good offers from abroad. The new jobs were not readily available in Venezuela. The stigma and lack of recognition towards professionals was such that they chose to leave the industry and/or the country (113-114; author trans.).

Niebrzydowski's and De la Vega's work also provides support for Network theory, the authors emphasizing that networking with former coworkers, friends and family helped the migrating workers find new jobs abroad, especially networking within the oil sector. For the interview group that had migrated, most of the workers had used such networks (ibid., 128).
Chapter Three: The Applicability of Migration Literature and Theories to the PDVSA Case

Most of the information on migration is focused on the quantity of emigrants; fewer data on the quality of those emigrants are available. While there was not a consistent set of measurements across the studies consulted and this limited the comparisons and analyses that could be performed, the available data was used to consider how well the PDVSA case did or did not support several prominent migration theories, with attention to which factors pushed and which ones pulled the PDVSA professionals to emigrate. There were push factors that existed before the Chávez regime (e.g., wage differentials), while other push factors (e.g., acute social polarization and a significant increase in violent crime) developed after Chávez came to power. There were also pull factors that existed before the period under consideration here (e.g., the demand for talented professionals by the more developed countries) and others that became more pronounced in the last decade (e.g., increased worldwide demand for oil workers). According to *Oil Jobs 411*, “Within the next decade there will be a need for 60,000 extra workers in the oil and natural gas industry in the oil sands area alone!”

In “Determinants of brain drain,” Alejandro Portes states “there is little doubt that brain drain is conditioned, at the most general level, by political and economic imbalances in the world system” (1976, 491). The primary causes of brain drain from PDVSA were due to political and economic imbalances between Venezuela and countries such as the U.S., Canada and Colombia (Niebrzydowski and De la Vega 2010), which increased under the Chávez administration. The U.S. and Canada offered much better economic conditions and quality of life and a better political environment (escape from repression), while such conditions were deteriorating and continue to deteriorate,
especially for executives, skilled professionals and other (as Chávez calls them) bourgeoisie in Venezuela. “Such differentials form an incontestable part of the etiology of emigration” (Portes 1976, 492). In the case of neighboring Colombia, which has been moving towards political stability and growing its economy, the imbalances with Venezuela (for skilled workers and executives) shifted dramatically.

In addition, “the asymmetry between the capacity of a nation to produce numbers of highly trained personnel and its capacity to absorb them,” (ibid., 496) grew rapidly in Venezuela. Although one typically views this differential as the result of more workers having been educated by a country that cannot then offer enough positions to attract and use their skills, PDVSA workers who had gone on strike (and had their names published) were left with minimal opportunity to work in Venezuela at virtually any level of skill or income. This led to a surplus of professionals in Venezuela, which contributed to the emigration of ex-PDVSA workers.

According to Neoclassical theory, flows of labor move from low-wage to high-wage countries and capital (including human capital) moves in the opposite direction (Massey et al. 1994). Neoclassical economics, “looks for a simple sum of individual cost-benefit decisions undertaken to maximize expected income through international movement [where] expected income is defined as the probability of employment (one minus the unemployment rate) times the mean income in whatever economic sector a rational actor contemplates working” (ibid, 701). There is no doubt that—while other factors do apply—for many Venezuelan professionals their probability of employment and their potential income were much greater outside Venezuela. As Massey et al. also say, “In theory, emigrants should go to the destination countries in which they expect the
highest net gain” (ibid.) and the information reviewed did show that Venezuelan oil
workers were well paid in Canada and have been successful in Colombia.

Massey et al. refer to a study done in 1963 by Fleisher on Puerto Rican
emigration, which showed that “the higher the relative unemployment on the island, the
greater the outflow of migrants to the mainland” (ibid.). According to the CIA World
Factbook (f2011 data and estimates) Venezuela had between 7.3-8.1% unemployment,
which was lower than that the United States (9.1%) or Canada (10.8%) and Colombia
(10.8%) and thus employment rate does not explain the migration of PDVSA workers.
However CIA World Factbook data show that real wages have been severely eroded
given Venezuela’s commercial bank lending rate of 19.89% and its high inflation rates
(27.1% in 2009 and 29.8% in 2010).

In his 2007 “Brain drain in developing countries,” Docquier states: “One of the
potential explanatory variables for migration is the sociopolitical environment at the
country of origin. The deterioration in governance is a push factor for emigration.” As
described previously, reports of violence, political instability, and government
inefficiency contributing to such deterioration in Venezuela are widespread. Through
ongoing takeovers in various industries, President Chávez has fostered uncertainty.
“President Hugo Chávez’s continued efforts to increase the government’s control of the
economy by nationalizing firms in the agribusiness, financial, construction, oil, and steel
sectors have hurt the private investment environment, reduced productive capacity, and
slowed non-petroleum exports” (CIA World Factbook). Further, the highly skilled
professionals at PDVSA fit within what Chávez considers the privileged classes. The
expropriations of private businesses and other Chávez policies are evidence of potential
threats to the civil rights of the workers and their families (Romero 2010) and therefore may have contributed to the exodus, which may be evidenced by the number of émigrés that sought political asylum. However, it should be noted that Massey et al. reported on a study performed in El Salvador by Richard C. Jones (1989) that found “political violence produced emigration only indirectly, by causing economic setbacks—sabotage, land disputes, strikes, abandonment, and divestment—which themselves promoted movement” (1994, 701).

The New Economics of Migration theory challenges some of the assumptions of Neoclassical Economic theory (ibid., 711). Rather than claiming that emigration comes from disequilibria in international labor markets and wage gaps, it “argues that international migration stems from failures in other markets that threaten the material well-being of households and create barriers to their economic advancement. Unlike the Neoclassical model, the New Economic model does not posit complete and well functioning markets. Indeed, it recognizes that in many settings, particularly in the developing world, markets for capital, futures, and insurance may be absent, imperfect or inaccessible. In order to self-insure against risks to income, production, and property, or to gain access to scarce investment capital, households send one or more workers to foreign labor markets. [...] Given the relatively higher wages in developed countries, international migration offers a particularly attractive and effective strategy for minimizing risks and overcoming capital constraints” (ibid.).
While the New Economics of Migration has been applied to migrant workers, it may also apply to the PDVSA emigrants because over the last ten years there has been an environment of negative growth and a high rate of inflation in Venezuela (CIA World Factbook, Llana 2007), also limiting viable opportunities for the highly skilled PDVSA workers. As a report for the Global Commission on International Migration by O’Neil, Hamilton and Papademetriou put it, “the role of economic changes and crises in engendering migration flows remains powerful if complex” (2005, 4).

World Systems theory, which attributes migration directly to the globalization of markets (Portes and Walton 1981; Sassen 1988), cannot be ignored as an explanation because the oil industry is global and the demand for workers, managers and executives is, therefore, worldwide. “Although low skilled workers saw their prospects dim as a result of economic globalization, the prospects of high skilled workers brightened as a result of the increasing globalization of economic relationships in the sense of the global interdependence of production, consumption, and knowledge creation” (Körner 1998, 26). It is possible that some of the population in Venezuela was prone to migrate because they were highly trained engineers whose skills were valuable in a global industry, however this situation existed before the strike and therefore World Systems theory cannot fully explain the specific exodus, although there is some support for it. World Systems theory also suggests that immigrants tend to be attracted to large cities, which may apply less in this case because many ex-PDVSA workers are employed in oil fields and production facilities. As Millman reported in the Wall Street Journal (2007), “remote Alberta has become one of the world’s fastest growing enclaves of Venezuelans.”
Network theory attributes migration to more individualized factors, as Massey et al. (1994) describe: “Migrant networks are sets of interpersonal ties that connect migrants, former migrants, and non-migrants in origin and destination areas through ties of kinship, friendship, and shared community origin” (728). The interviews performed by Niebrzydowski and De la Vega (2010) document that a network-building process is taking place as more of the PDVSA professionals settle in significant numbers in the United States, Canada and Colombia. The first ex-PDVSA migrants clustered in destination areas where their skills were in demand and they, through interpersonal ties, drew new immigrants, which is creating a pool of other immigrants and producing a multiplier effect. This “family and friends effect” (Massey et al. 1994, 729) can be observed in Alberta, Canada where there are examples of Venezuelan culture taking root, such as growing chili peppers under heat lamps and making cachapa pancakes with Canadian cornmeal (Millman 2007). In the United States, immigration policies facilitate such networking, as those who become U.S. residents are entitled to bring their family and then those family members can in turn help other family members to immigrate.

It is too early to tell whether Cumulative Causation theory, which refers to the tendency for international migration to “perpetuate itself over time, regardless of the conditions that originally caused it” (Massey et al. 1994, 733) is relevant to the PDVSA workers. “Cumulative Causation at the individual level leads to other mechanisms of self-perpetuation at the social structural level, one of the most important being network formation. According to network theory, each act of migration creates a social structure necessary to sustain additional movement” (ibid., 734). Evidence of Cumulative Causation was not encountered, although there was evidence that networks taking hold.
However, there were newspaper reports of individuals who would gladly return if conditions in Venezuela changed and of those who expressed no desire to do so. Finally, remittances are often discussed with Cumulative Causation theory, but they are complex even before allowing for the situation in Venezuela and were not part of this case study.

The New Economics of Migration theory explains international migration as stemming from failures in other markets that threaten the material well being of households (ibid., 711). There is no doubt about the applicability of this theory given the drastic changes in governance brought by the Chávez administration and its policy of encroaching on the private sector, which threatens the well being of many households. The lack of security and the economic deterioration can be considered a failure of the Venezuelan market to meet the expectations of skilled workers, who have the option to emigrate into markets that offer improved opportunities for survival, economic stability, and the possibility of capital formation.

In the case study of the PDVSA workers, the Neoclassical and New Economics theories complement each other. There is also support for a strong “demand component,” suggesting that immigration is driven by demand that is built into the economic structure of advanced industrial societies (ibid., 715). Such a pull factor is applicable as a cause of the PDVSA migration because many countries that participate in the oil sector need the expertise the Venezuelans have to offer. While the push factors increased in importance as conditions in Venezuela—especially for the PDVSA workers—deteriorated, the pull factor of available jobs in other jurisdictions cannot be ignored.

As already noted, there is also evidence in places like Alberta and Miami (Weston) that “ethnic enclaves” (ibid., 718) may be forming. Millman (2007) in
particular found such evidence, in that the population of oil workers in Alberta is attracting even more immigrants from Venezuela who are establishing businesses to recreate the familiarities of their former home.

In summary, the PDVSA case study provides some validation for several migration theories, probably because “each theory captures an element of truth” (Massey et al. 1994, 739). Indeed, no theory can be said to have prevailed; rather they complemented each other.
Chapter Four: Effects of the Brain Drain from PDVSA
Effects of the Loss of Skilled Workers on PDVSA and Venezuela

The loss of skilled workers is widely considered to be responsible for a decline in PDVSA’s production and efficiency. Recovery from the total shutdown during the strike took months and most sources report that production has never again reached prior levels. The quality of operations was also affected. Per Coronel (2011) “its [PDVSA’s] capacity to operate efficiently has been deeply eroded, perhaps irreversibly.” On September 17, 2010 Reuters reported that a huge fire had knocked out one of PDVSA’s major oil terminals in the Caribbean. The same article mentioned that PDVSA had suffered frequent incidents that had affected operations since Chávez had fired thousands of managers and technicians after the strike, noting that “experts say mismanagement, electrical faults and lack of maintenance have been the most frequent causes.”

As it provides the bulk of the country’s revenues, the declines at PDVSA negatively affect Venezuela’s economy, which is suffering from poor growth rates and runaway inflation (CIA World Factbook) despite a hike in oil prices that should have produced another oil boom for Venezuela. This economic deterioration has affected the quality of life in Venezuela, contributing to a soaring crime rate, food shortages and power outages (STRATFOR 2010).

Sadly, “Neither official statistics nor independent estimates show any evidence that Chávez has reoriented state priorities to benefit the poor” (Rodriguez 2008, 1). For example, while reporting from Caracas for The Guardian on January 26, 2011 about the exacerbation of the housing crisis due to recent flooding, Rory Carroll noted: “Under Chávez the government has built fewer than 40,000 units a year—some say only 24,000 –
in contrast to previous governments, which averaged 70,000.” Such problems feed crime, as reflected in this quote from a March 2012 article in *Latin Business Chronicle*:

“‘Caracas is the most dangerous capital city in the world, more dangerous than Baghdad,’ says Roberto Briceño Leon, who heads the Observatório Venezolano de Violencia, a non-government watchdog that monitors crime in the country.”

There is a dichotomy between the Venezuelan economy that has contributed to such situations and recent high oil prices. Pavia (2009) found “strong empirical evidence that [Venezuela's] growth has been dependent on oil revenues and that this dependency has increased in recent decades.” Despite a long history of such dependency, increased oil revenues are not providing the expected economic gains, as is neatly summarized in “Feeling the heat,” a 2010 article in *The Economist*.

**From boom to slump** But for the time being the Bolivarian revolution (named after Simón Bolívar, South America’s independence hero) faces unprecedented difficulties. Everyday life is getting harder for Venezuelans. While the rest of Latin America is recovering strongly from the world recession, Venezuela is slumped in stagflation. The boom came to an abrupt end when the oil price plunged in the later months of 2008. Although it has since risen again strongly, Venezuela’s economy has not (see chart). Mr Chávez last month accepted that it “could” shrink again this year, confounding earlier official forecasts of growth. The IMF projects a contraction of Venezuela’s GDP of 2.6% this year, after a fall of 3.3% last year. By March, average wages (allowing for inflation) were 15% below their peak of 2007 (Figure 14).
Foreign investors’ concerns over Chávez’s policies also contributes to reduced employment opportunities. Alvarez and Hanson (2009) note, 

In the 1990s, Venezuela opened its oil industry to limited private investment and allowed foreign companies to manage specific oil fields. Such ‘strategic associations’ made up roughly 23 percent of total oil production as of 2006. In April 2006, Chávez announced the government would take a majority stake in such projects, increasing its share from 40 percent to 60 percent. Though this partial nationalization is expected to burden PDVSA with investment costs in the billions, in 2007 the president created the seven new subsidiaries of PDVSA listed earlier, including services, agriculture, shipbuilding, construction and industry.

According to the Council on Foreign Relations, “The head of PDVSA, Rafael Ramírez, told the New Yorker in June 2008 that Chávez plans to use the oil company to transform Venezuela from an ‘oil sultanate to a productive society within a socialist framework’” (2009, sec. PDVSA).
Such significant intervention in the Venezuelan energy sector took revenues from PDVSA. The changes at PDVSA, the takeovers in banking, and the takeovers of foreign operations and holdings in the oil (and many other) industries, as listed before, effectively removed the foreign investment needed to maintain existing levels of oil production. As Isbell suggests:

it is very doubtful that the private sector will continue to invest in Venezuela at the same rate as during the last 10 years. The most likely outcome is that at least a large part, if not all, of the investor effort necessary to simply maintain current production—not to mention the possibility of significant increases—will fall on the shoulders of PDVSA, the same state company that just a short while ago lost nearly all its skilled technical human resources and that remains a financial hostage to Hugo Chávez’s political aims. In such a context, expecting the minimum U.S. $4 billion in new investments each year necessary to increase the level of Venezuelan production seems excessively optimistic; not even the U.S. $2 billion annually necessary to maintain current levels seems guaranteed […..] It will also be necessary to count on the technical capacity of international private companies (IOCs) in this endeavor, as the brain drain from PDVSA as of 2002 and 2003 has left the state company with very little technical and scientific capacity (and most of what remains is committed to Chávez’s projects abroad, such as the help that PDVSA is providing to Bolivia in the gas sector)” (2007, sec. Conclusion and Analysis: The new threat).

The assertion that the company's capabilities, at least in terms of education levels, have been eroded is supported by data reported in Niebrzydowski and De la Vega (2010) and supplied by the “Gente del Petróleo” [“Oil People”] organization, a group of ex-PDVSA employees. Looking at INTEVEP (Instituto Tecnologico Venezolano del Petroleo), a PDVSA subsidiary, they found that 62% of the fired workers held advanced degrees (Figure 15).
Numerous studies on migration also claim that the “donor” country suffers from the departure of skilled professionals. “The overwhelming opinion is that the emigration of professionals and academics from developing countries has certainly harmed the home countries in that the ‘reverse technology transfer’ resulting from such migration entails high costs for the country of origin that are not repaid by the industrial countries” (Körner 1998, 25).

The strong pull factors from neighboring Colombia are reflected in the number of skilled workers now emigrating there from Venezuela, of which, many are going to the oil sector. While Venezuela is going through a period of political instability, the World Bank (reported in *Miami Herald* 2012, 1-W) has rated Colombia as “the most business-
friendly country in Latin America (2010) and first on the continent for investor protection. Moreover, the country adheres to the Organization of Economic Cooperation and Development’s (OECD) Declaration on International Investment, guaranteeing foreign investors the same treatment as domestic businesses.” This environment has led, according to the United Nations Conference on Trade and Development (UNCTAD) to a marked increase in foreign investment. Large investments made in Colombia's oil sector have made the country the third largest exporter of oil to the United States and Pacific Rubiales Energy Corporation, an important new player in the oil and gas business in Latin America, was co-founded and headed by Ronald Pantin who had worked in the Venezuelan oil industry for twenty-four years. Mr. Pantin has said “there are certain technologies with which we have a lot of experience because we have been using them in Venezuela since the 60s” (Panorama Report 2012, 8). Pacific Rubiales has welcomed, in Colombia and throughout Latin America, many ex-PDVSA skilled workers.

In 2010, *Latin Business Chronicle* reported on an executive opinion survey done by the World Economic Forum. On a scale of 1-7, executives in 139 countries were asked to rate how well their country attracted and retained the brightest and most talented people. With a score of 2.1, Venezuela ranked above only seven countries. Combining Venezuela's lower attractiveness to workers with the investment and reinvestment issues discussed earlier makes the challenges for PDVSA clear.

*The Status of Former PDVSA Employees*

Referring to the “Gente del Petróleo” [“Oil People”] organization's data in Niebrzydowski and De la Vega (2010), as of 2006 more than 40% of former PDVSA employees had relocated to the United States and Canada (Figure 16).
Figure 16: Distribution by Country of the Employees Fired from PDVSA That Emigrated in 2002-2003, Data as of June 28, 2006

Data source: Database of la organización “Gente del Petróleo” (the “Oil People” organization), a group of ex-PDVSA employees, in Niebrzydowski and De la Vega (2010), 138.

Per the same “Gente del Petróleo” database (ibid.), an even higher percentage (59%) of ex-workers from INTEVEP, a subsidiary of PDVSA, had migrated to the U.S. and Canada as of 2006 (Figure 17).
In discussing the immigration of Venezuelans into the United States, Gouveia (2009) acknowledges that the greatest concentrations of Venezuelans are found in Florida, followed by New York, but continues, “However, an oil-lubricated network formed not only by oil camps, but by the more recent privatization strategies, is increasingly evident in Texas’ metropolitan areas (primarily Houston and Dallas) and even Omaha where Northern Gas has hired the occasional Venezuelan.” She further describes the Venezuelan population in the United States, based on data collected by the United States Census Bureau: There were 48,513 Venezuelans living in the United States in 1990 and, per the American Community Survey (ACS), in 2009 there were 196,327.
She also reports on ACS data that show Venezuelans are characterized by high levels of socioeconomic status and, for survey data from 2006 to 2008, 93% of Venezuelans twenty-five and older reported they were high school graduates and half were also college graduates. Gouveia also notes from the ACS that Venezuelan households reported a median household income of $52,000, that a relatively high percentage (14%) of Venezuelan workers were self-employed and that Venezuelan workers tended to be employed in occupations associated with high levels of socioeconomic standing (an average of 48.6 on the occupational socioeconomic index).

In Canada, extracting the heavy oil of Venezuela’s Orinoco region uses techniques applicable to the Alberta oil sands, making the former PDVSA employees’ knowledge valuable to Canadian oil companies (Millman 2007). While the effect on production is hard to measure, the workers’ value can be surmised: “The new arrivals are hardly huddled masses. Many are oil-field veterans who have taken positions in Canadian refineries at salaries topping $100,000 a year” (ibid.).

Another factor that influences migration is proximity (Doquier and Hanson, 215) and many PDVSA workers have migrated to Colombia. As reported in Semana magazine (2011), the increase in relocations to Colombia is more recent, reflecting the positive changes in the social and economic environment there. Leading executives from PDVSA have emigrated to Colombia and presumably have hired other former PDVSA employees and will continue to do so. In the same Semana article, Luis Giusti (president of PDVSA from 1994 to 1999) estimated that there could be as many as 1,300 Venezuelan oil workers in Colombia. Humberto Calderón Berti, a former president of PDVSA, chancellor of Venezuela and president of OPEC, is now president of Vetra, one of three
Colombian oil companies that have rapidly advanced the development of Colombia's oil industry and were created by executive emigrants from PDVSA. He comments: “Colombia was delayed many years due to a lack of human capital, which has now arrived. To make a good petroleum engineer takes 15-20 years, and those that arrived in Venezuela were persons with 30 or more years of experience.” Says Ronald Patin, who was second at PDVSA beginning in 2000 and is now president of Pacific Rubiales: “When we came here in 2007, the company produced 24,000 barrels and by the end of the year we were producing 275,000 barrels. Colombia then produced 560,000 barrels per day and today produces close to 900,000.”
Conclusion

Brain drain has been occurring from Latin America and Venezuela for decades. While Venezuela has typically shown a positive net immigration rate, the loss of its skilled professionals has long been a concern, as evidenced by the Venezuelan government’s creation of the Fundación Gran Mariscal Ayacucho program in 1975 to subsidize education abroad under the condition that graduates return to work in Venezuela. However brain drain from Venezuela was ameliorated during the 1980s and 1990s by a boom in the oil industry that absorbed many highly skilled Venezuelan professionals into jobs at the government-owned oil companies, PDVSA and CVG (Corporación Venezolana de Guayana), which also attract workers from other countries.

The facts that oil revenues represent 80% and, more recently, 92-95% of Venezuela’s export revenue and 50-55% of its national income, illustrate the overwhelming importance of the oil industry to Venezuela. Historical data show that PDVSA was a profitable company and, from some of the reports of departed workers and executives, offered attractive careers for many skilled professionals. Much of the literature reviewed describes the company as being managed by professionals with little interference from the government, prior to Chávez.

Given the importance of oil to Venezuela it is not surprising that Chávez turned his attention to PDVSA once he became president, but unlike his predecessors Chávez’s direct interventions led to a relationship with the executives at PDVSA that was increasingly adversarial. This dissatisfaction led PDVSA executives and workers to join the general strike in 2002-2003, which eventually led to the firing of many professionals at PDVSA who were then ostracized and unable to obtain suitable jobs.
The factors that pushed these workers to emigrate include political instability, deterioration in the country’s economy (anemic growth rate, inflation, devaluation, implementation of exchange controls, a dramatic reduction in foreign investors); lack of security and lack of rule of law (high crime rate, kidnapping, extortion and biased tribunals); and a lack of employment opportunity in Venezuela (contraction of PDVSA’s growth, reduced foreign investment in PDVSA and the firing and overt blacklisting of skilled professionals who had gone on strike).

Many factors also pulled these skilled workers to emigrate, particularly the offers of better wages and opportunities for careers in countries with political stability and better economies. Countries that have important and/or growing oil industries, such as the United States, Canada and Colombia had ready markets for the skills of the PDVSA professionals. Once a community of immigrants had settled in a new country, a multiplier effect (as they attracted family and friends to join them) was reported.

The impact of the departure of skilled professionals on Venezuela was amply demonstrated by the dismal performance of PDVSA and failures of the Venezuelan economy despite a major spike in oil prices. There was a marked decline in PDVSA production and efficiency after the strike and the exodus of skilled workers from which it has yet to recover. This, and the deflection of PDVSA's revenues to Fonden and Chávez's other “Bolivarian” efforts, hampered the ability of the company to reinvest in its operations. Because the oil industry is critical to the country’s revenues, the deterioration of production this caused at PDVSA has seriously affected the Venezuelan economy, which is struggling with anemic growth, high levels of inflation, and devaluations of the currency. Despite draining revenues from PDVSA, Rodriguez (2008), and Carroll
(2011)—among others—found evidence that Chávez’s promises to the poor have not been fulfilled. As Paiva concluded: “econometric modeling suggests that macroeconomic instability and fiscal mismanagement have hindered growth in Venezuela” (2009, 6).

In applying the data from the PDVSA case to several migration theories as they are described in scholarly papers, many of them found an element of support. There were clear economic and cost-benefit incentives for the skilled PDVSA workers to emigrate, as advanced by Neoclassical theory. The failure of the economy and the markets in Venezuela supports the Economics of Migration theory. Globalization has undoubtedly helped create a demand for oil industry professionals in many jurisdictions and some support for World Systems theory was observed. There was also evidence that networks, where earlier immigrants attracted family and friends to emigrate, developed and created a multiplier effect on the number of immigrants and their tendency to relocate to a particular place. Again, the PDVSA case study supplied some evidence in support of most theories and did not validate only one.

While results for PDVSA workers who emigrated to the United States are harder to separate out because of PDVSA's ownership of CITGO, there is evidence that the population of Venezuelans in the United States is well educated. The PDVSA workers who emigrated to Canada have been instrumental in the specialized extraction of heavy oil there, while they have also played a key role in the rapid acceleration of oil production in Colombia, providing a good example of the effects of brain drain.
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