

# THE IMPACT OF THE DECLINE IN OIL PRICES ON THE ECONOMICS, POLITICS AND OIL INDUSTRY OF VENEZUELA

By Francisco Monaldi

**SEPTEMBER 2015**



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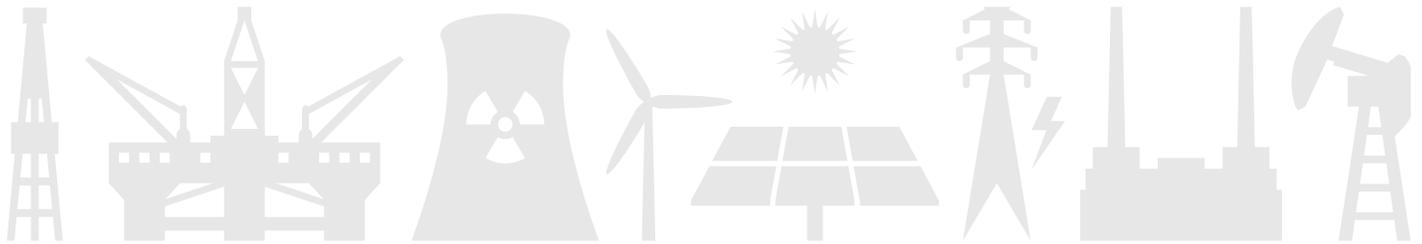


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By Francisco Monaldi\*

**SEPTEMBER 2015**

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## EXECUTIVE SUMMARY

While the collapse in oil prices since mid-2014 has stressed the economies of the majority of oil exporting nations, Venezuela stands out as one of the hardest hit among its peers. After a decade of some of the most favorable economic conditions in the nation's history thanks to a relatively prolonged period of strong oil prices and low international interest rates, the country was already in difficult economic straits before the oil price drop over the past year.

President Hugo Chávez (1999–2012) used the income from high oil prices to dramatically boost domestic consumption and to increase his power at home and abroad, while building up foreign debt and without generating any significant rise in productive investment. His successor, Nicolás Maduro, has been unwilling to take the tough decisions that the situation demands, with disastrous economic consequences. The country is more dependent on oil than ever, but the oil industry is in poor condition with production declining and margins thinning. Since 2013, oil policy has become more pragmatic and investor friendly, but it is unlikely to bring significant results in the short term. The problematic trends in the oil sector are hard to reverse when oil prices have significantly declined and the country is strapped for cash. Still Venezuela's extraordinary resource endowment offers significant opportunities if the country can be politically stabilized and the institutional and policy environment improve.

This paper provides an examination of the difficulties facing Venezuela in light of its dependence on revenues from the oil exports and the issues facing the energy sector, which have become more acute in the lower price environment seen over the past year. In short this paper finds:

- Venezuela's oil production has declined more than 350,000 barrels per day (b/d) since 2008 to around 2.6 million b/d. Critically, exports have declined even more, because domestic consumption and smuggling have been increasing and thus the exportable surplus has been falling. Net exports have fallen to close to 1.8 million b/d, and shipments that generate cash flow are significantly smaller due to the heavily subsidized sales to some Latin American and Caribbean countries and the loan repayments to China. In 2013–2014, Venezuelan state oil company PDVSA got cash flow from only about 1.4–1.5 million b/d. Higher value conventional oil production is also falling, and only output from lower value extra heavy oil is rising.
- PDVSA was in bad financial shape even before the oil price collapse, and since it began it has become much worse. The company will probably have to cut investments in real terms at the time it needs them the most. PDVSA's financial debt has dramatically increased, and other liabilities have also grown significantly. The cash flow deficit of PDVSA in 2015 can be projected at between US\$12 and 20 billion depending on the price of oil and the exchange rate used to estimate it.
- Under these stressful conditions, the government has become much more pragmatic and it is trying hard to create the conditions to boost foreign investment in oil and gas. PDVSA is also pushing for measures to improve its cash flow. The subsidized sales to Caribbean and Latin American countries have significantly decreased in 2015, the cash flow that returns to the company from the oil sent to China in repayment for loans has increased, there is a public discussion about raising the gasoline price, and the company is asking to be allowed to increase the amount of dollars that it sells at the more depreciated exchange rate.
- Overall, attracting investment in a low oil price scenario is going to be difficult due to a variety of above-ground challenges that remain present, including the lack of credibility of the institutional framework, the cash limitations of PDVSA, the macroeconomic and political instability, the widespread crime and corruption

issues, and the over-reached capacities of PDVSA's human resources. Total production is most probably going to remain stagnant in the short term and is highly unlikely to increase significantly in the next two to three years.

- Venezuela's macroeconomic crisis will likely get worse for lack of adjustment in an election year. There is even a small probability of hyperinflation and a much higher probability of debt default in 2016. Political instability may increase. The legislative elections should produce a majority for the opposition that could intensify the confrontation and might lead to a push to recall the president in a referendum in 2016–17.

## INTRODUCTION

During the last high oil prices cycle which ended in mid-2014 some oil exporters were more prudent than in the past, saving and investing more of the windfall, and taking advantage of the price environment to increase oil production. Venezuela was not one of those. In fact, after arguably a decade of the most favorable external conditions in its history, the country was in terrible shape even before the oil price decline in 2014. Venezuela's economic performance during the "Bolivarian Revolution" (1999–present) has been poor, having one of the worst per capita growth rates and the highest inflation in the region, despite receiving the largest resource windfall.

The populist presidency of Hugo Chávez (1999–2012) used the income from high oil prices to dramatically boost domestic consumption and to grow his power and influence at home and abroad. He not only spent most of the profits without generating any significant rise in productive investment, but he also rapidly increased the foreign debt. The macroeconomic imbalances generated by higher social spending during the extended electoral cycle in 2011–2013 made necessary a severe adjustment even during peak oil prices, but Chávez's successor, Nicolás Maduro, has been unwilling to take the tough decisions that the situation demands, with disastrous economic consequences. Legislative elections in December 2015 make unlikely any serious macro adjustment beforehand.

The country is more dependent on oil than ever, but the oil industry is in poor condition with production declining and margins thinning. Since 2013, oil policy has become more pragmatic and investor friendly, but it is unlikely to bring significant results in the short term. The problematic trends in the oil sector are hard to reverse when oil prices have significantly declined and the country is strapped for cash. Still Venezuela's extraordinary resource endowment offers significant opportunities if the country can be politically stabilized and the institutional and policy environment improve.

## ECONOMIC AND POLITICAL OUTLOOK

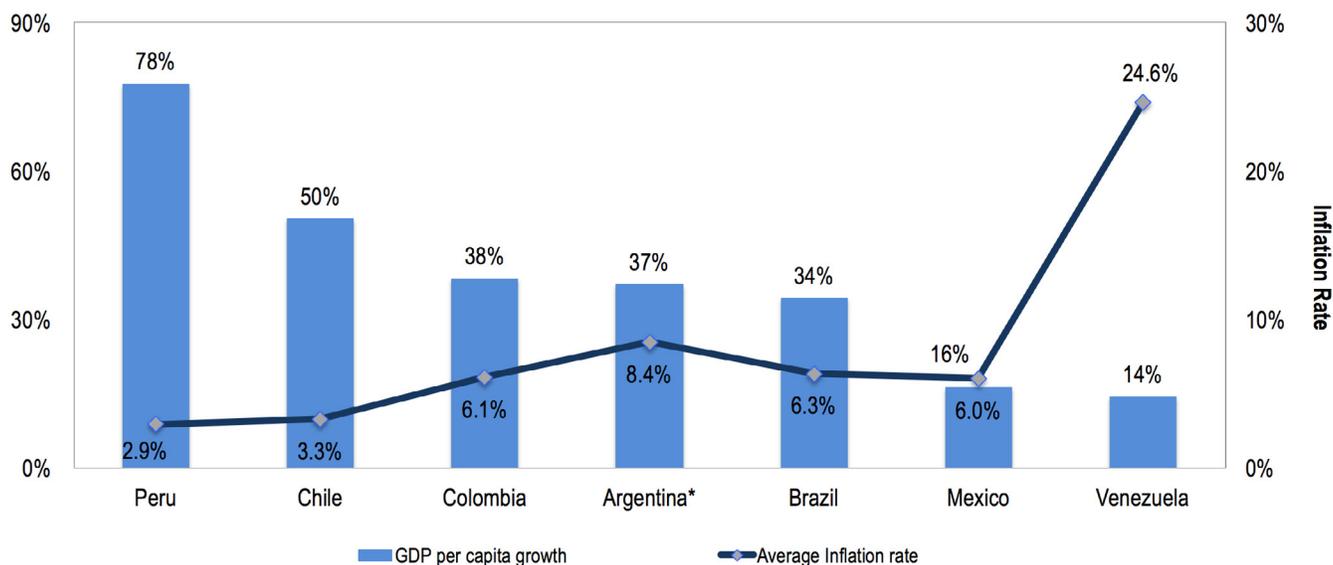
Venezuela was among the most vulnerable of the major oil producers in terms of its macroeconomic situation when the price of oil collapsed in 2014. Even at peak oil prices in 2011–2012, the country was running very high public sector deficits of around 17% of GDP, the foreign debt was increasing at an unsustainable pace, the domestic currency was severely overvalued, shortages of basic goods were widespread, and a recession had begun. Paradoxically, this precarious situation was generated during the largest oil income in the history of the country.

At 304% of GDP, Venezuela received the largest commodity windfall in Latin America in 2003–2012 compared to a regional average of 120% for net commodity exporters.<sup>1</sup> In contrast, it had one of the lowest GDP per-capita growth rates and the highest average inflation rate in the region (and more recently the world, with an official figure of 68.5% in 2014) (Figure 1). Poverty did decrease significantly in 2004–2008, along with a consumption boom that boosted the president’s popularity, but the recent crisis is leading to an increase in poverty to levels similar to those that existed in the late 1990s.

In addition, Venezuela demonstrated imprudent macroeconomic behavior during the high price cycle relative to many other oil exporters, as its net external position actually worsened. Venezuela’s foreign exchange reserves only rose by US\$7 billion in 1999–2014, a period in which accumulated exports were more than US\$850 billion according to the Central Bank of Venezuela. In addition, the external public debt went from US\$37 billion in 1998 to US\$ 102 billion in 2013, according to official figures.

At the same time, Venezuela’s economic dependency rose with the price during the boom period. Oil has represented 90–96% of exports during the last 7 years, compared to 60–70% in the late 1990s. Meanwhile fiscal revenues from oil represent more than 60% of total government’s revenues, compared to less than 50% during the late 1990s. Paradoxically, oil exports (measured in volume) declined approximately 30% between 1999 and 2014, so revenues are increasingly more dependent on the oil price (Figure 2). In addition, the meager non-oil GDP performance during Chávez’s tenure and the massive expropriation wave that started in 2006 left the Venezuelan private sector

Figure 1: GDP per capita growth and inflation 1998–2013



Source: World Bank.

much weaker than in the past, with private investment having a significant decline of 20% between 1998 and 2010, from an already very low level. As a result, the government is more reliant on the oil industry and the largely inefficient state-owned enterprises (SOEs) to generate revenues and future growth.

Still, the consumption bonanza, allowed by the increasing imports that were fueled by the surge in oil export revenues and the increase in foreign debt, enabled the president to have relatively high levels of popularity and easily win reelections in 2006 and 2012. In the case of the presidential contest of 2012, a consumption boom was engineered using different tools that would later aggravate the existing distortions, such as price controls, exchange rate controls, and significant interventions in labor and financial markets.

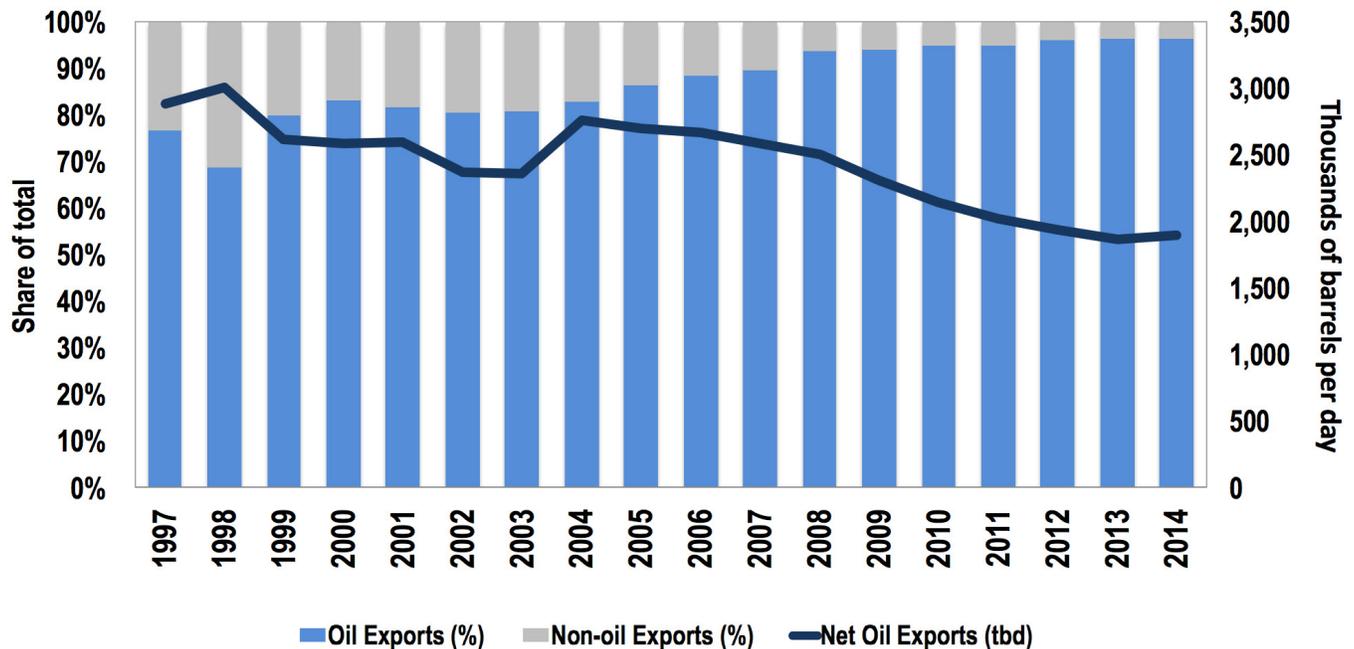
Total public sector expenditures reached a historical high of around 51% of GDP, while the public sector deficit reached 17.5% of GDP in that election year.<sup>2</sup> To a large extent, the growth in expenditures was financed through a twofold increase in the money supply between 2010 and 2012. Imports of goods rose by 27%, with a severe overvaluation of the official

exchange rate, which closed at only 25% of the black market rate in 2012.

President Chávez was terminally ill during the 2012 campaign and died in March 2013 shortly after the date he was supposed to initiate his new term. A month later Nicolás Maduro, his anointed successor, won a highly contested election with less than a 2% margin amid accusations of significant abuse of the incumbency advantage and widespread electoral irregularities.

The macroeconomic imbalances generated by the 2012 electoral cycle “on steroids,” prompted the need for a major adjustment even before the oil price collapse. The following year, when the Venezuelan oil export basket was close to \$100 per barrel, the economy experimented slower growth, public sector deficit remained at close to 17% of GDP and the exchange rate gap widened (see Figure 3). Partly due to the weak political position of the new president, a serious adjustment program never materialized, but the combination of a small devaluation and a significant quantitative restriction on imports brought the country to stagflation.

Figure 2: Oil exports vs. non-oil exports



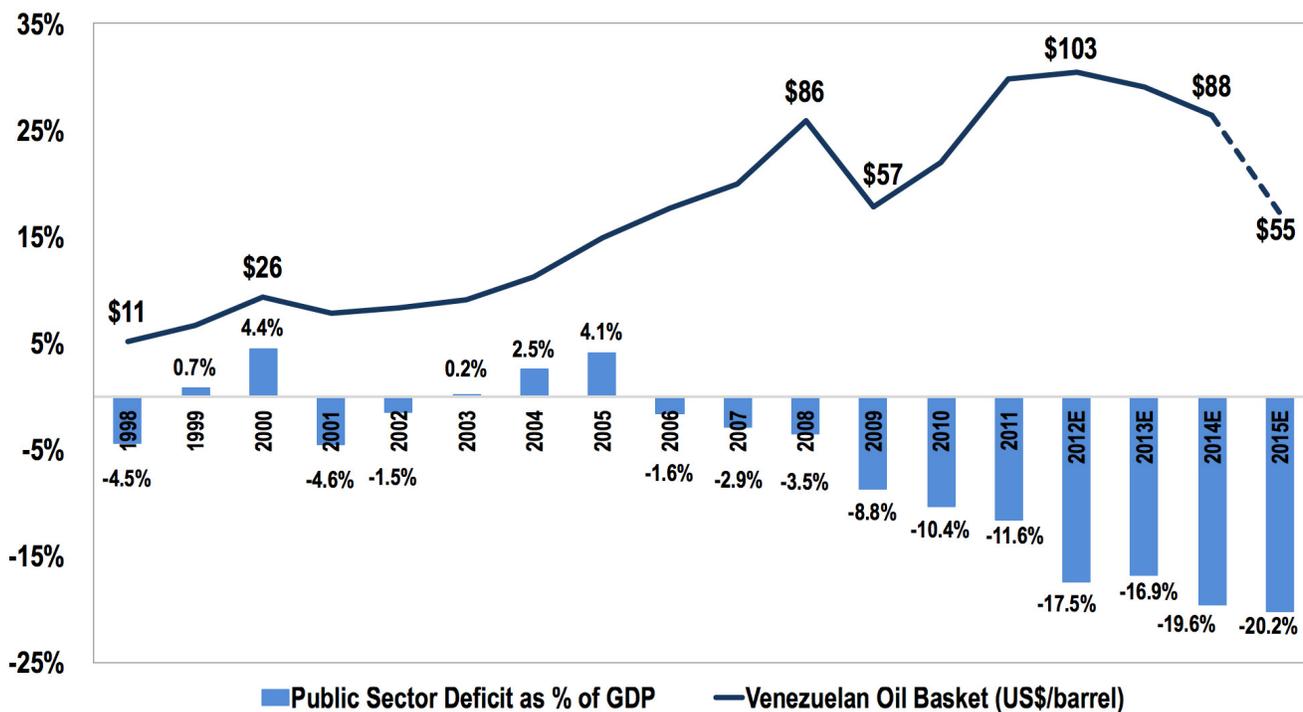
Source: Central Bank, BP Statistical Review of World Energy (2015).

The plunge in oil prices that began in mid-2014 could not come at a worse time. With a decline in the price of the Venezuelan basket of close to 50% and a record-low popularity of the government in a year with legislative elections, the much needed adjustment measures seem elusive. Morgan Stanley estimates that with an oil barrel at US\$ 60, Venezuela could experience for the first time in 15 years have a deficit in its current account leading to a total financing gap of more than US\$ 17 billion. Due to the high dependence on foreign goods, import cutbacks will lead to higher levels of scarcity, strong contractions in production and consumption, and a three-digit inflation rate, as a result of exchange rate devaluations and deficit monetization. The IMF is estimating a fall in GDP of 7% in 2015.

On the political side the country has been in a volatile transitional period from the strong-handed presidency of Chávez, a charismatic and popular president with an approval rating of close to 60% in 2012, to a much weaker successor, Maduro, whose popularity has fallen

from above 50%, when he won in April 2013, to around 22–28% by mid-2015.<sup>3</sup> As the economy tanks, the country has been in an increasing state of unrest, which led to significant protests in 2014 and the arrest of one of the main opposition leaders, Leopoldo López on charges of promoting violence. Legislative elections are set for the end of 2015. As of July the opposition held a lead over the government of more than 20 points in the polls, which would imply a change in control of the unicameral National Assembly in 2016. The government could get more seats than their share of voting due to malapportionment (over-representation of rural areas) and gerrymandering (manipulation of the electoral districts), but there is a limit to what they can do within the boundaries of legality to avoid a serious defeat. However, in an extremely polarized country in which the government controls all major levers of power, including the military, the electoral authority, and the judiciary, many things could happen before there is a transition to a new government.

Figure 3: Public sector deficit vs. oil prices



Source: Oficina de Estadísticas de las Finanzas Públicas (OEFP), Ecoanalítica.

The current outlook for the Venezuelan economy is similarly gloomy as it depends highly on an improvement in oil revenues in the short term. This is unlikely since even the most optimistic oil price forecasts for the end of 2015 (\$80–85 per barrel for the US oil) are very far from the fiscal breakeven of \$170 per barrel in 2014 and oil production is stagnant. Even if the country manages to postpone a major adjustment and close the financing gap this year, 2016 promises to be a very challenging year with unpopular and harsh measures to be taken after the legislative elections. Rating agencies reports and credit default swaps estimate a high probability of default.<sup>4</sup> Without a return of higher oil prices, one of the few options left to improve the economy in the medium term is raising oil production. However, as will be shown in the next section, the outlook for an oil production increase is not too rosy either.

# THE VENEZUELAN OIL INDUSTRY OBSTACLES

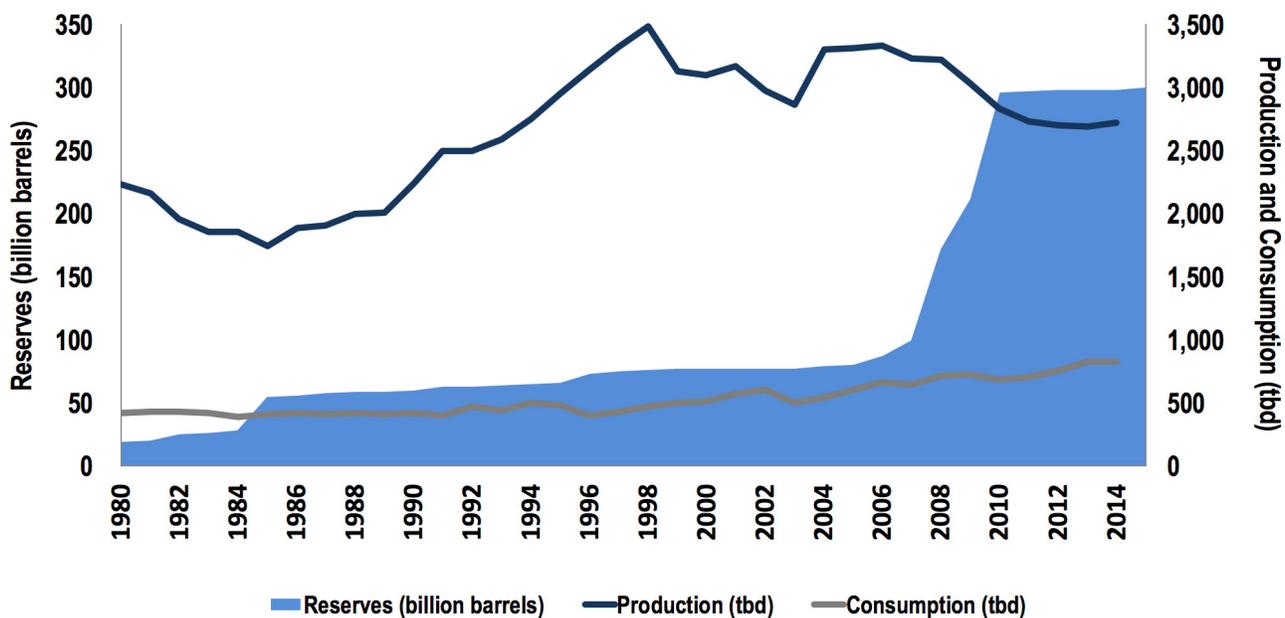
## STILL GREAT POTENTIAL, BUT WITH MANY OBSTACLES

The Venezuelan oil industry wasted an amazing opportunity to increase investments and production during the price boom of the last decade. The country has an extraordinary geological endowment of unconventional extra-heavy oil resources in the Orinoco Belt region, as well as a much smaller but still significant conventional reserves in traditional production areas (Figure 4).<sup>5</sup> It also has potential in shale oil and off-shore natural gas. At the high oil prices that prevailed during this period, the proved reserves could have been monetized with a large margin of profitability, but the necessary investments did not materialize. Quite the contrary, production has been steadily declining due to lack of investment and the depletion of the older conventional fields. This is a tragic story of great potential with dismal performance

## SOME WORRISOME PRODUCTION AND REVENUE TRENDS

During the last few years the opportunity provided by Venezuela’s immense resource endowment and high prices contrasted with a series of worrisome trends. The first and more obvious trend is the production decline. Different sources provide different levels of oil production, but they all coincide on the downward trend. Conservative estimations show production has declined more than 350,000 barrels per day (b/d) since 2008 and more than 800,000 b/d since its peak level in 1998. Current crude production is estimated at 2.5–2.6 million b/d with an additional 100,000 b/d in other liquids. Notice that this production fall occurred while proven reserves dramatically increased with the incorporation of unconventional resources and oil prices skyrocketed (Figure 4).

Figure 4: Oil production, consumption, and reserves 1980–2013



Source: BP Statistical Review of World Energy (2015).

The second trend is the fall in net oil exports, which have declined even more than production, because domestic consumption and smuggling have been increasing and thus the exportable surplus has been falling. Net exports have fallen more than 1.1 million b/d since the peak level in 1998, to their current level of close to 1.8 million b/d. The country has been increasingly importing products (and more recently light oil) for an average of about 150,000 b/d, both for domestic consumption and for blending with extra-heavy oil to re-export.

Third, exports that generate cash flow are significantly smaller due to the heavily subsidized exports to some Latin American and Caribbean (LAC) countries, most significantly Cuba, which has received close to 100,000 b/d over the past several years. In addition, PDVSA's cash flow generating exports are also reduced by the barrels it has to send for repayment of the loans-for-oil deals largely with China (and smaller amounts to other countries). The domestic market, currently representing more than 700,000 b/d of demand, is a total loss for PDVSA, due to heavy subsidization of fuel prices which leave Venezuelan pump prices as the cheapest in the world.<sup>6</sup> In fact, on average, the company does not even recover the distribution costs and incurs in very heavy losses in terms of opportunity cost (equivalent to about US\$24 billion in 2013). As a result of subtracting the subsidized LAC markets, the domestic market, and the loan repayment volumes, in 2013–2014, PDVSA got cash flow from only about 1.4–1.5 million b/d. During the last year, the exports to LAC subsidized markets have been reduced in an effort to improve the cash-flow, but unless the subsidies are eliminated they will continue to have a significant opportunity cost.

Fourth, the trend in Venezuela's production mix is also problematic. Conventional production (from the western and north-east areas of the country) has been falling faster than total production, and only extra-heavy production is increasing. Production in the western Lake of Maracaibo basin has been declining for more than a decade. It has fallen from close to 1.1 million b/d in 2008 to 750,000 b/d in 2014, a decline of about 32%. In this period the government expropriated some of the service contractors that operated in the area,

causing further production decline. This area is home to the original oil fields of Venezuela, some of which have been operated for almost a century. There are still significant proved reserves there, but exploiting them requires enhanced recovery techniques and significant investments. Some joint-ventures have recently increased investment and production, but the fields operated solely by PDVSA continue to fall.

Even more worrisome is the recent rapid decline in the more productive conventional fields of the north east Monagas state, where production has fallen from 1 million b/d in 2008, to about 700,000 b/d in 2015 (a fall of 30%). This area includes some of the most prolific and lower cost fields in the country, the cash-cows of PDVSA. It includes El Furrial, a field discovered in the late 1980s, which has seen production decline by more than 150,000 b/d. This has a variety of negative implications: it significantly reduces the profitability of the overall production basket and it reduces the lighter oil available to blend with the increasing extra-heavy production, which is conveniently located close to this production area, prompting the need to import products from the US and light oil from Africa to use as blending diluent.

The only area in which production is going up is in the Orinoco Oil Belt, in which most of the oil reserves are below 10°API grade and require upgrading or blending with lighter oil or product, to be exported or refined. Production of heavy and extra-heavy oil in this area has increased by about 200,000 b/d to close to 1.3 million b/d in 2015. Margins from exporting extra-heavy crude are smaller, since its transportation, blending or upgrading are costly, and they are heavily discounted in the international refining markets.<sup>7</sup>

Fifth, PDVSA's operated production is falling faster than the country's total production, while the production in joint ventures (JVs) with international partners has slightly increased. JVs produce more than 1 million b/d, more than a third of the country's oil production, from less than 800,000 b/d in 2009. The problem for PDVSA and the government is that foreign partners own up to 40% of these projects, so the cash flow has to be shared. Moreover, until recently the relationships with the partners were severely stressed by the nationalistic reforms made by Chavez to the oil industry.

To summarize, oil production in Venezuela is comprised of increasingly heavier oil and thus less profitable, PDVSA's operated production is falling more rapidly, and the production that generates cash-flow is almost half of the total production. These trends were problematic enough at peak oil prices, but with prices falling they become much more acute and require significant reforms.

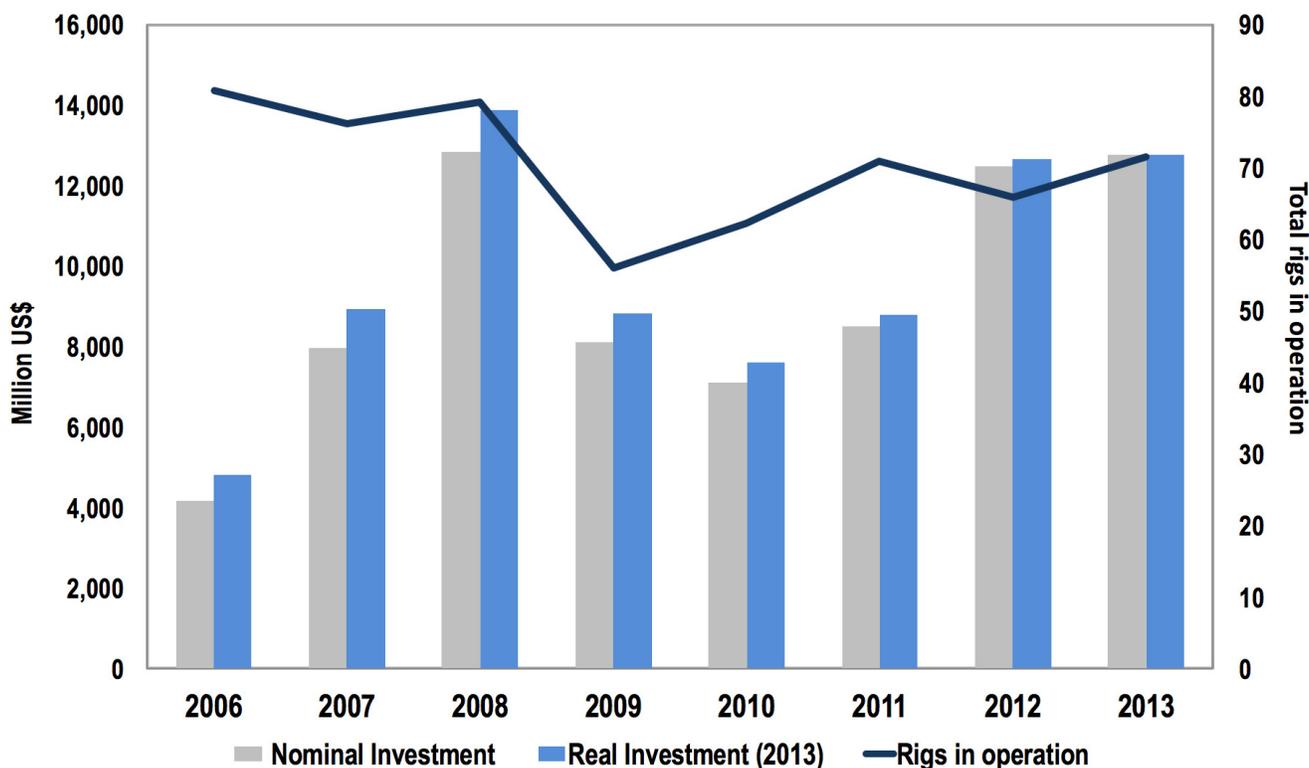
### PDVSA'S MALAISE

PDVSA was in bad financial shape even before the oil price collapse. An excessive fiscal take and other social burdens, combined with the subsidized sales of products in the domestic and regional markets, and oil-for-debt repayment, made the company incapable of fulfilling its investment plans, and as a result its infrastructure has been rapidly deteriorating. Investment in exploration and production (E&P) at US\$ 8–13 billion a year has been insufficient to avoid production decline. Worse yet, PDVSA's production

budget has stagnated despite the record high prices and debt issuance. The number of oil rigs in operation has not increased during the last decade (see Figure 5). In 2014, it declined to an average of 68 from 72 in 2013, and to 61 in the first five months of 2015. The government gave preference to the social program transfers to off-budget funds to be spent during the electoral cycle (Figure 6).

The financial debt of PDVSA has dramatically grown, from less than US\$ 3 billion in 2006 to close to \$46 billion in 2015. Other liabilities have also increased significantly including accounts payable to suppliers and minority partners for more than US\$ 16 billion since 2004. The compensation in the ICSID arbitrations of Conoco and Exxon expropriations could end up in the US\$7–9 billion range.<sup>8</sup> Moreover, PDVSA's domestic expenditures have been largely financed by the Central Bank. The dramatic overvaluation of the official exchange rate at which PDVSA sells most of the dollars it receives (the black market rate was 100 times

Figure 5: Exploration and Production Investment



Source: PDVSA and Baker Hughes.

higher than the lowest official exchange rate in August 2015) implies that it generated much less bolivars than it needs to operate, even before the oil price collapse. At the current exchange rate mix, Venezuela is one of the costliest economies in the world.

Since the mid-2014 price collapse, the financial problems of PDVSA have become much more serious. The cash flow deficit of PDVSA in 2015 can be projected at between US\$12 and 20 billion depending on the price of oil and the exchange rate used to estimate it. The implication is that most probably the company will have to cut investments in real terms at the time it needs them the most.

It is hard to overstate the operational difficulties that PDVSA has been confronting.<sup>9</sup> The rate of accidents and stoppages has significantly increased. Project deadlines and production goals are rarely met. The number of employees has dramatically risen to close to 150,000 from less than 50,000 before the strike of 2003, despite production falling.<sup>10</sup> The company has not recovered from the massive loss of human capital prompted by the firing of almost half its workforce after the strike in 2003, concentrated in management

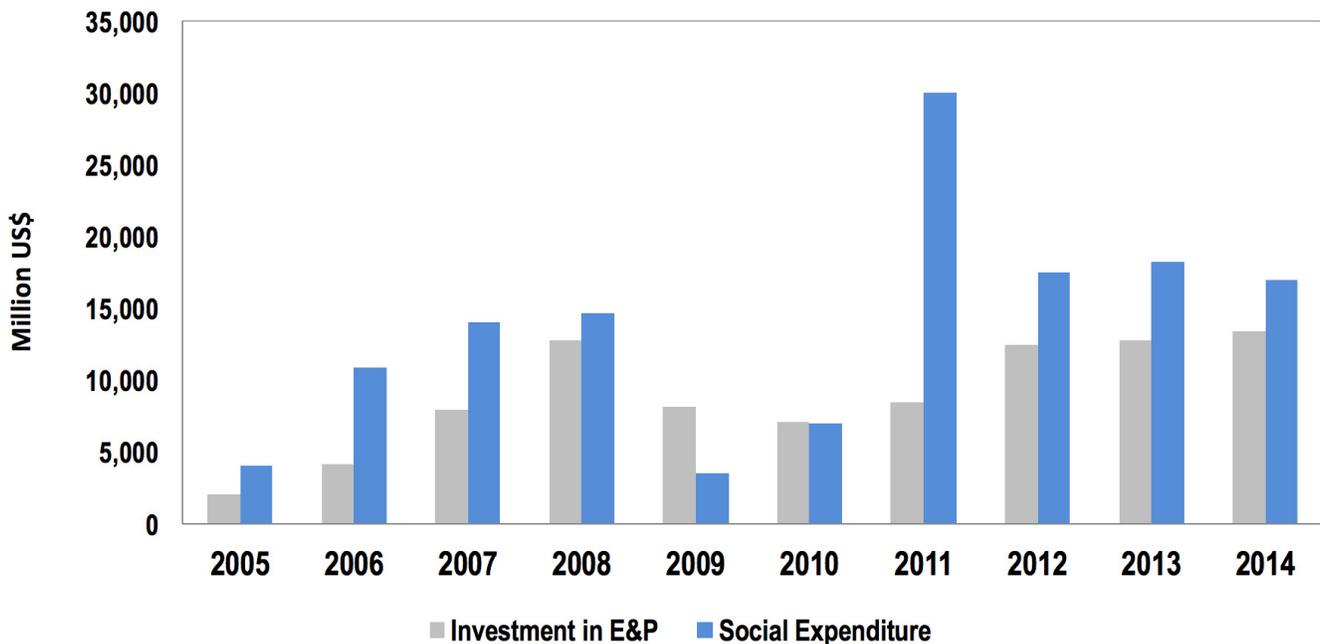
and technical personnel. The politicization of the company and the low salaries has made it difficult to attract and retain high quality personnel.

### PRAGMATISM OR DESPERATION?

Under these stressful conditions, the government has become much more pragmatic and it is trying hard to create the conditions to boost foreign investment in oil and gas. This renewed pragmatism started even before the price collapse. The government has asked the foreign partners to present their recommendations about the necessary changes in the regulatory and business environment to increase investments in the JVs and asked them for options to finance PDVSA's cash-calls in those projects.

As a result, starting in 2013 new contractual arrangements were negotiated giving the partners greater control over the cash flow and the operation in exchange for loans to the JVs. Chevron was the first one to sign the new agreements offering a US\$ 2 billion loan to the Petroboscan JV, which produces about 115,000 b/d. CNPC, Repsol and Perenco followed suit and others are negotiating similar deals.

Figure 6: Investment in E&P vs. Social Expenditure



Source: PDVSA.

The government has made the windfall profit tax more flexible for existing projects and it has been waived for new projects. A royalty rate reduction from 33.3% to 20% is under discussion. Also, the partners are being allowed to bring dollars at the depreciated official exchange rate.

PDVSA is also pushing for measures to improve its cash flow. The subsidized sales to LAC have significantly decreased in 2015 (up to 50% according to Barclays), the cash flow that returns to the company from the oil sent to China has increased, there is a public discussion about increasing the gasoline price, and the company is asking to be allowed to raise the amount of dollars that it sells at the more depreciated official exchange rate.<sup>11</sup> However, the sale of refineries abroad and the increased debt of Citgo, PDVSA's US downstream subsidiary, appear to be short sighted strategies to fund the government at the expense of the future capacity to market extra-heavy oil, which is traditionally more difficult to sell due to its lower quality relative to lighter, sweet crude.<sup>12</sup>

## CAN THE NEGATIVE TRENDS BE REVERSED?

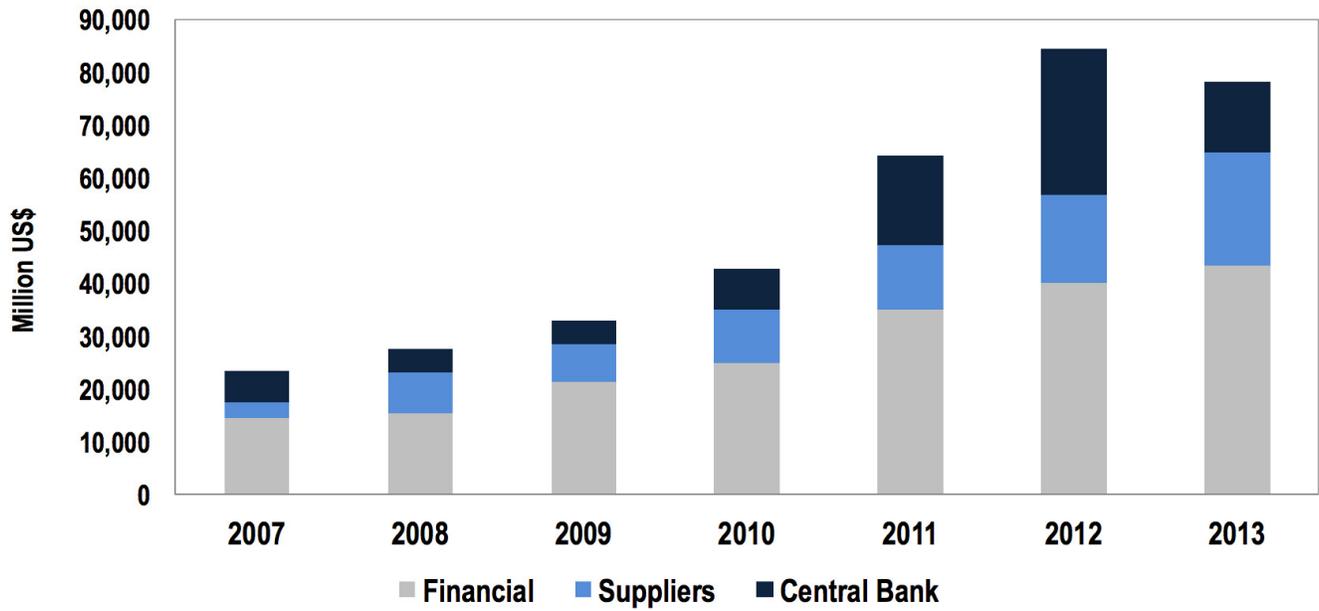
As discussed previously, Venezuela has tremendous geological potential, with among the three largest oil reserves in the world, but mostly of poor quality extra-heavy oil. The costs and geological risks of extracting this type of oil are relatively low. However, the costs of transporting, blending and refining extra-heavy crude make it less competitive, particularly given that it sells at a significant discount relative to lighter, higher quality oil. Still, under the right conditions, the pre-tax breakeven of the Venezuelan extra-heavy is below US\$25 per barrel, so it can remain competitive to US shale, the Canadian oil sands, or deep-water extraction.

Between 2009 and 2012, the government signed JVs to increase extra-heavy production with a variety of partners including CNPC, ENI, Chevron, Repsol and Rosneft. The original plan was to continue building upgraders to take the 8°API crude to 32°API. However, these required sunk investments of more than \$7 billion for every 200,000 b/d, and thus are unlikely to materialize in a high-risk business environment. So after seeing partners dragging their feet for years while

little investment materialized, the government has been moving to a more pragmatic strategy of blending without requiring the construction of the upgraders. Blending has been done with naphtha imported from the US and more recently with light oil imported from Africa. A 16 °API blend has been exported, made from 75% extra-heavy and 25% light oil. If they are able to successfully market the blended oil, this strategy could allow to significantly increase production without large sunk investments, but with lower margins than the conventional oil that it is replacing.

The government is also trying to get more investment in the conventional oil JVs. Some investment is indeed materializing, but it is unlikely to reverse the declining trend unless new areas are offered. Overall, attracting investment in a low oil price scenario is going to be difficult due to a variety of above-ground challenges that remain present, including the lack of credibility of the institutional framework (Venezuela ranks last in the Fraser Institute's worldwide survey of oil investors, meaning it has the most obstacles to investment), the cash limitations of PDVSA, the macroeconomic and political instability, the widespread crime and corruption issues, and the over-reached capacities of PDVSA's human resources.

Figure 7: PDVSA's debt



Source: Central Bank, PDVSA.

## CONCLUSION

The picture does not look pretty for Venezuela. The macroeconomic crisis will likely get worse for lack of adjustment in an election year. There is even a small probability of hyperinflation and a much higher probability of debt default in 2016. There may be more political instability. The legislative elections should produce a majority for the opposition that could intensify the confrontation and might lead to a push to recall the president in a referendum in 2016–17. Street protests are likely to increase as the economy continues to collapse.

The numerous problematic trends in the oil industry have been made worse by low oil prices. However, the new pragmatism in oil policy might lead to some improvement in private investment, but above ground risks could limit its impact. Conventional production would continue falling, so total production is most probably going to remain stagnant in the short term and is highly unlikely to grow significantly in the next two to three years. Extra-heavy production could rise at an increased rate if the current investor-friendly attitude remains in place. In a ten-year horizon production is more likely to increase, particularly if there is a transition to a more credible and stable government, but that potential could remain unfulfilled if political instability remains a serious issue.

## NOTES

1. Adler, Gustavo and Nicolas Magud (2013) “Four Decades of Terms-of-Trade Booms: Saving-Investment Patterns and a New Metric of Income Windfall” International Monetary Fund Working Paper. WP/13/103. May.
2. Source: local consulting firm Ecoanalitica and Barclays Capital.
3. According to Datanalisis, a respected local pollster and in line with other polls.
4. In 2015, the implicit probability of default during the next 5 years, provided by the credit default swaps market, has been up to close to 95%. All major rating agencies have repeatedly downgraded Venezuela’s and PDVSA’s debt.
5. The official proved oil reserves of Venezuela at 298 billion barrels are the largest in the world, of those more than 85% are of extra-heavy oil (below 10 grade API). This official figure has been calculated using a 20% recovery rate. Using a more conservative recovery rate of 10% Venezuela’s proved reserves would be 170 billion barrels, behind Saudi Arabia’s and similar to Canada’s. The dramatic increase in Venezuela’s reserves during the last decade is a result of the incorporation of the unconventional extra-heavy oil, discovered decades ago, but made commercial by technological improvements and high oil prices (Figure 4).
6. As of 10 August 2015, Venezuelans were paying 6 cents for a gallon of gasoline at the official exchange rate and a fraction of one cent at the black market rate, by far the lowest in the world, according to [globalpetrolprices.com](http://globalpetrolprices.com).
7. PDVSA strategy to increase production is mostly focused on large projects to develop extra-heavy resources, which is probably its best bet under the current institutional framework. However, in the longer term increasing conventional production might be also feasible in operational contracts with small private operators.
8. Most of the ICSID liabilities are owed by the Venezuelan government and not by PDVSA, but the payments would have to come from PDVSA’s revenues. Besides the Exxon and Conoco awards, there could be an additional US\$5–7 billion in other non-oil expropriation awards.
9. For example, all major refinery projects have been delayed 5 to 8 years, extra-heavy projects have been also delayed more than 4 years.
10. To some extent this workforce growth is the result of PDVSA’s changing role, becoming a development agency, but largely is the result of inefficiency and patronage in the oil operation itself, since the official figure of employees does not include the majority of those involved in the social programs, which are reported separately.
11. The reduction in gasoline subsidies seems unlikely to materialize before the elections in December 2015, at least in a relevant amount. Later on it would depend on the political situation but in any scenario this reform appears unavoidable.
12. PDVSA has announced that it is selling its 50% of the Chalmette and Hovensa refineries. Citgo has issued debt to pay dividends to PDVSA totaling \$2.5 billion in the first half of 2015.



